Technical Report

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National summary reports on pesticide residue analyses performed in 2022

European Food Safety Authority (EFSA)

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Abstract

In accordance with Article 31 of Regulation (EC) No 396/2005, European Union Member States provide the European Food Safety Authority with the results of their official controls on pesticide residues in food. The Member States, Iceland and Norway provided further information in the form of explanatory text outlining main findings of their control activities during the reference year. This technical report is the compilation of those contributions.

Keywords: pesticide residues, food, Regulation (EC) No 396/2005, pesticide monitoring 2022

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Summary

In the context of the preparation of the EU report on pesticide residues under Regulation (EC) No 396/2005, official control activities on pesticide residues are carried out in the EU Member States[1], Iceland and Norway.

EFSA prepared a scientific report reflecting the 2022 European Union Annual Report on Pesticide Residues in Food (EFSA, 2024). In addition to the submission of the results in the standardised reporting format developed by EFSA (Standard Sample Description, SSD), all the reporting countries provided additional information and a summary of their national results in a more descriptive mode; this has been compiled in this technical report. In particular, the information related to the competent authorities responsible for the implementation of pesticide monitoring at national level, the objectives and design of their national monitoring programmes, highlighting the specific characteristics and priorities of the national control plans, and the overall results of the national control programmes. The reporting countries also summarised their results and provided further information on follow-up actions that had been taken and the possible reasons for samples that had been found to be non-compliant with the legal limits. Some reporting countries included a trend analysis in which the 2022 results were compared with the results of previous years. The information also addresses quality assurance, such as giving the accreditation status of the laboratories responsible for official controls, and their participation in proficiency tests.

This technical report is a compilation of that information provided to complement the scientific report on the findings of the 2022 control year (EFSA, 2024).

[1] In accordance with the Agreement on the withdrawal of the United Kingdom of Great Britain and Northern Ireland from the European Union and the European Atomic Energy Community, and in particular Article 5(4) of the Windsor Framework (see Joint Declaration No 1/2023 of the Union and the United Kingdom in the Joint Committee established by the Agreement on the withdrawal of the United Kingdom of Great Britain and Northern Ireland from the European Union and the European Atomic Energy Community of 24 March 2023, OJ L 102, 17.4.2023, p.87) in conjunction with section 24 of Annex 2 to that Framework, for the purposes of this Regulation, references to Member States include the United Kingdom in respect of Northern Ireland

Contents

1 Introduction

1.1 Background and terms of reference as provided by the requestor

In accordance with Article 31 of Regulation (EC) No. 396/2005[2], Member States should submit their updated national control programme for pesticide residues to EFSA and publish all results of their national residue monitoring on the internet. EFSA decided to compile the additional information provided by the reporting countries and publish it in a technical report. In November 2019, the Standing Committee on Plants, Animals, Food and Feed highlighted the usefulness of this document. To harmonise the whole document layout and to align it with EFSA technical reports' style, EFSA made minor changes to the documents provided by the reporting countries; however, the content submitted was not amended.

This technical report is complementary to the scientific report on the findings of the 2022 control year (EFSA, 2024).

1.2 Interpretation of the terms of reference

This report is a compilation of the national summary reports as provided by the national competent authorities (see Appendix A in EFSA, 2024).

There might be a discrepancy between the information provided by reporting countries and the information published in the 2022 European Union report on pesticide residues in food (EFSA, 2024), because EFSA included additional data-cleaning steps in the preparation of the report to ensure that the results reported by the 30 countries were comparable. These data-cleaning steps might have had an impact on the overall results, such as the maximum residue limit (MRL) compliance rates. By means of this technical report, reporting countries can explain possible differences to their data.

2 Austria

2.1 Objective and design of the national control programme

The national pesticide monitoring is conducted under a nationwide sampling plan designed by the Austrian Agency for Health and Food Safety in cooperation with the Federal Ministry of Social Affairs, Health, Care and Consumer Protection. The plan is based on data for the dietary consumption, production and import of fruit, vegetables and food of animal origin and it takes into account the results of earlier monitoring programmes, as well as the analytical possibilities. The national monitoring programme, furthermore, takes into consideration the coordinated programme of the European Commission. In addition, routine samples are taken from the Austrian market by the responsible bodies.

2.1.1 Objective

In particular, the purpose of official food control is the comprehensive protection of consumers against health hazards when consuming food in addition to checking compliance with legal

[2] Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC. OJ L 70, 16.3.2005, p. 1–16

requirements. It is not only about detecting infringements in individual cases, but also about gaining general information that makes it possible to take appropriate measures to reduce risk. The results of monitoring and control programmes can also contribute to a realistic assessment of the impact of legal regulations (ZEBS, 1995).

2.1.2 Design

The data collected are representative of the Austrian market. Based on the results of previous years, selected parameter/commodity combinations were targeted by the monitoring programme and chosen for further examination with the aim of reflecting the results of the previous years (usually repeated on a three-year cycle).

Besides analysis of representative commodities for the Austrian diet, a significant number of samples was also analysed for usually underrepresented products like superfood/dried fruit, fermented dairy products, oilseeds and oilfruits, and rye and wheat flour.

Samples are analysed and evaluated in terms of consumer exposure and legal compliance by the Austrian Agency for Health and Food Safety and compiled data are submitted to the competent authorities for further risk assessment. Finally, the data are sent to the European Commission, to EFSA, and to the other Member States, in accordance with Article 31(1) of Regulation (EC) No 396/2005. In addition, the programme results are published annually in a national report on the residues of plant protection products in foodstuffs. This report is further used as a basis for discussing and improving measures to minimise risk in food safety issues.

2.1.3 Sampling

The samples were taken by trained officials from the local Food Inspection Service (*Lebensmittelaufsicht*) in accordance with Commission Directive 2002/63/EC [3], which is implemented in the internal quality assurance system of the officials. The samples were predominantly taken at the retail or wholesale level.

2.1.4 Analytical methods used

The samples were analysed for up to a maximum of 750 substances (part of sums included). The multi-residue methods were based on the QuEChERS (quick, easy, cheap, effective, rugged and safe) method, combined with gas chromatography (GC)–mass spectrometry (MS)/MS and liquid chromatography (LC)–MS/MS. Single-residue methods were used for dithiocarbamates (GC–MS), inorganic bromide (GC with electron capture detector) and highly polar residues (glyphosate/glufosinate, ethephon, fosetyl and phosphonic acid, chlorate and perchlorate, etc.) via LC-MS/MS.

2.2 Key findings, interpretation of the results and comparability with the previous year's results

In 2022, 1,198 samples were examined for pesticide residues. These samples were primarily fruit and primary derivatives thereof (416 samples), garden vegetables and primary derivatives

[3] Commission Directive 2002/63/EC of 11 July 2002 establishing Community methods of sampling for the official control of pesticide residues in and on products of plant and animal origin and repealing Directive 79/700/EEC. OJ L 187, 16.7.2002, p. 30–43.

thereof (385 samples), isolated purified ingredients (including mineral or synthetic) (189 samples) and grains and grain-based products (82 samples).

2.2.1 Key findings

Altogether, 191 samples (15.9%) were taken as objective sampling, and 1,007 samples (84.1%) were taken as selective sampling. Some 76.1% came from the European market, 23.5% from non-EU countries and the rest (0.3%) were of unknown origin. Without considering the measurement uncertainty, the percentage of objective sampling with residues above the MRL was 1.7% (EU) and 22.2% (non-EU countries). The percentage of selective sampling with residues above the MRL was 1.9% (EU) and 14.4% (non-EU countries).

In 34.6% of the samples no pesticide residues could be quantified; 60.4% of the samples had residues below or at the MRL. Disregarding measurement uncertainties, 4.9% of the samples contained one or more pesticide numerically above the MRL (59 samples). If, however, measurement uncertainty is considered, the number of samples containing pesticide residues above the MRL, and so being non-compliant, is reduced to 33 samples (2.8%). Fifteen of the 33 non-compliant samples were fruit and primary derivatives thereof (3.6% of 416 samples), 15 were garden vegetables and primary derivatives thereof (3.9% of 385 samples) and one sample was from isolated purified ingredients (including mineral or synthetic), oilseeds and oilfruits and starchy roots and tubers and primary derivatives thereof.

In 464 of all samples (38.7%), more than one pesticide was found. The maximum number of different pesticides was found in one sample of table grapes (17 compounds).

A total of 971 samples were of non-organic production and 227 samples were labelled as organic. In 94.2% of the non-organic samples, the MRL was not exceeded, while 98.7% of the organic samples did not exceed the MRL.

Table 1: Summary results

Samples	Total	Quantified	Quantified below MRL	Above MRL	Non-complaint
Fruit and primary derivatives thereof	416	353	325	28	15
Garden vegetables and primary derivatives thereof	385	269	244	25	15
Isolated purified ingredients (including mineral or synthetic)	189	36	33	3	1
Grains and grain-based products	82	60	60	0	0
Milk and milk products (dairy)	40	16	16	0	0
Oilseeds and oilfruits	38	10	9	1	1
Food products for young population	17	17	17	0	0
Alcoholic beverages	15	15	15	0	0
Starchy roots and tubers and primary derivatives thereof	13	7	5	2	1
Ingredients for hot drinks and infusions	2	0	0	0	0
Mammal and bird meat and products thereof	1	0	0	0	0
Total	**1,198**	**783**	**724**	**59**	**33**

2.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

2.3.1 Possible reasons for non-compliant samples

In 2022, 33 samples (2.8%, all commodities) were non-compliant with the EU MRLs, taking into account the measurement uncertainty. For these samples, administrative actions were taken by the responsible officials from the local Food Inspection Service. In general, there is no verified knowledge of the reasons for non-compliant results.

2.3.2 Actions taken

The actions taken can be seen in Table 2.

Table 2: Actions taken

	Number of non-compliant samples concerned	Comments
Rapid alert notification	15	In addition to administrative sanctions RASFF reference: 2022.349; 2022.350; 2022.261; 2022.1610; 2022.3279; 2022.3584; 2022.3408; 2022.4210; 2022.4325; 2022.4813; 2022.4821; 2022.4821; 2022.5524; 2022.5611; 2022.6906
Administrative sanctions (e.g. fines)	33	

2.4 Quality assurance

The analysis of the coordinated programme, the national monitoring programme and routine samples was conducted by the Austrian National Reference Laboratory (Table 3), the Institute for Food Safety Innsbruck of the Austrian Agency for Health and Food Safety. The laboratory received accreditation in 1998 and the methods for pesticide analyses are accredited.

Table 3: Laboratories participating in the national control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
AT	Austrian Agency for Health and Food Safety	AGES	1 November 1998	BMWA	EU proficiency tests (EUPT) SM14 Screening PT, multi-residue method) EUPT FV24 (multi-residue method) EUPT AO17 (multi-residue method) EUPT SRM17 (single-residue method)

	EUPT CF16 (multi-residue method) EUPT-FV SC06 (multi-residue method) EUPT-AO-BF (multi-residue method in baby food) PROOF-ACS_P2201-RT_Ethylenoxide in locust bean gum (single-residue method)

3 Belgium

3.1 Objective and design of the national control programme

The use of plant protection products during the production of fruit, vegetables and field crop products can lead to the presence of residues in food and feed. MRLs are set out in Regulation (EC) No 396/2005 in order to check the good use of plant protection products (the use of authorised products following good agricultural practices) and to protect consumers. Food or feed which do not comply with the MRL cannot be put on the market nor used. MRLs are not toxicological limits. An MRL exceeding content is a sign of the incorrect use of a plant protection product but does not necessarily involve a risk to the health of consumers.

More information on the plant protection products authorised in Belgium is available on the website Fytoweb [4]. Information on MRLs can be found on the website of the European Commission[5].

3.1.1 Self-checking

Food business operators are responsible for only placing food and feed products on the market that comply with MRLs. To verify the conformity of their products, they carry out analyses as part of their self-checking system. If they find food or feed that does not comply with the MRLs, they may not sell, use or dilute them in order to make them compliant. Moreover, food or feed that represents a serious risk to human or animal health must be notified to the Federal Agency for the Safety of the Food Chain (FASFC) in the context of the compulsory notification[6].

3.1.2 Official controls

In addition to the controls carried out by food business operators, the FASFC has set up an official risk-based control programme for pesticide residues in food and feed. A multiannual control programme is drawn up following a general statistical approach developed within the FASFC (Maudoux et al., 2006) taking into account several criteria: toxicity of the active substances, food consumption statistics, food commodities with a high residues/the non-

[4] http://www.fytoweb.be
[5] https://ec.europa.eu/food/plant/pesticides/max_residue_levels_en
[6] https://www.fasfc.be/control-system/compulsory-notification

compliance rate in the previous monitoring years, the origin of the food (domestic, EU or non-EU country), Rapid Alert System for Food and Feed (RASFF) notifications[7] and all other useful information. Specific attention is then paid to products with a high risk of MRL non-compliance.

Most of the groups of fruit and vegetables are included in the programme and a rotation programme is applied for the less common commodities. The coordinated control programme (Commission Implementing Regulation (EU) 2021/601[8]) of the European Commission and some temporary reinforced controls of high-risk commodities from certain non-EU countries at border controls (Regulation (EU) 2019/1793[9]) (harbours, airports, etc.) are also included in the control programme. Adjustments to the programme can be made in the course of the year so that emerging problems can be dealt with.

Sampling is done in accordance with Directive 2002/63/EC, which has been implemented in Belgian legislation. Samples are analysed in ISO 17025 accredited laboratories by means of multi-residue and single-residue methods which in 2022 allowed the detection of more than 600 pesticide residues.

If the MRL is exceeded, an assessment of the risk to the consumer (or animal health in the case of feed) is always carried out. This assessment is based on the European approach which estimates the amount of residue that will be ingested by consumers (the predicted short-term intake) and compares it with health-based guidance values.

3.2 Key findings, interpretation of the results and comparability with the previous year's results

In 2022, a total number of 4,255 samples of food (including baby food) and feed products were taken by the FASFC and analysed for the presence of pesticide residues in the context of Regulation 396/2005.

The products analysed were of Belgian origin (27.7%), EU origin (22.3%), non-EU origin (41.4%) and non-specified origin (8.6 %).

Results are presented according to their sampling strategy. In contrast to *surveillance samples* which are randomly taken, *enforcement samples* are taken after concrete indications that certain food may be of higher risk as regards non-compliance or consumer safety (e.g. rapid alert notifications or follow-up enforcement samples following MRL violations identified in an initial analysis of the product in focus).

Full details on the analytical scope, results per product and non-compliant samples can be found in the three annexes[10] to this summary report.

3.2.1 Surveillance samples

[7] https://webgate.ec.europa.eu/rasff-window/portal/
[8] Commission Implementing Regulation (EU) 2021/601 concerning a coordinated multiannual control programme of the Union for 2022, 2023 and 2024 to ensure compliance with maximum residue levels of pesticides and to assess the consumer exposure to pesticide residues in and on food of plant and animal origin. OJ L 127, 14.4.2021, p. 29–41.
[9] Commission Implementing Regulation (EU) 2019/1793 of 22 October 2019on the temporary increase of official controls and emergency measures governing the entry into the Union of certain goods from certain third countries implementing Regulations (EU) 2017/625 and (EC) No 178/2002 of the European Parliament and of the Council and repealing Commission Regulations (EC) No 669/2009, (EU) No 884/2014, (EU) 2015/175, (EU) 2017/186 and (EU) 2018/1660. OJ L 277, 29.10.2019, p. 89–129.
[10] https://favv-afsca.be/nl/thematische-publicaties-pesticide-residue-monitoring-food-plant-origin

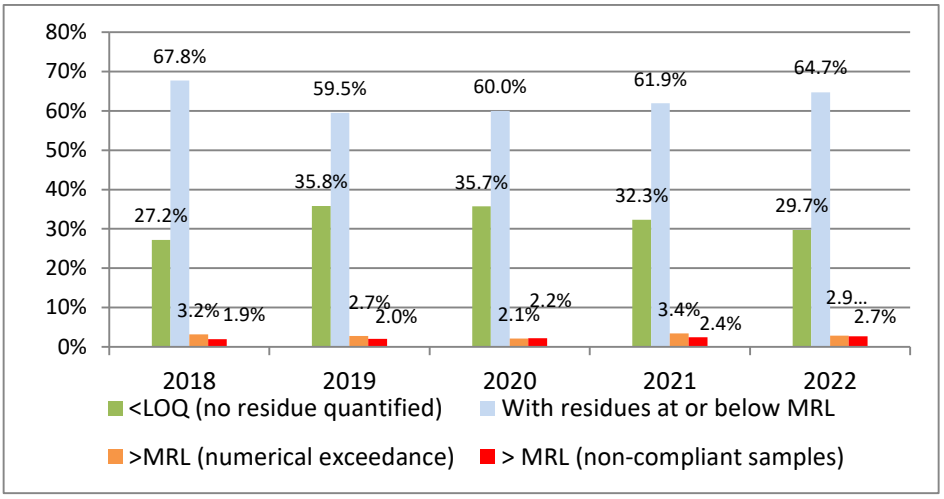
Out of the total of 4,255 samples, 3,359 surveillance samples were analysed as part of the control programme. Some 97.6% were compliant with the legislation in force (Table 4)

Table 4: Surveillance samples – summary of results

Type of product	Number of samples analysed	Without quantified residues (%)	With residues		With residues >MRL[b] (Non-compliant) (%)	Compliance rate (%) (Comparison with 2021)
			With residues at or below MRL (%)	With residues >MRL[a] (%)		
Fruit, vegetables, cereals & other	2,405	29.7	64.7	5.6	2.7	97.3 (-0.3)
Processed products	135	54.8	44.4	0.7	0.7	99.3 (-0.7)
Baby food	266	98.1	0.0	0.0	1.5	98.5 (=)
Animal products[c]	384	88.5	9.4	2.1	1.6	98.4 (-1.6)
Feed	169	47.9	49.7	2.4	2.4	97.6 (-0.2)
	3,359	**43.8**	**51.7**	**4.5**	**2.4**	**97.6 (-0.2)**

(a) Measurement uncertainty is not taken into account (numerical MRL exceedance).
(b) Measurement uncertainty is taken into account (non-compliant samples).
(c) Only animal products analysed as part of the coordinated control programme are included in this report. Additional samples are analysed under the veterinary legislation controls and are reported accordingly.

Fruit, vegetables, cereals and others: 97.3% of the 2,405 samples analysed complied with the MRLs (-0.3% compared with 2021). Figure 1 gives an overview of the trend of the results over the last 5 years. Some 29.7% of the samples were free of pesticide residues. Citrus fruit, stone fruit and fresh herbs are the groups of products with the highest frequency of detection of pesticide residues (more than 90% of the samples analysed contained one or more residues). Products with the highest rates of non-compliance are fresh herbs (11.7%), teas and infusions (8.2%), and fruiting vegetables (6.1%) mainly imported from non-EU countries. An overview of the detection frequencies and compliance with MRLs per product group is given in Table 5. Full details on the non-compliant samples can be found in Section 3.3. As in previous years, more MRL violations were proportionally observed in non-EU products (5.9%) than in products grown in the EU (1.4%).



LOQ: limit of quantification; MRL: minimum residue level.

Figure 1: Overview of the trend of the results for fruit, vegetables, cereals and other products of plant origin from 2018 to 2022 (surveillance samples)

Table 5: Overview of the results 2022 per group of products (fruit, vegetables, cereals and other) (surveillance samples)

	Product group	Number of samples analysed	Samples with one or more residues >LOQ (%)	Compliant samples (%)
Fruit	Citrus fruit	292	92.8	99.0
	Stone fruit	111	92.8	99.1
	Pome fruit	45	88.9	100
	Berries and small fruit	238	83.6	97.1
	Miscellaneous fruit	152	61.8	95.4
Vegetables	Fresh herbs	94	90.4	88.3
	Stem vegetables	103	86.4	99
	Bulb vegetables	35	85.7	100
	Leafy vegetables	231	83.1	99.6
	Legume vegetables	129	64.3	96.1
	Champignons	44	63.6	100.0
	Root vegetables	145	59.3	99.3
	Brassica vegetables	226	58.4	97.8
	Fruiting vegetables	98	58.2	93.9
Cereals	Cereals	134	56.7	95.5
Oilseeds	Oilseeds	176	23.3	98.3
Tea and infusions	Tea and infusions	85	58.8	91.8
Other products	Hops, cocoa beans and spices	67	52.2	98.5
Total		**2,405**	**70.3**	**97.3**

Processed products: 135 processed products (oil, dried fruits, canned vegetables, etc.) were analysed. One sample of dried grapes did not comply with the MRLs.

Baby food: 98.5% of the 266 baby-food products complied with the MRLs set in the relevant legislation. Non-compliance was related to biocidal products used for disinfection (dodecyl ammonium chloride and benzalkonium chloride).

Feed: 97.6% of the 169 feed products analysed was compliant with the legislation. Non-compliance was observed in cereals and oilseed products.

Animal products : six samples of honey did not comply with MRLs (captan sum).

3.2.2 Enforcement samples

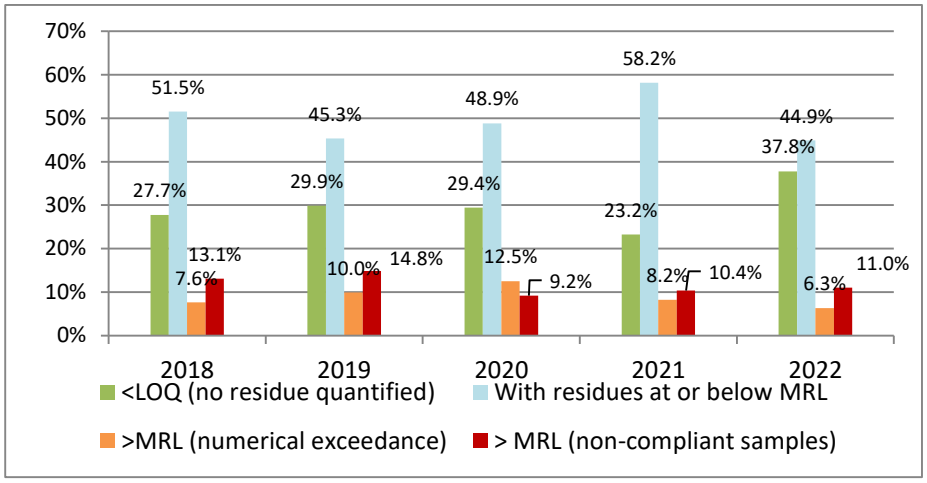
Besides surveillance samples, 896 enforcement samples were analysed when non-compliance of a product with EU MRLs was suspected (Table 6). These products were mainly targeted products analysed under Regulation 2019/1793 (suspected products coming from non-EU countries; Uganda, Kenya, Dominican Republic and China among others) and products analysed in the context of following up violations found previously. Some 89.7% were compliant with the legislation (-0.5% in comparison with 2021).

Table 6: Enforcement samples – summary results

Type of product	Number of samples analysed	Without quantified residues (%)	With residues		>MRL[b] (Non-compliant) (%)	Compliance rate (%) (Comparison with 2021)
			With residues at or below MRL (%)	>MRL[a] (%)		
Fruit, vegetables, cereals and other[c]	791	37.8	44.9	17.3	11	89.0 (0.6)
Animal products	1	100	0	0	0	100
Baby food	1	0	100	0	0	100
Food supplements	13	100	0	0	0	100
Food additives	38	86.8	13.2	0	0	100
Feed	12	8.3	83.3	8.3	8.3	91.7 (+41.7)
Processed products	40	57.5	27.5	15	10	90 (-10)
Total	**896**	**41.3**	**42.6**	**16.1**	**10.3**	**89.7 (-0.5)**

(a) Measurement uncertainty is not taken into account (numerical MRL exceedance).
(b) Measurement uncertainty is taken into account (non-compliant samples).
(c) Including samples analysed under Regulation (EU) 2019/1793.

Fruit, vegetables and cereals: 89.0% of the 791 samples analysed complied with the MRLs (+0.6% in comparison with 2021).



LOQ: limit of quantification; MRL minimum residue level.

Figure 2: Overview of the trend of the results for fruit, vegetables, cereals and other products of plant origin from 2018 to 2022 (enforcement samples)

Processed products: 40 processed products were analysed. Three samples of grape leaves and one sample of curry leaves were non-compliant.

Table 7: Overview of the results per group of product (enforcement samples)

Product group	Number of samples analysed	Compliant samples (%)	Main non-compliant products (>MRL) and origin
Cereals	49	87.8	Rice (India and Pakistan)
Fresh herbs	93	69.9	Mint, coriander leaves and basil (Israel, Ethiopia)
Fruiting vegetables	183	88.0	Aubergines (Myanmar, Uganda), chili peppers (Uganda), okra (Honduras)
Legume vegetables	166	97.0	Beans (Kenya, Dominican Republic)
Miscellaneous fruit	65	72.3	Passion fruit (Colombia)
Tea and infusions	50	92	Tea (China)
Oilseeds	29	86.2	Peanuts (Brazil), Linseed (Russia)
Others	156	100	
	791	**89**	

3.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

3.3.1 Possible reasons for non-compliant samples

The reasons for MRL violations in Belgian products are investigated at the premises of the food business operator responsible for the product in order to check the correct use of plant protection products. Such investigation cannot be done for imported products but non-compliance in these is generally related to the use of plant protection products that are not authorised in the EU.

3.3.2 Acute reference dose exceedance and RASFF notifications

An assessment of the risk to consumers is performed for all products that are found to exceed MRLs during official controls or notified to the FASFC by food business operators as part of self-checking and mandatory notification.

A tool[11] to estimate the risk to the consumer when MRLs are exceeded is available on the FASFC website. When an exceeded MRL indicates that the applicable health-based guidance value (the acute reference dose) has also been exceeded, the product is considered to be unsafe and must be withdrawn from the market and/or recalled from consumers.

Recalls of products are published on the FASFC website[12]. Unsafe products are also notified via the European RASFF in order to inform other Member States and allow them to take further action on products possibly distributed on their market.

Eighty-five food and feed products analysed by the FASFC under the control plan or by food business operators during self-checking were notified via the RASFF in 2022. Several notifications issued by Belgium concerned issues with chlorpyriphos and chlorpyriphos-methyl in various products. RASFF notifications can be found on the RASFF portal website.

3.3.3 Actions taken

When non-compliant samples are identified, the batch is seized and prevented from entering the market. An assessment of the risk to consumers is performed on all samples exceeding the MRLs and the appropriate measures are taken according to the risk to the consumer (withdrawal from the market, recall from consumers).

Follow-up action is taken to identify the cause. When non-compliant samples are identified, the producer or importer is subject to further checks and an official report is drawn up and sent to the FASFC's legal department which usually proposes a fine.

3.4 Quality assurance

Seven ISO 17025 accredited laboratories analysed pesticide residues as part of the FASFC's national control programme 2022.

Table 8: Laboratory participation in the national control programme

Country	Laboratory Name	Code	Accreditation	Body	Participation in proficiency tests or inter-laboratory tests
BE	CER Groupe	CER	Yes	BELAC	Yes
BE	Primoris Belgium cvba	PRIMORIS	Yes	BELAC	Yes
BE	Lovap	LOVAP	Yes	BELAC	Yes
BE	SGS	SGS	Yes	BELAC	Yes
BE	SCIENSANO	SCIENSANO	Yes	BELAC	Yes
DE	LUFA-ITL	LUFA	Yes	DAkkS (Deutsche Akkreditierungsstelle)	Yes

[11] https://www.favv-afsca.be/productionvegetale/produitsphytopharmaceutiques/#PSTI
[12] https://www.favv-afsca.be/consommateurs/

Country	Laboratory Name	Code	Accreditation	Body	Participation in proficiency tests or inter-laboratory tests
NL	Groenagro Control	GROENAGRO	Yes	RvA	Yes
NL	Eurofins Lab Zeeuws-Vlaanderen BV	ZEEUWS	Yes	RvA	Yes

3.5 Processing factors

Processing factors are applied as necessary to verify compliance of processed products with EU MRLs according to Article 20 of Regulation 396/2005. Processing factors were mainly applied to cover the dehydration of fruit or vegetables. Specific processing factors given in the EFSA database of processing factors for pesticide residues (Scholz et al., 2018) were also applied where appropriate.

3.6 Additional information

3.6.1 Organic production

Organic production falls under the responsibility of the Belgian Regions. Samples of organic food and feed products analysed by the FASFC are checked for their compliance with the MRLs set in Regulation 396/2005. Organic products containing pesticide residues are notified to the Regions for possible follow-up according to the legislation applicable to organic farming.

3.6.2 Use of control data for scientific purposes

The Scientific Committee of the FASFC regularly publishes opinions on the exposure of the Belgian population to residues of plant protection products through the consumption of fruit and vegetables based on official control results (advice 31-2007, 02-2010, 18-2015 and 09/2022). Their advice can be consulted on the FASFC website[13].

The Scientific Committee concluded in its last opinion (09/2022) based on FASFC control results for the period 2014–2020 that, overall, the long-term exposure of the Belgian consumer, including children, to residues of plant protection products via consumption of fruit and vegetables did not pose a risk or was not a cause for concern, even with a high consumption of fruit and vegetables.

4 Bulgaria

4.1 Objective and design of the national control programme

4.1.1 Objective

The Bulgarian Food Safety Agency (BFSA), within the Ministry of Agriculture is the competent authority for the enforcement of pesticide residue monitoring in Bulgaria. BFSA and the Risk Assessment Centre on Food Chain (RACFC), also within Ministry of Agriculture, are responsible

[13] https://www.favv-afsca.be/scientificcommittee/

for drawing up the national monitoring programme for pesticide residues in food and on products of animal and plant origin. Therefore, BFSA is responsible for implementing the coordinated multiannual control programme of the EU and taking samples in accordance with Commission Implementing Regulation (EC) No 2020/2041[14]. A coordinated multi-community monitoring programme is included in the national programme on pesticide residue monitoring.

4.1.2 Design

The sampling plan for pesticide residue monitoring is always drawn up for one calendar year. The plan is drafted by BFSA headquarters, national reference laboratories within the BFSA and scientific experts from RACFC. The sampling plan is distributed to the Regional Food Safety Directorates, which are responsible for its implementation.

In addition to the samples listed in Regulation (EU) No 2020/2041, the Republic of Bulgaria analysed the samples for identification of products used for plant protection.

The national control programme for pesticide residues in food of plant and animal origin 2022 was based on several factors of high importance:

- The relevance of the food products in the diet of the Bulgarian population.
- Food commodities not included in the EU-coordinated programme.
- The relevance of the food products to national agricultural production.
- Food products with a high RASFF notification rate.
- Food relevant to sensitive groups of consumers.
- Food products with a high non-compliance rate identified in previous years.

The national control programme was based on the following factors of low importance:

- Countries with a high non-compliance rate in the past.
- Sampling of products during the main marketing season/outside of the main marketing season.
- Non-processed or processed products.
- Organic or conventional products.
- Sample origin reflecting the geographical distribution of food products consumed.

4.2 Key findings, interpretation of the results and comparability with the previous year's results

4.2.1 Key findings

In 2022, 14,171 samples (Table 9) were analysed as part of the national and coordinated monitoring programmes: 1,975 samples of fruit and primary derivatives thereof, 12,065 of garden vegetables and primary derivatives thereof, 111 grains and grain-based products, 16 starchy roots and tubers and primary derivatives thereof, and four alcoholic beverages. In 7,648 samples, results for residues are below the limit of quantification (LOQ) (53.97%) and 526 samples exceeded the MRL (3.71%).

[14] Commission Implementing Regulation (EU) 2020/2041 of 11 December 2020 amending Implementing Regulation (EU) 2020/585 as regards the number of samples to be taken and analysed by each Member State in view of the withdrawal of the United Kingdom from the European Union and the European Atomic Energy Community. OJ L 420, 14.12.2020, p. 6–8.

Table 9: Summary results

Matrix class	Total samples	Below LOQ	Above MRL
Grains and grain-based products	111	104	1
Garden vegetables and primary derivatives thereof	12,065	6,445	331
Alcoholic beverages	4	2	0
Fruit and primary derivatives thereof	1,975	1,083	193
Starchy roots and tubers and primary derivatives thereof	16	14	1
Total	**14,171**	**7,648**	**526**

4.2.2 Interpretation of the results

In total, 14,171 samples were analysed, of which 526 (3.71%) samples contained pesticide residues above the MRL. Some 518 samples originated from non-EU countries and eight are of EU origin.

In 406 samples of the 414 with EU origin there were no residue detections. Residues above the MRL were detected in eight of them.

The most analysed products were vegetables (12,065 samples) and fruit (1,975). The third count of samples is for grains and products thereof (111). The number of samples of starchy roots and tubers was 16 and for the alcoholic beverages, four.

Out of all the vegetable samples analysed, 6,459 were below the LOQ and in 332 samples a level of residues above the MRL was detected. The most tested products were sweet peppers (11,899; 556 samples above the MRL) and lettuce (generic) (60; two samples above the MRL). The total number of other sampled vegetables (sweet peppers, lettuce (generic), spinach, tomatoes, potatoes, radishes, head cabbages, cucumbers, carrots, watermelons, alfalfa sprouts) was 122. In three of them the result was over the MRL and 119 were below the LOQ.

Lemons (927; 75 samples above the MRL) and pomegranates (637; 88 samples above the MRL) were the most analysed for residues of all the fruit samples (1,975). The total number of other fruit sampled was 411 (lemons, mandarins, grapefruit, apples, pears, table grapes, strawberries, peaches and similar, plums, pomegranates, bananas and similar, oranges). In 30 of them the result was over the MRL and 381 were below the LOQ.

Of the other 115 samples (oat grain, wheat and similar, white wine, red wine), 106 were below the LOQ and one sample of wheat and similar was above the MRL.

Table 10: Analysed samples

Product	Samples
Wheat and similar	104
Oat grain	7
Sweet peppers	11,899
Lettuce (generic)	60
Spinach	39
Tomatoes	18
Potatoes	16
Radishes	14
Head cabbage	10
Cucumbers	10
Carrots	8

Product	Samples
Wheat and similar	104
Oat grain	7
Sweet peppers	11,899
Lettuce (generic)	60
Watermelons	4
Lemons	927
Pomegranates	637
Grapefruit	166
Mandarins	78
Oranges	42
Apples	36
Pears	30
Strawberries	30
Table grapes	16
Bananas and similar-	6
Wine, white	2
Wine, red	2
Plums	4
Alfalfa sprouts	3
Peaches and similar-	3
Total products	**14,171**

4.2.3 Comparability with the previous year's results

For the purposes of comparison, Table 11 gives the results for 2011–2022.

The percentage of samples with residues below LOQ in 2022 (53.97%) increased compared with 2011 (5.4), 2012 (6.2), 2013 (5.1) and 2014 (6.1), 2015 (37.6), 2016 (50.42), 2017 (52.28), 2018 (57.85) 2019 (34.20), 2020 (51.57), 2021 (98.06).

The percentage of samples exceeding the MRL in 2022 (3.71%) extremely decreased as compared with years from 2011 to 2021 (vary from 1.9% to 15.78%).

Table 11: Total samples, percentage below the LOQ and percentage above the MRL, 2011–2022

Year	Total	Below LOQ	Above MRL
2022	14,171	7,648	526
2021	875	98.06	1.03
2020	9,370	51.57	15.78
2019	7,263	34.20	7.60
2018	7,685	57.85	8.82
2017	6,807	52.28	4.99
2016	5,153	50.42	9.31
2015	3,934	37.6	2.0
2014	3,428	6.1	2.1
2013	3,237	5.1	2.0
2012	3,174	6.2	1.9
2011	4,516	5.4	2.4

4.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

4.3.1 Possible reasons for non-compliant samples

In 2022, almost 2% (1.93%) of total samples were determined as non-complaint with the EU MRL legislation. The main reason for non-compliance was residue detection activities following the detection of non-approved pesticide residues by EU and border control activities.

Table 12: Non-compliant results

Matrix class	Food product	Non-compliant (n)	Non-compliant (%)
Garden vegetables and primary derivatives thereof	Lettuces (generic)	2	3.33
Garden vegetables and primary derivatives thereof	Spinach	2	5.13
Garden vegetables and primary derivatives thereof	Sweet peppers	138	1.16
Fruit and primary derivatives thereof	Apples	1	4.17
Fruit and primary derivatives thereof	Pomegranates	61	9.58
Fruit and primary derivatives thereof	Grapefruit	14	8.64
Fruit and primary derivatives thereof	Lemons	50	5.45
Fruit and primary derivatives thereof	Mandarins	1	1.43
Fruit and primary derivatives thereof	Oranges	3	9.38
Grains and grain-based products	Wheat and similar	1	0.96
Total		273	1.93

4.3.2 Acute reference dose exceedance

All suspect samples (those above the MRL) are analysed. Scientific advice is given to risk managers for follow-up action.

4.3.3 Actions taken

When a non-compliant sample is identified, the batch is seized and prevented from entering the market.

The control authority investigates, according to the legalisation, to assess the risk to consumers.

A rapid risk assessment was performed on all samples that exceeded the MRLs and, according to the risk to consumers, the appropriate measures were taken (withdrawal from the market, recall from the consumers, etc.).

RASFF notifications are sent in accordance with EU Regulations, taking into account the results of the risk assessment and the instructions of the RASFF Working Instructions 2.2 (alert notification, border rejection notification or information notification for attention).

The batches of products exceeding the MRL were placed under official detention and were destroyed or re-dispatched to the country of origin.

4.4 Quality assurance

The laboratory tests were carried out in two laboratories as detailed in Table 13. Both had undergone accreditation procedures from the Executive Agency – 'Bulgarian Accreditation Service'.

Table 13: Laboratories participating in the national control programme

Country	Laboratory		Accreditation	
	Name	Code	Date	Body
BG	Central Laboratory for Chemical Testing and Control	CLCTC	31 July 2020	Executive Agency – Bulgarian Accreditation Service
BG	Primoris	PRIMBG	03 June 2021	BELAC – Belgian Accreditation Council

5 Croatia

5.1 Competent authority

For the national monitoring programme for pesticide residues in and on food the competent authority is the Ministry of Agriculture.

The national annual report is published online: https://fis.mps.hr/izvjestaji/sve

For other official controls of pesticide residues in food, the relevant body is the State Inspectorate.

The competent authorities for the implementation of Regulation (EC) No 396/2005 are the Ministry of Agriculture and the State Inspectorate, each within their respective jurisdiction.

The Ministry of Agriculture is the designated official contact point in Croatia, under Article 38 of Regulation (EC) No 396/2005 and is responsible for:

- establishing and preparing a multiannual national control programme for pesticide residues referred to in Article 30 of Regulation (EC) No 396/2005, coordinating its implementation, submitting it to the European Commission and EFSA and publishing the results of the programme on the Internet; and
- submitting the information referred to in Article 31 of Regulation (EC) No 396/2005.

The State Inspectorate (agricultural, veterinary and sanitary inspection) is responsible for:

- carrying out the official controls referred to in Article 19 of Regulation (EU) 2017/625[15];
- performing the sampling activities referred to in Article 1 of Regulation (EU) 2021/2244[16]
- implementing the national monitoring programme for pesticide residues in food referred to in Article 1 of Commission Implementing Regulation (EU) 2021/1355[17];
- implementing the emergency measures referred to in Article 35 of Regulation (EC) No 396/2005.

[15] Commission Implementing Regulation (EU) 2017/62 of 14 December 2016 concerning the authorisation of 3-(methylthio) propionaldehyde, methyl 3-(methylthio) propionate, allylthiol, dimethyl sulfide, dibutyl sulfide, diallyl disulfide, diallyl trisulfide, dimethyl trisulfide, dipropyl disulfide, allyl isothiocyanate, dimethyl disulfide, 2-methylbenzene-1-thiol, S-methyl butanethioate, allyl methyl disulfide, 3-(methylthio) propan-1-ol, 3-(methylthio) hexan-1-ol, 1-propane-1-thiol, diallyl sulfide, 2,4-dithiapentane, 2-methyl-2-(methyldithio) propanal, 2-methylpropane-1-thiol, methylsulfinyl methane, propane-2-thiol, 3,5-dimethyl-1,2,4-trithiolane and 2-methyl-4-propyl-1,3-oxathiane as feed additives for all animal species. OJ L 13, 17.1.2017, p. 186–213.

[16] Commission Delegated Regulation (EU) 2021/2244 of 7 October 2021 supplementing Regulation (EU) 2017/625 of the European Parliament and of the Council with specific rules on official controls as regards sampling procedures for pesticides residues in food and feed. OJ L 453, 17.12.2021, p. 1–2.

[17] Commission Implementing Regulation (EU) 2021/1355 of 12 August 2021 on multiannual national control programmes for pesticides residues to be established by Member States. OJ L 291, 13.8.2021, p. 120–121.

5.2 Objective and design of the national control programme

5.2.1 National monitoring programme for pesticide residues in and on food

The national monitoring programme for pesticide residues in and on food was prepared and coordinated by the Department for Sustainable Use of Pesticides operating within the Service for Plant Protection Products of the Sector of Phytosanitary Policy in the Directorate for Agricultural Land, Plant Production and Market in the Ministry of Agriculture.

The objectives of the programme are:

- to determine the quantity of pesticide residues in food and verify compliance with Regulation (EC) No 396/2005;
- to assess the risk to consumers;
- to acquire information related to the use of plant protection products according to the instructions on labels and good agricultural practice (GAP);
- to control the unauthorised use of plant protection products.

The national monitoring programme for pesticide residues in and on food is implemented under Article 6 of the Act on Implementation of Regulation (EC) No 396/2005 on MRLs of pesticides in or on food and feed of plant and animal origin[18].

The national monitoring programme for pesticide residues in and on food in 2022 was funded by the Ministry of Agriculture.

Products were selected according to Commission Implementing Regulation (EU) 2021/601.

Products were also selected with regard to the assessment of their importance to the nutrition of the Croatian population and determined pesticide residues in the previous monitoring programmes, especially products that had been found in previous years to have exceeded the MRLs or been misused (unauthorised uses).

Risk factors that were taken into account:

- Importance of the crop.
- MRL exceedance (product, pesticide, region).
- Multiple pesticides (products).
- Illegal use – unauthorised pesticides.
- Misuse.

Products sampled according to Regulation (EU) 2021/601 were: apples, strawberries, peaches, wine (red or white) made from grapes, lettuces, head cabbages, tomatoes, spinach, oat grain, barley grain, cow milk, swine fat, food for infants and young children other than infant formulas, follow-on formulas and processed cereal-based baby food.

Products sampled based on national priorities took into account:

- previous exceedance: kiwi, grapefruit, melons, lemons, bananas, peppers, tangerines, mushrooms, cucumbers, strawberries and apples (for targeted sampling), oranges, celery root, broccoli, sesame seeds;
- importance in the nutrition: potatoes;

[18] Official Gazette of the Republic of Croatia, No. 80/13, 115/18 and 32/20.

- new products: lime, spelt, buckwheat, celery.

Pesticides to be analysed were chosen according to:

- Part C and D of Regulation (EU) 2021/601;
- plant protection products authorised in the country;
- forbidden plant protection products (at national/EU level);
- the analytical capacities of the national control laboratories.

Sampling strategy: selective sampling and objective sampling.

The sampling methods are in accordance with Commission Directive 2002/63/EC.

The areas of sampling covered four major cities, one smaller city and four regional units.

The sampling periods for sanitary inspections were March/April/May/June//July/August/September/October/December; for agricultural inspections (sampling in periods adjusted to the agricultural production, harvest and picking) they were March/April, May/June/July/August/September/October; for veterinary inspections sampling occurred throughout the year.

The points of sampling were:

- Sanitary inspections: sampling products of plant origin in large shopping centres – central distribution warehouses, green markets, wholesale markets and cold stores where there are affordable, comprehensive batches, in shops and at markets.
- Agricultural inspections: sampling products of plant origin from primary production sites – agricultural warehouses on farms or in places for storage of agricultural products intended for placing on the market, places for packaging or shipping of such products for the market, or in places where products were temporarily stored after the harvest/picking before placing on the market.
- Veterinary inspections: sampling products of animal origin from primary production and retail sites, facilities for the production, processing and storage of products of animal origin.

To ensure good implementation and coordination of the programme, the Ministry of Agriculture prepared guidance for the implementation of the programme in 2022 which is a documented procedure for sampling. It includes the number and description of samples for each inspection, the sampling area, the sampling strategy, the sampling methods, the sampling periods, the sampling procedures, the sampling form, storage, packing and delivery of the samples, the analysis and analytical reports, notification to RASFF and measures taken.

The laboratory that analyses the products of plant origin is Andrija Štampar Teaching Institute of Public Health, Department of Environmental Protection and Health Ecology.

The laboratory that analyses the products of animal origin is the Croatian Veterinary Institute, Laboratory for Determination of Residues.

5.2.2 Other official controls for pesticide residues

Besides the results of the national monitoring programme for pesticide residues in and on food, the results of other pesticide residue official controls in food of plant origin at the border were

also reported for 2022 (surveillance at the border including controls according to Regulation (EU) 2019/1793[19]).

The sampling strategies were objective, selective and suspect sampling.

The laboratories that analysed the products of plant origin were Andrija Štampar Teaching Institute of Public Health Eurofins Croatiakontrola d.o.o., Inspecto d.o.o. and Sample Control.

The sampling methods were in accordance with Commission Directive 2002/63/EC.

5.2.3 Risk assessment and HR RASFF

The assessment of risk to consumers was conducted by the Croatian Centre for Agriculture and Food – Centre for Plant Protection.

The Croatian RASFF system is the responsibility of the Ministry of Agriculture, Veterinary and Food Safety Directorate, which is the national RASFF contact point for the European Commission.

5.3 Key findings, interpretation of the results and comparability with the previous year's results

5.3.1 Key findings

National monitoring programme for pesticide residues in and on food

In 2022 551 samples were analysed as part of the national monitoring programme for pesticide residues in and on food.

The programme found that 29 samples exceeded the MRL, of which 17 samples were compliant, taking into account measurement uncertainty and 12 samples non-compliant.

Multiple residues were found in apples, peaches, head cabbage, lettuce, spinach, tomatoes, bananas, grapefruit, oranges, strawberries, lemons, limes, mandarins, celery, cucumbers, melons, sweet peppers and kiwi.

Some 235 samples were found to have pesticide residues below the LOQ and 290 quantified below the MRL.

MRL non-compliance was determined for samples of: tomatoes (1), strawberries (1), grapefruit (1), lemons (2), celery leaves (1), celeriac (1), spinach (3), apple (1) and buckwheat (1).

Regarding the comparability with the previous year, the results showed some changes in the trend (Table 14).

Table 14: Pesticide residues in food, 2014–2022

Year	No samples	Without residues	With residues below MRL	Multiple residues	Exceeding MRL	Non-compliant
2014	374	323 (86%)	70 (19%)	28	0	0

[19] Commission Implementing Regulation (EU) 2019/1793 of 22 October 2019 on the temporary increase of official controls and emergency measures governing the entry into the Union of certain goods from certain third countries implementing Regulations (EU) 2017/625 and (EC) No 178/2002 of the European Parliament and of the Council and repealing Commission Regulations (EC) No 669/2009, (EU) No 884/2014, (EU) 2015/175, (EU) 2017/186 and (EU) 2018/1660. OJ L 277, 29.10.2019, p. 89–129.

2015	483	348 (72%)	134 (28%)	74	1	1 (0.2 %)
2016	547	331 (60.51%)	216 (39.49%)	108	10 (1.83%)	6 (1.10%)
2017	608	423 (69.57%)	170 (27.96%).	95	15	5
2018	595	356 (59.83%)	226 (37.98%)	155	13 (2.18%)	6 (1.01%)
2019	290	166 (57.24 %)	116 (40%)	94	8 (2.7 %)	5 (1.72 %)
2020	311	202 (60 %)	107 (35 %)	69	3 (1 %)	2 (0.7 %)
2021	549	255 (46.45 %)	259 (47.18 %)	193	35 (6.38 %)	23 (4.19 %)
2022	551	235 (42.7 %)	291 (52.7 %)	149	25 (4.6 %)	12 (2.2 %)

When compared with the previous years, the number of analysed samples had increased, the percentages of samples without residues of pesticides is decreasing, while the percentage of samples with pesticide residues below the MRLs is increasing. The number of samples with multiple residues was low in 2020, then significantly increased, then started decreasing in 2022.

Percentages of the non-compliant samples remained mostly at the same level until 2020, and in 2021 significantly increased, then decreased in 2022.

Table 15: Summary results of the national monitoring programme for pesticide residues in and on food

Matrix detailed	Total samples	Below LOQ	Quantified below MRL	Above MRL	Non-compliant
Oat grain	2	2	0	0	0
Buckwheat	13	10	1	2	1
Barley grains	25	15	10	0	0
Spelt grain	15	14	1	0	0
Buckwheat flour	2	2	0	0	0
Oat flour	23	19	4	0	0
Broccoli	15	12	3	0	0
Head cabbage	25	22	2	1	0
Sweet peppers	10	4	6	0	0
Cucumbers	15	6	8	1	0
Melons	15	9	6	0	0
Lettuces (generic)	25	9	14	2	0
Spinach	24	5	14	5	3
Celeriac	5	0	4	1	1
Celery	6	3	3	0	0
Cultivated fungi and similar-	10	9	1	0	0
Celery leaves	4	0	3	1	1

Matrix detailed	Total samples	Below LOQ	Quantified below MRL	Above MRL	Non-compliant
Potatoes	20	16	4	0	0
Sesame seeds	8	8	0	0	0
Lemons	11	0	7	4	2
Limes	16	4	11	1	0
Mandarins	9	4	5	0	0
Clementines	1	1	0	0	0
Grapefruit and similar-	15	0	12	3	1
Apples	32	9	20	3	1
Strawberries and similar	30	5	24	1	1
Peaches and similar-	22	3	19	0	0
Pig fat tissue	16	16	0	0	0
Cow milk, whole	14	14	0	0	0
Wine, white	14	9	5	0	0
Wine, red	10	6	4	0	0
Wine, rosé	1	0	1	0	0
Ready-to-eat meals for infants and young children	25	25	0	0	0
Bananas and similar	5	0	5	0	0
Sesame seeds and similar	7	7	0	0	0
Baby leaf spinach	1	1	0	0	0
Tomatoes	25	13	11	1	1
Kiwi	15	6	6	3	0
Oranges	20	2	18	0	0
Total	**551**	**290**	**232**	**29**	**12**

Other official controls

Multiple residues were found in wine, apricots, bananas, peaches, prunes, raisins, lemons, nectarines, oranges, pears, plums, strawberries, table grapes, carrots, crisp lettuce, cucumbers, dried vegetables, gherkins, head cabbage, pickled/marinated vegetables, sweet peppers, tomatoes and parsley.

There were 17 non-compliant samples within other official controls: head cabbage (1), sweet peppers (2), gherkins (1), courgettes (1), crisp lettuce (2), pickled/marinated vegetables (1),

oilseeds (1), mandarins (1), table grapes (1), plums (1), hibiscus infusion flowers (1) and oranges (4).

Table 16: Summary results of other official controls (at the border)

Matrix detailed	Total samples	Below LOQ	Quantified below MRL	Above MRL	Non-compliant
Cereal grains (and cereal-like grains)	1	1	0	0	0
Popcorn kernels	1	1	0	0	0
Rice grains	2	2	0	0	0
Rice grains, long-grain	1	1	0	0	0
Maize semolina	3	3	0	0	0
Maize starch	1	1	0	0	0
Rye flour	2	2	0	0	0
Rye flour, wholemeal	1	1	0	0	0
Wheat flour, white	12	12	0	0	0
Cauliflowers	1	1	0	0	0
Head cabbage	16	12	3	1	1
Red cabbage	1	1	0	0	0
Garlic	2	2	0	0	0
Onions	5	5	0	0	0
Sweet peppers	65	51	11	3	2
Chili peppers	2	1	0	1	0
Aubergines	5	5	0	0	0
Goji berries	1	0	1	0	0
Cucumbers	30	9	18	3	0
Gherkins	6	2	2	2	1

Matrix detailed	Total samples	Below LOQ	Quantified below MRL	Above MRL	Non-compliant
Courgettes	2	1	0	1	1
Watermelons	12	12	0	0	0
Sweetcorn	2	2	0	0	0
Crisp lettuce	11	3	6	2	2
Mallow leaves	1	1	0	0	0
French beans (with pods)	3	2	1	0	0
Beetroot	2	2	0	0	0
Carrots	3	1	2	0	0
Dried mushrooms	1	1	0	0	0
Lemongrass	1	1	0	0	0
Parsley	1	0	1	0	0
Tomato puree	3	3	0	0	0
Tomato paste	4	4	0	0	0
Pickled/marinated vegetables	31	21	8	2	1
Sauerkraut	2	2	0	0	0
Sweetcorn canned	2	2	0	0	0
Dried vegetables	5	4	1	0	0
Potatoes	5	4	1	0	0
New potatoes	7	6	1	0	0
Sweet potatoes	4	4	0	0	0
Garden peas (without pods)	2	2	0	0	0
Borlotti or other common beans (dry)	12	12	0	0	0
Navy beans (dry seeds)	9	9	0	0	0

Matrix detailed	Total samples	Below LOQ	Quantified below MRL	Above MRL	Non-compliant
Chickpeas (dry)	3	3	0	0	0
Lentils (dry)	1	1	0	0	0
Almonds	2	1	1	0	0
Cashew nuts	7	7	0	0	0
Hazelnuts	7	7	0	0	0
Pistachios	1	1	0	0	0
Walnuts	3	3	0	0	0
Oilseeds	1	0	0	1	1
Peanuts	7	5	2	0	0
Poppy seeds	1	1	0	0	0
Sesame seeds	14	14	0	0	0
Mustard seeds	1	1	0	0	0
Pumpkin seeds	2	1	0	1	0
Dried herbs	2	2	0	0	0
Sage, dry	1	1	0	0	0
Paprika powder	1	1	0	0	0
Cinnamon bark	2	2	0	0	0
Ginger root	2	2	0	0	0
Turmeric root	1	1	0	0	0
Canned or jarred peas	1	1	0	0	0
Soya protein	1	1	0	0	0
Chickpea flour	1	1	0	0	0
Lemons	6	1	5	0	0

Matrix detailed	Total samples	Below LOQ	Quantified below MRL	Above MRL	Non-compliant
Mandarins	1	0	0	1	1
Clementines	2	2	0	0	0
Apples	4	2	2	0	0
Crab apples	1	1	0	0	0
Pears	9	2	7	0	0
Quinces	1	1	0	0	0
Grapes and similar fruit	1	1	0	0	0
Table grapes	10	0	9	1	1
Strawberries	5	1	4	0	0
Blackberries	2	1	1	0	0
Raspberries (red and yellow)	1	0	1	0	0
Blueberries	1	1	0	0	0
Cranberries	1	1	0	0	0
Apricots	2	0	2	0	0
Sour cherries	2	2	0	0	0
Cherries (sweet)	1	1	0	0	0
Common peaches	6	1	3	2	0
Nectarines	6	4	2	0	0
Plums	13	6	6	1	1
Dates	2	2	0	0	0
Figs	1	1	0	0	0
Common banana	22	3	19	0	0
Pomegranates	1	1	0	0	0

Matrix detailed	Total samples	Below LOQ	Quantified below MRL	Above MRL	Non-compliant
Pineapple	1	1	0	0	0
Dried fruit	6	6	0	0	0
Dried prunes	6	4	2	0	0
Dried apricots	3	3	0	0	0
Dried vine fruit (raisins, etc.)	5	0	5	0	0
Dried bananas	1	1	0	0	0
Citrus fruit peel	1	1	0	0	0
Soya bean oil, refined	1	1	0	0	0
Sunflower seed oil, edible	6	6	0	0	0
Palm oil/fat	3	3	0	0	0
Cocoa butter	1	1	0	0	0
Fruit juice concentrate	1	1	0	0	0
Instant coffee powder	1	1	0	0	0
Cocoa powder	2	2	0	0	0
Tea leaves and stalks, fermented	1	1	0	0	0
Wine, white	14	9	5	0	0
Wine, red	14	8	6	0	0
Wine, rosé	1	1	0	0	0
Fruit used as fruit	1	0	1	0	0
Fruit juice (100% from named source)	1	1	0	0	0
Rose hips	2	2	0	0	0
Sweet fennel seed	2	2	0	0	0
Marshmallow infusion roots	1	1	0	0	0

Matrix detailed	Total samples	Below LOQ	Quantified below MRL	Above MRL	Non-compliant
Hibiscus infusion flowers and similar	2	1	0	1	1
Arabian coffee beans	1	1	0	0	0
Tomatoes	21	10	10	1	0
Potatoes and similar	1	1	0	0	0
Oranges	24	5	14	5	4
Dried nuts/seeds and related flours and powders	2	2	0	0	0
Vegetable puree or paste	2	2	0	0	0
Chia seeds	4	4	0	0	0
Juice concentrate, apple	1	1	0	0	0
Total	**579**	**387**	**163**	**29**	**17**

5.4 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

5.4.1 Possible reasons for non-compliant samples

National monitoring programme for pesticide residues in and on food

Table 17: Reasons for MRL non-compliance in national monitoring programme for pesticide residues in and on food

Reasons for MRL non-compliance	Pesticide/food product[a]	Frequency[b]	Comments
Use of pesticide which is not approved on spinach	Metazachlor/spinach	1	Domestic origin
Good agricultural practice (GAP) not respected	Dithiocarbamates/spinach	1	Origin Italy
Use of pesticide which is not approved on spinach	Terbuthylazine/spinach	1	Domestic origin
Use of pesticide unapproved in the EU	Chlorpyrifos/grapefruit	1	Turkey
Use of pesticide unapproved in the EU	Prochloraz/lemon	1	Turkey
GAP not respected, use of pesticide unapproved in the EU	Dithiocarbamates, linuron/celery leaves	1	Italy
Use of pesticide unapproved in the EU	Prochloraz/lemon	1	Turkey
Use of pesticide which is not approved on strawberries	Ametoctradin/strawberries	1	Domestic origin

Use of pesticide unapproved in the EU/Croatia	Chlorothalonil/tomatoes	1	Domestic origin
Use of pesticide which is not approved on celeriac	Propamocarb/celeriac	1	Domestic origin
Use of pesticide which is not approved on buckwheat	Dithiocarbamates/buckwheat	1	Domestic origin
Use of pesticide unapproved in the EU/Croatia	Chlorpyrifos/apples	1	Domestic origin

Other official controls

Table 18: Reasons for MRL non-compliance in other official controls

Reasons for MRL non-compliance	Pesticide/food product[a]	Frequency[b]	Comments
Good agricultural practice (GAP) not respected	Cyazofamid/head cabbages	1	North Macedonia
GAP not respected	Formetanate/sweet peppers	1	Albania
GAP not respected	Formetanate/sweet peppers	1	Bosnia and Herzegovina
Use of pesticide unapproved in the EU/Croatia	Chlorpyrifos/gherkins	1	Serbia
GAP not respected	Metalaxyl and metalaxyl-M/courgettes	1	Turkey
GAP not respected	Lambda-cyhalothrin/crisp lettuce	1	Bosnia and Herzegovina
GAP not respected	Cyprodinil/crisp lettuce	1	Bosnia and Herzegovina
GAP not respected	Metalaxyl and metalaxyl-M/pickled/marinated vegetables (cucumbers)	1	India
Use of pesticide unapproved in the EU/Croatia	Chlorpyrifos/oilseeds (sesame seeds)	1	India
Use of pesticide unapproved in the EU/Croatia	Dimethoate/mandarins	1	Egypt
Use of pesticide unapproved in the EU/Croatia	Thiacloprid/table grapes	1	North Macedonia
Use of pesticide unapproved in the EU/Croatia	Chlorpyrifos/plums	1	North Macedonia
Use of pesticide unapproved in the EU/Croatia	Chlorpyrifos/hibiscus infusion flowers	1	Nigeria
Use of pesticide unapproved in the EU/Croatia	Chlorpyrifos/oranges	1	Egypt
Use of pesticide unapproved in the EU/Croatia	Chlorpyrifos/oranges	1	Egypt

Use of pesticide unapproved in the EU/Croatia	Chlorpyrifos/oranges	1	Egypt
Use of pesticide unapproved in the EU/Croatia	Chlorpyrifos/oranges	1	Egypt

5.4.2 Acute reference dose exceedance

National monitoring programme for pesticide residues in and on food

A risk assessment was done for 12 non-compliant samples found under the national monitoring programme for pesticide residues in and on food.

No toxicological reference values have been set for the active substances chlorpyrifos and chlorpyrifos-methyl, therefore the risk cannot be defined with certainty, i.e. it cannot be excluded.

Table 19: Actions taken under the national monitoring programme for pesticide residues in and on food

Pesticide/food product	Action taken[(a)]	Number of non-compliant samples concerned[(b)]	Comments
Dithiocarbamates/spinach	Administrative measures	1	No risk
Chlorpyrifos/grapefruit	Recall, withdrawal from the market, administrative measures	1	Risk cannot be excluded
Prochloraz/lemons	Withdrawal from the market, administrative measures	1	No risk
Dithiocarbamates, linuron/celery leaves	Recall, withdrawal from the market, administrative measures	1	Risk
Prochloraz/lemons	Withdrawal from the market, administrative measures	1	No risk
Ametoctradin/strawberries	Administrative measures	1	No risk
Chlorothalonil/tomatoes	Administrative measures	1	No risk
Propamocarb/celeriac	Administrative measures	1	No risk
Metazachlor/spinach	Administrative measures	1	No risk

Terbuthylazine/spinach	Administrative measures	1	No risk
Dithiocarbamates/buckwheat	Administrative measures	1	No risk
Chlorpyrifos/apples	Forbidden placing on the market, safe disposal of apples, administrative measures	1	Risk cannot be excluded

Other official controls

Table 20: Actions taken as part of other official controls

Pesticide/food product	Action taken[a]	Number of non-compliant samples concerned[b]	Comments
Cyazofamid/head cabbage	Import ban and reshipment outside the EU	1	No risk
Formetanate/sweet peppers (Albania)	Import ban and harmless destruction	1	No risk assessment done
Formetanate/sweet peppers (Bosnia Erzegovina)	Import ban and reshipment outside the EU	1	No risk
Chlorpyrifos/gherkins	Import ban and harmless destruction	1	No risk assessment done
Metalaxyl and metalaxyl-M/courgettes	Import ban and harmless destruction	1	No risk assessment done
Cyprodinil/crisp lettuce	Prohibition of import and return of shipment	1	No risk assessment done
Metalaxyl and metalaxyl-M/pickled/marinated vegetables (cucumbers)	Prohibition of import and return of shipment	1	No risk
Chlorpyrifos/oilseeds (sesame seeds)	Prohibition of import and return of shipment	1	No risk assessment done
Dimethoate/mandarins	No measures taken, product was evaluated as compliant by mistake	1	No risk assessment done

Thiacloprid/table grapes	Import ban and reshipment outside the EU	1	No risk
Chlorpyrifos/plums	Import ban and harmless destruction	1	No risk assessment done
Chlorpyrifos/hibiscus infusion flowers	Import ban and harmless destruction	1	Risk cannot be excluded
Chlorpyrifos/oranges	Import ban and harmless destruction	1	Risk cannot be excluded
Chlorpyrifos/oranges	Import ban and harmless destruction	1	Risk cannot be excluded
Chlorpyrifos/oranges	Import ban and harmless destruction	1	Risk cannot be excluded
Chlorpyrifos/oranges	Import ban and reshipment outside the EU	1	Risk cannot be excluded

5.5 Quality assurance

There are two national reference laboratories which analysed pesticide residues under national monitoring programme for pesticide residues in and on food: the Andrija Štampar Teaching Institute of Public Health (for products of plant origin) and the Croatian Veterinary Institute (for products of animal origin).

The analyses of products of plant origin at the Andrija Štampar Teaching Institute were performed using GC-MS , GC–MS/MS and LC–MS–MS in accordance with standards DIN EN 12393:2013 and HRN EN 15662:2018).

Analyses of products of animal origin were performed with the GC–MS/MS method.

For the other official controls at the border, four laboratories were involved: the Andrija Štampar Teaching Institute of Public Health, Eurofins Croatiakontrola d.o.o., Inspecto d.o.o. and Sample Control.

Table 21: Laboratory participation in the national control programme and other official controls

Country	Laboratory Name	Code	Accreditation Date	Body	Participation in proficiency tests or inter-laboratory tests
Croatia	Croatian Veterinary Institute	HVI	First: 14 May 2013 Last: 14 May 2023	Croatian Accreditation Agency	2022: Pesticides in rapeseed oil, organisation: EURL-AO, Freiburg, Germany

Croatia	Laboratory for Residue Control Andrija Štampar Teaching Institute of Public Health	Štampar	2003 Flexible accreditation	Croatian Accreditation Agency	2022: Pesticides in barley grain, organisation: EURL-CF, Copenhagen, Denmark EURL-PT-FV, EURL-PT-SRM EURL-PT-CF, EUPT-AO2015-2023
Croatia	Eurofins Croatiakontrola d.o.o.	Eurofins Croatiakontrola d.o.o.	27 February 2004. Flexible accreditation	Croatian Accreditation Agency	2021: EUPT-FV23; EUPT-CF15; EUPT-SRM16; FAPAS 05155; FAPAS 09136; FAPAS 09141; FAPAS 19304; FAPAS 19308; FAPAS 19309; FAPAS 19313; FAPAS 19316; FAPAS 19324; FAPAS 19327 2022: EUPT-FV24; EUPT-CF16; EUPT-SRM17; EUPT-AO17; FAPAS 19330; FAPAS 05161; FAPAS 09148; FAPAS 09150; FAPAS 19342; FAPAS 19348; FAPS 19354; FAPAS 19355; FAPAS 19530
Croatia	Inspecto d.o.o.	Inspecto d.o.o.	First: 5 July 2007 Flexible accreditation	Croatian Accreditation Agency	EUPT-FV-24 Tomato homogenate, EUPT-CF-16 Barley Kernels, EUPT-AO-17 Rapeseed Oil, BIPEA - 19B Pesticides cereals
Croatia	Sample Control	Sample Control	First: 6 July 2010 Flexible accreditation	Croatian Accreditation Agency	EUPT-AO, EUPT-FV, EUPT-CF i EUPT-SRM

6 Cyprus

6.1 Objective and design of the national control programme

The Ministry of Health is the competent authority for the enforcement of the pesticide residues legislation and the execution of the national monitoring and surveillance programmes. The enforcement of legislation and sampling is allocated to the Department of Medical and Public Health Services. For products of animal origin, sampling is carried out by the Veterinary Services of the Ministry of Agriculture, Rural Development and Environment.

The Pesticide Residues Lab (PR-SGL) of the State General Laboratory, a department of the Ministry of Health, is the Official Laboratory for the Monitoring & Surveillance of Pesticide Residues in Food of Plant and Animal Origin. The PR-SGL Lab, in cooperation with the MPHS, designs and implements the monitoring programme for both the local market and imports. The sampling is focused on the key points of the food chain: market, import, processing, primary storage producers, etc.

Organic products are controlled under a monitoring control plan designed by the PR-SGL Lab in cooperation with the Department of Agriculture of the Ministry of Agriculture, Rural Development and Environment. The results are evaluated by the competent authority in accordance with the Regulation on organic products.

The sampling regime is based on a combination of 'at random' sampling and targeted sampling focusing on problematic pesticide/food combinations. This combination is, in a way, biased towards problematic products and might lead to higher violation rates. Nevertheless, it can provide a higher degree of consumer protection and cost-effectiveness. The main criteria used in the sampling design are: the EU-coordinated programme, violations from previous years, information from RASFF, consumption rates, especially for children, and the needs of import controls.

The increase in the number of compounds monitored is a continuous process and is mainly defined by the requirements of the EU-coordinated programme. The Commission's working document on the inclusion of pesticides in the national control plan as well as the pesticides included in the European Union proficiency tests (EUPTs) are also taken into account. It should be noted though that the laboratory capacity and the costs of the analysis are the main factors which influence the inclusion of new pesticides in the national monitoring plan.

6.2 Key findings, interpretation of the results and comparability with the previous year's results

In 2022 a total of 692 food samples of plant and animal origin were analysed as part of official controls. The sampling rate was 77.9 samples per 100,000 inhabitants.

6.2.1 Plant origin samples

The number of plant origin samples analysed in 2022 was 533. The number of fruits tested was 148, vegetables 188, cereals 64, teas and dry herbs 25, pulses 23, oil seeds 14, spices 8 and vegetable/fruit-based baby food 11. Furthermore, 52 processed foods such as dry fruit, wine, juice and grape leaves in brine were also analysed. A total of 10 barley samples and 17 oat samples were analysed as required by the EU-coordinated plan, but due to the limited number of barley and oat grains found on the market, samples of flour and flakes were also analysed. For the purpose of the import controls, 167 samples were analysed, out of which 13 samples of sesame seeds, two herbal infusion samples and one green tea sample originating from India were also analysed for the compound ethylene oxide. The main imported products were vegetables, fruit, cereals, pulses, processed food and oil seeds.

Of the plant origin samples, 59.8% were found to be positive with pesticide residues while residues of more than one pesticide were found in 45.4% of the samples.

The most frequently found pesticides in 2022 were cypermethrin in 10.5%, acetamiprid in 10.3%, tebuconazole in 10.1%, fluopyram in 8.3%, boscalid and chlorantraniliprole in 7.7%, pyrimethanil in 7.3%, fludioxonil in 6.8%, fosetyl-Al in 6.6%, difenoconazole in 6.4% and azoxystrobin in 6.2% of the samples analysed for them.

For statistical purposes, the violation rate of the MRLs is calculated taking into account only the samples of plant origin. For the year 2022, 7.1% of the 533 samples were considered as legal violations, which means that the samples exceed the MRLs after taking into account the measurement uncertainty.

The number of organic farming samples analysed was 74 out of which 61 samples were analysed under the national monitoring programme of organic products. Seven samples were found to be positive with pesticide residues. All the results, which are presented in Table 22, were reported to the competent authority of the organic products so that the appropriate measures could be taken.

Table 22: Results of organic farming samples

Product	Pesticide	Found value (mg/kg)
Carrots	Boscalid	0.0050
	Fluxapyroxad	0.0067
Lettuce	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.012
Apples	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.057
Apples	Cyprodinil	0.018
	Tebuconazole	0.0061
Grapes	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.0078
Tulsi lemon ginger	Chlorpyrifos	0.027
Dry beans	Acetamiprid	0.083
	Chlorpyrifos	0.018

Comparing the results of 2022 with those of 2021, the violation rate was found to show a slight decrease from 8.5% to 7.1% and the frequency of multiple residues in 2022 (45.4%) did not show a significant difference compared with the corresponding result in 2021 (47%).

6.2.2 Animal origin samples

In 2022, 159 samples of animal origin were analysed for pesticide residues: 79 samples of meat (muscles, liver and fat), 34 milk samples, 21 hen egg samples, 13 fish samples and 12 samples of honey. Under the Community control plan, 12 swine fat samples and 12 of cow milk were analysed. The rest of the samples were analysed under the national monitoring plan in order to fulfil the requirements of EU Directive 1996/23[20].

Of the 159 samples of animal origin analysed, 11 honey samples were found to contain pesticides at quantifiable levels.

Some 92% of the honey samples were found to be positive with amitraz at concentrations ranging between 0.026 and 0.31 mg/kg. One of the samples also contained coumaphos at concentrations lower than the legal limit.

The concentration of amitraz determined in three honey samples was higher than the MRL but none of the samples was considered as a legal violation (after subtracting the measurement uncertainty).

[20] Council Directive 96/23/EC of 29 April 1996 on measures to monitor certain substances and residues thereof in live animals and animal products and repealing Directives 85/358/EEC and 86/469/EEC and Decisions 89/187/EEC and 91/664/EEC. OJ L 125, 23.5.1996, p. 10–32.

6.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

In 2022, 11.6% of the samples of plant origin (62 samples out of 533 samples of plant origin were found to be non-compliant with the EU MRLs), whereas 7.1% of the samples (38 samples) were considered as legal violations (meaning that they were found to be non-compliant with the legal limits taking into account the measurement uncertainty).

Acute exposure assessment using the PRIMO v 3.1 was performed for all legal violations. In eight cases for which no toxicological data were available, an exposure assessment was not carried out (chlorpyrifos in raisins, dry peppermint, herbal infusion, dry beans and omethoate in rocket).

In two cases (acetamiprid in celery and cypermethrin in spinach), the exposure of both population groups, adults and children, exceeded the toxicological reference value (acute reference dose). Furthermore, for acetamiprid in sweet peppers, only the children's exposure exceeded the acute reference dose.

The follow-up actions that were taken in the cases of non-compliant samples are shown in Table 23.

Table 23: Possible reasons for MRL non-compliance and actions taken

Reason for MRL non-compliance	Pesticide/food product	Frequency	Action taken
Good Agricultural Practice (GAP) not respected: application rate, number of treatments, application method or pre-harvest interval (PHI) not respected	Dithiocarbamates (expressed as CS2) / spinach	2	
GAP not respected: use of a pesticide not approved in the EU	Omethoate / roman rocket Linuron / parsley	1	
GAP not respected: use of an approved pesticide not authorised on the specific crop	Pyrimethanil / grape leaves Formetanate / parsley Acetamiprid & penconazole / celery Acetamiprid & pyrimethanil / celery Acetamiprid & propamocarb / celery Fluopicolide & propamocarb / celery Imidacloprid / lettuce Cypermethrin / spinach Etofenprox / guava Imidacloprid / cherries Imidacloprid / peaches Imidacloprid / pomegranates Acetamiprid / pomegranates Deltamethrin / pomegranates	1	Administrative consequences

GAP not respected: use of a pesticide not approved in the EU	Triflumuron & fluopyram / grape leaves in brine	1	Rapid alert notification / administrative consequences
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set	Acetamiprid, chlorpyrifos, diflubenzuron & propargite / peppers, sweet	1	
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set	Chlorpyrifos / dried black beans Malathion / dried broad beans Thiamethoxam / rice Chlorpyrifos / herbal infusion Azoxystrobin, carbendazim, boscalid, chlorpyrifos, cyfluthrin, difenoconazole, dimethomorph, fenpropathrin, fenpyroximate, imidacloprid, lufenuron, propiconazole, tebuconazole, lambda-cyhalothrin / grape leaves in brine	1	Rapid alert notification / lot not released onto the market
	Chlorpyrifos / raisins	2	
GAP not respected: use of a pesticide not approved in the EU	Chlorpyrifos & Profenofos / dry mint	1	Rapid alert notification/ lot recalled from the market/administrative consequences
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set	Chlorpyrifos / dry mint Chlorpyrifos & malathion / dry mint	1	
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set	Fenpropathrin & procymidone / frozen blueberries	1	Other
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set	Cypermethrin / mallow infusion leaves Propamocarb / garden peas (without pods) Bifenthrin, chlorantraniliprole, chlorpyrifos, tebuconazole & fluopyram / chili powder Acetamiprid, azoxystrobin, cypermethrin, flutriafol, indoxacarb, thiamethoxam & lambda-cyhalothrin / grape leaves in brine Acetamiprid, azoxystrobin, carbendazim, bifenthrin, boscalid, chlorpyrifos, cypermethrin, difenoconazole, dimethomorph, imidacloprid, myclobutanil, penconazole, propiconazole &	1	Rapid alert notification / lot not released onto the market / destruction of products

	pyraclostrobin / grape leaves in brine	
	Chlorpyrifos / raisins	2

6.4 Quality assurance

The PR Lab of the SGL has been accredited since 2002 in accordance with standard EN ISO/IEC 17025:2017. The PR Lab applies quality control procedures, which are in line with the Commission document 'Analytical Quality Control and Method Validation Procedures for Pesticide Residues Analysis in Food and Feed' (EC, 2020). Details on the laboratory can be found in Table 24.

Table 24: Quality control laboratory

Country code	Laboratory Name	Laboratory Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or interlaboratory tests
CY	State General Laboratory of the Ministry of Health	SGL_CYPRUS_FP	2002	Cyprus accreditation body (CYS-CYSAB)	PTs 2022: EUPT-FV 24 (Tomato Homogenate) EUPT-SRM-17 (Tomato Homogenate) EUPT-AO-17 (Rapeseed Oil) EUPT-CF-16 (Barley Kernels) EUPT-AOBF-1 (Infant Formula) FAPAS 19355 (Green Tea)

6.5 Processing factors

Processing factors were applied to verify the compliance with the EU MRLs of the processed food. Table 25 presents the processing factors applied for different foods.

Table 25: Processing factors

Pesticides	Unprocessed product (RAC)	Processed product	Processing factor	Source of the processing factor
Spirotetramat, sulfoxaflor	Tomatoes	Goji berries, dried	1	Default processing factor
Tebuconazole	Plums	Plums, dried	1.22	Bundesinstitut für Risikobewertung (BfR)

Pesticides	Unprocessed product (RAC)	Processed product	Processing factor	Source of the processing factor
Spirodiclofen			1	Default processing factor
Clothianidin, thiamethoxam	Cultivated fungi	Mushrooms, dried	9	General processing factor
Acetamiprid, carbendazim, chlorpyrifos,cypermethrin, emamectin, imidacloprid, lufenuron, malathion, pendimethanil, profenofos	Spearmint & peppermint fresh	Spearmint & peppermint, dried	5.18	Drying factor
Imidacloprid	Rice grain	Rice, polished	0.78	EFSA (EU) Database
Acetamiprid, azoxystrobin, buprofezine, clothianidin, difenoconazole, isoprothiolane, pirimiphos-methyl, propiconazole, tebuconazole, thiamethoxam, tricyclazole			1	Default processing factor
Ametoctradin	Table grapes	Raisins	3.35	EFSA (EU) Database
Boscalid			2.4	EFSA (EU) Database
Chlorantraniliprole			3.5	EFSA (EU) Database
Fludioxonil			1.1	EFSA (EU) Database
Fluopyram			2.9	EFSA (EU) Database
Lambda-cyhalothrin			3	EFSA (EU) Database
Methoxyfenozide			2.28	EFSA (EU) Database
Metrafenone			1.74	EFSA (EU) Database
Penconazole			1.18	EFSA (EU) Database
Proquinazid			2.84	EFSA (EU) Database
Azoxystrobin			2.99	BfR
Carbendazim			1.31	BfR
Chlorpyrifos			0.95	BfR
Cyflufenamid			3.6	BfR
Fenhexamid			2.42	BfR
Fluxapyroxad			3.26	BfR
Imidacloprid			5.5	BfR
Kresoxim-methyl			1.58	BfR
Metalaxyl			3.03	BfR

Pesticides	Unprocessed product (RAC)	Processed product	Processing factor	Source of the processing factor
Propargite			0.85	BfR
Pyrimethanil			1.63	BfR
Acetamiprid, cypermethrin, cyprodinil, difenoconazole, dimethomorph, fenhexamid, fenpropathrin, fenvalerate, fluopicolid, flutriafol, indoxacarb, myclobutanil, phosalone, profenophos, pyraclostrobin, quinoxyfen, tebuconazole, tebufenozide, tebufenpyrad, thiacloprid, trifloxystrobin			1	Default processing factor
Boscalid	Apples	Apple juice	0.08	EFSA (EU) Database
Pyrimethanil			0.55	EFSA (EU) Database
Cypermethrin	Olives for oil production	Olive oil	7.6	EFSA (EU) Database
Chlormequat chloride	Oat	Oat flakes	1	BfR
Glyphosate			0.17	BfR
Fosetyl-Al, mepiquat chloride			1	Default processing factor
Fluopyram	Wine grapes	Wines	0.18	EFSA (EU) Database
Myclobutanil			0.12	EFSA (EU) Database
Tebuconazole			0.11	EFSA (EU) Database
Thiophanate-methyl (red wine)			0.75	EFSA (EU) Database
Dimethomorph (red wine)			0.51	BfR
Dimethomorph (white wine)			0.55	BfR
Fosetyl-Al (red wine)			1.14	BfR
Fosetyl-Al (white wine)			1.47	BfR
Metalaxyl			0.5	BfR
Triadimenol (white wine)			0.5	BfR
Azoxystrobin, boscalid, carbendazim, chlorantraniliprole, fenhexamid, fenpyrazamine, flupyradifurone, pyrimethanil, thiophanate-			1	Default processing factor

Pesticides	Unprocessed product (RAC)	Processed product	Processing factor	Source of the processing factor
methyl (white wine), triadimenol (white wine)				
Fluopicolide	Tomatoes	Tomato paste	2.2	EFSA (EU) Database
Imidacloprid			7.4	EFSA (EU) Database
Pyridalyl			1.3	EFSA (EU) Database
Famoxadone			1.29	BfR
Acetamiprid, ametoctradin, azoxystrobin, carbendazim, chlorfenapyr, chlorpyrifos, cyromazine, difenoconazole, dimethomorph, fenbutatin oxide, indoxacarb, lufenuron, metallaxyl, myclobutanil, profenofos, propamocarb, propargite, teflubenzuron			5.6	Production factor

7 Czechia

7.1 Objective and design of the national control programme

7.1.1 Objective

Pesticide residue monitoring in foodstuffs in Czechia is guided by the Multiannual Control Plan for the Control of Pesticide Residues submitted by the Ministry of Health, in cooperation with the Ministry of Agriculture and other supervisory bodies (the Czech Agriculture and Food Inspection Authority (CAFIA), the State Veterinary Administration (SVA), the Central Institute for Supervising and Testing in Agriculture (CISTA)).

A coordinated multiannual Community monitoring control programme is included in the plan as required by Regulation (EC) No 396/2005.

The requirements of the multiannual control programme are included in the control plans of the official authorities (CAFIA, SVA and CISTA) with the jurisdiction to monitor pesticide residues in foodstuffs of plant and animal origin and feed.

7.1.2 Design

The multiannual pesticide residue control plan covers food and feed throughout the food chain. The control programme is based on Commission Implementing Regulation (EU) 2021/601. The plan includes the minimum numbers of commodities to be checked, the minimum number of samples to be taken, and the range of pesticide residues that must be analysed. During their

activities, supervisors may increase the number of inspected commodities and samples taken and the range of pesticide residues investigated as appropriate and at their discretion.

Selection of commodities

The following criteria were used to select which commodities are included in the national pesticide residue control programme:

- total food consumption in Czechia in 2019[21];
- the consumer food basket[22] ;
- the results of controls and monitoring of pesticide residues in previous years[23];
- products with more stringent requirements for pesticide use (organic food and biofeed);
- reporting in the RASFF system – the Commission's annual reports[24];
- Commission Implementing Regulation (EU) 2021/601[25];
- the final reports on the results of Community monitoring
- EU reports on pesticide residues in food published on the EFSA website(EFSA, 2014a,b, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022a, 2023).

Number of samples

The number of samples taken is set so that typical profiles of pesticide residue levels can be determined for selected commodities, and trends mapped for pesticide residues and their amounts in the analysed commodities, allowing statistical evaluation. The national programme is based on the multiannual EU control programme set out in Commission Implementing Regulation (EU) 2021/601.

The number of samples in Regulation (EU) No 2020/601[25] is set as a minimum. It is possible to change and update the number of samples according to the current situation. Similarly, it is possible to amend the number of commodities that are analysed. The real extent of samples is in the validation report.

Analysed pesticide residues

These were determined based on:

- the most commonly used active substances (source – CISTA);
- the database of authorised plant protection products and the active substances they contain, maintained by CISTA and available online on their website. Additionally, an overview of the consumption of active substances is published, both total consumption and consumption for main crops.
- the results of controls and pesticide residue monitoring in previous years[26];

[21] https://www.czso.cz/csu/czso/spotreba-potravin-2019; English version: https://www.czso.cz/csu/czso/food-consumption-2019
[22] http://czvp.szu.cz/spotrebapotravin.htm
[23] http://www.svscr.cz; http://www.szpi.gov.cz/; http://www.ukzuz.cz
[24] https://food.ec.europa.eu/safety/acn/reports-and-publications_en#rapid-alert-system-for-food-and-feed-rasff
[25] Commission Implementing Regulation (EU) 2020/601 of 13 April 2021 concerning a coordinated multiannual control programme of the Union for 2022, 2023 and 2024 to ensure compliance with maximum residue levels of pesticides and to assess the consumer exposure to pesticide residues in and on food of plant and animal origin. OJ L 127, 14.4.2021, p. 29–41.
[26] http://www.svscr.cz; http://www.szpi.gov.cz/; http://www.ukzuz.cz

- RASFF system reporting – the Commission's Annual Reports (https://food.ec.europa.eu/safety/acn/reports-and-publications_en#rapid-alert-system-for-food-and-feed-rasff);
- Commission Implementing Regulation (EU) 2021/601;
- the final reports on the results of Community monitoring;
- the consumer food basket[27];
- the toxicological profiles of pesticides (National Institute of Public Health, Prague);
- laboratory capacity.

Sampling

Seven CAFIA regional Inspectorates participate in sampling for the determination of pesticide residues. They take samples in compliance with requirements of Commission Directive 2002/63/EC. Samples are taken, in particular, from retail and wholesale sites.

Foodstuffs of animal origin are sampled by 14 Regional Veterinary Administrations in compliance with requirements of Commission Directive 2002/63/EC. Samples are taken at production and processing premises.

Samples of feedstuffs are taken by inspectors of CISTA (six regional branches) at producers of feed raw materials and operators placing these products on the market. Sampling is carried out in compliance with Commission Regulation (EC) No. 152/2009[28].

7.2 Key findings, interpretation of the results and comparability with the previous year's results

The Czech Agriculture and Food Inspection Authority together with the State Veterinary Administration and Central Institute for Supervising and Testing in Agriculture sampled a total of 1,010 samples in 2022. The samples were taken as part of official controls focused on checking the presence of pesticide residues. Most of the samples taken were of fresh fruit, vegetables, cereals, cereal products and products of plant origin (810 samples). Foodstuffs of animal origin amounted to 123 samples and there were 77 samples of feeding stuffs.

7.2.1 Key findings

Out of the total number of the samples taken, 568 (56.2%) returned a positive finding of any of the analysed active substances. The MRL was exceeded in 97 samples (9.6%). Some 75 samples (7.4%) were assessed as non-compliant, i.e. the samples exceeded the MRL even when uncertainty of measurement was taken into account.

The largest proportion of all samples were from products from EU countries (68.0% analysed samples) followed by samples from non-EU countries (24.6%). In 7.4% of the samples, the country of origin was not reported during the sampling.

The largest proportion of the analysed samples were of fruit, vegetables and other plant products (810 samples). The presence of pesticide residues was not detected in 27.4% of the analysed plant origin samples. In 60.6% of samples, the detected residues were under the MRL value. Regardless of the uncertainty measurement, 97 samples (12.0%) of fruit, vegetables and other

[27] http://www.szu.cz/tema/bezpecnost-potravin; http://czvp.szu.cz/spotrebapotravin.htm
[28] Commission Regulation (EC) No 152/2009 of 27 January 2009 laying down the methods of sampling and analysis for the official control of feed. OJ L 54, 26.2.2009, p. 1–130.

plant products contained pesticide residues above the MRL value. After taking uncertainty measurement into account, the number of non-compliant samples of fruit, vegetables and other plant products amounted to 75 (9.3 %).

As regards foodstuffs of animal origin, out of the total number of the samples taken (123), 107 were from non-processed foodstuffs: hen eggs, bovine, poultry and pig fat, beef, pig, sheep, goat and chicken liver, chicken fresh meat, cow milk and honey; and 16 samples were from processed products: butter, milk products (yogurt, curd cheese) and milk powder.

All 123 analysed samples of foodstuffs of animal origin came from the EU. Pesticide residues were not found in 80.5% of foodstuffs of animal origin. Of the 19.5% of samples with residues, the detected residues were found to be under the MRL. None of the analysed samples of animal origin were found to exceed the MRL.

Organic products of plant and animal origin comprised 7.8% (73 samples) of the total number of samples compared with 92.2% (860 samples) being foodstuffs produced by conventional farming. Out of the total number of samples taken from non-organic foodstuffs, a positive finding of pesticide residues was detected in 69.7% (599 samples) of samples compared with 17.8% (13 samples) of samples taken from organic foodstuffs.

In 483 samples of plant origin (52.7%) more than one active substance was detected. The maximum number various pesticide substances and their metabolites was found in chili peppers from Cambodia (32 compounds). As regards non-organic feeding stuffs, a total of 62 samples of non-processed raw materials and fish meal were taken. Out of the total number of the analysed samples of feeding stuffs, 93% originated in Czechia, two samples from EU countries, one sample from a non-EU country and one sample was of unknown origin. Positive detections of pesticide residues were found in 84% of feed. None of the samples was above the MRL. Out of the total number of 15 samples of feed from organic farming, in one case pesticide residue under the MRL value was detected.

7.2.2 Comparability with the previous year's results

In 2022, a total of 1,010 samples were analysed for pesticide residues (Table 26) compared with 1,520 in 2017, 1,390 in 2018, 1,478 in 2019, 1,029 in 2020 and 1,218 in 2021. Positive findings of pesticide residues (with residues below the MRL) in 2022 were detected in 56.2% samples compared with 56.2% in 2017, 73.8% in 2018, 64.9% in 2019, 64.0% in 2020 and 62.0% in 2021.

The MRL value in 2022 was exceeded in 9.6% of samples (4.5% in 2016, 3.1% in 2017, 3.5% in 2018, 3.9 % in 2019, 4.4% in 2020, 5.4% in 2021), and 7.4% samples were assessed as non-compliant (2.4% in 2016, 1.8% in 2017, 1.8.% in 2018, 2.3% in 2019, 2.0% in 2020, 2.9% in 2021). The higher percentage of samples exceeding the MRL and non-compliant samples in 2022 was due to numerous findings of non-compliant foods (basil, chilli pepper, coriander, longan) originating from Southeast Asia, mainly Cambodia, which were sampled at Václav Havel Airport immediately after custom clearance/market release.

Table 26: Summary results of samples taken in 2022 by product class

Samples	Total	Without residues	With residues below MRL	Exceeding MRL	Non-compliant
Animal products	123	99	24	0	0
Baby food	6	6	0	0	0

Samples	Total	Without residues	With residues below MRL	Exceeding MRL	Non-compliant
Cereals and cereal products	66	44	20	2	1
Feeding stuffs	77	24	53	0	0
Food additives	3	1	2	0	0
Food supplements	14	4	10	0	0
Fruits and nuts	259	36	199	24	18
Legume seeds	7	6	0	1	0
Oil seeds	33	20	12	1	1
Processed products	30	13	17	0	0
Spices	23	13	5	5	2
Tea, herbal infusions, cocoa	27	11	6	10	8
Vegetables incl. herbs	342	68	220	54	45
Total	1,010	345	568	97	75

7.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

Out of the total number of samples taken in 2022, 97 samples exceeded the MRL (9.6%). Of these, 75 samples (7.4%) were assessed as non-compliant even when uncertainty in measurement was taken into account. Two non-compliant samples originated in Czechia, five non-compliant samples originated in the EU, 66 non-compliant samples originated from non-EU countries and one non-compliant sample was of unknown origin.

The following commodities were concerned: chili peppers – 17 non-compliant samples, basil – 11 non-compliant samples, longans – five non-compliant samples, coriander leaves, lychees, maté – four non-compliant samples, tomatoes, sweet peppers, green tea – three non-compliant samples, two non-compliant samples of grapefruit, rambutans, one non-compliant sample for each of the following commodities: chinese cabbage, head cabbage, poppy seeds, barley grains, potatoes, Chinese wolfberries, lemons, limes, mandarins, table grapes, aubergine, dried pepper, lettuce, parsley, Vietnamese mint, tea leaves, cumin seeds.

Based on the assessment of health risk, 15 cases of non-compliant samples that exceeded the limit of pesticide residues were reported to the RASFF (see Table 28).

7.3.1 Possible reasons for non-compliant samples

Table 27: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]	Comments
Good Agricultural Practice (GAP) not respected: use of a pesticide not approved in the EU[b]	Chlorpyrifos/Chinese cabbage	1	Poland
	Chlorfenapyr/Tomatoes	2	Poland
	Dinotefuran/Tomatoes	1	Poland
	Prochloraz/Barley	1	Czechia
GAP not respected: use of an approved pesticide not authorised on the specific crop[c]	Acetamiprid/Poppy seed	1	Czechia
	Fluazifop-P/Head cabbage	1	Poland
	Imazalil/Potato	1	Germany
	Pirimiphos-methyl/Tomatoes	1	Poland
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set[c]	Formetanate/Pepper	1	Albania
	Chlorpyrifos/Limes	1	Brasil
	Buprofezin/Chilli peppers	2	Cambodia
	Carbaryl/Chilli peppers	2	Cambodia

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]	Comments
	Carbofuran/Chilli peppers	3	Cambodia
	Carboxin/Chilli peppers	1	Cambodia
	Diafenthiuron/Chilli peppers	1	Cambodia
	Diazinon/Chilli peppers	1	Cambodia
	Ethion/Chilli peppers	2	Cambodia
	Etofenprox/Chilli peppers	1	Cambodia
	Famoxadone/Chilli peppers	1	Cambodia
	Fipronil/Chilli peppers	1	Cambodia
	Fluazifop-P/Chilli peppers	1	Cambodia
	Flusilazol/Chilli peppers	1	Cambodia
	Folpet/Chilli peppers	1	Cambodia
	Hexaconazole/Chilli peppers	4	Cambodia
	Chlorfenapyr/Chilli peppers	13	Cambodia
	Chlorpyrifos/Chilli peppers	2	Cambodia
	Chlorfluazuron/Chilli peppers	2	Cambodia
	Chlorothalonil/Chilli peppers	1	Cambodia
	Iprovalicarb/Chilli peppers	1	Cambodia
	Profenofos/Chilli peppers	4	Cambodia
	Prochloraz/Chilli peppers	1	Cambodia
	Permethrin/Chilli peppers	5	Cambodia
	Propiconazole/Chilli peppers	7	Cambodia
	Tebufenpyrad/Chilli peppers	1	Cambodia
	Thiophanate-methyl	1	Cambodia
	Tolfenpyrad/Chilli peppers	2	Cambodia
	Triazophos/Chilli peppers	2	Cambodia
	Tricyclazole/Chilli peppers	3	Cambodia
	Triforin/Chilli peppers	1	Cambodia
	Dinotefuran/Goji	1	China
	Dinotefuran/Tea	1	China
	Tolfenpyrad/Tea	1	China
	Chlorfenapyr/Tomatoes	1	Morocco
	Pyridaben/Table grapes	1	Peru
	Antraquinone/Tea Maté	4	Syria
	Chlorfenapyr/Dried chilli	1	Thailand
	Chlorpyrifos/Dried chilli	1	Thailand
	Ethion/Dried chilli	1	Thailand
	Profenofos/Dried chilli	1	Thailand
	Triazophos/Dried chilli	1	Thailand
	Haloxyfop/Dried chilli	1	Thailand
	Flusilasol/Grapefruit	1	Turkey
	Prochloraz/Lemon	1	Turkey
	Chlorpyrifos/Tangerine	1	Turkey
	Chlorpyrifos/Grapefruit	1	Turkey
	Chlorfluazuron/Green tea	1	Vietnam
	Fipronil/Green tea	1	Vietnam
	Imidacloprid/Green tea	1	Vietnam
	Lambda-cyhalothrin/Green tea	1	Vietnam
	Diafenthiuron/Green tea	1	Vietnam
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past) Cross-contamination: spray drift or other accidental contamination			

(a) Number of cases.
(b) Applicable only for food products produced in the EU.
(c) For imported food only.

7.3.2 Acute reference dose exceedance

Based on the assessment of risk to health performed by the National Institute of Public Health, 15 of the non-compliant samples were notified to the RASFF. Risk assessment in Czechia is carried out by the National Health Institute.

7.3.3 Actions taken

If any non-compliant sample is detected, an assessment of risk to consumers' health is carried out for the purposes of notification to the RASFF system. Appropriate measures are taken, such as withdrawal of the non-compliant sample from the market. Non-compliant detection is, on the basis of the risk assessment, notified to the RASFF.

If the MRL of the given analytes laid down by obligatory legislation is exceeded, the control body imposes a ban on sale or distribution of the non-compliant foodstuff. If the foodstuff has not been dispatched at the time when the analyses are finished, a withdrawal of the foodstuff is ordered. The business operators should take measures to minimise further occurrence of the non-compliant foodstuff.

As part of follow-up inspections, the causes of the limits of pesticide residues in foodstuffs being exceeded are investigated at domestic growers and producers. Detected non-compliant findings lead to more intensive inspections at producers and imports. A fine that can be imposed on the inspected person that placed the foodstuffs in question on the market is proposed by an administrative procedure. However, the fine could be dropped based on the circumstances.

Table 28: Actions taken

Action taken	Commodity/pesticide	Number of non-compliant samples concerned	Comments
Rapid alert notification	Longan/Acetamiprid	15	Reference number 2022.0588
	Longan/Azoxystrobin		Reference number 2022.0588
	Longan/Carbendazim and benomyl		Reference number 2022.0588
	Longan/Carbendazim		Reference number 2022.0588
	Longan/Thiamethoxam		Reference number 2022.0588
	Potatoes/Imazalil		Reference number 2022.4127
	Limes/Chlorpyrifos		Reference number 2022.7344
	Dried pepper/Chlorfenapyr		Reference number 2022.5306
	Dried pepper/Chlorpyrifos		Reference number 2022.5306
	Dried pepper/Ethion		Reference number 2022.5306
	Dried pepper/Triazophos		Reference number 2022.5306
	Dried pepper/Haloxyfop		Reference number 2022.5306
	Maté/Anthraquinone		Reference number 2022.0154
	Maté/Anthraquinone		Reference number 2022.0154
	Maté/Anthraquinone		Reference number 2022.0154
	Maté/Anthraquinone		Reference number 2022.0154
	Rambutan/Buprofezin		Reference number 2022.2758
	Rambutan/Cypermethrin		Reference number 2022.2758
	Rambutan/Lambda-cyhalothrin		Reference number 2022.2758
	Basil/Carbendazim and benomyl		Reference number 2022.3257
	Basil/Carbofuran		Reference number 2022.3257
	Basil/Chlorfenapyr		Reference number 2022.3257
	Basil/Propiconazole		Reference number 2022.3257
			Reference number 2023.2726
			Reference number 2022.7266
			Reference number 2022.7280

	Sweet peppers/Formetanate		Reference number 2022.7280
	Basil/Carbofuran		Reference number 2022.7280
	Basil/Carbendazim and benomyl		Reference number 2022.7280
	Basil/Carbofuran		Reference number 2022.7155
	Basil/Chlorothalonil		Reference number 2022.7515
	Basil/Propiconazole		Reference number 2022.7515
	Basil/Valifenalate		Reference number 2022.7515
	Rambutans/Cypermethrin		Reference number 2022.7515
	Basil/Carbendazim and benomyl		Reference number 2022.7515
	Basil/Carbofuran		Reference number 2022.7515
	Basil/Chlorfenapyr		
	Basil/Imidacloprid		
	Basil/Iprodione		
	Basil/Propiconazole		
Administrative sanctions (e.g. fines)		60	
Lot recalled from the market			
Destruction of non-compliant lot			

7.3.4 Quality assurance

The laboratories performing analysis for official controls in the pesticide residues area meet the requirements of the technical standard ČSN EN ISO/IEC 17025:2005. They are accredited by the Czech Accreditation Institute (CIA), regularly participate in proficiency testing at international levels and the methods of analysis used are validated.

Table 29: Laboratory participation in the national control programme

Country	Laboratory Name	Code	Accreditation Date	Body	Participation in proficiency tests or inter-laboratory tests
Czechia	Czech Agriculture and Food Inspection Authority (CAFIA)	S01	EN ISO/IEC 17025, Certificate No. 456/2022 (20.9.2022)	Czech Accreditation Institute (CAI), Prague, Czechia	EUPT-CF16, EUPT-FV24, EUPT-SM14, EUPT-SRM17 EUPT-AO17 EUPT-BF1
Czechia	State Veterinary Institute Prague	V01	EN ISO/IEC 17025, Certificate No. 636/2022 (20.12.2022)	CAI, Prague, Czechia	EUPT-AO17
Czechia	Metrological and Testing laboratory, University of chemistry and technology	O01	EN ISO/IEC 17025, Certificate No. 100/2023 (6.3.2023), previous Certificate 599/2021 (12.11.2021)	CAI, Prague, Czechia	EUPT-FV24, EUPT-SM14, EUPT-SRM17, EUPT-AO17, EUPT-CF16, EUPT-SC06, EUPT-BF1

Country	Laboratory Name	Code	Accreditation Date	Body	Participation in proficiency tests or inter-laboratory tests
Czechia	Central Institute for Supervising and Testing in Agriculture	U01	Certificate of accreditation No. 422/2021 (2.8.2021)	CAI, Prague, Czechia	EUPT-CF16, EUPT-SRM17

7.4 Processing factors

Processing factors are applied when necessary to verify compliance of processed products with EU MRLs in accordance with Article 20 of Regulation 396/2005. Processing factors were applied to cover the dehydration of fruit (prunes), goji and dried peppers.

Table 30: Processing factors

Pesticide[a]	Unprocessed product (RAC)	Processed product	Processing factor[b]	Comments
Acetamiprid, benzalkonium chlorid, bifenthrin, carbendazim, carbaryl, carbofuran clothianidin, difenoconazol, diflubenzuron, dinotefuran, endosulfan, ethion, fipronilu, flonicamid, haloxyfop, chlorantraniliprol, chlorfenapyr, chlorpyrifos, imidacloprid, isocarbofos, lambda cyhalothrinu, metalaxyl, profenofos, prochloraz, propamocarb, propargit, pyraclostrobin, pyridaben, spirotetramate, tebuconazol, thiametoxam	Goji	Dried goji	5	Processing factor was calculated from content of water in fresh and dried goji berries
Boscalid, carbendazim, chlorantraniliprol, fluopyram, tebuconazol, triazophos	Prunes	Dried prunes	5	Processing factor was calculated from content of water in fresh and dried prunes
Clothianidin, chlorantraniliprol, chlorpyrifos, flonicamid, imidacloprid, propamocarb, pyraclostrobinu, thiamethoxam	Pepper	Dried pepper	10	Processing factor was taken from the website of the European Spice Association

(a) Report name
(b) Processing factor for the enforcement residue definition.

8 Denmark

8.1 Objective and design of the national control programme

8.1.1 Objective

The Danish Veterinary and Food Administration (DVFA) is the competent authority for the enforcement of the pesticide monitoring programme in Denmark.

The monitoring programme includes both sample strategies listed as objective or selective sampling as well as samples listed as suspect sampling.

8.1.2 Design

The National Food Institute, Technical University of Denmark, designed the monitoring programme in cooperation with the DVFA. Since 2006 the sampling plan has been based on dietary consumption pattern with regard to pesticide exposure, described in published reports (Jensen et al., 2019; Petersen et al., 2013; Poulsen et al., 2003), which analysed monitoring data from 1998–2003, 2004–2011 and 2012–2017. These reports indicated how much individual commodities contribute to the exposure and the Hazard Index. They showed that 25 commodities were responsible for more than 81% of the exposure and 85% of the Hazard Index, respectively (Top 25 commodities). The monitoring plan has been designed in such a way that most samples are taken from commodities that make a high contribution to the exposure and Hazard Index. Commodities that contribute less to the exposure and the Hazard Index are only taken every third year. All commodities in the EU-coordinated control programme are included in this annual sample plan. The focus on these commodities will provide a better basis for comparison between years, so that trends in pesticide residues found can be analysed. In addition to these samples, a broad range of commodities common on the Danish market were analysed, including processed foods, food for infants and organically grown foods. Most sampling projects were designed to cover surveillance and control in combination, and the sampling strategy for these samples is listed as objective or selective sampling. One project was set up to cover sampling and analysis in accordance with Regulation (EC) No 2019/1793. Another project was designed to cover suspect sampling and included sampling of direct imports via Copenhagen Airport or other border entry points. A third project checked imported organic foods. The sampling strategy for these projects is listed as suspect sampling.

Sampling was performed by authorised personnel from the four Food Control Offices of the DVFA. Directive 2002/63/EC on sampling procedures for the control of pesticide residues is implemented in the Danish legislation. All samples for control of the MRL, except the directly imported samples, were taken from products on the market, primarily at wholesalers or importers. Products of animal origin were sampled at slaughterhouses.

Reporting includes samples analysed for pesticides from projects based on Regulation 2022/1644 and Regulation 2022/1646.

In total, 342 pesticides (counted as residue definitions) were included in the analytical methods. Most samples of fruit and vegetables were analysed for about 342 pesticides (counted as residue definitions). In addition, some of the samples (58 samples) were analysed for dithiocarbamates, bromide ion (23 samples), chlormequat and mepiquat (12 samples), fipronil (97 samples), chlorthalonil (84 samples) and glyphosate (83 samples). Due to the methodology applied, it was not possible to distinguish between the specific dithiocarbamates included in the residue definition for enforcement.

8.2 Key findings, interpretation of the results and comparability with the previous year's results

8.2.1 Key findings

In 2022, 1,988 surveillance samples of fruit, vegetables, cereals, processed products, baby food and animal products were analysed. Furthermore, 129 samples were taken from direct imports from non-EU countries at Copenhagen Airport, 57 samples were taken in accordance with Regulation 2019/1793 and two samples were taken to check imports of organic food products. Samples from these three projects are listed as suspect sampling. Results from these projects are reported separately and are not included in the following general statistics.

Of the 1,988 samples, 745 samples were produced in Denmark and 1,243 samples were produced in other EU countries and outside the EU. The samples included 1,553 samples of fruit, vegetables and cereals, 311 samples of animal origin, 114 samples of processed vegetable foods, and 10 samples of baby food. Of the fruit and vegetable samples, 146 (11%) were organically produced and 53 (25%) of the cereal samples.

Pesticide residues were found in 79% of the conventionally grown fruit, 42% of the conventionally grown vegetables and in 29% of the conventionally grown cereal samples. Residues exceeding the MRL were found in 2.7% of the conventionally grown fruit and vegetable samples (32 samples). Of these, 18 samples (1.5%) had non-compliant (measurement uncertainty taken into consideration) residues. Six cereal samples (3.8%) had residues exceeding the MRL. Four of those samples (3.5%) were non-compliant. In conventionally grown processed samples, three samples (3.1%) exceeded the MRL. All three samples were non-compliant. No residues were found in samples of baby food.

For fruit, pesticide residues were found in 86% and 83% of the samples produced in the EU and outside the EU, respectively, whereas pesticide residues were found in 51% of the samples from Denmark. For vegetables, residues were found in 58% and 56% of the samples produced in the EU and outside the EU, respectively, while residues were found in 20% of the samples from Denmark.

The frequency of conventionally grown samples exceeding the MRLs was 0.9% and 3.1% for fruit produced in the EU and outside the EU, respectively. For vegetables, the frequency of samples exceeding the MRL was 1.2% and 14.6% for vegetables originating from the EU and outside the EU, respectively. The frequency of residues exceeding the MRL in Danish-grown fruit was 1.1% while no samples of vegetables exceeded the MRLs in Danish-grown vegetables.

A total of 181 samples (conventionally grown crops; fruit, vegetables and cereals) were taken using sampling strategy 'Suspect'. Residues exceeding the MRL were found in 38 samples (21%). Of these, 27 samples (15%) had non-compliant residues.

8.2.2 Interpretation of the results

Generally, the results from the monitoring programme in 2022 are comparable with the results from previous years.

For conventionally grown fruit, pesticide residues were found in 79% of the samples.

For conventionally grown vegetables, pesticide residues were found in 42% of the samples.

For conventionally grown fruit and vegetables, exceedance of the MRL was found in 1.9% and 3.4% of the samples, respectively.

Generally, more fruit and vegetables produced in non-EU countries exceeded the MRL than fruit and vegetables produced in EU countries.

In cereals, pesticide residues were found in 29% of the conventionally grown samples. Exceedance of the MRL was found in 3.8% of the samples.

In processed commodities, three samples (3.1%) from conventionally produced products exceeded the MRL.

No residues were found in baby food.

In animal commodities, residues were found in five samples of honey (from Denmark) (1.6% of all samples of animal commodities). The content was below the MRL.

Of organically grown surveillance samples, pesticide residues were found in 3.6% (8) of them. Five samples with azaractiradin and spinosad content were in accordance with the standard label, while the status of the three others is still pending the results of the investigation.

More than one residue was found in several samples. These samples were more often from other EU countries than Denmark and in samples originating outside the EU.

All but 34 samples exceeding the MRL were found not to result in any health concern.

All other samples with multiple residues were found not to result in any health risk.

8.2.3 Comparability with the previous year's results

In 2022, a total of 2,176 samples were analysed for pesticide residues compared with a total of 1,699 samples analysed in 2021. The number of samples was lower in 2021 due to the COVID-19 situation.

In 2022, residues were found to exceed the MRL in 3.0% of the conventionally grown samples of non-animal origin (41 samples) taken by an objective or selective sample strategy, compared with 3.9% in 2021. Of these, 1.9% (26 samples) were found to be non-compliant with the MRL, compared with 3.9% in 2021.

For conventionally grown samples taken as part of the suspect sampling strategy in 2022, residues were found to exceed the MRL in 38 samples (20%) compared with 25.5% in 2021. Of these, 14% were found to be non-compliant with the MRL, compared with 19% in 2021.

8.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

8.3.1 Possible reasons for non-compliant samples

In 2022, residues were found to exceed the MRL in 3.0% of the conventionally grown samples of non-animal origin (41 samples) taken under the objective or selective sample strategy. Of these, 1.9% (26 samples) were found to be non-compliant with the MRL.

For samples taken as part of the suspect sampling strategy, residues in 21% (27 samples) were found to exceed the MRL. Of these, 14% were found to be non-compliant with the MRL. Follow-up actions were taken for samples that were found to be non-compliant (see Table 32). In general, there is no verified knowledge of the reasons for non-compliant results.

8.3.2 Acute reference dose exceedance and actions taken

No samples exceeded the acute reference dose. However, it was concluded for 34 samples that either there was a health concern, or a health concern could not be excluded. Seventeen of these samples were taken as part of objective sampling and 17 samples were taken under suspect sampling. They are shown in Table 31.

Table 31: Samples with health concern

Commodity	Country of origin	Pesticides
Selective sampling		
Aubergine	Mexico	Diflubenzuron
Banana	Ecuador	Chlorpyrifos
Coriander seed	Unknown country	Chlorpyrifos
Dried lentils	Unknown country	Chlorpyrifos
Dried merian	Lebanon	Chlorpyrifos
Dried oregano	Germani	Chlorpyrifos, carbendazim and benomyl
Fennel seed	India	Chlorpyrifos
Fennel seed	India	Chlorpyrifos
Orange	Spain	Imazalil
Rice	Pakistan	Tricyclazol
Rice	India	Tricyclazol, thiamethoxam and imidacloprid
Rice	Vietnam	Tricyclazol
Squash	Netherlands	Aldrin+dieldrin and heptachlor
Squash	Netherlands	Heptachlor
Sweet pepper	Turkey	Buprofezin
Wheat kernel, broken	India	Chlorpyrifos
Wholemeal grain	India	Chlorpyrifos
Suspect sampling		
Black pepper	India	Ethylenoxid
Black pepper	India	Ethylenoxid
Chili	Vietnam	Chlorpyrifos, chlorfenapyr, dinotefuran and fenpropathrin
Chili	Uganda	Carbendazim and benomyl
Holy basil	Thailand	Carbofuran and triazophos
Holy basil	Thailand	Carbofuran
Lonkong	Thailand	Triazophos
Okra	Pakistan	Dimethoate, omethoate and propargite
Pear	China	Chlorpyrifos
Rice	Bangladesh	Chlorpyrifos
Rice	India	Tricyclazol, Carbendazim and benomyl
Rice	India	Tricyclazol
Rice	India	Tricyclazol
Rice	India	Tricyclazol
Rice	India	Tricyclazol
Rice	India	Tricyclazol
Sweet basil	Thailand	Carbendazim and benomyl

Table 32: Action taken on non-compliant samples

Action taken	Number of non-compliant samples concerned
Follow-up action	2
Rapid alert notification	34
Lot recalled from the market	34
Follow-up action due to a pesticide residue detected in organic samples, violating the provisions laid down in the organic farming legislation	2
Warnings to the responsible food business operator	4
Other actions	27
No action	13

8.4 Quality assurance

Table 33: Laboratory participation in the control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
DK	National Food Institute, Technical University of Denmark	DTU Food	20 April 1995 (DANAK #350)	DANAK, Denmark	EUPT-BF1 EUPT-AO17 EUPT-FV24 FAPAS-09144
DK	Danish Veterinary and Food Administration	FVST	30. September 2008 (DANAK #405)	DANAK, Denmark	EUPT-BF1EUPT-CF16, EUPT-FV24, EUPT-AO17, EUPT-SRM17, FAPAS 19328, FAPAS 19345, FAPAS 19348, FAPAS 19364, FAPAS 09144, FAPAS 09147, FAPAS 09150, FAPAS 09151, FAPAS 09152, FAPAS 05159, FAPAS 05161, FAPAS 05162, Progetto Trieste SF2701, Progetto Trieste SF2702

8.5 Processing factors

Table 34 lists the processing factors that were reported by national competent authorities to verify compliance of processed products with EU MRLs. In addition to these, factors based on water content from food composition tables in fresh vs dried commodities were used for dried samples where the MRL was set on the fresh commodity.

Table 34: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor
Boscalid	Grape for wine production	Wine	1.3
Chlorantraniliprol	Grape for wine production	Wine	1.3
Dinotefuran	Grape for wine production	wine	1.3
Fluopicolide	Grape for wine production	wine	1.3
Fluopyram	Grape for wine production	wine	1.3
Flutriafol	Grape for wine production	wine	1.3
Metalaxyl	Grape for wine production	wine	1.3

8.6 Additional information

The analytical methods have been developed and/or validated by the National Food Institute, Technical University of Denmark and the laboratory of the DVFA. Most samples were analysed at the laboratory of the DVFA. Both laboratories are accredited for pesticide analysis in compliance with ISO17025 by the Danish accreditation body, DANAK. Furthermore, the laboratories participated in the relevant FAPAS proficiency test scheme and in all EU proficiency tests.

The 'Guidelines concerning Quality Control Procedures for Pesticide Residue Analysis' have been applied for all methods. Mass selective confirmation was performed for the GC and LC multi methods. Analytical uncertainty is not applied in monitoring reports but is always applied to of enforcement actions.

Each year, the National Food Institute, Technical University of Denmark and the DVFA prepare a report on pesticide residues in foods on the Danish market. Since 1 January 2011, the annual pesticide report has been supplemented by the regular publication of control data from each quarter. The quarterly reporting comprises results from all samples analysed in the quarter – both conventionally and organically grown. The National Food Institute, Technical University of Denmark, prepares and publishes the quarterly reports on their website.

A risk assessment by the National Food Institute was performed for all findings above the MRL. It was concluded in all cases that there was no risk to consumers except for 34 samples (Section 8.3.2). In addition, all samples in which more than one pesticide residue was found, were evaluated using the Hazard Index method, using the sum of each residue in relation to the acceptable daily intake and acute reference dose, respectively, taking into account the estimated consumption of the sample commodity for an adult and a child. For all samples taken in 2022 with multiple residues, besides the samples that constituted a health risk or where a health risk could not be excluded, it was considered that the residues were not expected to result in any risk to the consumer.

In 2022, samples were taken in accordance with Regulation (EU) 2019/533[29]. The requirements for the analysed number of samples were fulfilled for all commodities in the 2022 EU Control Programme.

[29] Commission Implementing Regulation (EU) 2019/533 of 28 March 2019 concerning a coordinated multiannual control programme of the Union for 2020, 2021 and 2022 to ensure compliance with maximum residue levels of pesticides and to assess the consumer exposure to pesticide residues in and on food of plant and animal origin. OJ L 88, 29.3.2019, p. 28–41.

Table 35: The Danish summary table for the EU Control Programme commodities

EUCP Commodity	Number
Apples	51
Strawberries	50
Peaches and similar-	17
Lettuce and similar-	23
Head cabbage and similar	22
Tomatoes	47
Spinach and similar	14
Oat grain	9
Barley grains	6
Wine, white	14
Wine, red	38
Wine, rosé	0
Cow milk, whole	39
Pig fat tissue	11
Pig fat tissue	59
Ready-to-eat meal for infants and young children	10

Furthermore, a total of 224 samples were analysed for copper and mercury. The samples included 169 samples of animal products, 23 samples of cereals, 15 samples of seaweed, eight samples of cauliflower and nine samples of chia seeds.

9 Estonia

9.1 Objective and design of the national control programme

The Agriculture and Food Board (AFB) is a competent authority for food safety and is responsible for drawing up the pesticide residue monitoring programme, which contains two parts. One is the coordinated multiannual control programme of the EU (a legal requirement from Commission Implementing Regulation No 2021/601, which gives the list of commodities and pesticide residues to be analysed and the number of samples to take for the year 2022). The other part of the pesticide residue monitoring programme is the national control programme. The national control programme contains commodities important for local consumption, commodities where the MRLs were exceeded in previous years and commodities reported in the EFSA report as problematic products.

9.2 Key findings, interpretation of the results and comparability with the previous year's results

In 2022, 349 samples were analysed for pesticide residues (from 30 different food commodities).

Of those, 192 samples (55%) were of Estonian origin, 116 samples (31%) were originated from other EU countries and 41 samples (12%) originated from non-EU countries.

Table 36: Summary of samples taken in 2022

Samples	Total	Without residues	%	With residues below MRL	%	Exceeding MRL	%
Vegetables	**104**	69	66	35	34	0	0
Fruit, nuts and other plant products	**75**	47	63	29	39	2[(a)]	3
Cereals	**57**	50	88	7	12	0	0
Baby food	**2**	2	100	0	0	0	0
Animal products	**13**	13	100	0	0	0	0
Fish	**8**	3	38	5	63	0	0
Processed products	**13**	4	31	9	69	0	0
Total	**272**	**181**	**67**	**89**	**33**	**2**	**1**

(a) The matrixes, where the exceedance was detected are apples (1) and strawberries (1).

Table 37: Summary of organic samples taken in 2022

Samples	Total	Without residues	%	With residues below MRL	%	Exceeding MRL	%
Vegetables	**11**	11	100	0	0	0	0
Fruit, nuts and other plant products	**50**	50	100	0	0	0	0
Cereals	**16**	15	94	1[(a)]	6	0	0
Baby food	**0**	0	0	0	0	0	0
Animal products	**0**	0	0	0	0	0	0
Processed products	**0**	0	0	0	0	0	0
Total	**77**	**76**	**99**	**1**	**1.3**	**0**	**3**

The matrix where the plant protection agent content was detected was buckwheat.

Previously, the level of non-compliant samples (results exceeding the MRL after taking into account the measurement uncertainty) has remained low. The number of non-compliant samples identified in 2020 and 2021 is significantly higher.

Table 38: Estonian non-compliant samples 2018–2022

Year	Non-compliant samples	% of all samples
2018	4	2
2019	2	0.8
2020	10	4.1
2021	**16**	**6.4**
2022	**6**	**1.7**

The overall percentage of samples with no residues has stayed in the range of 40% to 75% over the years.

Table 39: Summary results

Sampling year	Total number of samples	Percentage of samples with no residues	Residues detected >LOQ and ≤MRL (%)	Residues >MRL (%)

2018	195	47	51	2
2019	249	46	53.2	0.8
2020	246	41.8	54.1	4.1
2021	249	43	50.6	6.4
2022	349	73.6	25.8	0.6

9.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

Table 40: Actions taken

Actions taken	Frequency	No of samples
Rapid alert notification	2	1 sample (lot) of apples 1 sample (lot) of strawberries
Lot withdrawn from the market	1	1 sample (lot) of buckwheat

Table 41: Possible reasons for MRL non-compliance

Possible reason	Pesticide/commodity combination	Frequency
Contamination during handling, storage or transport of food item/crop	With the help of the RASFF violation notification prepared by Estonia, it was found that Golden apples of Italian origin Delicious, from which seven TKV substances were detected, including ethereal, banned in Europe, was delivered to Estonia through RIMI Latvia SIA. 9984 kg of apples arrived in Latvia and were distributed between RIMI stores in Estonia, Latvia and Lithuania. RIMI determined that the unsold apples would not reach the market.	1
	Italian pollution investigation revealed that the residual levels of ethirimol could not be derived from ethirimol only resulted from the use of the residue of another plant protection product used – bupirimate, from decay. Since the content of ethirimol was below the MRL, it was not a product but a mixture. No measures were applied by Italy to the apple producer. Nor did Estonia initiate a product recall.	1
	Strawberries containing ethirimol and chloridazon of Spanish origin were supplied by Fruit Xpress OÜ via Estonia 480 kg. Estonia prepared an infringement notice through RASFF. As a plant	1

Possible reason	Pesticide/commodity combination	Frequency
	protection product the residue content was below the MRL and therefore did not pose a health risk, so the product was not recalled	
	In addition to the residues of 14 plant protection products, an excess of sulfoxaflor MRL was found in grapefruit from Turkey (MRL = 0.15, result 0.2 mg/kg). A risk assessment was carried out using the PRIMO model to find out if this was the case with a product dangerous to health. An expansion uncertainty of 50% was used to expand the result (SANTE/12682/2019) it turned out that it was a product potentially posing a threat to human health. By the time the risk assessment was carried out, the grapefruits had already been consumed. No RASFF alert was prepared.	1
	In two cases, an excess of the MRL of acrinathrin prohibited in the EU was detected in spinach of Italian origin (0.05 mg/kg and 0.04 mg/kg; MRL = 0.02 mg/kg). In the first case, spinach was delivered to Estonia as Karlskrona 240 kg through mediation and in the second case through Konsum 120 kg. In both cases, a risk assessment was carried out using the PRIMO model to find out if it was a health hazard. An expansion uncertainty of 50% was used to expand the results (SANTE/12682/2019). It was made clear that it was about products potentially posing a threat to human health, and that's why AFB started gathering additional information about the shipment (supplier, quantity, whether the lot was still for sale, how much was left in stock, etc.). Estonia also prepared RASFF infringement notices, with the help of which Italy was notified of the incident. By the time the reports were made, the spinach had presumably already been consumed.	

9.4 Quality assurance

According to Regulation No 882/2004[30] (since December 2019, Regulation No 2017/625[31]) the competent authority should designate laboratories that may carry out the analysis of samples taken during official controls. Designated laboratories are assessed and accredited in accordance with EN ISO/IEC 17025 'General requirements for the competence of testing and calibration laboratories'. The laboratories are accredited by the Estonian Accreditation Centre and designated by the AFB for all analytical methods (and pesticide residues within these methods) used for official control of pesticide residues in food.

EC guideline SANTE/12682/2019 'Analytical Quality Control and Method Validation Procedures for Pesticide Residues Analysis in Food and Feed' has been implemented.

There are two accredited and designated laboratories that analyse pesticide residues: Tartu Laboratory of the Estonian Health Board (HB) and the Agricultural Research Centre Laboratory for Residues and Contaminants in Tallinn (ARC).

HB analyses commodities of animal origin and non-animal origin. ARC analyses commodities of non-animal origin.

In 2021, HB and ARC participated in the pesticide residue control programme. They analysed the pesticide residues in the food samples taken by the AFB.

Table 42: Laboratories participation in the national control programme

Country	Laboratory Name	Code	Accreditation Date	Body	Participation in proficiency tests or interlaboratory tests
Estonia	Laboratory for Residues and Contaminants, Agricultural Research Centre	L003	Since 18.06.1996	EAC – Estonian Accreditation Centre	2021: EURL EUPT-FV-SC04 EURL EUPT-CF15 EURL EUPT-FV23 EURL EUPT-SRM16
Estonia	Tartu Laboratory of Estonian Health Board	L019	Since 28.12.1999	EAC – Estonian Accreditation Centre	2021: EUPT-FV-23 EUPT-AO-16 FCMS2-CCP49

[30] Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules. OJ L 165, 30.4.2004, p. 1–141.

[31] Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products, amending Regulations (EC) No 999/2001, (EC) No 396/2005, (EC) No 1069/2009, (EC) No 1107/2009, (EU) No 1151/2012, (EU) No 652/2014, (EU) 2016/429 and (EU) 2016/2031 of the European Parliament and of the Council, Council Regulations (EC) No 1/2005 and (EC) No 1099/2009 and Council Directives 98/58/EC, 1999/74/EC, 2007/43/EC, 2008/119/EC and 2008/120/EC, and repealing Regulations (EC) No 854/2004 and (EC) No 882/2004 of the European Parliament and of the Council, Council Directives 89/608/EEC, 89/662/EEC, 90/425/EEC, 91/496/EEC, 96/23/EC, 96/93/EC and 97/78/EC and Council Decision 92/438/EEC (Official Controls Regulation). OJ L 95, 7.4.2017, p. 1–142.

10 Finland

10.1 Objective and design of the national control programme

The Finnish pesticide residue control programme is coordinated by the Finnish Food Authority and carried out in collaboration with Finnish Customs, the National Supervisory Authority for Welfare and Health and municipal food control authorities (Figure 3).

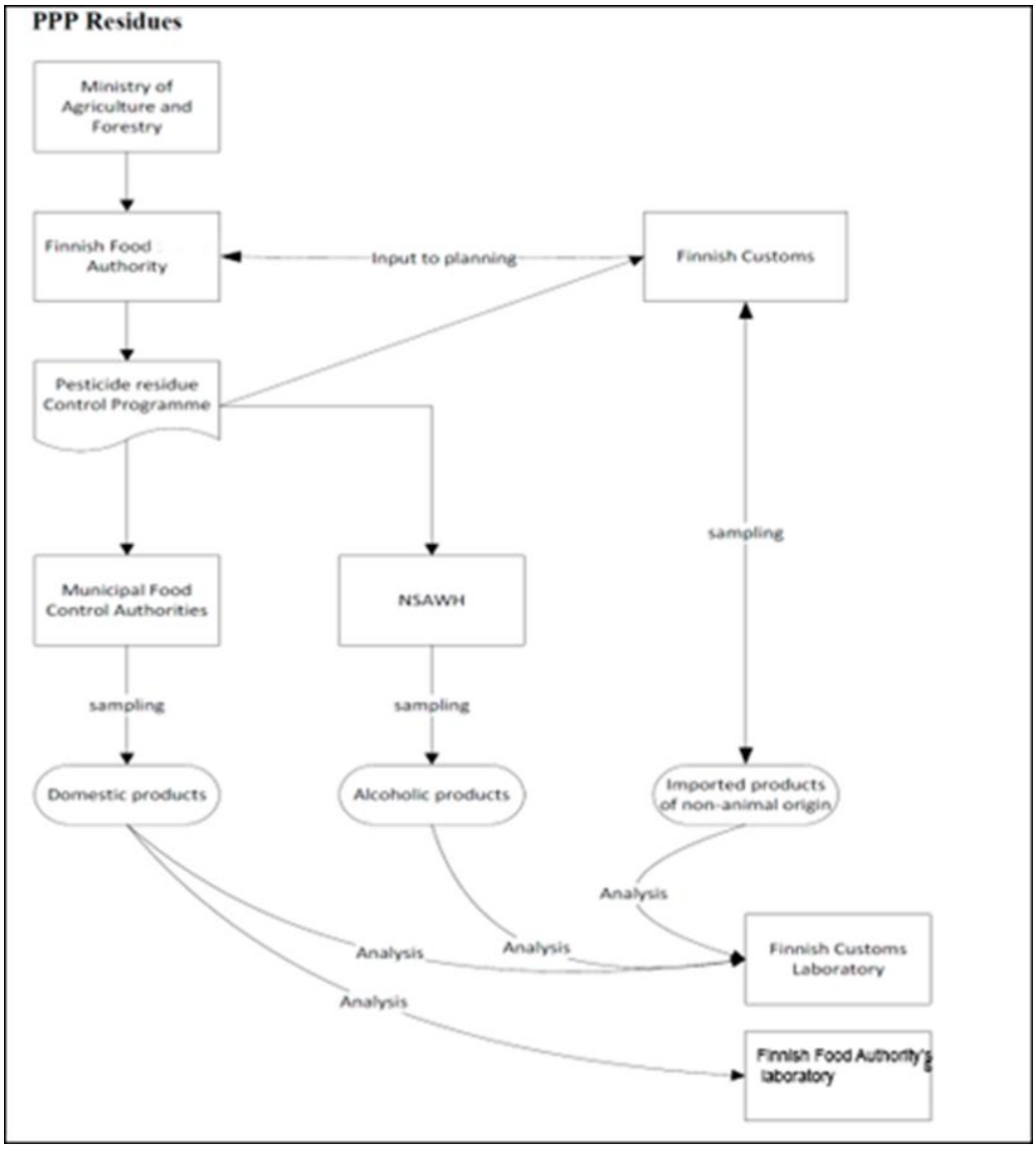


Figure 3: Control system for pesticide residues in Finland

10.1.1 Objective

The objective of the annual pesticide residue control plan is to monitor and verify that foods do not contain residues of unauthorised pesticides and that the levels of residues for authorised pesticides do not exceed the MRLs.

10.1.2 Design

The control programme comprises two strategies: 1) surveillance of products of plant and animal origin randomly sampled for the presence of pesticide residues; and 2) enforcement of specific pesticide residue legislation (e.g. when targeting samples with a history of non-compliance and commodities listed in Regulation (EC) No. 2019/1793 for pesticide residues).

The control programme consists of two parts: the EUCP, Commission Regulation (EU) No. 2021/601) and separate, national control programmes of the above-mentioned authorities based mainly on the dietary intake patterns of Finnish consumers as well as on the relevance to national agricultural production.

When defining the food products to be analysed in the control programmes, special importance was given to the factors listed below:

- EU Commission Regulation concerning a coordinated multiannual control programme of the Union ((EU) No 2021/601);
- the relevance of a food product to national dietary patterns and to national agricultural production;
- food products with a high non-compliance rate identified in previous years;
- a high RASFF notification rate;
- organic or conventional products;
- the origin of the food product (e.g. domestic, EU, non-EU countries);
- cooperation possibilities in sampling with different contaminant projects and the organic control programme;
- the needs of the national risk assessment projects;

To define pesticides that should be included in the control programme, the following aspects were taken into consideration:

- pesticides listed in the Regulation concerning a coordinated multiannual control programme (included as far as possible);
- RASFF notifications for a pesticide and frequency of pesticide findings in the EU monitoring reports;
- the use pattern of pesticides: commonly used pesticides as well as pesticides that are known to leave residues in foods;
- pesticides that are authorised for use in Finland (when relevant);
- the toxicity of the active substances; e.g. many toxic organophosphate compounds which are not commonly used anymore are still included (they may occur in samples originating from developing countries);
- the cost of the analysis: multiple residue methods are preferred, as the cost of analysis for single-residue methods is higher; if several single-residue analyses are performed, the total number of samples to be analysed decreases;
- the capacity of the labs: single-residue methods are run as required by the EU-coordinated programme and a limited number of other samples; instrument and personnel capacity in the laboratories limits the number of single-residue analyses.

10.2 Key findings, interpretation of the results and comparability with the previous year's results

10.2.1 Key findings

The sampling for the pesticide residue control programme was carried out in accordance with the plan for 2022. The summary of samples and their results are presented in (Tables 43–49). In general, the results presented in this report include data from the Finnish Food Authority and Finnish Customs submitted successfully to the EFSA Data Warehouse.

Table 43: Summary of samples taken in 2022 by product class

Samples	Total	Without residues	%	With residues below MRL	%	Exceeding MRL	%	Non-compliant	%
Cereals	121	75	62.0	36	29.8	10	8.3	9	7.4
Baby food	53	53	100	0	0	0	0	0	0
Vegetables	506	295	58.3	202	39.9	9	1.8	6	1.2
Fruit, nuts and other plant products	680	289	42.5	359	52.8	32	4.7	16	2.4
Animal products[(a)]	22	22	100	0	0	0	0	0	0
Processed products[(b)]	257	131	51.0	109	42.4	17	6.6	9	3.5
Total*	**1,639**	**865**	**52.8**	**706**	**43.1**	**68**	**4.1**	**40**	**2.4**

(a) Pig fat and cow milk regulated by (EU) 2021/601.
(b) Including herbs, spices and similar and alcoholic beverages.

*Percentages calculated from the sum of classified samples, total 1,612. Additionally, 180 other samples of animal origin were analysed for pesticide residues as part of the National Residue Control Programme based on Council Directive 96/23 and Regulation (EU) 625/2017. No pesticide residues exceeding MRLs were found.

Table 44: Summary of the number of samples taken, MRL exceedance and non-compliance in 2022 by region of origin

Origin	Samples	%	Exceeding MRL	%	Non-compliant	%
Domestic	142	8.7	1	1.4	1	2.4
EU	674	41.1	8	11.6	3	7.3
Non-EU countries	783	47.8	58	84.1	36	87.8
Unknown	40	2.4	2	2.9	1	2.5
Total	**1,639**	**100**	**69**	**100**	**41**	**100**

Table 45: Summary of organic samples taken in 2022 by product class and results

Samples	Total	Without residues	%	With Residues below MRL	%	Exceeding MRL	%	Non-compliant	%
Fruit and nuts, and other plant products	81	78	96.3	1	1.2	2	2.5	0	0
Vegetables	55	55	100	0	0	0	0	0	0
Cereals	8	8	100	0	0	0	0	0	0
Baby food	38	38	0	0	0	0	0	0	0
Processed products[(a)]	52	48	92.3	4	7.7	0	0	0	0
Total	234	227	97.0	4	1.7	2	0.9	0	0

(a) Including herbs, spices and similar, and alcoholic beverages.

10.2.2 Interpretation of the results

The total number of samples analysed under the EU-coordinated and national programmes was 1,639, which is a couple of samples less than the previous year (1,689). The distribution of all the samples by origin was: domestic 9%, EU 41% and non-EU countries 48%. Actually, the percentage of the samples that originate from non-EU countries was greater, as some sampled products arrived through other Member States and are therefore classified as samples of EU origin, and many products of unknown origin originate from non-EU countries.

Overall, 47% of samples had residues of one or more pesticide active ingredients. Exceedance of MRLs was found in 69 samples, of which 41 were non-compliant (measurement uncertainty taken into consideration; number including surveillance and enforcement samples). The total percentage of non-compliance (2.5%) is a little bit less than the previous year (3.0%).

The non-compliant lots originated from several countries. The highest number of non-compliance samples were in products from India (13 samples), China (11 samples) and Pakistan (5 samples). The products with the highest number of samples exceeding the MRL were tea and rice.

No residues were detected in any of the analysed baby foods or animal-based products.

A total of 234 samples from organic production were analysed. Four of them had residues above the reporting level. However, in none of the samples from conventionally farmed products were residue levels non-compliant.

10.2.3 Comparability with the previous year's results

Table 46: Summary of the results of the pesticide residue control programme in Finland during 2011–2022

Year	Samples	Without residues (%)	With residues (%)	Number of samples exceeding MRL	Number of non-compliant samples
2022	1,639	53	47	69	41
2021	1,689	48	52	80	50
2020	1,648	55	45	65	47
2019	1,753	59	41	63	27
2018	1,217	47	53	70	38
2017	1,664	64	36	84	51
2016	1,969	57	43	65	37
2015	2,088	55	45	55	35
2014	2,383	54	46	126	49
2013	2,408	49	51	117	63
2012	2,243	48	52	66	31
2011	2,104	47	53	54	22

10.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

10.3.1 Possible reasons for non-compliant samples

One domestic tomato sample was found to be non-compliant, due to chlormequat residue above the MRL. Also, the use of chlormequat is not allowed for tomatoes in Finland. Local authorities investigated the case and found that the unauthorised substance had been used for saplings earlier in the year. However, the repeat sample was clear.

The reasons for non-compliant samples from import control mainly remain unknown. As the highest proportion of non-compliant samples occur in products from non-EU countries, possible reasons might be the use of a pesticide on food imported from non-EU countries for which no import tolerance was set, and GAP was not respected: use of a pesticide not approved in the EU.

10.3.2 Acute reference dose exceedance

The acute reference dose calculated according to the pesticide residue intake model (PRIMo 3.1) of EFSA was exceeded, or toxicological data of the substance was not available for 29 samples. All these lots were withdrawn from the market and recalled from consumers.

10.3.3 Actions taken

In 2022, 2.5% of the samples (41 samples in total) were found to be non-compliant with the EU MRLs. RASFF notifications were issued for 29 samples, and for 12 organic samples organic farming information system (OFIS) notifications were issued.

For all non-compliant samples detected, effective and appropriate actions were taken in order to protect European consumers (Table 47).

Table 47: Actions taken for samples non-compliant with the EU MRLs

Action taken	Number of non-compliant samples	Comments
Rapid alert notification	29	Number of RASFFs notified by Finland for pesticide residues. Ethylene oxide was found in five samples.
OFIS notifications	12	Six notifications for products of EU origin, six notifications for products from non-EU countries. Two of the lots were not analysed in Finland, but on the country of entry to the EU. However, a Finnish importer was responsible for the import and therefore an OFIS notification was made by Finnish authorities.
Lot recalled from the market	45	
Lot withdrawn from the market	18	
Rejection of a non-compliant lot at the border	36	In 18 lots the RASFF limit was exceeded
Warnings to responsible food business operators (lot origin in EU or non-EU countries)	64	
Marketing as organic prohibited	12	

10.4 Quality assurance

All the laboratories conducting the official analyses of pesticide residues were accredited according to ISO-17025, conduct routine quality assurance activities and participate regularly in proficiency tests regarding their expert opinion (Table 48).

Table 48: Laboratories participating in the national control programme

Country	Laboratory name	Code	Accreditation date	Body	Participation in proficiency tests or interlaboratory tests
Finland	Finnish Customs Laboratory	FI01	29 September 2022	FINAS-Espoo, Finland	EUPT-FV24, EUPT-CF16, EUPT-FV-SM14, EUPT-SRM17, EUPT-AO17, EUPT-AO-BF1, Bipea 3-6619, Bipea 7-5419, Bipea 12-3219
Finland	Finnish Food Authority	FI03	25 November 2022	FINAS-Espoo, Finland	EUPT-SRM17, EUPT-AO17, EUPT-AO-BF1, EUPT-CF16, EUPT-FV24, FAPAS 05162

10.5 Processing factors

The processing factors used by national competent authorities to verify the compliance of processed products with EU MRLs are presented in Table 49.

Processing factors for processed products were mainly acquired from the database of EFSA and the Bundesinstitut für Risikobewertung (BfR). In the cases were processing factors were not available in the database, the crude estimate based on Table 49 was used.

Table 49: Processing factors used to verify the compliance of processed products

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]	Comments
All pesticides	Fresh herbs	Dried herbs	10	Factors are used for first estimation, in the event of non-compliance
All pesticides	Fresh vegetables	Dried vegetables	10	
All pesticides	Fresh fruit	Dried fruit	3	
All pesticides	Rice	Polished rice	0.5	

(a) Processing factor for the enforcement residue draft.

10.6 Additional information

In this national summary report the data from the Finnish Food Authority and Finnish Customs Laboratory successfully submitted to the EFSA Data Warehouse (100% of the samples). In the following years, further developments will be made to improve the efficacy of the data submission system at the national level.

10.6.1 Note on confidentiality of certain control data submitted by the reporting country

Finland follows the common agreements made at the EFSA Network on Pesticide Monitoring on the confidentiality of certain control data submitted.

11 France

11.1 Objective and design of the national control programme

11.1.1 Objective

DGCCRF

The General Directorate for Competition Policy, Consumer Affairs and Fraud Control (DGCCRF), within the Ministry of Economics and Finance, is the competent authority for the enforcement of pesticide residues monitoring on marketed food from non-animal origin. The DGCCRF draws up the annual national monitoring programme for pesticide residues in and on fruit, vegetables, cereals and food originating from these products placed on the market. The aims of this programme are to ensure the protection of consumers, and to prevent any fraud or unfair commercial practice.

DGDDI

The General Directorate for Customs and Indirect Duties (DGDDI), within the Ministry of Economics and Finance, is the competent authority for processing the flow of goods at the border. The DGDDI is gradually becoming the competent authority for the enforcement of pesticide residues and ethylene oxide monitoring on food of non-animal origin, before customs clearance. In 2022, the DGDDI is in charge of the following border control posts (BCPs), control points and points of release for free circulation in the EU: Dunkerque port, Calais, Le Havre port and Marseille (Marseille port, Marseille Marignane, Marseille Fos-Port-Saint-Louis). As well as Saint-Nazaire-Montoir, Bordeaux (port and airport), Strasbourg-Entzheim, Guadeloupe (port and airport), French Guiana, La Réunion (port and airport) and Agen since 1 November 2022. The objectives of these checks are to ensure the protection of customers (reinforced checks and emergency measures) and to verify the application of the rules of loyalty (control of organic products).

DGAL

The General Directorate for Food (DGAL), within the Ministry of Agriculture and Food, is the competent authority for the enforcement of pesticide residue monitoring in primary plant products (samples collected from crops harvested by farmers, relating, therefore, only to domestic production). The aim of this programme is to identify non-compliant use of plant protection products in targeted crops selected after a national and regional risk analysis (national 'control' programme), and to be able to assess the levels of residue in any given crop (national 'surveillance' programme).

DGAL also implements a national control programme for monitoring pesticide residues in food of animal origin (samples collected on farms or at the slaughterhouse). The aim of this programme is to identify non-compliant uses of pesticides (notably insecticides) in animals or excessive exposures of food-producing animals to plant protection products that would lead to excessive concentrations of residues in products of animal origin and therefore excessive exposure of the consumer.

For chlordecone, the DGAL implements surveillance and control plans on food of animal origin and primary plant products as well as on animal feed and soil. These plans are part of a global national chlordecone action plan that have been put in place in response to the strong concerns expressed by the population concerning the effects of pollution by chlordecone, which

constitutes, by its scale and its persistence over time, a health, environmental, economic and social issue in Martinique and Guadeloupe. The aim of this programme is, on the one hand, to assess the prevalence of chlordecone in these foods and feeds and, on the other hand, to detect non-conformities, bad practices and fraud and thus to limit consumer exposure.

11.1.2 Design

DGCCRF

The national pesticide monitoring is conducted according to a nationwide sampling. The monitoring programme is based on data concerning dietary consumption, national agricultural production and import of fruit, vegetables, cereals and food originating from these products. It takes into account the results of previous monitoring programmes as well as the analytical possibilities.

The programmes cover three strategies of sampling called 'surveillance' for random sampling (notably implementing the European coordinated programme), 'control' for targeted sampling (based on strong suspicion of non-compliance or on specific concerns, such as the presence of chlordecone in root vegetables) and 'sampling of imports under Regulation No (EC) 2019/1793'.

The national plan takes into account:

- the level of risk of exposure (calculated according to the frequency of detections of active substances, balanced with matrixes of consumption in France and the existence of chronic and acute risks affecting various population categories);
- the observations of non-compliance from the previous years;
- the MRL changes in the scope of phytopharmaceutical products approved in the EU or authorised in France (authorisations and withdrawals).

In addition to the sampling initially planned, further products can be analysed in the event of RASFF alerts or if any non-compliance had been noticed.

Samples are taken from all stages of the supply chain.

The sampling covers raw and transformed products as well as organic, non-organic and 'pesticide-free' labelled products. They are, for surveillance purposes, representative of the national consumption; in particular, in terms of origin and agriculture systems.

Samples are taken by experienced inspectors from local services (departments) of the DGCCRF, in compliance with Commission Directive 2002/63/EC.

Analyses are performed by four official laboratories from the Common Laboratory Network of France (SCL network). Two of these laboratories are located overseas and deal mainly with local production. The two others analyse all types of plant commodities available on the French market, including raw and transformed products.

Up to 580 substances (including metabolites) are sought in samples. The multi-residue method used the 'QuEChERS' method (NF EN 15662), combined with GC-MS(/MS), LC-TOF and LC-MS/MS. Single-residue methods are used for specific substances (dithiocarbamates, bromide ion, glyphosate, glufosinate, ethephon, fosetyl aluminium, chlormequat, mepiquat, chlordecone, maleic hydrazide) following the recommendations of the European reference laboratories.

In 2022, 5,618 samples of marketed food from plant origin, honey and baby food were analysed. This represents more than eight samples per 100,000 inhabitants (Table 50).

Table 50: Presentation of the samples, by origin, strategy and type of product.

Sample origin	France		EU		Non-EU countries			Unknown		Total
Sampling strategy	Obj.	Sel.	Obj.	Sel.	Obj.	Sel.	Susp. *	Obj.	Sel.	
Vegetables and vegetable products	1,047	844	252	8	63	202	618	22	34	3,090
Fruit and fruit products	460	165	228	49	238	106	49	18	7	1,320
Cereals and cereal products	331	12	33	9	45	104	5	34	11	584
Wine	109	2	12		6	1		3		133
Pulses	50	2	1		14	38		8	3	116
Teas, coffee, herbal infusions and cocoa	12		2	3	10	64	21		1	113
Spices	1	3	1	1	7	50	41	6	2	112
Oilseeds and oil fruits	10	5	5	1	5	21	8		1	56
Others	19	5	2	1	1	11	2	1	3	45
Honey	24		1		3			1		29
Baby food	7	1						2		10
Sugar plants	5					3		1		9
Hops	1									1
Total	**2,076**	**1,039**	**537**	**72**	**392**	**600**	**744**	**96**	**62**	**5,618**

*Most of the suspect samplings were taken at border controls (739 of 744).

Some 55.5% of the 5,618 samples were of French origin. Among the French products, 30.8% were taken in overseas France. Of the samples, 30.9% originated from non-EU countries and 10.8% were products from the rest of the EU.

For import control (905 samples), the samples came mainly from China (25 samples), Dominican Republic (26), India (78), Kenya (474), Sri Lanka (67), Marocco (16), Uruguay (38) and Venezuela (49). Of imports, the main distributions were beans (473 samples), chili peppers (62), pitayas (48), Asiatic pennywort (38) and teas (38).

More than 100 distinct types of product were analysed among vegetables and vegetable products and more than 70 among fruit and tree nuts.

Organic samples (901 samplings) were taken under every programme, from all origins and all types of product (raw and processed).

DGDDI

The monitoring of pesticide levels is carried out in accordance with European regulations:

- Regulation No (EU) 2019/1793 amended on the temporary increase of official controls and emergency measures. The selection of batches subject to physical controls and sampling meets the minimal rates set in Annex 1 and 2 of the Regulation.
- Regulation No (EU) 2018/848[32] on organic production and labelling of organic products, and its delegated and executed regulations, on the control of organic-labelled products. The selection of batches subject to physical controls and sampling is based on a European, a national and a local analysis, based on the observation of non-compliance from the previous years.

The samples are taken by local services of the DGDDI – BCPs, in compliance with Commission Directive 2002/63/EC, on raw and transformed products as well as non-organic and organic-labelled products.

Analyses are performed by two official laboratories from the 'Service commun des laboratoires' (SCL) network. The SCL is a nationally competent service of the economic and financial ministries. Being the state laboratory of these ministries, it carries out analyses for the General Directorate of Customs and Indirect Duties and the General Directorate of Competition, Consumption and Fraud Repression.

The multi-residue method used the ' QuEChERS' method. Single-residue methods are used for specific substances (dithiocarbamates, bromide ion, glyphosate, glufosinate, ethephon, fosetyl aluminium, chlormequat, mepiquat, chlordecone, maleic hydrazide, ethylene oxide) following the recommendations of the European reference laboratories.

DGAL

The samples are taken by the regional departments of the DGAL (DRAAF), in compliance with Directive 2002/63, transposed into French law by an order of 12 December 2002 relating to plant products affected by MRL, as set out in Appendix I of Regulation (EU) No. 396/2005.

The 'control' programme is based on a risk assessment, which takes account of the following factors:

- Results from previous national 'control' and 'surveillance' plans conducted by DGAL and DGCCRF.
- Chronic and acute risk exposure data, calculated by EFSA from the results of the European monitoring programme.
- The latest scientific and technical recommendations from ANSES (National Agency for Food Safety, Environment and Labour) on the number of samples per crop and the pesticides to be tested in order to evaluate consumer exposure.
- Notifications to RASFF on plant products of EU provenance.
- MRL changes affecting phytopharmaceutical products authorised in France.
- Changes in the use of phytopharmaceutical products authorised in France (authorisations and withdrawals).

[32] Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007. OJ L 150, 14.6.2018, p. 1–92.

- The importance of cultures in national plant products and their geographical distribution nationwide.

This 'control' programme is also established in order to sample, in a multi-annual programme of three years, the first 70 cultures which are the most important to production in France.

The multi-residue method used the 'QuEChERS' method. Single-residue methods are used for specific substances (dithiocarbamates, glyphosate, ethephon, chlormequat, mepiquat, maleic hydrazide, etc.) following the recommendations of the European reference laboratories.

Table 51: Distribution of samples by culture (detail by plant product) – 2022 national 'control' programme

Plant product		Number of samples
Aromatic herbs		**33**
	Basil	4
	Chives	9
	Dill leaves	2
	Parsley	8
	Rosemary	2
	Sage	2
	Spearmint	3
	Tarragon	1
	Thyme	2
Berries and small fruit		**131**
	Blackcurrants	9
	Blueberries	3
	Raspberries	11
	Redcurrants	5
	Strawberries	48
	Table grapes	7
	Wine grapes	48
Brassica vegetables		**21**
	Broccoli	21
Bulb vegetables		**81**
	Garlic	23
	Onions	37
	Shallots	9
	Spring onions	12
Cereals		**73**
	Buckwheat	15
	Common wheat grain	57
	Triticale grain	1
Citrus fruit		**1**

	Mandarins	1
Cucurbits with edible peel		**1**
	Gherkins	1
Fruiting vegetables		**42**
	Chili peppers	4
	Sweet corn	19
	Sweet peppers	19
Fungi		**12**
	Cultivated fungi	12
Leaf vegetables		**51**
	Baby leaf crops (including brassica species) and similar-	1
	Lettuces	50
Legume vegetables		**48**
	Beans	32
	Broad beans	1
	Garden peas (without pods)	14
	Lentils	1
Miscellaneous fruit		**31**
	Mangoes	9
	Pineapples	15
	Pitayas	5
	Table olives	2
Oilseeds and oil fruits		**82**
	Olives for oil production	39
	Rapeseeds	43
Pome fruits		**1**
	Apples	1
Root and tuber vegetables		**115**
	Carrots	37
	Celeriac	16
	Potatoes	42
	Sweet potatoes	20
Stem vegetables		**54**
	Asparagus	30
	Celery	5
	Leeks	19
Tree nuts		**24**
	Almonds	1
	Chestnuts	4
	Hazelnuts	9

	Walnuts	10
Total		**801**

Control of animal origin products (except the specific control programme for chlordecone)

The samples are taken by inspectors from the departmental services of the DGAL (DD(ETS)PP), in compliance with Directive 96/23/EC, Commission Implementing Regulation (EU) 2020/601, Commission Implementing Regulation (EU) 2022/164[33] and Directive 2002/63/EC requirements.

The sampled products are raw and unprocessed, organic and non-organic. Samples are taken at the production stage of the food chain, i.e. at the slaughterhouse or at the farm level. Milk samples are also taken at the level of the dairy industry before the bulk tanker is discharged and eggs samples are taken partly from hens reared exclusively in buildings (on the ground or in cages) and partly from outdoor hens and/or organic.

In honey, the target analytes represent 34 pesticide residues including organochlorines, organophosphates, pyrethroids, neonicotinoids (acetamiprid, clothianidin, imidacloprid, thiacloprid and thiamethoxam) and amitraz.

In the other products of animal origin, the target analytes are amongst aldicarbe, aldicarbe sulfone, aldicarbe sulfoxyde, aldrine, aldrine + dieldrine, azinphos ethyl, bifenthrine, carbofuran, carbofuran 3OH, carbofuran [sum of carbofuran (including carbofuran from carbosulfane, benfuracarb or furathiocarb) and 3-hydroxy-carbofuran, expressed as carbofuran], chlorobenzilate, chlordane (cis- + trans- + oxy-chlordane), chlordane cis, chlordane oxy, chlordane trans, chlorothalonil, chlorpyriphos ethyl, chlorpyriphos methyl, cyfluthrine, cyhalothrine lambda, cypermethrin (sum of isomers), DDT (pp'DDT + op'DDT + pp'DDE + pp'TDE (DDD)), deltamethrin (cis-deltamethrin), diazinon, dicofol (p, p'-dicofol + o,p'-dicofol), dieldrine, diflubenzuron, disulfoton, disulfoton + sulfoxide + sulfone, disulfoton sulfone, disulfoton sulfoxide, endosulfan (alpha- + beta- + endosulfan-sulfate), endosulfan alpha, endosulfan beta, endosulfan-sulfate, endrine, fenthion, fenthion oxon, fenthion oxon sulfone, fenthion oxon sulfoxide, fenthion sulfone, fenthion sulfoxide, fenthion+oxygene+sulfoxide+sulfone, fenvalerate (regardless of the ratio of isomers (RR, SS, RS and SR), including esfenvalerate), heptachlore, heptachlore + heptachlore epoxide, heptachlore epoxyde, hexachlorobenzene, hexachlorocyclohexane alpha, hexachlorocyclohexane beta, hexachlorocyclohexane gamma (lindane), methacrifos, methidathion, methomyl, methomyl and thiodicarb (sum of methomyl and thiodicarb, expressed as methomyl), methoxychlor, N-acetyl-glufosinate (NAG), o,p'-dicofol, op'DDT, p, p'-dicofol, paraoxon-methyl, parathion ethyl, parathion-methyl, parathion-methyl + paraoxon-methyl, pendimethalin, permethrin (sum of isomers), permethrin cis, permethrin trans, phorate, phorate +phorate oxon + phorate sulfone, phorate oxon, phorate sulfone, pirimiphos methyl, pp'DDE, pp'DDT, pp'TDE (DDD), profenofos, propoxur, pyrazophos, teflubenzuron, thiodicarbe and triazophos.

[33] Commission Implementing Regulation (EU) 2022/1646 of 23 September 2022 on uniform practical arrangements for the performance of official controls as regards the use of pharmacologically active substances authorised as veterinary medicinal products or as feed additives and of prohibited or unauthorised pharmacologically active substances and residues thereof, on specific content of multi-annual national control plans and specific arrangements for their preparation. OJ L 248, 26.9.2022, p. 32–45.

In accordance with Commission Implementing Regulation (EU) 2021/601, the following analytes were added to the above list:

- famoxadone, fipronil, glyphosate and glufosinate ammonium in porcine kidney fat;
- famoxadone, fipronil, glyphosate, glufosinate ammonium and indoxacarb in cow milk.

The samples for these analytes are analysed by the national reference laboratory (Anses Maisons-Alfort). The samples (except honey) are analysed by one of the 10 laboratories in the laboratory network. This network consists of the national reference laboratory (Anses Maisons-Alfort) and nine laboratories approved by the Ministry of Agriculture as official laboratories. Their approval is based on the laboratories being accredited to conduct tests on pesticide residues provided by the competent authorities and on their participation in the inter-laboratory aptitude tests, organised by the European reference laboratory.

Honey is analysed by one specific national reference laboratory (Anses Sophia-Antipolis) for both diagnosis and confirmation.

All these laboratories are accredited by the French Accreditation Committee (COFRAC) to ISO 17025 standards, enabling them to conduct tests on pesticide residues in food of animal origin.

In 2022, as part of DGAL's control programme for food of animal origin, 1,257 samples (not counting samples analysed for chlordecone specifically) were taken and analysed out of 1,369 samples planned (Table 52).

Table 52: Distribution of samples by animal species or type of product

Animal species or type of product	Matrix	Number of samples planned in 2022	Number of samples taken in 2022
Bovine	Kidney fat	260 for organochlorine (OC), organophosphorus (OP) pesticides and pyrethroids (Pyr)	254 for organochlorine (OC), organophosphorus (OP) pesticides and pyrethroids (Pyr)
	Muscle	50 for carbamates	47 for carbamates
	Cow milk	78 for OC, OP & Pyr	75 for OC, OP & Pyr
	Cow milk	78 for fipronil, famoxadone, glufosinate ammonium, glyphosate and indoxacarb	74 for fipronil, famoxadone, glufosinate ammonium, glyphosate and indoxacarb
Porcine	Kidney fat	258 for OC, OP & Pyr	227 for OC, OP & Pyr
	Kidney fat	78 for fipronil, famoxadone, glyphosate and glufosinate ammonium	70 for fipronil, famoxadone, glyphosate and glufosinate ammonium
	Muscle	50 for carbamates	40 for carbamates
Ovine and caprine	Kidney fat	77 for OC, OP & Pyr	79 for OC, OP & Pyr
	Muscle	10 for carbamates	9 for carbamates
	Goat milk	5 for OC, OP & Pyr	5 for OC, OP & Pyr
Equine	Kidney fat	5 for OC, OP & Pyr	5 for OC, OP & Pyr
	Muscle	3 for carbamates	3 for carbamates
Poultry	Muscle and skin	156 for OC, OP & Pyr	148 for OC, OP & Pyr
	Muscle and skin	20 for carbamates	17 for carbamates
Rabbit	Muscle	5 for OC & Pyr	5 for OC & Pyr
	Muscle	3 for carbamates	3 for carbamates
Farmed game	Muscle	5 for OC & Pyr	5 for OC & Pyr

Aquaculture	Muscle	30 for OC, OP, Pyr, diflubenzuron and teflubenzuron	26 for OC, OP, Pyr, diflubenzuron and teflubenzuron
Hens eggs	Eggs	70 for OC, OP & Pyr and 70 for fipronil	56 for OC, OP & Pyr and 56 for fipronil
Quail eggs	Eggs	3 for OC, OP & Pyr	2 for OC, OP & Pyr
Honey	Honey	55 (pesticides listed above)	51 (pesticides listed above)

For each specific animal species or type of product, the number of samples defined at the national level was distributed amongst departments according to their local production and based on a local risk analysis.

Surveillance and control of chlordecone in products of animal and plant origin

The analyte sought is chlordecone in foodstuffs of animal origin derived from:

- bovine supply chains (perirenal fat);
- ovine–caprine (perirenal fat);
- porcine (perirenal fat);
- egg products (chicken egg);
- poultry (fat);
- fishery products (flesh).

It is also sought in foodstuffs of plant origin intended for human and animal consumption and soil.

The samples are taken at the production stage (primary production) of the food chain, i.e. at the slaughterhouse or at the farm level but also at the distribution step or on the farm, according to the matrix considered.

These samples are taken by the food, agriculture and forestry department of Guadeloupe and Martinique.

The samples are analysed by one of the six laboratories in the laboratory network. These six laboratories are approved by the Ministry of Agriculture as official laboratories.

In 2022, as part of DGAL's control programme for products of animal origin, 3,532 samples were taken and analysed (Table 53).

Table 53: Distribution of samples by animal species or type of product, 2022

	Guadeloupe	Martinique
Animal species or type of product	**Number of samples taken**	**Number of samples taken**
Bovine	785	956
Fish product	337	514
Ovine–caprine	9	90
Swine	429	40
Poultry	39	135
Egg	63	135
TOTAL	1,662	1,870

In 2022, as part of DGAL's control programme for primary plant products and soil, 662 samples were taken and analysed (Table 54).

Table 54: Distribution of samples by product, 2022

	Guadeloupe	Martinique
	Number of samples taken	Number of samples taken
Plants	128	263
Soils	101	170
TOTAL	229	433

11.2 Key findings, interpretation of the results and comparability with the previous year's results

11.2.1 Key findings

DGCCRF

The main results are presented in the two tables below (Tables 55 and 56).

Table 55: Results of pesticide residue analyses by origin and strategy of sampling

Origin of sample	Sampling strategy	Number of samplings	% >LOD*	% >LOQ*	% >MRL (before uncertainty)	% non-compliant with MRL
France	Objective	2,076	40.6	35.3	1.4	0.9
	Selective	1,039	24.4	21.7	8.8	7.3
EU (except France)	Objective	537	63.3	55.7	2.4	1.1
	Selective	72	73.6	68.1	1.4	0.0
non-EU country	Objective	392	66.1	57.9	9.7	5.6
	Selective	600	33.3	28.2	8.8	6.3
	Suspect	744	74.2	66.3	15.2	11.7
Unknown	Objective	96	39.6	34.4	2.1	1.0
	Selective	62	19.4	14.5	8.1	6.5
Total general		**5,618**	**45.4**	**39.8**	**6.2**	**4.5**

LOD : Limit of detection; LOQ : Limit of quantification.

Table 56: Results of pesticide residue analyses by type of product

	Total	% >LOD	% >LOQ	% >MRL (before uncertainty)	% non-compliant with MRL
Vegetables and vegetable products	3,090	44.2	38.1	6.7	5.1
Fruit and fruit products	1,320	64.0	58.2	7.3	5.1
Cereals and cereal products	584	31.2	27.6	2.7	1.7
Wine	133	37.6	34.6	0.0	0.0

Pulses	116	49.1	39.7	6.0	4.3
Teas, coffee, herbal infusions and cocoa	113	25.7	20.4	12.4	8.8
Spices	112	11.6	8.0	6.3	2.7
Oilseeds and oil fruits	56	10.7	8.9	1.8	1.8
Others	45	2.2	0.0	0.0	0.0
Honey	29	6.9	3.4	0.0	0.0
Baby food	10	0.0	0.0	0.0	0.0
Sugar plants	9	0.0	0.0	0.0	0.0
Hops	1	0.0	0.0	0.0	0.0
Total	**5,618**	**45.4**	**39.8**	**6.2**	**4.5**

DGDDI

In 2022, 860 samples of food imported from non-EU countries to the EU have been analysed. Some 558 of them from were conventional agriculture and 62 from organic farming. The food mainly originated from the following non-EU countries: India (219 samples), China (164), Turkey (114), South Korea (97), Vietnam (30), United Kingdom (26), Morocco (12), Peru (11), Tunisia (10), Japan (10) and Brazil (10).

The samples are divided between 313 samples of raw products and 547 samples of transformed products. The breakdown by product type is shown in Table 57.

Table 57: Distribution of samples by product

Category of product	Number of samples
Raw products	
Fruit	45
Vegetables	64
Dried vegetables	27
Oilseeds	44
Cereals	34
Spices	90
Sugar plants	8
Milk (coconut)	1
SUB-TOTAL	**313**
Transformed products	
Fruit-based (juices, compotes, ciders, dried fruits, etc.)	101
Vegetable-based (dried vegetables, sauces, purees, etc.)	29
Oilseed-based (olive, sunflower, rapeseed, sesame, etc.)	3
Cereal-based (flour, dough, bread, beer, etc.)	133
Cocoa based (cocoa, butter, chocolate, etc.)	6
Teas, coffees, infusions, cocoa	183
Wine	0
Feed	3
Various (food supplements, preparations, other drinks, etc.)	88
SUB-TOTAL	**547**

Of all samples, 78.8% contained no detectable traces of pesticide residues. This amounts to 84% of raw products and 75% of transformed products.

Of the 21.2% of samples that were positive, teas, coffees, infusions and cocoa are the most represented, accounting for 51.9% of positive samples (divided into 75 samples compliant with the MRL and 20 non-compliant and to be monitored).

The main results are detailed in Table 1 below.

Table 58: Summary results of sample analysis

	Negative samples	Positive samples			Total by category of product
		Compliant	Non-compliant and to be monitored (organic)	Non-compliant with MRL and to be monitored	
Raw products	**264**	**22**	**13**	**14**	**313**
Fruit	37	4	2	2	45
Vegetables	55	3	1	5	64
Dried vegetables	25		2		27
Oilseeds	43		1		44
Cereals	16	14	1	3	34
Spices	80	1	5	4	90
Sugar plants	7		1		8
Milk (coconut)	1				1
Transformed products	**414**	**98**	**9**	**26**	**547**
Fruit-based	88	5	8		101
Vegetable-based	26		1	2	29
Oilseed-based	3				3
Cereal-based	125	8			133
Cocoa-based		6			6
Teas, coffees, infusions, cocoas	88	75		20	183
Wine	1				1
Feed	1	2			3
Various	82	2		4	88
TOTAL	**678**	**120**	**22**	**40**	**860**

DGAL

Control programme in primary plant products

As part of DGAL's control programme for pesticide residues in primary plant products, 816 samples were analysed, including 801 at harvest, the results of which are presented in this report. Of those, 18 were non-compliant with the MRL after taking account of analytical uncertainty (i.e. 1.75% of samples taken nationwide, all cultures).

Table 59: Control programme 2022 – main results

MRL compliant/non-compliant	Number of samples
Compliant	783
Non-compliant	18
Total	801

Percentage non-compliant	**2.25%**

Control programme in products of animal origin (except for chlordecone)

Out of 1,257 samples taken and analysed, all were MRL compliant.

Surveillance and control of chlordecone in animal-origin products and primary plant products and soil

As part of DGAL's control and surveillance programme for food of animal origin, 3,532 samples were taken and analysed, and 85 were non-compliant with the MRL, representing 2.4% of all the samples (Table 60).

Table 60: Programme 2022 on food of animal origin – main results

Animal species or type of product	Guadeloupe		Martinique	
	Number of samples taken	Number of non-MRL compliant samples	Number of samples taken	Number of non-MRL compliant samples
Bovine	785	10	956	26
Fish product	337	15	514	16
Ovine–caprine	9	0	90	3
Swine	429	1	40	0
Poultry	39	0	135	0
Egg	63	0	135	14
TOTAL	1,662	26	1870	59

As part of DGAL's control and surveillance programme for primary plant products and soil, 662 samples were taken and analysed. Five plant samples intended for human consumption were not MRL compliant (Table 61).

Table 61: Programme 2022 on primary plant products and soil – main results

	Guadeloupe		Martinique	
	Number of samples taken	Number of non-MRL compliant samples	Number of samples taken	Number of non-MRL compliant samples
Plants	128	2	263	3
Soils	101		170	(Beware: there is no MRL for chlordecone in soil, it represents a level of contamination)
TOTAL	229		433	

11.2.2 Interpretation of the results

DGCCRF

In positive samples (a sample with at least one pesticide residue detected) a mean of 2.8 detectable residues per sample was found and a median of two detectable residues per sample, with a maximum number of 34 residues found in dried vine fruits from Turkey. In 10 samples, at least 20 residues were found: all of them were dried vine fruit from Turkey. Some 0.9% of all

the analysed samples contained at least 10 detectable residues, and 7.3% contained five or more detectable residues.

Of all the analysed samples, 30 (0.5%) contained at least 10 residues exceeding the LOQ, with a maximum of 27 residues quantified in dried vine fruits from Turkey. Of all analysed samples, 241 (4.3%) contained at least five quantifiable residues.

The highest figures were obtained from import control at BCPs, samples taken under Implementing Regulation (EU) No.2019/1793 (corresponding to 739 samples), both in terms of samples containing residues above the LOQ (58.7% of the control on import samples) and samples exceeding the MRLs (12.5%), leading to a non-compliance rate of 9.4% after taking into account the measurement uncertainty. These high figures were linked to the specific targeting of commodities and importing countries with an identified risk of MRL exceedance, and could be, consequently, expected to be higher than those obtained for 'surveillance' and control programmes. Of the non-compliant samples, 70.6% originated from Sri Lanka and Kenya. The main non-compliant products were Asiatic pennywort (from Sri Lanka, 32.6% of the non-compliant samples) and French beans from Kenya (26.7%).

There were 3,090 samples of vegetables and vegetable products analysed. French beans (16.1% of the vegetable samples), sweet potatoes (8.0%), dasheen taros (5.3%), yams (5.3%), cucumbers (4.7%), potatoes (3.9%), courgettes (3.8%), turnips (3.2%), aubergines (3.1%) and lettuces (3.1%) were the main sampled products.

Of the vegetable samples, 44.1% were taken under the 'surveillance' programme, 34.4% under the control programme and 21.5% as control on imports.

A total of 1,365 samples contained at least one detectable residue, representing an average of 1.2 residues on analysed vegetables and vegetable products. Of these, 190 samples showed five or more residues with a maximum of 22 residues found in a sample of goji berry from China.

Of the analysed vegetables and vegetable products, 1,177 samples contained at least one quantifiable residue (38.1%).

Some 206 samples exceeded the MRLs before taking into account the measurement uncertainty, leading to 158 cases of non-compliance after taking into account the measurement uncertainty, for 31 distinct products. The highest contributions of non-compliance were found for dasheen tarots (19.0% of the non-compliant samples of vegetables; 18.2% of the analysed dasheen tarots), Asiatic pennywort (17.7%; 73.7%) and French beans (16.5%; 5.2%).

There were 1,320 samples reported as fruit and fruit products. The main analysed products were apples (10.2% of the analysed fruit), strawberries (8.8%), plantains (7.0%), clementines (5.5%), Tahiti limes (4.8%), table grapes (4.2%) and table olives (4.0%).

Of the fruit samples, 70.1% were taken under the 'surveillance' programme, 21.9% under the control programme and 8.0% as control on imports.

A total of 845 samples contained at least one detectable residue, representing an average of 2.4 residues on analysed fruit and fruit products. Of those, 249 samples showed five or more residues, with a maximum of 34 residues found in a sample of dried vine fruits from Turkey.

Of the analysed fruit and fruit products, 768 contained at least one quantifiable residue (58.2%).

Some 96 samples exceeded the MRLs before taking into account the measurement uncertainty, leading to 67 cases of non-compliance after taking into account the measurement uncertainty, for 16 distinct products. The highest rates of non-compliance were found for plantains (34.3% of the non-compliant samples of fruit; 25% of the analysed plantains), common bananas (13.4%; 26%) and pitayas (10.4%; 14%).

Cereals and cereal products represented 10.4% of all the samples. The main analysed products were rice grain, long-grain (24.5%), common wheat grain (9.4%), beer (7.7%), barley grains (5.5%) and oat grains (5.3%).

Of the cereal samples, 75.5% were taken under the 'surveillance' programme, 22.3% under the control programme and 2.2% as control on imports.

A total of 182 samples contained at least one detectable residue, representing an average of 0.7 residues on analysed cereals and cereal products. Ten samples showed five or more residues, with a maximum of 11 residues found in rice grain from Chile.

Of the analysed cereals and cereal products, 161 samples contained at least one quantifiable residue (27.6%).

Sixteen samples exceeded the MRLs before taking into account the measurement uncertainty, leading to ten cases of non-compliance after taking into account the measurement uncertainty. All the non-compliant samples were found in rice: eight were long-grain rice (5.6% of all the analysed long-grain rice), and one was chia seeds (of five chia seeds samples).

A total of 116 pulses were sampled in 2022. Of these, 49.1% contained detectable residues (1–4 residues found) and 39.7% quantified residues. In seven samples, residues were quantified above the LMR. Five samples were non-compliant with the MRL set for chlorpyriphos-methyl, chlorpyriphos and malathion on chickpeas, chlorothalonil on peas and chlorpropham on lentils, all the other residues levels being under the corresponding MRLs.

There were 56 samples from oilseeds, oil fruits and processed products from oilseeds and oil fruits taken in 2022. Six samples contained detectable residues (1–2 residues found) and five samples contained one residue quantified. One sample was non-compliant with the EU MRLs: a sesame seed oil containing ethylene oxide.

Honey and sugar plants from organic and non-organic production amounted to 38 samples. All samples were compliant with the EU MRLs.

There were 133 wines sampled: residues were detected for 50 of them (1–5 residues found) and above the quantification limit in 46 cases. No sample was non-compliant with R396/2005.

There were 112 spices sampled: residues were detected for 13 of them (1–2 residues found) and above the quantification limit in 10 cases. Three samples were non-compliant with R396/2005: two samples of black pepper and one of turmeric root.

There were 10 samples of baby food analysed. No residues were detected. All samples were compliant with the 0.010 mg/kg limit set for baby food products.

Only one samples of hops was analysed in 2022, with no residue detected.

There were 113 samples taken from tea, coffee, herbal infusions and cocoa: residues were detected for 29 of them (1–16 residues found) and above the quantification limit in 23 cases, mainly on tea leaves. Ten samples were non-compliant with R396/2005: eight samples of tea leaves, one sample of couverture chocolate and one of kola nuts.

Organic products of all types (raw or processed food) represented 16.0% of all the samplings (901 organic samples). For most of them, no residue could be detected. Residues were detected in 80 samples (3.1% of the organic samples), above the LOQ for 48 of them (2.1% of the organic samples). In eight samples, three or more residues were detected (0.9% of the organic samples) with a maximum of six residues found in a sample of tea leaves from India.

Seven organic samples (0.8% of the organic samples) were non-compliant with R396/2005, which represents 0.1% of all the samples. These non-compliant organic samples are: tea leaves (3), ginger roots, globe artichokes, couverture chocolate and table olives. Four of them came from a non-EU country, one from the EU and two from France.

DGDDI

In 2022, 622 pesticide residues were detected: 165 of them were below the LOQ against 457 above.

Of the 457 pesticide residues above the LOQ, 436 are assessable and defined in Regulation (EU) 396/2005. Of those, 398 were below the MRL (91.3%), 18 were between 1 and 1.5 times the MRLs (4.1%) and 20 were over 1.5 times the MRLs (4. 6%).

Teas, coffees and infusions are the most represented with 335 results above the LOQ, followed by cereals with 34 results above the LOQ.

The results are detailed in Table 62.

Table 62: Pesticide residues detected

	Number of residues <LOQ	**Number of residues >LOQ**		
		Number of residues ≤MRL	**Number of residues>MRL and ≤1.5× MRL**	**Number of residues >1.5× MRL**
Raw products	**44**	**75**	**2**	**4**
Fruit	3	15		
Vegetables	14	11	2	2
Dried vegetables	1	1		
Oilseeds		1		
Cereals	20	32		2
Spices	6	14		
Sugar plants		1		
Transformed products	**121**	**323**	**16**	**16**
Fruit-based	8	2		
Vegetable-based	1	1		2
Cereal-based	8	8		
Teas, coffees, infusions, cocoas	103	305	16	14

Feed		2
Various	1	5

11.2.3 Comparability with the previous year's results

DGDDI

The percentage of samples not compliant with the MRL in 2022 (40 out of 860 samples; 4.6%) were higher than those of 2021 (5 out of 154 samples; 3.2%).

The relevance of this comparison is, however, limited due to the significant increase in the number of samples taken in 2022 compared with 2021 (+558%).

The difference is explained by the fact that the DGDDI became responsible for the controls carried out by the BCPs of Le Havre and Marseille on 1 November 2021, and for those of Saint-Nazaire-Montoir, Bordeaux, Strasbourg-Entzheim, Guadeloupe, French Guiana, La Réunion and Agen on 1 November 2022.

DGCCRF

In 2022 the control pressure was lower than in 2021 and 2019 (400 fewer samples), both in the surveillance and control plans, but not on imports (which show the highest rate of non-compliance). One explanation is the decrease of commodities sampled for ethylene oxide compared with 2021.

The scope of residues analysed was the same as in 2021. Only the type of analysed products differs between years.

In 2022, the samples that originated from non-EU countries decreased from 50% to 31%, while samples from France accounted for 55% in 2022 versus 40% in 2021. This is the consequence of a national reorganisation of the import control between the DGCCRF and the DGDDI.

The proportion of samples taken in overseas France is still important (17% of all the samples) in order to notably target tropical commodities associated with a significant risk of exposure; mainly tropical commodities produced in Martinique and Guadeloupe because of the environmental contamination by the former use of chlordecone.

Fruit and vegetables remained the main products analysed under all programmes (78% in 2022, 68% in 2021 and 75% in 2020).

As observed for previous years, the numbers of samples with detected residues, of samples with quantified residues, and of non-compliant samples depended on the sampling programme. A higher number of non-compliant samples is still observed for control on imports.

Considering the origin of the non-compliant samples, the results were in accordance with those of previous years: most of the breaches occurred in samples from non-EU countries followed by domestic samples, while the samples originating from other EU countries showed a very low non-compliance rate. Furthermore, as previously observed, the lowest rates for MRL exceedance were found for 'surveillance' samples.

In 2022, the percentage of samples containing one or more quantifiable residue(s) was very similar to the previous year (39.8% in 2022 versus 39.4% in 2021). However, the rate of MRL exceedance (before applying analytical uncertainty) increased from 3.9% in 2021 to 6.2% in

2022. Considering all plans and all types of commodity, 4.5% of non-compliance was observed in 2022, compared with 3.2% in 2021 and 3.9% in 2020. Among other possible explanations, this might be due to the targeting of certain products.

As previously observed, the pattern of non-compliance for organic food varies according to the sampling year, possibly due to the limited number of organic samples analysed. The non-compliance rate of 0.8% is significantly low but the rate of 4.9% calculated for 2020 suggests a need to maintain pressure on the control of the risk associated with pesticide residues in organic farming practices.

DGAL

For pesticide residues in primary plant products, the percentages of MRL non-compliance in 2022 were lower than those of 2021, concerning the control programme.

In animal-origin food products, as in 2021, all the samples were compliant.

For chlordecone, both in the animal and vegetal sectors, the compliance rates in 2022 in Guadeloupe and Martinique remained relatively constant from 2021 and range from 96 to 99%.

11.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

11.3.1 Possible reasons for non-compliant samples

DGCCRF

The possible reasons for MRL non-compliance (with measurement uncertainty taken into account) are shown in Table 63. If multiple reasons are possible, products are listed for the main one. Products can be listed twice or more if they contained two or more pesticide residues above the MRL (after taking into account the uncertainty).

Table 63: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Food product	Residue	Frequency[a]	Comments
GAP not respected: use of a pesticide not approved in the EU[b]	Cresses	Carbetamide	1	FR
	Dried herbs	Chlorpyrifos	1	PL
	Clementines	Chlorpyrifos	1	PT
	Globe tomatoes	Fipronil	1	GF
	Plums	Imidacloprid	1	IT
	Florence fennels	Linuron	1	IT
	Dried herbs	Linuron	1	PL
	Welsh onions	Linuron	1	GP
	Cherries (sweet)	Omethoate	1	FR
	Tannias	Pencycuron	1	MQ
GAP not respected: use of an approved pesticide, but	Common peaches	Cypermethrin	1	RE
	Spinaches	Cypermethrin	1	GP
	Pineapples	Ethephon	1	BJ

Reasons for MRL non-compliance	Food product	Residue	Frequency[a]	Comments
application rate, number of treatments, application method or PHI not respected	Lettuces	Flonicamid	1	GP
	Sweet peppers	Flonicamid	2	FR
	Chili peppers	Fludioxonil	1	UG
	Chili peppers	Lambda- cyhalothrin	1	UG
	Courgettes	Meptyldinocap	1	FR
	Grape leaves	Metalaxyl	1	TR
	Common mushrooms	Metrafenone	1	FR
	Courgettes	Propyzamide	1	FR
	Granate apples	Sulfoxador	1	TR
GAP not respected: use of a pesticide not authorised in organic production	Tea leaves	Anthraquinone	1	IN
	Couverture chocolate	Chlorpyrifos	1	BE
	Ginger roots	Methacriphos	1	PE
	Tea leaves	Penthiopyrad	1	KR
	Table olives	Propiconazole	1	FR
	Globe artichokes	Prosulfocarb	1	FR
	Tea leaves	Pyridaben	1	JP
	Tea leaves	Tebuconazole	1	JP
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)	Yams	Chlordecon	1	GP
	Dasheen taros	Chlordecon	3	GP
	Tannias	Chlordecon	5	GP
	Tannias	Chlordecon	1	DM
	Lentils (dry)	Chlorpropham	1	FR
	Potatoes	Chlorpropham	1	FR
	Spinaches	Delthamethrin	1	GP
	Figs	Delthamethrin	2	FR
Use of a pesticide on food imported from third countries for which no import tolerance was set[c]	French beans	Acephate	20	KE
	Podded pea	Acephate	1	KE
	Okra	Acephate	1	IN
	Chili peppers	Acrinathrin	2	UG
	Gojiberry	Amitraz	1	CN
	Black pepper	Anthraquinone	1	IN
	Common peaches	Bifenthrin	1	LC
	Pitayas	Carbendazim et benomyl	2	VN
	Chives	Carbendazim et benomyl	1	TH
	Gojiberry	Carbofuran	1	CN
	French beans (with pods)	Chlorfenapyr	1	EG

Reasons for MRL non-compliance	Food product	Residue	Frequency[a]	Comments
	Dill leaves	Chlorfenapyr	1	TH
	Sweet peppers	Chlorfenapyr	1	DO
	Chives	Chlorfenapyr	1	TH
	Peas (dry) and similar-	Chlorothalonil	1	KE
	Asiatic pennywort	Chlorothalonil	1	LK
	Yardlong beans (dry)	Chlorpyrifos	1	MG
	Rice grain, long-grain	Chlorpyrifos	3	BD
	Teas leaves, dry and/or fermented, and similar	Chlorpyrifos	1	CN
	Dill leaves	Chlorpyrifos	1	TH
	Table olives ready for consumption	Chlorpyrifos	2	MA
	Gojiberry	Chlorpyrifos	1	CN
	Rice grain, long-grain	Chlorpyrifos	1	IN
	Chickpeas (dry)	Chlorpyrifos	1	IN
	French beans (with pods)	Chlorpyrifos	1	KE
	Kola nuts	Chlorpyrifos	1	NG
	Chickpeas (dry)	Chlorpyrifos-methyl	1	US
	Chili peppers	Clothianidin	1	UG
	Other spinaches and similar leaves	Clothianidin	4	LK
	Tannias	Cypermethrin	1	CR
	Passionfruits	Cypermethrin	1	VN
	Teas leaves, dry and/or fermented, and similar	Diafenthiuron	1	CN
	Chives	Diflubenzuron	1	TH
	Nectarines	Dimethoate	1	TN
	Chia seeds	Ethylene oxide	1	XX
	Seseame seed oil	Ethylene oxide	1	KR
	Tumeric roots	Ethylene oxide	1	IN
	Black peppper	Ethylene oxide	1	VN
	Peanuts (fresh seeds)	Ethylene oxide	3	US
	Teas leaves, dry and/or fermented, and similar	Ethylene oxide	1	CN
	Asiatic pennywort	Fenobucarb	2	LK
	Passionfruits	Fenpropathrin	1	VN
	Chili peppers	Fenpropathrin	1	EG
	Mukunuwenna	Fipronil	5	LK
	Asiatic pennywort	Fipronil	15	LK

Reasons for MRL non-compliance	Food product	Residue	Frequency[a]	Comments
	Yams	Fipronil	1	DM
	French beans (with pods)	Flutriafol	1	KE
	French beans (with pods)	Hexaconazole	1	KE
	Asiatic pennywort	Hexaconazole	2	LK
	Asiatic pennywort	Imidacloprid	1	LK
	Teas leaves	Imidacloprid	1	CN
	Passionfruits	Imidacloprid	2	VN
	Mukunuwenna	Imidacloprid	1	LK
	Passionfruits	Imidacloprid	1	CO
	Kola nuts	Imidacloprid	1	NG
	Plums	Iprodione	1	CL
	Pitayas	Iprodione	1	KE
	Ginger roots	Methacriphos	1	CR
	French beans (with pods)	Methamidophos	17	KE
	Podded pea (young pods)	Methamidophos	1	KE
	Okra	Monocrotophos	1	IN
	Mukunuwenna	Novaluron	1	LK
	Asiatic pennywort	Novaluron	1	LK
	Passionfruits	Omethoate	1	VN
	Tahiti limes	Prochloraz	1	CO
	Mukunuwenna	Profenophos	2	LK
	Asiatic pennywort	Profenophos	10	LK
	French beans	Profenophos	1	KE
	Aubergines	Profenophos	2	DO
	Dill leaves	Propiconazole	1	TH
	Rice grain, long-grain	Thiamethoxam	1	CL
	Rice grain, long-grain	Thiamethoxam	1	IN
	Globe tomato	Tolfenpyrad	1	DO
	Rice grain, long-grain	Tricyclazole	5	BD
	Rice grain, long-grain	Tricyclazole	1	CL
	Rice grain, long-grain	Tricyclazole	1	IN
	Rice grain, glutinous	Tricyclazole	1	VN
Use of an approved substance on a crop where the MRL is fixed at the LoQ	Other spinaches and similar leaves	Fenpyroximate	1	LK
	Pitayas	Forchlorfenuron	1	VN
	Yams	Imazalil	1	DM

Reasons for MRL non-compliance	Food product	Residue	Frequency[a]	Comments
	Passionfruits	Imazalil	1	CO
	Grape leaves	Lambda- cyhalothrin	1	TR
	Teas leaves	Lambda- cyhalothrin	1	CN
	Chickpeas (dry)	Malathion	1	IN
	Dasheen taros	Metalaxyl	2	DM & XX
	Dasheen taros	Metalaxyl	24	GP
	Yams	Metalaxyl	2	GP
	Tahiti limes	Oxamyl	4	CO
	Pitayas	Propamocarb	2	VN
	Taros	Pyraclostrobin	1	CR
	French beans (with pods)	Sulfoxaflor	2	KE
	Asiatic pennywort	Sulfoxaflor	1	LK
	Asiatic pennywort	Tebuconazole	3	LK
	Yams	Thiabendazole	1	CR
	Tannias	Thiabendazole	1	CR
	Passionfruits	Thiabendazole	1	CO
	Passionfruits	Dimethomorph	1	VN
	Yams	Cypermethrin	1	CR
	Lemons	Buprofezin	1	TR
	Tea leaves	Acetamiprid	4	CN
Use of a pesticide not authorised for this crop	Welsh onions	Pirimicarb	1	GP
	Dried herbs	Pirimiphos-méthyl	1	PL
	Florence fennels	Propamocarb	1	FR
	Cucumbers	Prosulfocarb	1	FR
	Cresses	Prosulfocarb	2	FR
	Plantains	Ethephon	22	MQ, GF & GP
	Common bananas	Ethephon	9	MQ & GF
	Spinaches	Abamectin	1	IT
	Lettuces	Cyazofamid	1	GP

Reasons for MRL non-compliance	Food product	Residue	Frequency[a]	Comments
	Welsh onions	Cypermethrin	2	GP
	Spinaches	Flonicamid	1	FR
	Sweet potatoes	Flonicamid	1	GP
	Florence fennels	Fluopicolide	1	FR
	Red pitayas	Lambda- cyhalothrin	1	GF

(a) Number of cases.
(b) Applicable only for food products produced in the EU.
(c) Highest frequency observed/For imported food only.

DGDDI

The possible reasons for MRL non-compliance are shown in Table 64 below.

Table 64: Possible reasons for MRL non-compliance

Reasons for non-compliance	Food product	Residue	Frequency	Comments (origin)
Use of pesticide on food imported from non-EU countries	Tea leaves	Anthraquinone	11	CN
		Lambda-cyhalothrine	6	CN, AE
		Chlorpyrifos	5	CN, AE
		Tolfenpyrad	2	CN, AE
		Acetamipride	1	CN
		Diafenthiuron	1	AE
		Difenoconazole	1	AE
		Dinotefurane	1	AE
		Pyridabene	1	AE
	Okra	Flonicamide	3	VN
		Hexaconazole	2	VN
		Thiamethoxam	2	VN
		Tricyclazole	2	IN
	Rice	Acetamipride	1	PK
		Chlorpyrifos	1	PK
		Propiconazole	1	IN
		Thiamethoxam	1	IN
	Guar gum	Ethylene oxide	4	IN
	Curry powder	Ethylene oxide	2	IN
	Turmeric roots	Ethylene oxide	2	IN
	Fenugreek seeds	Ethylene oxide	1	IN
	Vanilla	Ethylene oxide	1	IN
	Soya beans	Ethylene oxide	1	IN
	Moringa	Monocrotofos	1	IN

DGAL

The possible reasons for MRL non-compliance are shown in Table 65.

Table 65: Possible reasons for MRL non-compliance – control programme

Reasons for MRL non-compliance	Pesticide/food product	Frequency
Environmental contamination		1
	Prosulfocarb / Parsley	1
Good Agricultural Practice (GAP) not respected: use of a pesticide not approved in the EU		4
	Chlorpropham / Potatoes	1
	Linuron / Celery	1
	Iprodione / Garlic	1
	Profenofos/ Lettuces	1
GAP not respected: use of an approved pesticide not authorised on the specific crop		8
	Abamectin / Pitayas	1
	Lambda-cyhalothrin / Pineapples	1
	Pirimicarb / Pineapples	1
	Prochloraz / Garlic	1
	Propyzamide / Leeks	1
	Pyriproxyfen / Lettuces	1 (the same sample with fluazifop-P and lambda-cyhalothrin)
	Spinosad / Celeriacs	1
	Trifloxystrobin / Sweet peppers	1 (the same sample with fluopyram)
GAP not respected: unauthorised quantities		3
	Fluazifop-P and Lambda-cyhalothrin / lettuces	1 (the same sample with pyriproxifen)
	Fluopyram and Prothioconazole / Garlic	1
	Fluopyram / Sweet peppers	1 (the same sample with trifloxystrobin)
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)		1
	Dieldrin / Carrots	1
Unknown		3
	Carbendazim and benomyl / Leeks	1
	Metalaxyl/ Rapeseed	1
	Pyraclostrobin/ Garlic	1
Total general		**18** (the samples of sweet peppers and lettuce are counted once)

For chlordecone, the reason for the non-compliant samples is the effect of pollution from the chlordecone which was widely used before 1993 and is a persistent molecule over time.

11.3.2 Acute reference dose exceedance

DGAL

For pesticide residues in primary plant products, reported exceedance of the acute reference dose was:

- Lambda-cyhalothrin in pineapples (two samples) from French Guiana.
- Lambda-cyhalothrin in lettuce from Mayotte.
- Chlorpropham in potatoes: an acute risk cannot be ruled out.

11.3.3 Actions taken

DGCCRF

When a non-compliant sample is identified, the batch is seized, if available. Products controlled on import are prevented from entering the market (by destruction or rejection at the border).

An assessment of the risk to consumers is performed for all non-compliant samples and the appropriate measures, such as recall and RASFF notification, are taken according to this risk assessment.

When non-compliant samples are identified, the producer or importer is subject to a stronger control that gives rise to an official report and, if relevant, a fine. A follow-up action is also implemented to identify the cause of non-compliance. In that case, the information can be submitted to the services of the Ministry of Agriculture, responsible for controlling the use of pesticides at the production level. The reason for the MRL exceedance or use of a pesticide not approved in the EU or in France is investigated as far as possible in French products.

DGDDI

When the laboratory analysis of a sample concludes on its non-compliance, the release for free circulation of the batch placed under control as part of the reinforced controls and emergency measures of the amended Regulation (EU) 2019/1793 is refused (destruction or dismissal). The control then gives rise to a RASFF notification.

Products declared as organic, that do not exceed the MRLs, can be released for free circulation as conventional products, on the condition that the goods are repackaged to no longer mention their organic character. The inspection may give rise to an OFIS notification.

DGAL

As part of the control, each instance of non-compliance was followed up by administrative action and/or sanctions.

The following actions were implemented:

- Ten administrative warnings;
- One consignment of a crop with a sample for product release testing, followed by the release of the crop;
- Six second checks scheduled in 2023;
- Four formal compliance warnings;
- Five batches not released onto the market;
- Two batches recalled from the market;
- Four destructions of products;

- Three sets of minutes sent to magistrates courts;
- Five administrative consequences.

The same measure can be implemented to sanction a series of non-compliance, with several samples possibly being taken from the same area.

For chlordecone, non-compliant samples were followed up by administrative action, which can go as far as the withdrawal of the commodity concerned from the market.

11.3.4 Quality assurance

DGCCRF

Both mainland France's laboratories are accredited by the French Committee of Accreditation (COTAIL COAT). One overseas laboratory is also accredited for the search for chlordecone in non-animal products.

SCL laboratories are assessed and/or accredited in accordance with the EN ISO/IEC 17025 on 'General requirements for the competence of testing and calibration laboratories'. Most of the analyses are performed under COFRAC accreditation according to standard NF EN 15662:2018 'Foods of plant origin – Determination of pesticide residues using GC-MS and/or LC-MS/MS) following acetonitrile extraction/partitioning and clean-up by dispersive SPE-QuEChERS-method'.

The guidance document on analytical quality control and method validation procedures for pesticide residues analysis in food and feed was implemented (European Commission, 2020).

Table 66: Laboratory participation in the national control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
FR	SCL - Laboratoire de Montpellier	SCL34	1997	Comité français d'accréditation - COFRAC (1-0162)	Yes
FR	SCL - Laboratoire de Paris	SCL91	1996	Comité français d'accréditation – COFRAC (1-0162)	Yes
FR	SCL - Laboratoire des Antilles	SCL971	2012	Comité français d'accréditation - COFRAC (1-0162)	Yes
FR	SCL - Laboratoire de La Réunion	SCL974	2022	Comité français d'accréditation - COFRAC (1-0162)	Yes

DGDDI

Both mainland France's laboratories are accredited by the French Committee of Accreditation (COTAIL COAT).

SCL laboratories are assessed and/or accredited in accordance with EN ISO/IEC 17025 on 'General requirements for the competence of testing and calibration laboratories'. Most of the analyses are performed under COFRAC accreditation according to standard NF EN 15662:2018 'Foods of plant origin - Determination of pesticide residues using GC-MS and/or LC-MS/MS)

following acetonitrile extraction/partitioning and clean-up by dispersive SPE-QuEChERS-method'.

The guidance document on analytical quality control and method validation procedures for pesticides residues analysis in food and feed was implemented (European Commission, 2020).

DGAL

The samples are analysed by 10 laboratories, three of which belong to SCL, the network of laboratories run by DGCCRF: SCL34, SCL75 and SCL971. The other seven private laboratories are approved by the Ministry of Agriculture as official laboratories: CAMP, CAPINOV, CERECO, GIRPA, LDA26, LDA72, LDA972. Their approval is based on the laboratories being accredited to conduct tests on pesticide residues provided by the competent authorities and on their participation in the proficiency tests, organised by EU reference laboratories.

The laboratories are accredited by the French Accreditation Committee (COFRAC) to ISO 17025 standards, enabling them to conduct tests on pesticide residues in fruit and vegetables or in food of animal origin. The scope of the accreditation focuses on the most frequently found or relevant residues. Official tests are governed by health guidelines SANTE/11312/2021 relating to analytical quality control and method validation procedures for testing pesticide residues in food for humans and animals.

11.4 Processing factors

11.4.1 DGCCRF

The processing factors used to verify compliance of processed products with EU MRLs are listed in Table 67.

Table 67: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]
All pesticides	Cereals	Complete flour	1
All pesticides	Cereals	Flour	0.2
All pesticides	Cereals	Bran	2.4
All pesticides	Fruits	Dry fruits	5
All pesticides	Fungi	Dry fungi	10
All pesticides	Olive	Olive oil	5
All pesticides	Wine grapes	Wine	1
All pesticides	Fruits	Fruit juice	1
All pesticides	Goji berries	Dried goji berries	5

(a) Processing factor for the enforcement residue definition.

12 Germany

12.1 Objective and design of the national control programme

Germany's multi-annual national programme for control of pesticide residues in and on foodstuffs serves the planning of official controls to make sure that residues in food of animal or plant origin do not lead to unacceptable risks to health. Investigations under this programme aim to evaluate consumers' exposure to pesticide residues and control compliance with legal regulations.

The control programme is jointly developed by the Federal Government and the Federal States (Länder). Each programme covers a period of three years, is updated each year and submitted to the Commission and EFSA three months before the end of the current calendar year at the latest, in accordance with Article 30(1)2 of Regulation (EC) No 396/2005, replaced by Article 1 of Implementing Regulation (EU) 2021/1355 on 15 December 2022.

To achieve both the aim of evaluating consumer exposure and of checking compliance with current legislation, some of the samples are analysed following the provisions set out in a multi-annual national monitoring plan. This plan has been specifically conceived to measure pesticide residues and to determine in the end consumers' exposure on a national scale. Sampling is done at random and is based on the conditions of the German market, as regards the origin of samples and their distribution over conventional and organic farming.

A much larger number of samples are taken and analysed on a risk basis and at all levels of trade (import, wholesale, retail sale, production), on the basis of uniform criteria, which allows the sampling plans separately developed by the Federal States to be integrated into one national sampling plan.

The following criteria have been set up for the selection of products to be sampled, in order to allow a uniform approach to developing the multi-annual national control plan, and integration of the Federal State plans into a national sampling plan in a transparent manner:

(a) 'Hard' criteria:

- product risk as defined in a health risk assessment of the respective product (risk to population, risk to sensitive consumer groups, food with potential risks), while considering the product's dietary importance;
- amount of production/import/distribution of the food product in question;
- frequency of non-compliance with residue levels, frequency of complaints;
- frequency of findings (distribution of frequency), frequency of multiple residues;
- findings under the monitoring programme; findings reported in the annual report pursuant to Article 32 of Regulation (EC) No. 396/2005.

(b) 'Soft' criteria:

- seasonal particularities (for instance, early strawberries: sampling should be concentrated at the beginning of the season to allow forecasts of trends in residue findings);
- origin and regional particularities (for instance, regional prevalence of certain crops);
- consideration of findings in controls performed by the Crop Protection Services of the Federal States (for instance, findings about improper or unauthorised use of plant protection products, or suspicion of residues of unauthorised use of plant protection products or use of banned products);
- information on the public/public perception of pesticide residues;
- type of farming (such as organic/conventional, small-scale/large-scale cropping)
- efficiency of producers'/suppliers' self-control systems.

Both control programmes, sampling and actual analyses are performed by the competent authorities of the Federal States. Analytic results are delivered to the Federal Office of Consumer Protection and Food Safety (BVL). The BVL compiles the data submitted by the Federal States in accordance with EFSA's business rules, makes an assessment and sends the data to the European Commission, to EFSA, and to the other Member States, in accordance with Article

31(1) of Regulation (EC) No. 396/2005. In addition, all results are published annually in the 'National Report on Residues of Plant Protection Products in Food'. This report serves as a basis for discussing risk-minimising measures in the field of food safety. A condensed version in English is published[34].

12.2 Key findings, interpretation of the results and comparability with the previous year's results

In 2022, Germany submitted the results of a total of 20,955 samples tested for pesticide residues to EFSA, of which 20,953 samples were relevant for EFSA's annual report by EFSA (Table 68), including 20,407 surveillance and 546 follow-up enforcement samples. All these sample data fulfilled the requirements of EFSA's business rules. Of these samples, 13,580 samples came from within the EU, 4,280 samples were produced outside of the EU and 3,093 of the samples had an unknown origin.

Table 68: Summary of samples by origin and sampling strategy

Sample origin	Sampling strategy	Total samples	<LOQ	<LOQ %	Quantified	Quantified %	Quantified <MRL	Quantified <MRL %	>MRL	>MRL %	Non-compliant	Non-compliant %
EU	Objective	3,643	1,244	34.1	2,399	65.9	2,322	63.7	77	2.1	27	0.7
EU	Selective	9,820	4,425	45.1	5,395	54.9	5,257	53.5	138	1.4	65	0.7
EU	Suspect	117	60	51.3	57	48.7	33	28.2	24	20.5	20	17.1
Non-EU country	Objective	1,106	178	16.1	928	83.9	839	75.9	89	8.0	46	4.2
Non-EU country	Selective	2,812	984	35.0	1,828	65.0	1,529	54.4	299	10.6	193	6.9
Non-EU country	Suspect	362	206	56.9	156	43.1	113	31.2	43	11.9	26	7.2
Unknown	Objective	1,283	371	28.9	912	71.1	787	61.3	125	9.7	48	3.7
Unknown	Selective	1,743	828	47.5	915	52.5	844	48.4	71	4.1	27	1.5
Unknown	Suspect	67	31	46.3	36	53.7	21	31.3	15	22.4	13	19.4
Total		20,953	8,327	39.7	12,626	60.3	11,745	56.1	881	4.2	465	2.2

The samples included a total of 8,026,370 analyses, from which 6,132,337 were relevant for data analysis by EFSA.

The samples were analysed for a total of 755 different pesticides (excluding components) of which 295 were detected in at least one sample. Residues of 177 individual pesticides exceeded MRLs.

In 8,030 (39.3%) surveillance samples, no residues of pesticides were quantified (2021: 7,719 (39.0%); 2020: 7,078 (38.4%)). In 11,578 (56.7%) surveillance samples, residues of pesticides were quantified at or below MRLs (2021: 11,331 (57.3%); 2020: 10,666 (57.9%)). There were

[34] https://www.bvl.bund.de/EN/Tasks/01_Food/01_tasks/02_OfficialFoodControl/07_ResiduesPlantProtection/ResiduesPlantProtection_node.html

799 (3.9%) surveillance samples containing residues of pesticides exceeding MRLs (2021: 740 (3.7%); 2020: 678 (3.7%)), and 406 (2.0%) samples had residues non-compliant with the MRL (2021: 422 (2.1%); 2020: 280 (1.5%)).

In 297 (54.4%) follow-up enforcement samples, no residues of pesticides were quantified (2021: 295 (51.0%); 2020: 196 (47.2%)). In 167 (30.6%), follow-up enforcement sample residues of pesticides were quantified at or below MRLs (2021: 194 (33.6%); 2020: 138 (33.3%)). There were 82 (15.0%) follow-up enforcement samples containing residues of pesticides exceeding MRLs (2021: 89 (15.4%); 2020: 81 (19.5%)), and 59 (10.8%) samples had residues non-compliant with the MRL (2021: 48 (8.3%); 2020: 65 (15.7%)).

Of 20,407 surveillance samples, 3,451 (16.9%) samples were from products produced under the rules of organic farming. In 1,237 (35.8%) samples, residues of pesticides were quantified. There were 158 (4.6%) organic samples containing residues of pesticides exceeding MRLs, consisting of 141 detections of copper and 19 detections of other substances (some samples had multiple residues). Some 67 (1.9%) samples had residues non-compliant with the MRL. The sampling strategies for these products varied between the Federal States. Some have special programmes, while others take samples rather by chance.

Multiple residues were found and quantified in 32.3% of all samples (2021: 35.2%; 2020: 33.8%).

12.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

In 2022, 2.2% of the samples (465 samples in total) were found to be non-compliant with the EU MRL. For 59 samples, RASFF notifications were issued (Table 69).

Table 69: Follow-up actions taken for samples non-compliant with the EU MRL (measurement uncertainty taken into consideration)

Action taken	Number of non-compliant samples	Note
Actions/measure that fall under the competence of the judicial authorities	3	
Administrative consequences	72	
Animals and products classified as unfit for human consumption	2	
Criminal penalties	3	
Destruction of animals and/or products	8	
Follow-up (suspect) sampling	70	
Follow-up action due to the residue of a pesticide detected in a domestic product, which is not authorised in the country	2	
Follow-up investigation	8	
Lot not released onto the market	9	
Lot recalled from the market	2	
Movement restriction	2	
No action	21	
Other	194	
Rapid alert notification	59	Samples can be looked up on the RASFF window using the search

		function: https://webgate.ec.europa.eu/rasff-window
Missing/not reported	10	

The possible reasons for the MRL being exceeded were submitted for only 515 of the 731 cases from the competent authorities in the Federal States (Table 70). In all other cases the information was not available.

Table 70: Possible reasons for the MRL exceedance

Reason for MRL non-compliance	Product	Substance	Frequency
Accidental	Buckwheat and other pseudo-cereals	Copper compounds (copper)	1
Contamination during handling, storage or transport of food item/crop	Milk (cattle)	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorides with alkyl chain lengths of C8, C10, C12, C14, C16 and C18)	1
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)	Coriander leaves	Aldicarb (sum of Aldicarb, its sulfoxide and its sulfone, expressed as Aldicarb)	1
	Cultivated fungi	Trimethyl-sulfonium cation, resulting from the use of glyphosate	2
	Potatoes	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	1
	Soyabeans	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	1
Cross-contamination: spray drift or other accidental contamination	Kale	Acetamiprid	1
		Prosulfocarb	1
Environmental contamination	Bananas	Nicotine	1
Good agricultural practice (GAP) not respected: use of a pesticide not approved in the EU	Apricots	Imidacloprid	1
	Aubergines/eggplant	Acephate	1
		Diflubenzuron	1
		Methamidophos	1
		Profenofos	1
	Beans (with pods)	Bifenthrin (sum of isomers)	2
		Carbofuran (sum of carbofuran (including any carbofuran generated from carbosulfan, benfuracarb or furathiocarb) and 3-OH carbofuran expressed as carbofuran)	1
		Chlorfenapyr	1
		Chlorpyrifos	2
		Dimethoate	1
		Fenpropathrin	3
		Lufenuron (any ratio of constituent isomers)	1
		Profenofos	1
		Propargite	3

	Thiamethoxam	1
	Thiophanate-methyl	1
	Triazophos	1
Cherimoyas	Chlorpyrifos	2
	Clothianidin	1
	Cyfluthrin (cyfluthrin including other mixtures of constituent isomers (sum of isomers))	2
	Dimethoate	2
	Fipronil (sum fipronil + sulfone metabolite (MB46136) expressed as fipronil)	1
	Imidacloprid	3
	Omethoate	1
Chili peppers	Acephate	5
	Chlorfenapyr	1
	Chlorpyrifos	2
	Famoxadone	1
	Hexaconazole	2
	Iprodione	1
	Methamidophos	4
	Procymidone	1
	Thiophanate-methyl	1
Courgettes	Acephate	1
Dates	Chlorpyrifos	1
	Fipronil (sum fipronil + sulfone metabolite (MB46136) expressed as fipronil)	1
	Thiophanate-methyl	1
Guavas	Acephate	1
	Chlorpyrifos	4
	Dimethoate	1
	Imidacloprid	4
	Omethoate	1
	Profenofos	2
	Thiamethoxam	2
Mangoes	Clothianidin	1
	Cyfluthrin (cyfluthrin including other mixtures of constituent isomers (sum of isomers))	1
	Fenobucarb	1
	Omethoate	2
Okra (lady's fingers)	Profenofos	1
Papayas	Acephate	1
	Dimethoate	2
	Fenpropathrin	1
	Imidacloprid	3
	Omethoate	1
Passionfruit/maracujas	Chlorothalonil	2
	Propiconazole (sum of isomers)	1
Pears	Diflubenzuron	1

	Roman rocket/rucola	Thiamethoxam	1
	Spinach	Chlorpyrifos	1
	Teas	Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	2
	Tomatoes	Monocrotophos	1
	Yardlong beans	Acephate	1
		Chlorothalonil	2
		Dimethoate	1
		Fenobucarb	1
		Lufenuron (any ratio of constituent isomers)	1
		Omethoate	1
		Profenofos	1
GAP not respected: use of an approved pesticide not authorised on the specific crop	Cherries (sweet)	Dimethoate	1
	Coriander leaves	1,4-Dimethylnaphthalene	1
		Pymetrozine	1
	Head cabbage	Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)	1
	Sweet peppers/bell peppers	Fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate	1
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Apricots	Dodine	1
	Basil and edible flowers	Dikegulac	1
		Fenazaquin	1
	Beans (dry)	Clothianidin	1
		Thiamethoxam	1
	Buckwheat and other pseudo-cereals	Paraquat	1
	Coriander leaves	Profenofos	2
	Cultivated fungi	Clothianidin	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
		Procymidone	1
	Cumin seeds	Azoxystrobin	1
		Linuron	1
	Figs	Tebuconazole	1
	Granate apples/pomegranates	Acetamiprid	1
		Fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate	1
		Imazalil (any ratio of constituent isomers)	2
	Grape leaves and similar species	Acetamiprid	1
		Boscalid	2
		Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	2
		Chlorpyrifos	1

		Cypermethrin (cypermethrin including other mixtures of constituent isomers (sum of isomers))	1
		Difenoconazole	1
		Dithiocarbamates (dithiocarbamates expressed as CS2, including maneb, mancozeb, metiram, propineb, thiram and ziram)	1
		Imidacloprid	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	2
		Lufenuron (any ratio of constituent isomers)	1
		Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M) (sum of isomers)	2
		Propiconazole (sum of isomers)	1
		Pyraclostrobin	1
		Pyridalyl	1
		Thiophanate-methyl	1
	Grapefruit	Chlorpyrifos-methyl	1
	Head cabbage	Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)	1
		Imidacloprid	1
		Propiconazole (sum of isomers)	1
	Hops, dried	Nicotine	1
	Lentils (dry)	Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
	Peaches	Glufosinate (sum of glufosinate isomers, its salts and its metabolites 3-hydroxy(methyl)phosphinoyl]propionic acid (MPP) and N-acetyl-glufosinate (NAG), expressed as glufosinate)	1
	Peas (with pods)	Chlorothalonil	1
	Quinces	Dimethoate	1
	Soyabeans	Chlorfenapyr	1
	Sunflower seeds	Chlorpyrifos	1
	Sweet peppers/bell peppers	Buprofezin	1
		Clothianidin	1
		Etoxazole	1
		Flonicamid (sum of flonicamid, TFNA and TFNG expressed as flonicamid)	1
		Glyphosate	1
Illegal treatment	Chili peppers	Chlorpyrifos-methyl	1
	Thyme	Propargite	1
Natural occurrence	Buckwheat and other pseudo-cereals	Copper compounds (copper)	51
Other	Oats	Dodine	1

Residues resulting from sources other than plant protection product (e.g. biocides, veterinary drugs, bio fuel)	Baby food other than processed cereal-based foods	Chlorates	2
	Fat (swine)	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorides with alkyl chain lengths of C8, C10, C12, C14, C16 and C18)	1
		Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	1
	Liver (sheep)	Copper compounds (copper)	1
	Milk (cattle)	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorides with alkyl chain lengths of C8, C10, C12, C14, C16 and C18)	7
		Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	2
	Strawberries	Chlorates	1
	Swine tissue	Chlorates	1
	Tissue (other farmed terrestrial animals)	Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	1
Unknown	Avocados	Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
	Basil and edible flowers	Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide)	1
	Beans (dry)	Chlorpyrifos	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
	Beans (with pods)	Etoxazole	1
	Buckwheat and other pseudo-cereals	Copper compounds (copper)	15
		Paraquat	1
	Carob/St John's bread	Nicotine	1
	Cassava roots/ manioc	Thiabendazole	1
		Triadimefon	1
		Triadimenol (any ratio of constituent isomers)	1
	Cherries (sweet)	Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
	Chili peppers	Acetamiprid	1
		Chlorates	1
		Chlorfenapyr	4
		Chlorothalonil	2
		Chlorpyrifos	1

	Dinotefuran	1
	Prochloraz (sum of prochloraz, BTS 44595 (M201-04) and BTS 44596 (M201-03), expressed as prochloraz)	1
	Tolfenpyrad	1
Coriander leaves	1,4-Dimethylnaphthalene	1
	Chlorpyrifos	1
Courgettes	Iprodione	1
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M) (sum of isomers)	1
Cultivated fungi	Acetamiprid	1
Cumin seed	Acetamiprid	1
	Famoxadone	1
	Linuron	1
Eggs (quail)	Chlorates	1
Ginger roots	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	2
	Clothianidin	2
	Mepiquat (sum of mepiquat and its salts, expressed as mepiquat chloride)	1
Granate apples/ pomegranates	Azoxystrobin	1
	Flonicamid (sum of flonicamid, TFNA and TFNG expressed as flonicamid)	1
	Fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate	1
	Imazalil (any ratio of constituent isomers)	1
	Pyrimethanil	1
	Thiacloprid	1
Grape leaves and similar species	Acetamiprid	5
	Azoxystrobin	4
	Boscalid	4
	Captan (sum of captan and THPI, expressed as captan)	1
	Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	3
	Chlorpyrifos	2
	Cyfluthrin (cyfluthrin including other mixtures of constituent isomers (sum of isomers))	1
	Cypermethrin (cypermethrin including other mixtures of constituent isomers (sum of isomers))	2
	Difenoconazole	3
	Dimethomorph (sum of isomers)	5
	Dithiocarbamates (dithiocarbamates expressed as CS2, including maneb, mancozeb, metiram, propineb, thiram and ziram)	4

	Emamectin benzoate B1a, expressed as emamectin	1
	Ethirimol	1
	Fenpropathrin	1
	Hexythiazox (any ratio of constituent isomers)	2
	Imidacloprid	4
	Indoxacarb (sum of indoxacarb and its R enantiomer)	2
	Iprodione	1
	Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	7
	Lufenuron (any ratio of constituent isomers)	3
	Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M) (sum of isomers)	2
	Propiconazole (sum of isomers)	3
	Pyraclostrobin	2
	Pyrimethanil	1
	Quizalofop (sum of quizalofop, its salts, its esters (including propaquizafop) and its conjugates, expressed as quizalofop (any ratio of constituent isomers))	1
	Spirotetramat (spirotetramat and its metabolite BYI08330-enol expressed as spirotetramat)	2
	Tebuconazole	2
	Thiamethoxam	2
	Thiophanate-methyl	2
	Triadimenol (any ratio of constituent isomers)	1
	Trifloxystrobin	2
	Triflumuron	1
Grapefruit	Chlorpyrifos-methyl	1
Head cabbage	Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)	1
Herbal infusions (leaves)	Fenhexamid	1
	Fludioxonil	1
	Imidacloprid	1
	Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
Honey and other apicultural products	Chlorpyrifos	1
Kaki/Japanese persimmons	Acetamiprid	1
Kale	Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)	1

	Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
	Tebuconazole	3
Lamb's lettuce/corn salads	Iprodione	1
Lentils (dry)	Procymidone	1
Lettuces	Terbuthylazine	1
Liver (sheep)	Copper compounds (copper)	16
Mangoes	Chlorpyrifos	1
	Omethoate	1
Maté	Anthraquinone	7
Milk (cattle)	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorides with alkyl chain lengths of C8, C10, C12, C14, C16 and C18)	1
	Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	1
Okra (lady's fingers)	Chlorfenapyr	1
	Flonicamid (sum of flonicamid, TFNA and TFNG expressed as flonicamid)	1
	Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)	1
	Propargite	1
Parsley	Chlorpyrifos	1
	Pyraclostrobin	2
	Trimethyl-sulfonium cation, resulting from the use of glyphosate	1
Parsley roots/ Hamburg roots parsley	Aclonifen	1
Passionfruit/maracujas	Dithiocarbamates (dithiocarbamates expressed as CS2, including maneb, mancozeb, metiram, propineb, thiram and ziram)	2
Peaches	Imidacloprid	1
Pineapples	Fenobucarb	1
	Haloxyfop (sum of haloxyfop, its esters, salts and conjugates expressed as haloxyfop (sum of the R- and S-isomers at any ratio))	1
Poppy seeds	Acetamiprid	1
Potatoes	Chlorpropham	2
	Flonicamid (sum of flonicamid, TFNA and TFNG expressed as flonicamid)	1
Raspberries (red and yellow)	Buprofezin	1
Rice	Acetamiprid	1
	Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	1

		Chlorpyrifos	1
		Imidacloprid	2
		Thiamethoxam	7
		Tricyclazole	9
	Roman rocket/ rucola	Abamectin (sum of avermectin B1a, avermectin B1b and delta-8.9 isomer of avermectin B1a, expressed as avermectin B1a)	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
	Rosemary	Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide)	1
	Spring onions/green onions and Welsh onions	Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)	1
	Strawberries	Chlorates	1
		Propargite	1
	Sweet peppers/bell peppers	Buprofezin	1
		Iprodione	1
	Swine Tissues	Chlorates	1
	Tarragon	Propiconazole (sum of isomers)	1
	Teas	Acetamiprid	1
		Anthraquinone	2
		Matrine	2
		Tebuconazole	1
		Trimethyl-sulfonium cation, resulting from the use of glyphosate	3
	Thyme	Linuron	1
	Tomatoes	Chlorates	2
		Chlorothalonil	1
	Turmeric/curcuma	Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide)	1
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set	Beans (with pods)	Carbofuran (sum of carbofuran (including any carbofuran generated from carbosulfan, benfuracarb or furathiocarb) and 3-OH carbofuran expressed as carbofuran)	1
	Carambolas	Imidacloprid	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
	Cardamom	Dimethomorph (sum of isomers)	1
		Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M) (sum of isomers)	1
		Quinalphos	1
		Tebuconazole	1
	Cherries (sweet)	Dimethoate	1
	Chili peppers	Buprofezin	1

	Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
Coriander leaves	Carbofuran (sum of carbofuran (including any carbofuran generated from carbosulfan, benfuracarb or furathiocarb) and 3-OH carbofuran expressed as carbofuran)	2
	Chlorpyrifos	1
	Fenobucarb	1
Ginger roots	Clothianidin	1
	Thiamethoxam	1
Litchis/lychees	Azoxystrobin	1
	Dimethoate	1
	Dimethomorph (sum of isomers)	1
	Hexaconazole	1
	Propiconazole (sum of isomers)	1
	Tricyclazole	1
Papayas	Procymidone	1
Potatoes	Dikegulac	1
Quinces	Dimethoate	1
Radishes	Chlorpyrifos	1
Rice	Acetamiprid	2
	Thiamethoxam	1
	Tricyclazole	2

12.4 Quality assurance

Twenty accredited laboratories (Table 71) took part in the national control programme for 2022.

Table 71: Laboratories

Country code	Laboratory name	Laboratory code	Accreditation date	Accreditation body	Participation in proficiency tests or inter-laboratory tests
DE	Chemisches und Veterinärunter-suchungsamt Freiburg, 79114 Freiburg Bissierstr. 5	082102	07.10.2021	DAkkS	FAPAS 05160 (oily fish 2022) BIPEA 19g Code: 49-3619-0056 (pesticides in honey)
DE	Chemisches und Veterinärunter-suchungsamt Stuttgart 70736 Fellbach Schaflandstr. 3/2	082107	16.06.2022	DAkkS	EUPT 2022: AO17, FV 24, FV-SM14
DE	Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit 91058 Erlangen Eggenreuther Weg 43	092821	17.10.2022	DAkkS	EUPT 2022: AO17, AO-BF01, CF16, FV24, FV-SC06, FV-SM14, SRM17; BVL-NRL-MN0622 (Cu), BVL-NRL-MN0722 (Cu)

Country code	Laboratory name	Laboratory code	Accreditation date	Accreditation body	Participation in proficiency tests or inter-laboratory tests
DE	Landeslabor Berlin-Brandenburg Dienstsitz Berlin 12489 Berlin Rudower Chaussee 39	112001	16.03.2023	DAkkS	EUPT 2022: AO17, AO-BF01, CF16, FV24, SRM17 FAPAS 19332 (pesticides in tea (herbal)) FAPAS 05157 (pesticides and PCBs in infant formula) LLBB (pesticides in cumin)
DE	Landeslabor Berlin-Brandenburg Dienstsitz Frankfurt (Oder) 15236 Frankfurt (Oder) Gerhard-Naumann-Straße 2/3	122104	16.03.2023	DAkkS	EUPT 2022: AO17, AO-BF01, CF16, FV24, SRM17 FAPAS 19332 (pesticides in tea (herbal)) FAPAS 05157 (pesticides and PCBs in infant formula) LLBB (pesticides in cumin)
DE	Landesunter-suchungsamt für Chemie, Hygiene und Veterinärmedizin 28217 Bremen Lloydstraße 4	042101	26.07.2022	DAkks	EUPT 2022: AO17, FV24 FAPAS 19355 (pesticides in green tea)
DE	Institut für Hygiene und Umwelt 20539 Hamburg Marckmannstr. 129a	022020	16.12.2022	DAkkS	EUPT 2022: FV24, SRM17 FAPAS 19349 (ethylene oxide in sesame) FAPAS 19355 (pesticides in green tea) FAPAS 05160 (pesticides in oily fish) PROOF-ACS (P2201-RT ethylene oxide in locust bean gum) Progetto SF2701 (pyrethroides in fish muscle)
DE	Landesbetrieb Hessisches Landeslabor FG I.3 Datenmeldestelle 65203 Wiesbaden Glarusstraße 6	062109	30.03.2022	DAkkS	EUPT 2022: SRM17, CF10
DE	Landesamt für Landwirtschaft, Lebensmittelsicherheit und Fischerei	132101	10.08.2020	DAkkS	EUPT 2022: AO17, AO-BF01, CF16, FV24, SRM17

Country code	Laboratory name	Laboratory code	Accreditation date	Accreditation body	Participation in proficiency tests or inter-laboratory tests
	Mecklenburg-Vorpommern 18059 Rostock Thierfelderstr. 18				LGC PT AQ 40 (fungicides in groundwater)
DE	Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit - Lebensmittelinstitut Braunschweig- 38124 Braunschweig Dresdenstr. 2 und 6	032001	24.08.2022	DAkkS	BVL-NRL-EP MN0622(Cu); BVL-NRL-EP MN1022 (Cu)
DE	Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit Lebensmittel- und Veterinärinstitut Oldenburg 26133 Oldenburg Martin-Niemöller-Straße 2	032010	03.06.2022	DAkkS	EUPT 2022: AO17, AO-BF01, CF16, FV24, FV-SM14, SRM17
DE	Chemisches und Veterinärunter-suchungsamt Westfalen CVUA-Westfalen 44791 Bochum Westhoffstr. 17	052121	27.01.2022	DAkkS	BVL-NRL-EP MN0622(Cu) LVU-Lippold: Analytik von Schwermetallen in Brühwurst (2021) (Cu)
DE	Chemisches und Veterinärunter-suchungsamt Rhein-Ruhr-Wupper CVUA-RRW 47798 Krefeld Deutscher Ring 100	052306	11.01.2023	DAkkS	EUPT 2022: AO17, AO-BF01, CF16, FV24, FV-SM14, SRM17 FAPAS 05157 (pesticides in infant formula) BIPEA 19g (pesticides in honey) BIPEA 19e (pesticides in fruit vegetables; spinach: bromid) BIPEA 19h (pesticides in fruit and vegetables; tomato: dithiocarbamates)
DE	Chemisches und Veterinärunter-suchungsamt Münsterland-Emscher-Lippe CVUA-MEL	052502	18.05.2022	DAkkS	EUPT 2022: AO17, AO-BF01, FV24, SC06, SRM17 iis22T11 (pesticides in textile)

Country code	Laboratory name	Laboratory code	Accreditation date	Accreditation body	Participation in proficiency tests or inter-laboratory tests
	48147 Münster Joseph-König-Straße 40				LLBB (pesticides in cumin)
DE	Landesuntersuchungsamt Institut für Lebensmittelchemie 67346 Speyer Nikolaus-von-Weis-Str. 1	072107	02.12.2020	DAkkS	EUPT 2022: AO17, AO-BF01, CF16, FV24, SC06, SRM17 FAPAS 19326 (honey pesticide residues), TestQual 155 (DTC cabbage), TestQual 171 (DTC grapes) FAPAS 05162 (pesticides in pork fat)
DE	Landesamt für Verbraucherschutz GB 2 – Veterinärmedizinische, mikrobiologische, molekularbiologische und lebensmittelchemische Untersuchungen 66115 Saarbrücken Konrad-Zuse-Straße 11	101101	10.03.2022	DAkkS	EUPT 2022: CF16, FV24 FAPAS 09152 (chlormequat and mepiquat in wheat flour) FAPAS 19334 (pesticides in lemon) Progetto Trieste E2702 (fipronil in egg)
DE	Landesuntersuchungsanstalt für das Gesundheits- und Veterinärwesen Sachsen Standort Dresden 01099 Dresden Jägerstraße 8/10	142262	06.10.2022	DAkkS	EUPT 2022: AO17, AO-BF01, CF16, FV24, FV-SM14, SRM17 LLBB (pesticides in cumin)
DE	Landesamt für Verbraucherschutz Sachsen-Anhalt Fachbereich 3 06009 Halle (Saale) Freiimfelder Str. 68	152200	03.06.2022	DAkkS	EUPT 2022: AO17, FV24, CF16, SRM 17 FAPAS 19355 (pesticides in green tea)
DE	Landeslabor Schleswig-Holstein (Lebensmittel-, Veterinär- und Umweltunter-suchungsamt) Postfach 2743 24537 Neumünster Max-Eyth-Str. 5	012001	18.01.2023	DAkkS	EUPT 2022: AO17, AO-BF01, CF16, FV24, SRM17
DE	Thüringer Landesamt für Lebensmittelsicherheit und Verbraucherschutz	162104	01.12.2020	DAkkS	EUPT 2022: AO17, FV24

Country code	Laboratory name	Laboratory code	Accreditation date	Accreditation body	Participation in proficiency tests or inter-laboratory tests
	Standort Bad Langensalza 99947 Bad Langensalza Tennstedter Str. 8/9				

13 Greece

13.1 Objective and design of the national control programme

The Hellenic Ministry of Rural Development and Food is the national authority responsible for coordinating the implementation of Regulation (EC) 396/2005 according to national law 4036/2012. It is also responsible for the planning and coordination of the official controls for food of plant origin. The competent authorities responsible of the sampling of plant origin products are the Regional Centres of Plant Protection and Quality Control (RCPP&QC) of the Ministry of Rural Development and Food and the Directorates-General of Regional Rural Economy and Veterinary Medicine.

The authority responsible for the planning and coordination of the monitoring of processed foods is EFET (the Hellenic Food Authority) while the controls of pesticide residues in wine are organised by the General Chemical State.

The official laboratories that analysed the samples taken in 2022 were the Laboratory of Pesticide Residues of Benaki Phytopathological Institute, the Laboratory of Pesticide Residues of the Centre of Plant Protection and Quality Control of Thessaloniki (RCPP&QC) and the Laboratory of Pesticide Residues of the General Chemical State.

The control programmes for pesticide residues and the report of results of the national residue monitoring are published on the official website of the Hellenic Ministry of Rural Development and Food on an annual basis[35].

The national control programme of 2022 for pesticide residues (monitoring) as part of the Multi Annual Control Programme (MACP) has been established in accordance with the terms and conditions of Articles 26–35 of Regulation (EC) No 396/2005. It is also noted that from 15 December 2022, Articles 26, 27, 28(1, 2) and 30 of Regulation (EC) 396/2005 no longer apply. The MACP is established according to Official Control Regualtion and the new Regulations applicable since 15 December 2022 (Delegated Regulation (EC) 2021/2244 and Implementing Regulation (EC) 2021/1355).

The national programme was based on several risk analysis criteria and parameters: the number of samples (domestic and imported) for each product, agricultural produce, cultivation area per culture, expected imports, results from previous years' monitoring programmes, the dietary intake contribution of each product, sampling location, the Community control programme, pesticides used in practice by the farmers, relevant RASFF notifications for pesticide residues, the personnel and analytical capacity of the official laboratories, recommendations from EFSA as well as the working document from the European Commission (SANCO 12745/2013) (as applicable). It aims to ensure compliance with MRLs and assess consumer exposure in order to achieve a high level of protection and application of GAP in all stages of production and harvest of agricultural products.

The responsibilities of the laboratories involved, regarding the number of samples of each commodity that should be analysed, and the areas of sampling were defined. The sampling was carried out by the regional and local authorities responsible for sampling.

[35] https://www.minagric.gr/en/

The sampling strategy was based on the 'from farm to fork' rationale, taking into account the specialties of each region of the country. The sampling methods, necessary for carrying out such controls of pesticide residues, were those provided for in JMD 91972/2003-Directive 2002/63/EC. Samples were taken by domestic production and imports, proportionally, covering all stages of the supply chain (i.e. borders, storage, packing, trade of products of plant origin, retail and wholesale).

The official laboratories analysing samples for pesticide residues are accredited and participate in the Community proficiency tests. The methods of analysis used by the laboratories comply with the criteria set out in relevant provisions of EU law and other adopted technical guidelines.

13.2 Key findings, interpretation of the results and comparability with the previous year's results

In 2022, 3,655 samples were analysed in total by our authorities. Of those, 2,697 samples were domestic (73.8%), 125 samples originated from the EU (3.4%) and 811 originated from non-EU countries (22.2%), while the origin of 22 samples was unknown (0.6%). The total number of samples analysed is higher than the number of samples considered by EFSA for the preparation of the annual report for pesticide residues. Composite/mixed samples were not taken into account in the report as these commodities were not included in Annex I of Regulation (EC) 396/2005.

Of the samples analysed, 53.43% were free of quantifiable residues, 41.91% of samples contained quantifiable residues at or below the EU MRL and 4.65% exceeded the EU MRL. Considering measurement uncertainty (50%), this percentage is reduced to 2.4%. Compared with the previous year's results, the non-compliance rate was reduced from 3% to 2.4%.

The total number of pesticides analysed was approximately 550.

The unapproved active substance chlorpyrifos remained the most frequently detected compound in non-compliant samples.

Among the domestic samples analysed, grape leaves were the most frequently non-compliant commodity.

The main contributor to the non-compliance rate of selective samples from non-EU countries (nine samples out of 20 non-compliant samples) was the commodity black eyed beans (from Madagascar). Since 2023 this commodity/origin combination has been subject to increased temporary official controls (Regulation (EC) 2019/1793). The main contributor to the non-compliance rate of suspect samples from non-EU countries was the commodity cumin seeds/powder (from India).

Regarding organic samples, 150 out of 163 samples were below the LOQ (92%), 12 out of 163 samples contained quantifiable residues at or below the MRL (7.4%) and one out of 165 samples was non-compliant (0.6%).

A targeted sampling of sesame seeds continued in 2022. The total number of samples analysed was 118. Of those, 83.9% were below LOQ, 6.78% of samples contained quantifiable residues at or below the MRL, 9.32% of samples exceeded the MRL and 1.6% were non-compliant. No ethylene oxide was detected.

Table 72: Summary results 2018–2022

Category	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
Total number of samples	3,571	3,454	3,149	3,658	**3,655**
Number of samples without detectable residues	1,701 (48%)	1,724 (50%)	1,516 (48%)	1,885 (52%)	**1,953 (53.43%)**
Number of samples with detectable residues at or below the EU MRL	1,606 (45%)	1,531 (44%)	1,429 (45%)	1,575 (43%)	**1,532 (41.92%)**
Number of samples with residues exceeding the EU MRL	264 (7%)	199 (6%)	204 (7%)	198 (5%)	**1,70 (4.65%)**
Non-compliant samples	158 (4%)	119 (3%)	123 (4%)	115 (3%)	**88 (2.4%)**

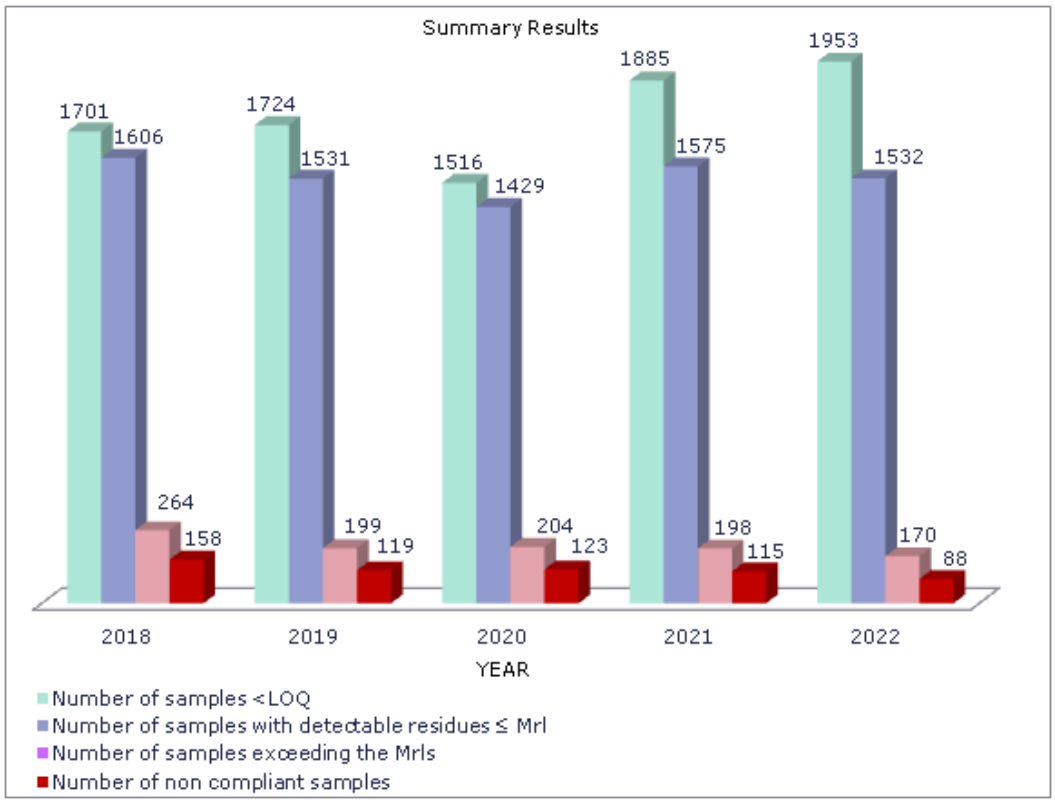


Figure 4: Summary results 2018-2022

Table 73: Summary results 2022 per origin

Origin of samples	Total no of samples	No of samples (%) <LOQ	No of samples (%) >MRL

			≥LOQ and ≤MRL	Compliant and non-compliant	Non-compliant
EU	2,822	1,431 (50.7%)	1,309 (46.4%)	82 (2.9%)	36 (1.28%)
Non-EU	811	507 (62.5%)	217 (26.8%)	87 (10.7%)	52 (6.41%)
Unknown	22	15 (68.2%)	6 27.3%)	1 (4.5%)	0 0%
Total	**3,655**	**1,953 (53.4%)**	**1,532 (41.9%)**	**170 (4.7%)**	**88 (2.4%)**

Table 74: Summary results 2022 per type of product

Product	Total no of samples	No of samples (%)			
		<LOQ	≥LOQ and ≤MRL	>MRL	
				Compliant and non-compliant	Non-compliant
Animal products	6	6	0	0	0
Baby food	1	1	0	0	0
Cereals	89	71	16	2	2
Fruit, vegetables and nuts	2,947	1,408	1,434	105	54
Other plant origin products	612	467	82	63	32

Table 75: Summary results 2022 per origin and sampling strategy

Sampling strategy	Origin of samples	Total no of samples	<LOQ	≥LOQ and ≤MRL	>MRL	
					Complaint and non-compliant	Non-compliant
Random sampling	EU	2,632	1,333 (50.65%)	1,226 (46.58%)	73 (2.77%)	31 (1.2%)
	Non-EU	206	122 (59.2%)	71 (34.5%)	13 (6.3%)	7 (3.4%)
	Unknown	21	15 (71.4%)	6 (28.6%)	0 (0%)	0 (0%)
Total no of random samples		2,859	1,470 (51.4%)	1,303 (45.6%)	86 (3.0%)	38 (1.3%)
Selective sampling	EU	139	70 (50.4%)	63 (45.3%)	6 (4.3%)	2 (1.4%)
	Non-EU	209	84 (40.2%)	89 (42.6%)	36 (17.2%)	20 (9.6%)
	Unknown	1	0	0	1	0
Total no of selective samples		349	154 (44.1%)	152 (43.6%)	43 (12.3%)	22 (6,3%)
Suspect sampling	EU	51	28 (54.9%)	20 (39.2%)	3 (5.9%)	3 (5.9%)
	Non-EU	396	301 (76%)	57 (14.4%)	38 (9.6%)	25 (6.3%)
	Unknown	0	0	0	0	0
Total no of suspect samples		447	329	77	41	28
Total number of samples		3,655	1,953	1,532	170	88

Table 76: Summary results 2022 for sesame seeds/tahini

Commodity	Origin of samples	Total no of samples	<LOQ	≥LOQ and ≤MRL	>MRL	
					Compliant and non-compliant	Non-compliant
Sesame seeds/tahini	EU	0	0	0	0	0
	non-EU	118	99 (83.9%)	8 (6.8%)	11 (9.3%)	2 (1.7%)
	Unknown	0	0	0	0	0
Total no of samples		**118**	**99 (83.9%)**	**8 (6.8%)**	**11 (9.3%)**	**2 (1.7%)**

13.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

13.3.1 Possible reasons for non-compliance

Table 77: Reasons for MRL exceedance

Reasons for MRL non-compliance	Pesticide[a]/food product	Frequency[b]	Comments*
GAP not respected: use of a pesticide not approved in the EU[c]	Chamomile flowers/chlorpyrifos	1	
	Carrots/phoxim	1	
	Carrots/linuron	1	
	Sweet cherries /imidacloprid	1	
	Cucumber/dimethoate	1	
	Cucumber/chlorpyrifos	2	
	Grape leaves/famoxadone	1	
	Nectarines/imidacloprid	1	
	Pistachios/imidacloprid	1	
	Roman rocket/alachlor	1	
	Spinach/dithiocarbamates	1	**
	Strawberries/propargite	1	
	Sweet peppers/famoxadone	1	
	Sweet pepper/chlorpyrifos	1	
	Tomato/dinotefuran	1	Origin PL
	Cherry tomato/chlorfenapyr	4	Origin IT
	Chinese cabbage/chlorpyrifos	1	Origin PL
GAP not respected: use of an approved pesticide not authorised on the specific crop[c]	Cucumber/formetanate	1	
	Grape leaves/trifloxystrobin	3	
	Grape leaves/metalaxyl	1	
	Grape leaves/penconazole	1	
	Grape leaves/acetamiprid	1	
	Grape leaves/cyflufenamid	1	
	Grape leaves/cymoxanil	1	
	Grape leaves/dimethomorph	2	
	Grape leaves/fluopyram	1	
	Grape leaves/pyrimethanil	1	
	Grape leaves/spiroxamine	1	
	Grape leaves/tebuconazole	1	
	Grape leaves/tebufenpyrad	1	
	Grape leaves/zoxamide	1	
	Grape leaves/fluvalinate	1	
	Grape leaves/lambda-cyhalothrin	1	
	Grape leaves/fluxapyroxad	1	
	Grape leaves/metrafenone	1	
	Leeks/aclonifen	1	
	Lentils (dry)/tetraconazole	1	
	Olive oil/fluopyram	1	
	Radish leaves/cyprodinil	1	
	Radish leaves/fludioxonil	1	
GAP not respected: use of an approved			

pesticide, but application rate, number of treatments, application method or PHI not respected			
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set/unknown reason[(d)]	Basil/diclosulam	2	Origin IL
	Basil/imidacloprid	1	Origin IL
	Black eyed peas/chlorpyrifos	8	Origin MG
	Black eyed peas/carbaryl	2	Origin MG
	Black eyed peas/fenitrothion	2	Origin MG
	Blackberries/cyantraniliprole	1	Origin RS
	Courgette/iprodione	1	Origin TR
	Courgette/metalaxyl	2	Origin TR
	Cocoa beans/etofenprox	1	Origin MG
	Cumin powder/acetamiprid	1	Origin BD
	Cumin powder/Carbendazim & benomyl	1	Origin BD
	Cumin powder/chlorpyrifos	1	Origin BD
	Cumin powder/thiamethoxam	1	Origin BD
	Cumin powder/tricyclazole	1	Origin BD
	Cumin seed/acetamiprid	7	Origin 5 IN, 1 PK, 1 XC
	Cumin seed/carbendazim & benomyl	8	Origin 6 IN, 1 PK, 1 XC
	Cumin seed/cypermethrin	1	Origin PK
	Cumin seed /chlorpyrifos	8	Origin 7 IN, 1 XC
	Cumin seed/imidacloprid	3	Origin IN
	Cumin seed/propiconazole	4	Origin 3 IN, 1 XC
	Cumin seed/thiamethoxam	6	Origin 5 IN, 1 XC
	Cumin seed/tricyclazole	9	Origin 7 IN, 1 PK, 1 XC
	Cumin seed/flonicamid	1	Origin IN
	Cumin seed/hexaconazole	5	Origin 4 IN, 1 PK
	Curry powder/chlorpyrifos	1	Origin IN
	Fenugreek seed/ethylene oxide	1	Origin IN
	Ginger roots/clothianidin	1	Origin CN
	Grape leaves/dithiocarbamates	1	Origin TR
	Hulled sesame seeds/chlorpyrifos	2	Origin IN
	Lemon/chlorpyrifos-methyl	1	Origin TR
	Lemon/buprofezin	4	Origin TR
	Mixed supplements/ formulations/Ethylene oxide	3	Origin IN
	Pomegranates/acetamiprid	1	Origin TR
	Rice/hexaconazole	2	Origin PK
	Rice/thiamethoxam	2	Origin PK
	Sesame seeds/chlorpyrifos	2	Origin IN
	Sweet peppers /profenofos	1	Origin UG
	Strawberries/buprofezin	1	Origin EG
	Sweet pepper/spiroxamine	1	Origin TR
	Sweet pepper/buprofezin	1	Origin TR
Other (use of a pesticide on food imported from a non-	Apples/chlorpyrifos	1	Origin AL
	Spinach/deltamethrin Black eyed beans/carbaryl	1	Origin MG

EU country with
exceedance of the
acute reference dose)
*Domestic samples unless another origin is specified (ISO country 2-digit code).
**Illegal use of the approved active substance (ziram) cannot be excluded.
(a) Report name as specified in the MatrixTool.
(b) Number of cases (these numbers do not correspond to number of samples).
(c) Applicable only for food products produced in the EU.
(d) For imported food only.

13.3.2 Acute reference dose exceedance

Exceedance of the acute reference dose was identified for two out of 3,655 samples (black eyed beans/carbaryl and cucumber/formetanate).

13.4 Actions taken

In a case of an MRL exceedance, before any administrative and punitive enforcement action is taken, a default analytical uncertainty of 50% is subtracted from the measured value. If this figure still exceeds the MRL, this sample is non-compliant and enforcement action relevant to the case is taken. Risk assessment of non-compliant samples is carried out by the Directorate of Plant Production Protection (Department of Plant Protection Products). RASFF notifications were prepared according to EU Regulations taking into account the results of the risk assessment and the instructions of the RASFF WI 2.2 Guidelines. Notifications were issued for MRL exceedance not only due to the health-based guidance values (HBGVs) being exceeded but also for active substances without established HBGVs due to health concerns and/or for approved active substances with use limited to non-edible crops (for example buprofezin). RASFF notifications can be found at https://webgate.ec.europa.eu/rasff-window.

The batches of products with MRL exceedance were set under official detention and were destroyed or re-dispatched to the country of origin. Next, placement on the market of a batch of the same origin was not allowed unless a second laboratory analysis was conducted, and the results showed conformity with the respected MRLs.

Sanctions were imposed on producers of non-compliant samples in accordance with to national laws. If the producer (or farmer) of the lot of the product was unknown, the control authority called the distributors (trader, wholesaler, retailer, etc.) to provide details (evidence) on the origin of the products. If traceability was lost, sanctions were imposed on the traders.

For imported products, sanctions were imposed on importers.

For samples taken under import control regulations (Regulation (EU) 2019/1793), a border rejection decision was taken for non-compliant samples. RASFF notifications were issued for samples when a risk to consumers was identified or in the case of potential risks as described above.

13.5 Quality assurance

Table 78: Laboratory participation in the control programme

Country	Laboratory		Accreditation Body	Participation in proficiency tests or inter-laboratory tests
	Name	Date		
Hellas	Benaki Phytopathological Institute, Pesticides Residues Laboratory	09/07/2002	ESYD (Hellenic Accreditation System S.A.)	EUPT-FV24 EUPT-SRM18 EUPT-AO18 EUPT-CF17 COIPT Testqual 149 (dithiocarbamates in potatoes)
	Regional Centre of Plant Protection, Quality and Phytosanitary Control of Thessaloniki	08/09/2009	ESYD	EUPT-FV24 (tomato), EUPT-CF16 (barley kernerls) EUPT-AO-17 (Rape Seed Oil)
	General Chemical State	ACCREDITED, ISO 17025, 2009-2018	ESYD	EUPT-SRM17, EUPT-FV24, EUPT-CF16, EUPT-AO17, EUPT-FVSC06, EUPTAOBF1, COI-PT, 2022-IOC CHEM2022
		ACCREDITED, ISO 17025, 1998-2009	UKAS	

13.6 Processing factors

The processing factors applied were those characterised as indicative/reliable in the European database of processing factors for pesticides in food. If there wasn't available an indicative/reliable pf or other data, a default pf of one was considered.

14 Hungary

14.1 Objective and design of the national control programme

14.1.1 Objective

The National Food Chain Safety Office (NFCSO) is the competent authority for the enforcement of pesticide residue monitoring in Hungary.

14.1.2 Design

The national monitoring programme for pesticide residues in produce of plant and animal origin 2022 was based on risk assessment. The programme covers all major commodities of fruit and vegetables, cereals, selected processed products of plant origin, and baby-food products. The sampling frequency of different commodities is determined taking into consideration the production and Hungarian food consumption habits as well as the results of previous monitoring programmes. The coordinated programme of the European Commission was included in the national programme.

Domestic analytical samples of plant origin were taken at harvest in the places of production and the marketplaces, while the import commodities were sampled at the BCPs and at the wholesale chains.

The planned number of samples (2,007) for the 2022 control programme was set by the NFCSO of Hungary. A major contribution to the planned number of samples for food of animal origin (58) was decided in conjunction with the Food and Feed Safety Directorate, as part of the National Residue Plan required under Directive 96/23/EC.

Sampling is done in accordance with Directive 2002/63/EC, which has been implemented in Hungarian legislation. Samples are analysed in ISO 17025 accredited laboratories by means of multi-residue and single-residue methods which enabled the detection of more than 500 pesticide residues in 2022.

The four regional pesticide residue analytical laboratories – Hódmezővásárhely, Miskolc, Szolnok, Velence – belong to the NFCSO.

14.2 Key findings, interpretation of the results and comparability with the previous year's results

14.2.1 Key findings

In 2022, 2,007 samples were analysed for pesticide residues in Hungary. These samples were included in the national monitoring programme and the EU-coordinated programme.

Table 79: Total number of samples

Type of products (surveillance samples only)	Raw samples	Processed samples	Total number of samples in category
Animal products	51	7	58
Cereals	38	63	101
Baby food	-	19	19
Other products	-	63	63

Fruit and nuts, vegetables and other plant product	1,582	184	1,766
Total number of samples	**1,671**	**336**	**2,007**

14.2.2 Interpretation of the results

Table 80: Origin of samples

Strategy	Origin	Samples	Samples (%)
Surveillance	Domestic	1,124	56.0
	EU countries	527	26.3
	Non-EU countries	356	17.7

Fruit and vegetables (including potatoes, nuts and other plant products)

A total of 1,582 fruit and vegetable samples were tested. Within this category, residues above MRLs (without taking account of measurement uncertainty) were at ~1%, around the expected level.

Table 81: Summary results for samples from the surveillance programme

Type of samples	Comment
Fruit and vegetable samples with pesticide residues detected	1,582 surveillance samples were analysed 61.9% without residues (no residues detected above the LOQ) 36.8% had residues detected above the LOQ and below the MRL 1.3% had residues detected above the MRL
Origin of samples (fruit and vegetables)	56.1% domestic samples 27.2% were from EU countries 16.7% from non-EU countries
Most frequently detected pesticides	Detection rates in all fruit and vegetables Acetamiprid 8.0%, boscalid 8.0%, fluopyram 7.8%, azoxystrobin 7.3%, dithiocarbamates 6.5%
Maximum number of multiple residues	18 different pesticides were found in one raisin sample from Turkey and 16 different pesticides were found in one raisin sample from Hungary.
MRL breaches	20 samples exceeded the MRL
Labelled organic	48 samples

Cereals

Table 82: Summary results for cereal with the surveillance programme

Type of samples	Comment
Cereal samples with pesticide residues detected	101 cereal samples were analysed 93.1% had no residue detected above the LOQ 6.9% had residues detected above the LOQ and below the MRL No residue was detected above the MRL
Origin of samples	60.4% of cereal samples were domestic samples

Type of samples	Comment
	35.6% were from other EU countries and4% from non-EU countries
Most frequently detected pesticides	Pirimiphos-methyl 20%
Maximum number of multiple residues	Three different pesticides were found in one barley sample
MRL breaches	No sample exceeded the MRL
Processed	63 samples
Labelled organic	Five samples

Animal products

Table 83: Summary results for food of animal origin with the surveillance programme

Type of samples	Comment
Food of animal origin samples with pesticide residues detected	58 food of animal origin samples were analysed 84.5% had residue detected above the LOQ 15.5% had residues detected above the LOQ and below the MRL No residue was detected above the MRL
Origin of samples	77.6% of the food of animal origin samples were of Hungarian origin 10.3% were from other EU countries 12.1% were from non-EU countries
Most frequently detected pesticides	Acetamiprid 31%
Maximum number of multiple residues	Acetamiprid, carbendazim and thiophanate-methyl expressed as carbendazim in one honey sample
MRL breaches	There was no MRL exceedance
Processed	Seven samples
Labelled organic	Two samples

Baby food

Table 84: Summary results for baby food samples

Type of samples	Comment
Baby food samples with pesticide residues detected	19 baby food samples were analysed 100% had no residue detected above the LOQ No residues detected above the LOQ and below the MRL
Origin of samples	42% domestic samples 58% were from EU countries
Most frequently detected pesticides	No pesticides detected
Maximum number of multiple residues	No pesticides detected
MRL breaches	There was no MRL exceedance
Labelled organic	Five samples

Overview

In 2022, 58.19% of the samples analysed resulted without pesticide residues. Some 40.67% of the samples analysed had pesticide residues below the EU MRL but 1.14% exceeded it (1.14% non-compliant overall).

14.2.3 Comparability with the previous year's results

Table 85, gives an overview of the samples from the last three years. The number of the samples is slightly lower than the previous year. The number of the samples without pesticide residues has increased. The percentage of samples with pesticide residues above MRLs is slightly lower than in the previous year.

Table 85: Number of samples, 2020–2022

Year	Number of samples	Without residues	With residues below MRL	Exceeding MRL	Non-compliant
2020	2,225	60.54%	39.46%	1.21%	1.17%
2021	2,007	53.36%	46.64%	1.15%	1.0%
2022	1,849	58.19%	40.67%	1.14%	1.14%

14.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

14.3.1 Possible reasons for non-compliant samples

In total, 1.14% of the samples were found to be non-compliant with the EU MRLs.

Table 86: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency	Comments
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Generally, all samples are non-compliant with the MRL		

14.3.2 Acute reference dose exceedance and actions taken

Table 87 gives an overview of what sort of actions have been taken.

Table 87: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
Rapid alert notification Administrative sanctions (e.g. fines) Lot recalled from the market	20	Most of the non-compliant lots had been 'eaten'

14.4 Quality assurance

Table 88: Laboratory participation in the national control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
HU	FCSCN Ltd – Pesticide Residue Analytical Laboratory, Miskolc	206	10.05.2023	NAH-1-1742/2018	EUPT-FV21, EUPT-FV-SM11, EUPT-SRM14, EUPT-AO14, EUPT-CF13, Wessling-Qualco Duna – Pesticide Residues in Water 2019,
HU	FCSCN Ltd Pesticide Residue Analytical Laboratory, Hódmezővásárhely	213	20.04.2022	NAH-1-1704/2017	EUPT-FV21, EUPT-FV-SM11, EUPT-SRM14, EUPT-AO14, EUPT-CF13

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
HU	NFCSO – DPPSCA Pesticide Analytical Laboratory, Velence	220	06.04.2022	NAH-1-1594/2017	EUPT-FV21, EUPT-FV-SM11, EUPT-SRM14, EUPT-AO14, EUPT-CF13, Wessling-Qualco Duna – Pesticide Residues in Water 2019
HU	FCSCN Ltd Pesticide Residue Analytical Laboratory, Szolnok	244	09.11.2023	NAH-1-1625/2018	EUPT-FV-21, EUPT-SM11, EUPT-CF13, EUPT-AO14, EUPT-SRM14

14.5 Processing factors

These factors, based on water content from food composition tables in fresh vs dried commodities, were used for dried samples when the MRL was set on the fresh commodity.

Table 89: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
Chlorpyrifos	Grape	Raisins	3.8	

15 Iceland

15.1 Objective and design of the national control programme

15.1.1 Objective

The control programme consisted of two strategies: monitoring of food of plant origin and animal origin randomly sampled for the presence of pesticide residues; and enforcement of the pesticide residue legislation. Samples of animal origin are taken as a part of the VMDR programme and are not included in this report.

15.1.2 Design

The Food and Veterinary Authority is the competent authority for designing the pesticide residue monitoring programme as well as reporting results to EFSA. The collection of the samples is performed by the relevant municipal food control authority around the country. Enforcement actions, when necessary, were also the responsibility of the relevant municipal food control authority.

For 2022, 123 samples were taken in total.

A multi-annual sampling plan is revised every year. The sampling plan is based on information extracted from the customs tariff on import volumes and numbers on domestic production volumes. The coordinated EU programme in Regulation (EC) No 2021/601 is included in the sampling plan.

Strawberries and raspberries are the only fruit/berry commercially grown in Iceland. All other fruit found in Iceland's report are imported. Vegetables are both imported and grown domestically, both outdoors and in greenhouses with the use of electrical illumination.

The laboratory of Matis ohf. in Reykjavik analyses samples of fruit, vegetables and grains for pesticide residues. For other matrixes, the samples are sent abroad for analysis.

Samples of certified organic fruit, vegetables and cereals are included in the monitoring programme but this year they could not be distinguished from other samples in the data.

15.2 Key findings, interpretation of the results and comparability with the previous year's results

15.2.1 Key findings and interpretation of the results

The results of the monitoring programme show that the level of pesticide residues in food from the EU is generally low and this year there was no exceedance MRLs. Exceedance has generally been more common in non-EU country products in previous years but this year there was no sample that exceeded the MRLs. This implies that the food with these measured levels of pesticide residues is safe to eat. There is a decrease in exceedance compared with 2021. The main factors in this are the randomness of a small programme. It is important to view the results over a longer period than one year and the results from the whole of Europe to see the true status. Still, it is important to continue the monitoring of pesticide residues in both imported and locally grown food in Iceland.

15.2.2 Comparability with the previous year's results

This year the number of samples exceeding the MRLs has decreased (Table 90). The very small programme plays a big role in the randomness of the results. A change in the choice of samples, origin and matrix can change the outcome significantly. This year there was also a change in the application of measurement uncertainty in the laboratory, which has the effect of lowering exceedance.

Table 90: Comparability with the previous year's results

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number of samples exceeding the MRL	2	4	8	4	3	11	7	5	0

15.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

This year no samples were deemed non-compliant.

15.4 Quality assurance

In 2022, two laboratories analysed the samples (Table 91).

Table 91: Laboratories participating in the national control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
IS	Matis ohf	Matis	13.1.2023	SWEDAC	EUPT-CF-16, EUPT AO17, EUPT-FV-24
DE	Eurofins Dr Specht Express GmbH	Efins	19.12.2022	DAkkS	n/a

15.5 Additional information

On the list of pesticides to be analysed under Regulation (EU) No 2021/601 (the coordinated multiannual control programme) there are few pesticides that the laboratory in Iceland cannot analyse yet. New pesticides have been added to the method regularly since 2013 with the aim of meeting the Regulation's requirements. Due to malfunctions of analytical equipment in the Icelandic laboratory, a few of the samples in the control programme were sent to a laboratory abroad this year.

The implementation of new legislation, and changes to the MRLs in Iceland have been delayed. New legislation needs to be approved in the European Environment Agency Joint Committee before implementation, which will cause a delay compared with the rest of the EU.

16 Ireland

16.1 Objective and design of the national control programme

The 2022 Irish national control programme for pesticide residues in food was carried out by the Pesticide Controls Division (PCD), Dairy Inspectorate, Organics Division, Veterinary Medicine Division and the Import Controls Operations Division of the Department of Agriculture, Food and the Marine (DAFM) with the cooperation of the Pesticide Control Laboratory and under the terms of a service contract with the Food Safety Authority of Ireland (FSAI).

16.1.1 Objective

The control programme consisted of a number of strategies:

- **Routine surveillance** of plant and animal origin randomly sampled for the presence of pesticide residues; and
- **Targeted samples:**
  - Samples targeted as a follow-up to previous non-compliance.
  - Commodities listed in Regulation (EC) 2019/1793 (as amended) on the temporary increase of official controls and emergency measures governing the entry into the EU of certain goods from certain non-EU countries for pesticide residues, i.e. samples taken at BCPs.

- **Organic samples**: commodities listed in (EC) 1235/2008[36] laying down detailed rules for implementation of Council Regulation (EC) No 834/2007[37], as amended, as regards the arrangements for imports of organic products from non-EU countries for pesticide residues.
- **Investigation samples:** requests to investigate specific commodities from stakeholders (e.g. FSAI, public bodies) due to perceived health concerns; alerts to potential fraudulent and deceptive practices relating to PPP.

This involved sampling produce at retail and distribution outlets, storage, processing, slaughter premises, ports and airports and the analysis of those samples for the presence of pesticide residues at the Food Chemistry Division Laboratory in Ireland. Additional residue analysis of ethylene oxide in sesame seed samples (arising from a 2020 RASSF notification and subsequent coordinated action across Member States on unauthorised ethylene oxide in sesame seeds) was performed at a commercial laboratory operated by Eurofins in Germany.

16.1.2 Design

The control programme for 2022 took into consideration:

- the coordinated programme (under Regulation (EU) 2021/601) required by the European Commission for 2022;
- dietary intake patterns of Irish consumers[38] (adults and children);
- the residue profile of commodities as established from the results of the programme in previous years;
- results from other Member States in the EFSA annual reports;
- handling/processing of food before consumption;
- estimate for BCP samples;
- capacity of the laboratory.

The planned number of sample commodities for the 2022 control programme was agreed with the FSAI, with the exception of BCP samples, which was an unknown variable. A major contribution to the planned number of samples for food of animal origin was decided in conjunction with the Veterinary Medicine Unit of the Department of Agriculture, Food and the Marine, as part of the national residue plan required under Regulation (EU) 2017/625.

- EU monitoring programme regulation;
- EU working document on compounds to be considered for inclusion in monitoring;
- Results from other Member States in the EFSA annual reports;
- RASFF notifications.

16.2 Key findings, interpretation of the results and comparability with the previous year's results

16.2.1 Key findings

Overall, 95.7% of the 1,716 samples analysed were free of quantifiable residues or contained residues within the legally permitted levels allowed for in Regulation (EC) 396/2005, as amended. No residues were detected in 55.5% of samples. An additional 40.2% of samples had quantified residues below the MRLs, while 4.2% (72 samples) contained residues exceeding the

[36]Regulation (EC) 1235/2008 laying down detailed rules for implementation of Council Regulation (EC) No 834/2007 as regards the arrangements for imports of organic products from third countries (OJ L 334, 12.12.2008, p.25)
[37]Regulation (EC) 834/2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91. OJ L 189, 20.7.2007, p.1.
[38] Irish University Nutrition Alliance IUNA 2008–2010 and the 2006 Irish Children's Survey.

MRLs. When analytical measurement uncertainty is taken into consideration, 2.3% of samples (39 samples) exceeded the MRL and were actionable from an enforcement perspective (non-compliance).

Table 92: Summary of all samples taken in 2022 by product class

Samples	Total	<LOQ *	% <LOQ	>LOQ and <MRL‡	% >LOQ and <MRL	>MRL	% >MRL
Animal products	440	424	96.4	14	3.2	2	0.5
Cereals	63	21	33.3	30	47.6	12	19.0
Baby food	45	44	97.8	0	0.0	1	2.2
Fruit and vegetables							
Fruit	*514*	*109*	*21.2*	*383*	*74.5*	*22*	*4.3*
Vegetables	*528*	*248*	*53.8*	*210*	*40.2*	*32*	*6.1*
Processed products	126	71	56.3	52	41.3	3	2.4

*Limit of quantification; ‡Maximum residue level.

Table 93: Summary of all fruit and seeds, including processed fruit and seeds

Commodity	Residues detected				Origin of samples			
	Total	<LOQ*	>LOQ‡ and <MRL	>MRL	Ireland	EU	non-EU	Unknown
Apples	70	15	52	3	3	47	20	0
Apricots	2	1	1	0	0	1	0	1
Blackberries	6	3	3	0	0	1	5	0
Blueberries	13	2	11	0	0	4	9	0
Canned or jarred pineapple	1	1	0	0	0	0	0	1
Cherries	3	0	3	0	0	0	3	0
Clementines	12	0	12	0	0	3	9	0
Coconut milk (*cocos nucifera*) liquid	10	10	0	0	0	2	5	3
Coconuts	1	1	0	0	0	0	1	0
Common banana	31	20	11	0	0	0	31	0
Common peaches	11	2	1	0	0	7	4	0
Cranberries	2	2	0	0	0	0	2	0
Dates	1	0	0	1	0	0	1	0
Dragon fruit	2	0	1	1	0	0	2	0
Figs	3	3	0	0	0	0	3	0
Granate apples (pomegranate)	13	1	7	5	0	3	10	0
Grapefruit	28	1	25	2	0	7	21	0
Juice, apple	4	0	4	0	3	0	1	0
Juice, cranberry	1	1	0	0	0	0	1	0
Juice, orange	2	2	0	0	1	0	1	0
Juice, pineapple	2	1	1	0	0	0	1	1
Kiwi fruit (green, red, yellow)	21	14	5	2	0	16	5	0
Kumquats	2	2	0	0	0	2	0	0
Lemons	15	3	12	0	0	11	4	0

Commodity	Residues detected				Origin of samples			
	Total	<LOQ*	>LOQ‡ and <MRL	>MRL	Ireland	EU	non-EU	Unknown
Limes	11	0	10	1	0	0	11	0
Mandarins	28	4	23	1	0	6	21	1
Mangoes	11	2	8	1	0	0	11	0
Melons	4	1	3	1	0	1	3	0
Nectarines	11	1	10	0	0	5	6	0
Oranges	46	3	42	1	0	23	23	0
Papaya	5	1	3	1	0	0	5	0
Passionfruit	10	0	10	0	0	0	10	0
Pears	47	4	43	0	0	34	13	0
Pineapples	6	0	6	0	0	0	6	0
Plums	11	2	9	0	0	4	7	1
Pomelos	1	0	1	0	0	0	1	0
Quince	2	0	1	1	0	0	2	0
Raspberries and similar	9	6	3	0	1	3	5	0
Redcurrants	1	0	1	0	0	0	1	0
Satsumas	9	0	9	0	0	1	8	0
Sharon fruit	1	1	0	0	0	0	1	0
Strawberries	25	3	22	0	14	11	0	0
Table grapes	31	3	27	1	0	1	30	0
Vanilla	3	3	0	0	0	0	3	0
Watermelons	4	3	1	0	1	1	2	0
Wine, white	11	5	6	0	0	1	10	0
Wine, red	13	7	6	0	0	4	9	0
Total	**547**	**125**	**400**	**22**	**23**	**197**	**323**	**4**

*Limit of quantitation; ‡Maximum residue level.

Table 94: Summary of all vegetables and fungi, including processed vegetables and fungi

Commodity	Residues detected				Origin of samples			
	Total	<LOQ*	>LOQ‡ and <MRL	>MRL	Ireland	EU	Non-EU	Unknown
Asparagus	5	5	0	0	0	1	4	0
Aubergines	12	9	3	0	0	12	0	0
Avocados	11	9	2	0	0	1	10	0
Beans (with pods) and similar	28	16	10	2	0	0	28	0
Beans (without pods) and similar	1	1	0	0	0	0	1	0
Beetroot	3	3	0	0	3	0	0	0
Broccoli	23	18	4	1	5	12	6	0
Brussels sprouts	3	0	3	0	3	0	0	0
Butternut squash	2	2	0	0	0	2	0	0
Carrots	27	12	14	1	12	12	3	0
Cauliflowers	13	13	0	0	3	8	2	0
Celeriac	2	0	2	0	1	1	0	0
Celery	13	7	6	0	1	12	0	0
Chard	1	0	1	0	0	1	0	0
Chili peppers	13	0	9	4	0	1	12	0
Chinese cabbage	4	4	0	0	0	4	0	0

Chives	1	0	1	0	0	1	0	0
Common mushrooms	16	9	5	1	14	1	0	1
Coriander leaves	1	1	0	0	0	1	0	0
Courgettes	12	7	5	0	2	10	0	0
Cucumber	16	5	11	0	1	15	0	0
Drumsticks (*Moringa oleifera*)	12	4	0	8*	0	0	12	0
Endives	3	3	0	0	0	3	0	0
Florence fennels	8	5	3	0	0	8	0	0
Garden peas (with pods)	14	3	7	4	0	0	14	0
Garden peas (without pods)	2	2	0	0	0	0	0	2
Garlic	2	1	1	0	2	1	0	0
Ginger roots	8	6	1	1	0	0	8	0
Globe artichokes	1	0	1	0	0	1	0	0
Head cabbage	15	10	5	0	13	2	0	0
Jerusalem artichokes	2	2	0	0	0	2	0	0
Juice, tomato	1	1	0	0	1	0	0	0
Kale	3	2	1	0	3	0	0	0
Kohlrabi	1	1	0	0	0	1	0	0
Leeks	10	5	5	0	7	3	0	0
Lemongrass	1	1	0	0	0	0	1	0
Lettuce (generic)	27	14	13	0	7	16	4	0
Mints	2	0	2	0	0	1	1	0
Mooli (Daikon)	2	2	0	0	0	2	0	0
Okra	10	0	9	1	0	0	10	0
Onions	12	10	2	0	1	10	1	0
Oregano	2	0	2	0	0	0	2	0
Oyster mushrooms	2	2	0	0	1	1	0	0
Pak-choi	3	2	1	0	1	20	0	0
Parsley	3	0	2	1	1	2	0	0
Parsnips and similar	6	0	5	1	4	1	1	0
Physalis	3	2	0	1	0	0	3	0
Potatoes	35	20	15	0	22	5	8	0
Radishes	4	4	0	0	2	2	0	0
Rhubarb	3	3	0	0	3	0	0	0
Roman rocket	3	0	3	0	1	2	0	0
Salsify	2	0	1	1	0	2	0	0
Shi-take mushrooms	3	2	1	0	0	3	0	0
Spinach	15	7	8	0	2	13	0	0
Spring onions	5	2	3	0	0	0	5	0
Summer squash	1	1	0	0	0	1	0	0

Swede	1	1	0	0	1	0	0	0
Sweet corn	12	12	0	0	0	4	6	2
Sweet peppers	25	8	16	1	0	18	7	0
Sweet potatoes	11	5	5	1	0	3	8	0
Tea leaves, dry and/or fermented, and similar	92	54	35	3	0	0	92	0
Tomatoes	27	8	19	0	2	21	4	0
Turmeric	2	2	0	0	0	0	2	0
Turnips	2	2	0	0	2	0	0	0
Vine leaves	2	2	1	1	0	0	2	0
Watercress	1	0	0	1	0	1	0	0
Winter squash	4	3	1	0	0	4	0	0
Yardlong beans with pods	5	2	2	1	0	0	5	0
Total	**621**	**339**	**247**	**35**	**120**	**232**	**264**	**5**

*Limit of quantification; ɬMaximum residue level.

Table 95: Summary of all cereals including processed cereals

Commodity	Residues detected				Origin of samples			
	Total	<LOQ*	>LOQɬ and <MRL	>MRL	Ireland	EU	Non-EU	Unknown
Barley flour	2	0	2	0	2	0	0	0
Oat grain	19	12	7	0	8	0	5	6
Rice grain	33	6	15	12	0	0	28	5
Wheat flour	9	3	6	0	0	0	0	9
Total	**63**	**21**	**30**	**12**	**10**	**0**	**33**	**20**

*Limit of quantification; ɬMaximum residue level.

Table 96: Summary of all food of animal origin including processed food of animal origin

Commodity	Residues detected				Origin of samples			
	Total	<LOQ*	>LOQɬ and <MRL	>MRL	Ireland	EU	Non-EU	Unknown
Bovine fat tissue	143	139	3	1	143	0	0	0
Chicken, fresh fat tissue	21	20	0	1	21	0	0	0
Equine fat tissue	2	2	0	0	2	0	0	0
Pig fat tissue	55	55	0	0	55	0	0	0
Sheep fat tissue	80	78	2	0	80	0	0	0
Turkey, fresh fat tissue	4	1	3	0	4	0	0	0
Cow milk	90	85	5	0	90	0	0	0
Hen eggs	30	30	0	0	30	0	0	0
Honey	15	14	1	0	11	0	1	3
Total	**440**	**424**	**14**	**2**	**436**	**0**	**1**	**3**

*Limit of quantification; ⁺Maximum residue level.

Table 97: Summary of infant food

Commodity	Residues detected				Origin of samples			
	Total	<LOQ *	>LOQ⁺ and <MRL	>MRL	Ireland	EU	Non-EU	Unknown
Follow-on formulas	16	15	0	1	16	0	0	0
Infant formulas	19	19	0	0	19	0	0	0
Ready-to-eat meal for infants and young children	10	10	0	0	0	7	3	0
Total	**45**	**44**	**0**	**1**	**35**	**7**	**3**	**0**

*Limit of quantification; ⁺Maximum residue level.

Table 98: Summary of all targeted, organic and investigation samples (also included in Tables 92–97)

Commodity	Type	Residues detected			
		Total	<LOQ *	>LOQ and <MRL⁺	>MRL
Apples	Organic§	2	2	0	0
Beans (with pods) and similar	BCP‖	18	9	8	1
Beans (without pods) and similar	BCP	1	1	0	0
Chilli peppers	BCP	11	0	7	4
Common banana	Organic	20	19	1	0
Coconut milk (cocos nucifera) liquid	Organic	1	1	0	0
Drumsticks (Moringa oleifera)	BCP	12	4	0	8
Granate apples (pomegranate)	BCP	4	0	1	3
Grapefruit	BCP	4	0	4	0
Honey	Organic	1	1	0	0
Okra	BCP	10	0	9	1
Rice	BCP	26	2	13	11
Sweet peppers	BCP	7	4	2	1
Tea leaves, dry and/or fermented, and similar	BCP	92	54	35	3
Vanilla	Organic	3	3	0	0
Vine leaves	BCP	2	0	1	1
Wine	Organic	12	12	0	0
Yardlong beans with pods	BCP	5	2	2	1
Total		**231**	**114**	**83**	**34**

*Limit of quantification; ⁺Maximum residue level; §pursuant to Regulation (EC) 1235/2008, ‖Border Control Post pursuant to Regulation (EU) 2019/1793 as amended.

Table 99: Summary results – maximum residue limit exceedance details (not accounting for measurement of uncertainty)

Commodity	Residues detected			
	Origin	Compound	Result	MRL[+]
Apples	Italy	Fenhexamid	0.039	0.01
	Ireland	Fenpropidin	0.12	0.01
	The Netherlands	1,4-Dimethylnaphthalene	0.015	0.01
Beans (with pods) and similar	Guatemala	Chlorothalonil	0.011	0.01
	Kenya	Benzalkonium chloride	0.22	0.1
Bovine fat	Ireland	Dieldrin	0.24	0.2
Broccoli	Spain	Fluazifop-p	0.25	0.01
Carrots	Spain	Penconazole	0.062	0.01
Chilli peppers	India	Diphenylamine	0.054	0.05
	India	Carbendazim	0.17	0.1
	Uganda	Clothianidin	0.063	0.04
	Uganda	Carbendazim	1.2	0.1
Common mushrooms	Ireland	Deltamethrin	0.063	0.05
Common peaches	Spain	Cyazofamid	0.017	0.01
Dates	Israel	Boscalid	0.022	0.01
		Triflumuron	0.026	0.01
Dragon fruit	Thailand	Imidacloprid	0.023	0.01
		Cypermethrin	0.057	0.05
Drumsticks (*Moringa oleifera*)	India	Carbendazim	0.43	0.1
	India	Methamidophos	0.013	0.01
	India	Cypermethrin	0.035	0.01
		Acephate	0.056	0.01
		Methamidophos	0.101	0.01
		Thiamethoxam	0.018	0.01
	India	Acephate	0.038	0.01
		Methamidophos	0.087	0.01
	India	Monocrotophos	0.14	0.01
	India	Methamidophos	0.027	0.01
	India	Methamidophos	0.013	0.01
	India	Methamidophos	0.011	0.01
Follow-on formula	Ireland	Phosphonic acid (expressed as fosetyl)	0.036	0.01
Garden peas (with pods)	Guatemala	Chlorothalonil	0.23	0.01
		Dimethoate	0.029	0.01
		Omethoate	0.023	0.01
	Egypt	Chlorothalonil	0.016	0.01
	Guatemala	Chlorothalonil	0.26	0.01
		Dimethoate	0.046	0.01
		Omethoate	0.016	0.01
	Guatemala	Chlorothalonil	0.076	0.01
Ginger	China	Metalaxyl	0.12	0.1
Granate apples (pomegranate)	Turkey	Acetamiprid	0.012	0.01
	Turkey	Pirimicarb	0.034	0.01
	Turkey	Acetamiprid	0.17	0.01

		Chlorpyrifos	0.016	0.01
	Turkey	Cypermethrin	0.062	0.05
	Turkey	Acetamiprid	0.035	0.01
Grapefruit	Turkey	Chlorpyrifos-methyl	0.08	0.01
	Cyprus	Imazalil	4.2	4.0
Kiwi fruit (green, red, yellow)	Chile	2-phenylphenol	0.018	0.01
	Italy	Thiabendazole	0.014	0.01
Limes	Brazil	Chlorpyrifos	0.018	0.01
Mandarins	South Africa	Propiconizole	0.039	0.01
Mangoes	Senegal	Trifloxystrobin	0.011	0.01
Okra	India	Acephate	0.012	0.01
Oranges	South Africa	Chlorfenapyr	0.013	0.01
Papaya	Brazil	Chlorothalonil	0.038	0.01
Parsley	Ireland	1,4-Dimethylnaphthalene	0.021	0.01
		Fenuron	0.082	0.01
Parsnips and similar	Spain	Thiabendazole	0.012	0.01
Physalis	Columbia	Chlorothalonil	0.9	0.01
		Iprodione	0.059	0.01
Poultry fat	Ireland	2-phenylphenol	0.013	0.01
Quince	Turkey	Chlorpyrifos	0.18	0.01
Rice grain	Unknown	Tricyclazole	0.022	0.010
	India	Buprofezin	0.013	0.01
		Imidacloprid	0.034	0.01
		Thiamethoxam	0.045	0.01
		Tricyclazole	0.13	0.01
	India	Buprofezin	0.014	0.01
		Imidacloprid	0.031	0.01
		Thiamethoxam	0.019	0.01
		Tricyclazole	0.24	0.01
	India	Tricyclazole	0.011	0.01
	India	Chlorpyrifos	0.048	0.01
	India	Imidacloprid	0.016	0.01
		Thiamethoxam	0.034	0.01
	India	Tricyclazole	0.019	0.01
	India	Propiconazole	0.013	0.01
		Thiamethoxam	0.074	0.01
		Tricyclazole	0.16	0.01
		Imidacloprid	0.018	0.01
		Carbendazim	0.015	0.01
	India	Thiamethoxam	0.075	0.01
		Tricyclazole	0.29	0.01
		Imidacloprid	0.015	0.01
		Carbendazim	0.014	0.01
		Diphenylamine	0.065	0.05
	Pakistan	Acetamiprid	0.016	0.01
		Imidacloprid	0.017	0.01
	Pakistan	Acetamiprid	0.027	0.01
		Imidacloprid	0.014	0.01
	India	Buprofezin	0.015	0.01
		Chlorpyrifos	0.01	0.01
		Tricyclazole	0.012	0.01

Salsify	The Netherlands	Dieldrin	0.014	0.01
Sweet peppers	Uganda	Clothianidin	0.063	0.04
Sweet potatoes	Morocco	Pyrimethanil	0.036	0.01
Table grapes	Brazil	Pyriproxyfen	0.056	0.05
Tea leaves, dry and/or fermented, and similar	China	Molinate	0.064	0.05
	China	Molinate	0.27	0.05
	China	Molinate	0.34	0.05
Vine leaves	Turkey	Pirimicarb	0.014	0.01
Watercress	Italy	Boscalid	0.26	0.01
		Cyprodinil	1.0	0.02
		Pyraclostrobin	0.024	0.02
Yardlong beans with pods	India	Hexaconazole	0.019	0.01
		Chlorpyrifos	0.11	0.01

ǂMaximum residue levels.

16.2.2 Interpretation of the results

Fruit and vegetables (including fungi, seeds and processed commodities)

In 2022, 12.2% of the fruit and vegetable samples analysed were of domestic origin and the remainder were imported from the EU (36.7%), non-EU countries (50.3%) and of unknown origin (0.8%). Some 95.1% of the samples contained either no residues or residues below the MRLs (39.7% contained no residues and 55.4% contained residues at levels which were below the MRLs). The remaining 4.9% contained residues exceeding the MRLs. When laboratory measurement of uncertainty (50%) is taken into account this reduces to 2.6% that are actionable from an enforcement perspective.

Cereals

Of the cereal samples, 15.9% were of domestic origin, 52.4% were from non-EU countries and the remaining 31.7% were of unknown origin. No residues were detected in 33.3% of the samples and a further 47.6% had residues below the MRLs. The remaining 19.0% contained residues exceeding the MRLs. When measurement uncertainty (50%) is taken into account this reduces to 12.7%.

Food of animal origin

For samples of food of animal origin, 99.1% were of domestic origin, 0.2% were from non-EU countries and the remaining 0.7% were of unknown origin. No residues were detected in 96.4% of the samples, while the remaining 3.2% had residues below the MRLs. The remaining 0.5% (two samples) contained residues exceeding the MRLs but when measurement uncertainty (50%) was taken into account, they were compliant.

Baby food

Of the baby-food samples, 77.8% were of domestic origin, 15.6% were from EU and 6.7% were from non-EU countries. Some 97.8% contained no residues. However, one sample (2.2%) of follow-on formula contained residues above the MRL even when measurement uncertainty is considered.

Border control posts

A total of 231 samples were taken at BCPs. Of these, 192 samples were taken pursuant to EU Regulation 2019/1793 covering temporary increase of official controls on food of non-animal origin from certain countries. This is a significant increase on the two previous years, which can largely be attributed to Britain's exit from the customs union. No residues were detected in 39.6% of the samples and an additional 43.2% of the samples had residues in compliance with the EU legislation. The remaining 17.2% contained residues exceeding the MRLs but when measurement uncertainty (50%) was taken into account, this dropped to 8.3%.

Organic

Pesticide residue testing of organic produce taken at BCPs pursuant to Regulation (EU) 1235/2008 was carried out on 39 samples. No residues were detected in 97.4% of samples. The remaining one sample had residues that were below pesticide MRLs but could not be marketed as organic.

Maximum residue level breaches and enforcement actions

In all cases where residues are detected above the MRL, consumer risk assessments, based on the residue level found and national food consumption data, are carried out to estimate the risk to consumers and to inform the follow-up action to be taken. In 2022, no consumer health risks were identified for most of the MRL breaches. However, two breaches were identified as posing acute risks for children, i.e. chlorothalonil in physalis and carbendazim in chili pepper. Furthermore, a number of these non-compliant commodities related to the detection of pesticides for which the EU has withdrawn the health-based reference values for the acute reference dose and acceptable daily intake (due to concerns over genotoxicity, endocrine disruption properties, etc.) making a dietary risk assessment impossible e.g. chlorpyrifos (quince, pomegranate, beans with pod, limes), chlorpyrifos-methyl (grapefruit), tricyclozole (rice), fenuron (parsley), dieldrin (bovine fat, salsify) omethoate and dimethoate (garden peas with pod), benzalalkonium chloride (beans with pod) and acephate (drumsticks). In such instances, a consumer health risk cannot be ruled out.

All MRL breaches, taking measurement uncertainty into account, involving produce of domestic origin were investigated to establish the reasons for the breaches and for appropriate follow-up. In addition, all produce with MRL breaches, both domestic and imported, were listed for targeted sampling as part of the follow-up strategy.

16.2.3 Comparability with the previous year's results

As part of the 2022 programme, a total of 1,168 fruit, vegetables (including processed products) and fungi samples were analysed. When compared with previous years, the number of samples with residues detected above the MRL (4.9%) is similar to the levels detected in 2021 (5.2%) and higher than those in 2020 (3.5%). The majority (>75%) of the breaches occur in samples from non-EU countries with different regulations controlling the use of pesticides and where application for higher import MRLs or import tolerances in the EU have yet to be applied for or were not granted.

The number of fruit and vegetable samples with detectable residues above the LOQ has decreased from 59.6% in 2021 to 55.4% in 2022. The number of pesticides being detected has remained relatively constant.

The most commonly detected pesticide in fruit and vegetable samples in 2022 was fludioxonil. This is a non-systemic fungicide used as a post-harvest treatment across a broad range of commodities. Pyrimethanil, a contact fungicide for treating moulds, mildew and rusts on fruit and potatoes was the second most commonly detected pesticide.

Pesticide residues were found in 66.6% of cereal samples taken and the MRL was exceeded in 12 of the 33 rice samples. This is higher than levels reported in 2021 (33.3%) and 2020 (41.7%).

The percentage of food of animal origin samples with detectable residues fell to 3.7% in 2022 compared with the higher levels reported in 2021 (8.3%). This was similar to levels reported in 2020 (3.5%) and 2019 (2.0%). For food of animal origin, there were two MRL breaches in 2022 compared with one in 2021 and two in 2020. In infant and follow-on formula samples, there was one follow-on formula sample with residues (phosphonic acid expressed as fosetyl) detected above the MRL. A risk assessment was carried out and no acute or chronic risk was identified for the most vulnerable consumers (young infants).

There were 34 MRL breaches for BCP samples in 2022 of which 18 were non-compliant when measurement uncertainty was considered. This compared with 12 breaches (five of which were non-compliant when measurement uncertainty was taken into account) detected in 2021 and no breaches in 2020. However, the data are not directly comparable due to the large variability in sample numbers between 2020 and 2022.

16.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

16.3.1 Possible reasons for non-compliant samples

A DAFM PCD Enforcement Officer investigates all MRL breaches, when measurement of uncertainty is taken into account, in domestic samples of plant origin. For food of animal origin, a DAFM Dairy or Veterinary Officer is informed of the issue and investigates the matter. In 2022, six MRL breaches were detected in produce of domestic origin (apple, mushroom, parsley, bovine fat, chicken fat and follow-on formula) of which three (apple, parsley, follow-on formula) were non-compliant when measurement uncertainty was taken into consideration. For non-compliant imported samples, it is not possible to follow up on the root causes. However, for imported samples, the CODEX contact point in the country of origin is informed of the issue. All breaches, irrespective of measurement uncertainty, are subjected to a dietary risk assessment and reported to the FSAI.

Table 100: Possible reasons for MRL non-compliance

Reasons for MRL* non-compliance	Pesticide/food product	Frequency[a)]	Comments	Origin of samples
	Fruits			
Misuse of product	Chlorpyrifos-methyl/Grapefruit	1		Turkey
Misuse of product	Propiconizole/Mandarin	1		South Africa
Misuse of product	Dates/Boscalid/Triflumuron	1		Israel
Misuse of product	Imidacloprid/Dragon fruit	1		Thailand

Misuse of product	Chlorothalonil/Papaya	1		Brazil
Misuse of product	Fenhexamid/Apple	1		Italy
Contamination	Fenpropadin/Apple	1	Spray drift from adjacent tillage field (cereals)	Ireland
Misuse of product	Granate apple (pomegranate)/Acetamiprid	2		Turkey
Misuse of product	Granate apple (pomegranate)/Pirimicarb	1		Turkey
Misuse of product	Chlorpyrifos/Quince	1		Turkey
Vegetables				
Misuse of product	Fluazifop-p/Broccoli	1		Spain
Misuse of product	Carbendazim/Drumsticks (*Moringa oleifera*)	1		India
Misuse of product	Cypermethrin/Acephate/Methamidophos/Drumsticks (*Moringa oleifera*)	1		India
Misuse of product	Acephate/Drumsticks (*Moringa oleifera*)	1		India
Misuse of product	Methimadophos/Monocrotophos/Drumsticks (*Moringa oleifera*)	1		India
Misuse of product	Methimadophos/Drumsticks (*Moringa oleifera*)	1		India
Misuse of product	Chlorothalonil/Omethoate/Dimethoate/Garden peas (with pods)	1		Guatemala
Misuse of product	Chlorothalonil/Dimethoate/Garden peas (with pods)	1		Guatemala
Misuse of product	Chlorothalonil/Garden peas (with pods)	1		Guatemala
Misuse of product	Chlorothalonil/Iprodione/Physalis	1		Colombia
Misuse of product	Pyrimethanil/Sweet potato	1		Morocco
Invalid use	1,4-Dimethylnaphthalene/Fenuron/Parsley	1	Carryover soil residues from previously planted crops (Beetroot)	Ireland
Misuse of product	Boscalid/Cyprodinil/Water cress	1		Italy
Misuse of product	Penconazole/Carrots	1		Spain
Misuse of product	Carbendazim/Chilli peppers	1		Uganda

Misuse of product	Benzalkonium chloride/Beans (with pods)	1	Kenya
Misuse of product	Chlorpyrifos/Yardlong beans	1	India
Cereals			
Misuse of product	Tricyclazole/Rice	1	Unknown
Misuse of product	Tricyclazole/Imidaclopri d/Thiamethoxam/Rice	1	India
Misuse of product	Tricyclazole/Imidaclopri d/Rice	1	India
Misuse of product	Thiamethoxam/Rice	1	India
Misuse of product	Tricyclazole/Thiamethox am/Rice	1	India
Misuse of product	Acetamiprid/Rice	1	Pakistan
Misuse of product	Chlorpyrifos/Rice	1	India
Baby food			
Unknown	Phosphonic acid (expressed as fosetyl)/Follow-on formula	1	Ireland

*Maximum Residue Levels.
(a) Number of cases.

16.3.2 Acute reference dose exceedance

There was an unacceptable acute risk identified (acute reference dose 357% for children) in a BCP sample of Ugandan chilli peppers that exceeded the MRL for carbendazim. This consignment was rejected at the port and was destroyed/re-exported. None of the other MRL breaches resulted in acute reference dose exceedance. However, with the detections of residues such as chlorpyrifos, chlorpyrifos-methyl, tricyclozole, fenuron, dieldrin, omethoate, dimethoate, benzalalkonium chloride and acephate in assorted commodities, where the EU has withdrawn the health-based reference values for acute reference dose and acceptable daily intake, a consumer health risk cannot be ruled out.

16.3.3 Actions taken

Follow-up enforcement actions are carried out for all Irish MRL breaches, when measurement uncertainty is taken into consideration and invalid use reports. For other MRL breaches the food business operator is informed as well as the CODEX contact point for the country of origin.

Table 101: Actions taken

	Action taken	No. of non-compliant samples concerned	Comments
Rapid alert notification		0	
Administrative sanctions (e.g. fines)		0	
Lot recalled from the market		0	
Rejection of a non-compliant lot at the border		21	

Destruction/re-export of non-compliant lot		21	
Follow-up (suspect) sampling of similar products, samples of same producer or country of origin	Targeted sampling where possible	0	To date, other relevant samples could not be found on the market in 2022
Warnings to responsible food business operator		0	
Other follow-up investigations to identify reason of non-compliance or responsible food business operator	Grower contacted by a PCD enforcement officer	4	For Irish MRL breaches
Other actions (please specify)		121	Consignments rejected at BCP on basis of absence of appropriate paperwork

16.4 Quality assurance

The analysis of the coordinated programme and the national monitoring programme was carried out by the Pesticide Control Laboratory. The laboratory is accredited for pesticide residue analysis.

Table 102: Laboratory participation in the national control programme

Country	Laboratory Name	Code	Accreditation Date	Body	Participation in proficiency tests or inter-laboratory tests
Ireland	Pesticide Control Laboratory	PCS	1/1/2022–31/12/2022	INAB	Seven EUPTs and one collaborative study in 2022

Table 103: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]	Comments
n/a	n/a	n/a	n/a	n/a

(a) Processing factor for the enforcement residue definition.

17 Italy

17.1 Objective and design of the national control programme

Italy is a country where agriculture is most important across the country. There is production of fruit, vegetables and cereal from the north, where there are little places that produce a lot of pome fruit, to the south where a lot of orange and lemons and cereals are grown because the weather is very hot. Moreover, the centre produces a variety of vegetables, fruit and cereal. The objectives of the law reflect this in the control programme of residues of pesticides defined by Ministerial Decree 23 December 1992 and by the letter issued from the General Directorate to other authorities giving specific instructions about the sampling of fruit, vegetables, cereal, oil and wine.

These laws form a part of the national control plan that is available on the website of the Ministry of Health[39].

The time of application of the National Action Plan is three years from 2020 and the part of the programme related to residues of pesticide is amended every year by Office 7 of the Directorate-General for Hygiene and Food Safety and Nutrition.

The national programme for pesticide residues is a detailed programme for implementing the checks to be carried out by the Regions and Autonomous Provinces of Trento and Bolzano, indicating the minimum number and the type of samples to be analysed.

The breakdown of the number of samples to be taken for each Region/Province is calculated according to the data on consumption and production of a given foodstuff in the relevant area.

The number of samples to be taken for each Region/Province for vegetables, fruit, cereals, wine and oil is given by the Decree cited above.

The programme also covers the research of residues of plant protection products in foodstuffs of animal origin: meat, milk, eggs and fish.

Moreover, the Director General of Directorate-General for the Hygiene and Safety of Food and Nutrition in the Ministry of Health gives indications to the regions/provinces for sampling of foods reported in the coordinated programme and for the national programme.

In particular, for every Region/Province the number of samples to be checked for each food is specified for the monitoring programme. The number of irregular samples in the previous year is reported, together with procedures for sampling non-compliant samples and information about the sampling region and with region of origin. There is also detail about baby food and organic samples.

It is also possible to group the type of food in the classification of Annex I of Regulation 396/2005 and in the Regulation (EU) 723/2019[40].

Honey was added to the list of products of animal origin. Due to environmental regional problems fish were sampled on a voluntary basis.

Specific indications were given about the transmission of data and the processing factor to be applied by the laboratories when they evaluate the results. An integration form report is provided that inspectors should use as a checklist for the transmission of data.

'Uffici di Sanità Marittima, Aerea e di Frontiera' (USMAF) of the Ministry of Health, named border post of control, performs the sampling on products of vegetable origin imported from non-EU countries, in at least 3% of the consignments of imported food.

The national programme also reports the pesticides that the laboratories should look for. These include the pesticides that were found not compliant in the previous year and the pesticides that

[39] https://www.salute.gov.it/portale/pianoControlloNazionalePluriennale2023/dettaglioPCNP2023.jsp?cap=capitolo3&sez=%20%20pni-cap3-alimenti-controllianalitici&id=3225

[40] Commission Implementing Regulation (EU) 2019/723 of 2 May 2019 laying down rules for the application of Regulation (EU) 2017/625 of the European Parliament and of the Council as regards the standard model form to be used in the annual reports submitted by Member States. OJ L 124, 13.5.2019, p. 1–31.

are reported in the SANCO/12745/2013 document. There is also reported the pesticides indicated in Regulation (EU) 601/2021[41].

17.2 Key findings, interpretation of the results and comparability with the previous year's results

In 2022 the total number of samples was 8,405.

Non-compliant samples are 40 (0.5%) also taking into consideration non-compliant import controls.

Detailed information about import controls are collected. In particular, 76 samples were taken at the BCP and 8,329 samples were taken by local health authorities.

Out of a total of 8,405 samples (Table 104) 54.5% were fruit and vegetables, 13.3% cereals, 12.5% oil and wine, 0.8% baby food and 18.9% other types of food (processed different form oil and wine, products of animal origin, fish products, the group of plants and seeds for beverages, spice, oilseeds and oil fruits).

Some 65.6% of samples (Table 106) are without residues, while 34% are with residues below the MRL and 0.5% are irregular. All baby food samples are compliant. Irregular samples were found for cereal, fruit, vegetables and other products.

A total of 7,572 samples originated in Italy, 319 came from other EU Member States, 432 came from non-EU countries and for 82 samples the origin is unknown.

Of the total number of samples, 1.8% (155) was organic, and 2.4% (203) of samples were enforcement samples.

The total number of products sampled for the European programme (Table 108) was 1,353, much more than the 910 specified in Regulation (EU) 2021/601. All types of food were sampled.

This report does not include data from the Regions Piedmont and Valle D'Aosta because they had problems submitting the data in the new format for Italy but they submitted the data in another format so it is known that they took, respectively, 486 and 25 samples.

Table 104: Summary results

Fruit & vegetables	% of total	Cereals	% of total	Oil & wine	% of total	Baby food	% of total	Other products	% of total	Total
4,582	54.5	1,117	13.3	1,047	12.5	66	0.8	1,593	18.9	8,405

Table 105: Compliant – not compliant

[41] Commission Implementing Regulation (EU) 2021/601 of 13 April 2021 concerning a coordinated multiannual control programme of the Union for 2022, 2023 and 2024 to ensure compliance with maximum residue levels of pesticides and to assess the consumer exposure to pesticide residues in and on food of plant and animal origin. OJ L 127, 14.4.2021, p. 29–41.

Food	Total samples	Samples without residues	Samples without residues (%)	Samples with residue below or equal to MRL	Samples with residue below or equal to MRL (%)	Samples with residues above MRL	Samples with residues above MRL (%)
Fruit & vegetables	4,582	2,351	51.3	2,201	48.0	30	0.7
Cereals	1,117	900	80.6	215	19.2	2	0.2
Oil & wine	1,047	735	70.2	310	29.6	2	0.2
Baby food	66	66	100.0	0	0,0	0	0.0
Other products	1,593	1,458	91.5	129	8,1	6	0.4
Total	8,405	5,510	65.6	2,855	33.9	40	0.5

Table 106: National samples

Food	Total samples	Samples without residues	Samples without residues (%)	Samples with residue below or equal to MRL	Samples with residue below or equal to MRL (%)	Samples with residues above MRL	Samples with residues above MRL (%)
Fruit & vegetables	4,524	2,325	51.4	2,170	48.0	29	0.6
Cereals	1,115	898	80.5	215	19.3	2	0.2
Oil & wine	1,047	735	70.2	310	29.6	2	0.2
Baby food	66	66	100.0	0	0.0	0	0.0
Other products	1,577	1,444	91.6	128	8.1	5	0.3
Total	8,329	5,468	65.6	2,823	33.9	38	0.5

Table 107: Import samples

Food	Total samples	Samples without residues	Samples without residues (%)	Samples with residue below or equal to MRL	Samples with residue below or equal to MRL (%)	Samples with residues above MRL	Samples with residues above MRL (%)
Fruit & vegetables	58	26	44.8	31	53.4	1	1.7
Cereals	2	2	100.0	0	0.0	0	0.0
Oil & wine	0	0	0.0	0	0.0	0	0.0
Baby food	0	0	0.0	0	0.0	0	0.0
Other products	16	14	87.5	1	6.25	1	6.25
Total	76	42	55.3	32	42.1	2	2.6

Table 108: Sample for European programme

Food	Total samples	Samples without residues	Samples without residues (%)	Samples with residue below or equal to MRL	Samples with residue below or equal to MRL (%)	Samples with residues above MRL	Samples with residues above MRL (%)
Oats	52	48	92.3	4	7.7	0	0.0
Barley	53	51	96.2	2	3.8	0	0.0
Head cabbage and children	50	45	90.0	5	10.0	0	0.0
Lettuce and children	87	50	57.5	37	42.5	0	0.0
Spinach	54	26	48.1	28	51.9	0	0.0
Apples	187	51	27.3	136	72.7	0	0.0
Strawberries	102	32	31.4	70	68.6	0	0.0
Peaches and children	139	26	18.7	112	80.6	1	0.7
Pig fat tissue	54	54	100.0	0	0.0	0	0.0
Milk	119	118	99.2	1	0.8	0	0.0
Wine	252	140	55.6	112	44.4	0	0.0
Baby food	48	48	100.0	0	0.0	0	0.0
Tomatoes and children	156	76	48.7	76	48.7	4	2.6
Total	1,.353	765	56.5	583	43.1	5	0.4

Table 109: Residues analysed for the European Programme

Residues	Number of samples	Number of laboratories
1-naphthylacetamide	3	1
2.4,5-T (sum of 2.4,5-T, its salts and esters, expressed as 2.4,5-T)	16	1
2.4-D	100	1
2.4-D (sum of 2.4-D, its salts, its esters and its conjugates, expressed as 2.4-D)	118	3
2.4-DB (sum of 2.4-DB, its salts, its esters and its conjugates, expressed as 2.4-DB)	16	1
2.4-Dimethylanilin	65	2
2-methyl-2-[4-(2-methyl-3- piperidin-1-yl-propyl)-phenyl]propionic acid (CGA289267)	255	1

Residues	Number of samples	Number of laboratories
2-phenylphenol	14	1
2-Phenylphenol (sum of 2-phenylphenol and its conjugates, expressed as 2-phenylphenol)	517	10
3-OH-carbofuran (free and conjugated) expressed as carbofuran	1	1
Abamectin (sum of avermectin B1a, avermectin B1b and delta-8.9 isomer of avermectin B1a, expressed as avermectin B1a)	399	7
Acephate	1,091	16
Acequinocyl	41	2
Acetamiprid	1,031	14
Acetamiprid (sum of acetamiprid and N-desmethyl-acetamiprid (IM-2-1), expressed as acetamiprid)	4	2
Acetochlor	316	4
Acibenzolar-S-methyl (sum of acibenzolar-S-methyl and acibenzolar acid (free and conjugated), expressed as acibenzolar-S-methyl)	36	2
Aclonifen	172	4
Acrinathrin	277	5
Alachlor	425	7
Aldicarb	848	11
Aldicarb (sum of Aldicarb, its sulfoxide and its sulfone, expressed as Aldicarb)	1,000	14
Aldicarb-Sulfone	886	11
Aldicarb-Sulfoxide	591	11
Aldrin	738	14
Aldrin and Dieldrin (Aldrin and dieldrin combined expressed as dieldrin)	832	17
Allethrin	260	2
Allidochlor	33	1
Ametoctradin	837	10
Ametoctradin, metabolite 4-(7-amino-5-ethyl [1,2,4]triazolo, [1,5-a]pyrimidin-6-yl) butanoic acid (M650F01) and metabolite 6-(7-amino-5-ethyl [1,2,4]triazolo [1,5-a]pyrimidin-6-yl) hexanoic acid (M650F06), expressed as ametoctradin	2	1
Ametryn	165	3
Aminocarb	47	3
Amisulbrom	142	2
Amitraz	279	5
Amitraz (amitraz including the metabolites containing the 2,4 - dimethylaniline moiety expressed as amitraz)	315	7
AMPA	24	1
AMPA-N-acetyl	24	1
Anilazine	259	2
Anthraquinone	202	2
Atrazine	387	7
Atrazine, Desethyl-2-Hydroxy-	1	1
Avermectin B1a	108	2
Avermectin B1b	100	1
Azaconazole	9	1
Azadirachtin	134	1
Azamethiphos	12	1
Azinphos-ethyl	1,008	14
Azinphos-methyl	1,023	16
Azoxystrobin	1,114	17
BAC 10	10	2
BAC 12	10	2
BAC 14	10	2
BAC 16	10	2
BAC 18	8	1

Residues	Number of samples	Number of laboratories
BAC 8	8	1
Benalaxyl including other mixtures of constituent isomers including benalaxyl-M (sum of isomers)	870	11
Bendiocarb	54	4
Benfluralin	327	5
Benfuracarb	116	5
Benomyl	108	2
Bentazone (Sum of bentazone, its salts and 6-hydroxy (free and conjugated) and 8-hydroxy bentazone (free and conjugated), expressed as bentazone)	9	1
Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorides with alkyl chain lengths of C8, C10, C12, C14, C16 and C18)	10	2
Benzovindiflupyr	101	4
Benzoximate	162	3
Bifenazate	58	2
Bifenazate (sum of bifenazate plus bifenazate-diazene expressed as bifenazate)	59	2
Bifenazate-diazene	8	1
Bifenox	269	3
Bifenthrin (sum of isomers)	1,108	18
Bioallethrin	51	1
Biphenyl	555	10
Bitertanol (sum of isomers)	819	14
Bixafen	311	6
Bixafen (sum of bixafen and desmethyl-bixafen, expressed as bixafen)	9	1
Boscalid	852	15
Bromacil	177	2
Bromadiolone	8	1
Bromfenvinfos	33	1
Bromfenvinfos-methyl	48	2
Bromide ion	44	3
Bromocyclen	9	1
Bromophos	280	4
Bromophos-ethyl	317	8
Bromopropylate	840	14
Bromoxynil and its salts, expressed as bromoxynil	17	2
Bromuconazole (sum of diasteroisomers)	789	11
Bupirimate	1,081	15
Buprofezin	1,110	16
Butachlor	170	1
Butafenacil	28	1
Butocarboxim	9	1
Butoxycarboxim	28	1
BYI08330 enol-glucoside (cis-3-(2,5-Dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro [4.5]dec-3-en-4-yl ß-D-glucopyranoside)	100	1
BYI08330-enol (cis-3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one)	150	3
BYI08330-ketohydroxy ((cis-3-(2,5-Dimethylphenyl)-3-hydroxy-8-methoxy-1-azaspiro[4.5]decane-2,4-dione)	100	1
BYI08330-monohydroxy (cis-3-(2,5-Dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]decan-2-one)	100	1
Cadusafos	996	13
Captan	193	6
Captan (sum of captan and THPI, expressed as captan)	238	5
Carbaryl	1,120	17
Carbendazim	479	6
Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	977	11

Residues	Number of samples	Number of laboratories
Carbendazim and thiophanate-methyl, expressed as carbendazim	10	2
Carbetamide (sum of carbetamide and its S isomer)	93	3
Carbofuran	685	10
Carbofuran (sum of carbofuran (including any carbofuran generated from carbosulfan, benfuracarb or furathiocarb) and 3-OH carbofuran expressed as carbofuran)	856	12
Carbofuran, 3-hydroxy	709	10
Carbophenothion	249	4
Carbophenothion-Methyl	9	1
Carbosulfan	116	5
Carboxin	149	3
Carboxin (carboxin plus its metabolites carboxin sulfoxide and oxycarboxin (carboxin sulfone), expressed as carboxin)	100	1
Carfentrazone-ethyl (sum of carfentrazone-ethyl and carfentrazone, expressed as carfentrazone-ethyl)	8	1
Chinomethionat	134	1
Chlorantraniliprole (DPX E-2Y45)	952	13
Chlorbenside	51	2
Chlordane (sum of cis- and trans-chlordane)	149	8
Chlordane (sum of cis- and trans-isomers and oxychlordane expressed as chlordane)	156	8
Chlordane, cis-	174	7
Chlordane, trans-	167	7
Chlorfenapyr	748	13
Chlorfenson	253	5
Chlorfenvinphos	790	16
Chlorfluazuron	307	7
Chloridazon	58	1
Chloridazon (sum of chloridazon and chloridazon-desphenyl, expressed as chloridazon)	60	1
Chlormephos	169	1
Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	277	5
Chlorobenzilate	671	11
Chloroneb	33	1
Chloropropylate	9	1
Chlorothalonil	602	10
Chlorotoluron	310	4
Chloroxuron	28	1
Chlorpropham	767	14
Chlorpyrifos	1,081	18
Chlorpyrifos-methyl	923	16
Chlorthal-dimethyl	210	3
Chlorthiamid	8	1
Chlorthiophos	73	2
Chlozolinate	244	4
cis-Permethrin	11	1
Clethodim (sum of Sethoxydim and Clethodim including degradation products calculated as Sethoxydim)	28	1
Clodinafop and its S-isomers, expressed as clodinafop	2	1
Clofentezine	748	15
Clofentezine (sum of all compounds containing the 2-chlorobenzoyl moiety expressed as clofentezine)	50	5
Clomazone	404	8
Cloquintocet-Mexyl	2	1
Clothianidin	830	14
Coumaphos	258	8
Crimidine	9	1

Residues	Number of samples	Number of laboratories
Cyanazine	8	1
Cyanofenphos	170	1
Cyanophos	178	2
Cyantraniliprole	122	3
Cyazofamid	1,078	15
Cycloate	34	2
Cycloxydim	247	1
Cycloxydim including degradation and reaction products which can be determined as 3-(3-thianyl)glutaric acid S-dioxide (BH 517-TGSO2) and/or 3-hydroxy-3-(3-thianyl)glutaric acid S-dioxide (BH 517-5-OH-TGSO2) or methyl esters thereof, calculated in total a	255	2
Cycluron	37	2
Cyflufenamid (sum of cyflufenamid (Z-isomer) and its E-isomer, expressed as cyflufenamid)	812	10
Cyflufenamid metabolite 149-F1	255	1
Cyflumetofen	60	1
Cyfluthrin (Cyfluthrin including other mixtures of constituent isomers (sum of isomers))	765	15
Cyhalofop-butyl	70	4
Cyhalothrin	60	1
Cymiazole	15	2
Cymoxanil	1,040	15
Cypermethrin	21	3
Cypermethrin (Cypermethrin including other mixtures of constituent isomers (sum of isomers))	1,070	17
Cyproconazole	1,113	17
Cyprodinil	1,094	16
Cyromazine	559	9
DDAC-C10	2	1
DDD, o,p-	233	6
DDD, p,p-	295	10
DDE, o,p-	163	6
DDE, p,p-	295	10
DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT)	382	12
DDT, o,p-	295	10
DDT, p,p-	295	10
Deltamethrin (cis-deltamethrin)	1,053	18
Demeton-O-sulfoxide	129	2
Demeton-S-Methyl	296	5
Demeton-S-Methylsulfone	751	11
Desethyl-Atrazine	8	1
Desmedipham	28	1
Desmethyl chlorpyrifos-methyl	5	1
Desmethyl Pirimicarb	9	2
Desmethyl-bixafen	8	1
Desmetryn	8	1
Diafenthiuron	39	3
Dialifos	183	2
Diazinon	1,275	18
Dicamba	16	1
Dichlobenil	225	2
Dichlofenthion	200	3
Dichlofluanid	641	9
Dichlorobenzamide, 2,6-	58	1
Dichlorobenzophenone, 4,4`-	64	1
Dichlorprop (Sum of dichlorprop (including dichlorprop-P), its salts, esters and conjugates, expressed as dichlorprop)	22	2

Residues	Number of samples	Number of laboratories
Dichlorvos	1,066	14
Diclobutrazol	408	4
Dicloran	801	13
Dicofol (sum of p, p' and o,p' isomers)	567	10
Dicofol p, p'	13	1
Dicrotophos	447	7
Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	10	2
Dieldrin	611	13
Diethofencarb	1,087	15
Diethyl-m-toluamid, N,N-	74	1
Difenoconazole	1,110	17
Difenzoquat	19	1
Diflubenzuron	900	12
Diflubenzuron (sum of Diflubenzuron and 4-chlorophenylurea expressed as Diflubenzuron)	12	2
Diflufenican	286	5
Dimefox	33	2
Dimepiperate	9	1
Dimethachlor	33	1
Dimethoate	1,136	16
Dimethomorph (sum of isomers)	1,110	16
Dimethylaminosulfotoluidide (DMST)	207	5
Dimethylphenylformamide, 2,4-	85	3
Dimethylphenyl-N-methylformamidine, N-2,4-	85	3
Dimoxystrobin	107	4
Diniconazole (sum of isomers)	867	14
Dinotefuran	340	6
Dioxacarb	28	1
Dioxathion (sum of isomers)	134	1
Diphenylamine	785	13
Dipropetryn	9	1
Disulfoton	223	4
Disulfoton (sum of disulfoton, disulfoton sulfoxide and disulfoton sulfone expressed as disulfoton)	320	8
Disulfoton-Sulfon	210	3
Disulfoton-Sulfoxid	186	2
Ditalimfos	134	1
Dithianon	183	3
Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb, Mancozeb, Metiram, Propineb, Thiram and Ziram)	93	3
Diuron	378	6
Dodine	546	7
Edifenphos	33	1
Emamectin benzoate B1a, expressed as emamectin	593	7
Endosulfan (sum of alpha- and beta-isomers and endosulfan-sulfate expressed as endosulfan)	967	17
Endosulfan, alpha-	754	14
Endosulfan, beta-	820	15
Endosulfansulfate	878	15
Endrin	502	13
EPN	791	11
Epoxiconazole	1123	15
EPTC (ethyl dipropylthiocarbamate)	169	1
Etaconazole	170	3
Ethalfluralin	33	1
Ethephon	43	3
Ethiofencarb	342	7

Residues	Number of samples	Number of laboratories
Ethion	1,119	17
Ethiprole	28	1
Ethirimol	1,061	15
Ethofumesate	256	1
Ethofumesate (Sum of ethofumesate, 2-keto–ethofumesate, open-ring-2-keto-ethofumesate and its conjugate, expressed as ethofumesate)	263	2
Ethoprophos	723	13
Ethoxyquin	204	3
Etofenprox	920	16
Etoxazole	1,005	13
Etridiazole	170	1
Etrimfos	225	4
Famoxadone	1,039	13
Famphur	8	1
Fenamidone	1,035	14
Fenamiphos	775	11
Fenamiphos (sum of fenamiphos and its sulphoxide and sulphone expressed as fenamiphos)	956	14
Fenamiphos-Sulfon	830	12
Fenamiphos-Sulfoxid	722	10
Fenarimol	1,110	16
Fenazaquin	1,084	16
Fenbuconazole (sum of constituent enantiomers)	1,051	15
Fenbutatin oxide	367	4
Fenchlorphos	7	2
Fenchlorphos (sum of fenchlorphos and fenchlorphos-oxon expressed as fenchlorphos)	39	4
Fenchlorphos-oxon	5	1
Fenhexamid	1,095	15
Fenitrothion	812	14
Fenobucarb	98	4
Fenothiocarb	128	2
Fenoxycarb	1,091	16
Fenpicoxamid	95	3
Fenpropathrin	966	18
Fenpropidin	255	1
Fenpropidin (sum of fenpropidin and its salts, expressed as fenpropidin)	728	11
Fenpropidin (sum of fenpropidin, 2-methyl-2-[4-(2-methyl-3- piperidin-1-yl-propyl)-phenyl]propionic acid, and their salts, expressed as fenpropidin)	4	2
Fenpropimorph (sum of isomers)	1,099	16
Fenpyrazamine	838	9
Fenpyroximate	776	13
Fenson	33	1
Fensulfothion	116	4
Fensulfothion oxon	1	1
Fensulfothion-oxon-sulphone	1	1
Fensulfothion-sulfon	1	1
Fenthion	981	11
Fenthion (fenthion and its oxigen analogue, their sulfoxides and sulfone expressed as parent)	1,161	15
Fenthion oxon sulfone	486	7
Fenthion-Oxon	734	8
Fenthion-Oxonsulfoxide	486	7
Fenthion-Sulfon	803	9
Fenthion-Sulfoxide	804	9
Fenuron	37	2

Residues	Number of samples	Number of laboratories
Fenvalerate (any ratio of constituent isomers (RR, SS, RS & SR) including esfenvalerate)	646	10
Fenvalerate and Esfenvalerate (Sum of RR and SS isomers)	2	1
Fipronil	836	12
Fipronil (sum fipronil + sulfone metabolite (MB46136) expressed as fipronil)	1,025	16
Fipronil-Desulfinyl	12	2
Fipronil-Sulfone	631	10
Flazasulfuron	8	1
Flonicamid	471	5
Flonicamid (sum of flonicamid, TFNA and TFNG expressed as flonicamid)	645	9
Florpyrauxifen-benzyl	115	2
Fluazifop	100	1
Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)	227	5
Fluazifop-P-butyl	190	2
Fluazinam	151	3
Flubendiamide	723	12
Fluchloralin	33	1
Flucycloxuron	128	1
Flucythrinate (flucythrinate including other mixtures of consitutent isomers (sum of isomers))	328	5
Fludioxonil	939	14
Fludioxonil (sum of fludioxonil and its metabolites oxidised to metabolite 2,2-difluoro-benzo[1,3]dioxole-4 carboxylic acid expressed as fludioxonil)	2	1
Fluensulfone	8	1
Flufenacet	24	1
Flufenacet (sum of all compounds containing the N fluorophenyl-N-isopropyl moiety expressed as flufenacet)	68	2
Flufenoxuron	1,074	14
Flumethrin	7	1
Fluometuron	28	1
Fluopicolide	904	13
Fluopyram	904	12
Fluopyram (sum fluopyram and fluopyram-benzamide (M25) expressed as fluopyram)	12	3
Fluopyram-benzamide (M25)	265	2
Fluoxastrobin	2	1
Fluoxastrobin (sum of fluoxastrobin and its Z-isomer)	67	3
Flupyradifurone	8	1
Fluquinconazole	1,155	17
Fluridone	167	2
Fluroxypyr (sum of fluroxypyr, its salts, its esters and its conjugates, expressed as fluroxypyr)	13	1
Flusilazole	1,094	15
Flusilazole (sum of flusilazole and its metabolite IN-F7321 ([bis-(4-fluorophenyl)methyl]silanol) expressed as flusilazole)	4	2
Flutianil	48	1
Flutolanil	461	9
Flutriafol	1,147	16
Fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate	421	7
Fluxapyroxad	857	10
FM-6-1 (N-(4-chloro-2-trifluoromethylphenyl)-n-propoxyacetamidine)	36	1
Folpet	124	4
Folpet (sum of folpet and phthalimide, expressed as folpet)	276	6
Fonofos	511	7

Residues	Number of samples	Number of laboratories
Forchlorfenuron	171	3
Formetanate	254	1
Formetanate hydrochloride	255	1
Formetanate: Sum of formetanate and its salts expressed as formetanate(hydrochloride)	733	10
Formothion	265	4
Fosetyl	82	4
Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	83	4
Fosthiazate	1,053	14
Fuberidazole	9	1
Furalaxyl	37	2
Furathiocarb	136	4
Glufosinate	35	3
Glufosinate (sum of glufosinate isomers, its salts and its metabolites 3-[hydroxy(methyl)phosphinoyl]propionic acid (MPP) and N-acetyl-glufosinate (NAG), expressed as glufosinate)	48	4
Glufosinate–ammonium	13	1
Glyphosate	330	7
Haloxyfop (Sum of haloxyfop, its esters, salts and conjugates expressed as haloxyfop (sum of the R- and S- isomers at any ratio))	117	3
HCH, delta-	20	2
Heptachlor	438	9
Heptachlor (sum of heptachlor and heptachlor epoxide expressed as heptachlor)	519	13
Heptachlor endo-epoxide	49	6
Heptachlor epoxide	214	4
Heptachlor exo-epoxide	48	5
Heptenophos	275	4
Hexachlorobenzene	583	15
Hexachlorocyclohexane (HCH), alpha-isomer	548	13
Hexachlorocyclohexane (HCH), beta-isomer	541	13
Hexaconazole	1,103	17
Hexaflumuron	226	2
Hexazinone	300	4
Hexythiazox	613	14
Hydramethylnon	28	1
Hydroxy-tebuconazole	255	1
Imazalil	309	3
Imazalil (any ratio of constituent isomers)	947	13
Imazamox (sum of imazamox and its salts, expressed as imazamox)	3	1
Imidacloprid	1,083	15
Indoxacarb (sum of indoxacarb and its R enantiomer)	1,210	16
Iodofenphos	191	2
Iodosulfuron-methyl (iodosulfuron-methyl including salts, expressed as iodosulfuron-methyl)	2	1
Ioxynil (sum of ioxynil and its salts, expressed as ioxynil)	13	1
Ipconazole	28	1
Iprodione	771	13
Iprovalicarb	1,105	16
Isocarbophos	716	11
Isodrin	261	3
Isofenphos	301	3
Isofenphos (sum)	15	1
Isofenphos-methyl	384	7
Isofetamid	122	3
Isoprocarb	332	4
Isopropalin	33	1

Residues	Number of samples	Number of laboratories
Isoprothiolane	959	10
Isoproturon	390	8
Isopyrazam	315	5
Isoxaben	17	2
Isoxaflutole	84	3
Isoxaflutole (sum of isoxaflutole and its diketonitrile-metabolite, expressed as isoxaflutole)	143	3
Kresoxim-methyl	1,065	16
Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	820	15
Lenacil	161	3
Lindane (Gamma-isomer of hexachlorocyclohexane (HCH))	581	13
Linuron	1,112	16
Lufenuron (any ratio of constituent isomers)	1,067	14
Malaoxon	1,036	12
Malathion	985	12
Malathion (sum of malathion and malaoxon expressed as malathion)	1,192	16
Mandipropamid (any ratio of constituent isomers)	1,044	13
MCPA	134	1
MCPA and MCPB (MCPA, MCPB including their salts, esters and conjugates expressed as MCPA)	151	2
MCPB	134	1
Mecarbam	398	3
Mecoprop (sum of mecoprop-p and mecoprop expressed as mecoprop)	142	3
Mefenacet	28	1
Mefenpyr-diethyl	26	2
Mefentrifluconazole	62	2
Mepanipyrim	1,113	16
Mepiquat (sum of mepiquat and its salts, expressed as mepiquat chloride)	151	4
Mepronil	171	3
Meptyldinocap (sum of 2,4 DNOPC and 2,4 DNOP expressed as meptyldinocap)	8	1
Mesosulfuron-methyl	2	1
Metaflumizone (sum of E- and Z- isomers)	454	8
Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M) (sum of isomers)	1,017	14
Metamitron	17	2
Metazachlor (Sum of metabolites 479M04, 479M08 and 479M16, expressed as metazachlor)	39	2
Metconazole (sum of isomers)	793	12
Methabenzthiazuron	37	2
Methacrifos	461	11
Methamidophos	1,061	16
Methidathion	1,269	17
Methiocarb	868	11
Methiocarb (sum of methiocarb and methiocarb sulfoxide and sulfone, expressed as methiocarb)	1,077	16
Methiocarb-Sulfon	753	9
Methiocarb-Sulfoxid	753	9
Methomyl	998	14
Methoprotryne	28	1
Methoxychlor	665	13
Methoxyfenozide	1,077	15
Metobromuron	349	5
Metolachlor and S-metolachlor (metolachlor including other mixtures of constituent isomers including S-metolachlor (sum of isomers))	592	9
Metoxuron	9	1

Residues	Number of samples	Number of laboratories
Metrafenone	871	11
Metribuzin	877	12
Mevinphos (sum of E- and Z-isomers)	386	8
Mirex	113	3
Molinate	124	4
Monocrotophos	1,038	15
Monolinuron	55	3
Monuron	18	1
MPP (3-Methylphosphinicopropionic acid)	48	4
Myclobutanil (sum of constituent isomers)	607	12
N-acetyl glyphosate	27	2
NAG (N-acetyl-glufosinate)	48	4
Naled	134	1
Napropamide (sum of isomers)	1	1
Neburon	162	2
Nicosulfuron	3	1
Nitenpyram	209	4
Nitrofen	277	9
Norflurazon	167	2
Novaluron	209	4
Nuarimol	424	5
Ofurace	8	1
Omethoate	1033	14
Oryzalin	8	1
Oxadiargyl	93	2
Oxadiazon	512	8
Oxadixyl	1,111	16
Oxamyl	1,015	13
Oxathiapiprolin	123	3
Oxycarboxin	7	1
Oxychlordane	131	6
Oxydemeton-methyl	834	9
Oxydemeton-methyl (sum of oxydemeton-methyl and demeton-S-methylsulfone expressed as oxydemeton-methyl)	1,009	12
Oxyfluorfen	278	6
Paclobutrazol (sum of constituent isomers)	1,065	17
Paraoxon-Methyl	1,030	11
Parathion	1,086	18
Parathion-methyl	668	10
Parathion-methyl (sum of Parathion-methyl and paraoxon-methyl expressed as Parathion-methyl)	1,159	15
Pebulate	41	2
Penconazole (sum of constituent isomers)	1,121	17
Pencycuron	363	10
Pencycuron (sum of pencycuron and pencycuron-PB-amine, expressed as pencycuron)	797	8
pencycuron-PB-amine	255	1
Pendimethalin	988	18
Penflufen	184	4
Penflufen (sum of isomers)	166	4
Pentachloroaniline	218	4
Pentachlorobenzene	1	1
Pentachlorophenol	177	2
Penthiopyrad	406	6
Permethrin (sum of isomers)	1,076	18
Pethoxamid	15	1
Phenmedipham	46	2

Residues	Number of samples	Number of laboratories
Phenothrin (phenothrin including other mixtures of constituent isomers (sum of isomers))	60	3
Phenthoate	707	12
Phorate	361	5
Phorate (sum of phorate, its oxygen analogue and their sulfones expressed as phorate)	391	5
Phorate-Sulfon	266	3
Phorate-Sulfoxid	134	1
Phosalone	1,131	15
Phosmet	463	9
Phosmet (phosmet and phosmet oxon expressed as phosmet)	959	14
Phosmet oxon	704	7
Phosphamidon	526	10
Phosphonic acid	65	3
Phoxim	770	12
Phthalimide	22	1
Picolinafen	121	4
Picoxystrobin	171	3
Piperonyl Butoxide	164	4
Pirimicarb	940	15
Pirimicarb (sum of Pirimicarb and Desmethyl pirimicarb expressed as Pirimicarb)	17	3
Pirimicarb, Desmethylformamido-	261	2
Pirimiphos-Ethyl	777	13
Pirimiphos-methyl	1,258	18
Pretilachlor	33	1
Prochloraz	528	6
Prochloraz (sum of prochloraz, BTS 44595 (M201-04) and BTS 44596 (M201-03), expressed as prochloraz)	725	10
Procymidone	754	14
Profenofos	1,228	18
Profluralin	33	1
Promecarb	257	4
Prometon	37	2
Prometryn	214	4
Propachlor: oxalinic derivate of propachlor, expressed as propachlor	32	2
Propamocarb (Sum of propamocarb and its salts, expressed as propamocarb)	1,059	15
Propanil	209	3
Propaquizafop	283	3
Propargite	1,089	15
Propazine	8	1
Propetamphos	47	2
Propham	211	3
Propiconazole (sum of isomers)	1,113	17
Propisochlor	33	1
Propoxur	591	12
Propyzamide	1,099	15
Propyzamide (sum of propyzamide and all metabolites containing the 3,5-dichlorobenzoic acid fraction expressed as propyzamide)	3	1
Proquinazid	791	9
Prosulfocarb	864	9
Prothioconazole: prothioconazole-desthio (sum of isomers)	917	12
Prothiofos	669	8
Pymetrozine	612	9
Pyracarbolid	28	1
Pyraclofos	33	1
Pyraclostrobin	1,140	15

Residues	Number of samples	Number of laboratories
Pyrazophos	628	14
Pyrethrins	219	3
Pyridaben	1,112	16
Pyridalyl	411	7
Pyridaphenthion	293	3
Pyrifenox	134	1
Pyrimethanil	800	14
Pyriofenone	142	3
Pyriproxyfen	1,109	15
Pyroxsulam	53	1
Quinalphos	993	12
Quinoclamine	91	2
Quinoxyfen	1,115	17
Quintozene	230	6
Quintozene (sum of quintozene and pentachloro-aniline expressed as quintozene)	328	9
Quizalofop (sum of quizalofop, its salts, its esters (including propaquizafop) and its conjugates, expressed as quizalofop (any ratio of constituent isomers))	283	3
Quizalofop-Ethyl	260	2
Quizalofop-P-ethyl	24	1
Resmethrin (resmethrin including other mixtures of consituent isomers (sum of isomers))	311	9
Rimsulfuron	226	1
Rotenone	366	6
Sebuthylazine	8	1
Siduron	28	1
Silthiofam	9	1
Simazine	262	6
Simetryn	37	2
Spinosad (spinosad, sum of spinosyn A and spinosyn D)	1,069	14
Spinosyn A	116	3
Spinosyn D	116	3
Spirodiclofen	1,066	14
Spiromesifen	948	13
Spirotetramat	144	2
Spirotetramat (spirotetramat and its metabolite BYI08330-enol expressed as spirotetramat)	192	4
Spiroxamine (sum of isomers)	1,097	16
Sulfotep	306	6
Sulfoxaflor (sum of isomers)	296	6
Sulprofos	42	2
Sum of boscalid and its hydroxy metabolite 2-chloro-N-(4'-chloro-5-hydroxybiphenyl-2-yl)nicotinamide (free and conjugated) expressed as boscalid	1	1
Sum of chlorpyrifos-methyl and desmethyl chlorpyrifos-methyl	64	8
Sum of cyflufenamid (Z-isomer), its E-isomer and metabolite 149-F1, expressed as cyflufenamid	4	2
Sum of flonicamid and TFNA-AM, expressed as flonicamid	1	1
Sum of imazalil and metabolite FK-772 (any ratio of constituent isomers), expressed as imazalil	4	2
Sum of iprodione and all metabolites containing the 3,5-dichloroaniline moiety expressed as iprodione	12	2
Sum of metalaxyl (sum of isomers) and its metabolites containing the 2,6-dimethylaniline moiety, expressed as metalaxyl	4	2
Sum of Proquinazid and metabolite (3-[(6-iodo-4-oxo-3-propyl-3,4-dihydroquinazolin-2-yl)oxy]propanoic acid (IN-MU210)) expressed as proquinazid	2	1

Residues	Number of samples	Number of laboratories
Sum of pyrimethanil and 2-(4-hydroxyanilino)-4.6-dimethylpyrimidine, expressed as pyrimethanil	1	1
Sum of terbuthylazine and desethyl-terbuthylazine, expressed as terbuthylazine	39	2
Tebuconazole	1,094	16
Tebuconazole (sum of tebuconazole, hydroxy-tebuconazole and their conjugates, expressed as tebuconazole)	5	3
Tebufenozide	1,069	15
Tebufenpyrad	1,110	16
Tebuthiuron	27	1
Tecnazene	196	9
Teflubenzuron	958	11
Tefluthrin	1	1
Temephos	162	2
Terbacil	167	2
Terbucarb	18	1
Terbufos	292	7
Terbufos Sulfone	33	2
Terbufos Sulfoxide	32	1
Terbumeton	37	2
Terbuthylazine	811	14
Terbutryn	214	4
Tetrachlorvinphos	444	5
Tetraconazole	1,147	16
Tetradifon	797	14
Tetramethrin	1,033	13
Thiabendazole	922	12
Thiabendazole (sum of thiabendazole and 5-hydroxythiabendazole, expressed as thiabendazole)	3	3
Thiabendazole, 5-Hydroxy-	256	1
Thiacloprid	1,077	15
Thiamethoxam	1,017	14
Thidiazuron	28	1
Thiencarbazone-methyl	24	1
Thiobencarb	28	1
Thiodicarb	980	12
Thiometon	169	1
Thionazin	141	2
Thiophanate-Ethyl	10	1
Thiophanate-methyl	988	12
THPI	30	2
Tolclofos-methyl	1,112	16
Tolfenpyrad	150	4
Tolylfluanid	584	6
Tolylfluanid (Sum of tolylfluanid and dimethylaminosulfotoluidide expressed as tolylfluanid)	792	10
Transfluthrin	31	1
Trans-permethrin	16	1
Triadimefon	1,084	16
Triadimenol (any ratio of constituent isomers)	1,070	15
Tri-allate	253	5
Triazophos	1,222	18
Tribenuron-methyl	19	3
Trichlorfon	453	7
Trichloronat	9	1
Trichlorophenol, 2,4,6-	134	1
Triclopyr	150	2
Tricyclazole	887	12

Residues	Number of samples	Number of laboratories
Trifloxystrobin	1,057	15
Trifloxystrobin (sum of trifloxystrobin and its metabolite (E, E)-methoxyimino- {2-[1-(3-trifluoromethyl-phenyl)-ethylideneamino-oxymethyl]-phenyl}-acetic acid (CGA 321113))	4	2
Triflumizole	94	2
Triflumizole Triflumizole and metabolite FM-6-1(N-(4-chloro-2-trifluoromethylphenyl)-n-propoxyacetamidine), expressed as Triflumizole	143	4
Triflumuron	1,076	15
Trifluralin	773	13
Trimethyl-sulfonium cation, resulting from the use of glyphosate	19	1
Triticonazole	771	12
Tritosulfuron	226	3
Vamidothion	135	2
Vinclozolin	777	14
Vinclozolin, iprodione, procymidone, sum of compounds and all metabolites containing the 3,5-dichloroaniline moiety expressed as 3,5 dichloroaniline	23	2
Zoxamide	913	13

17.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

In 2022, 0.5% of the samples (40) was found not compliant with the EU MRL. The measures adopted for samples not compliant with Regulation 396/2005 are reported below (Table 110).

Table 110: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
Rapid alert notification	2	
Administrative sanctions (e.g. fines)	7	
Movement restriction	1	
Follow-up action due to a residue of a pesticide detected in an EU sample, which is not approved for use in the EU territory		
Follow-up (suspect) sampling		
Follow-up investigation	6	
No action		
Lot recalled from the market	1	
Rejection of a non-compliant lot at the border		
Destruction of non-compliant lot	1	
Follow-up action due to the residue of a pesticide detected in a domestic product, which is not authorised in the country		
Warnings to the responsible food business operator		
Other follow-up investigations to identify the reason for non-compliance or the responsible food business operator		
Other actions or not reported		

Table 111: MRL non-compliant

Pesticide[a]/food product frequency[b]	Frequency[b]
Acetamiprid–Chard–Non-ready-to-eat-unprocessed	1
Acetamiprid–Pitayas–ready-to-eat-unprocessed	1
Azoxystrobin–Grape leaves–canning/jarring–not ready-to-eat–non organic	1
Azoxystrobin–Tomato puree	1
Boscalid–Grape leaves–Ready-to-eat	1
Bupirimate–Parsley and similar	1
Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)–Litchis–Ready-to-eat-unprocessed	1
Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)–Plums	1
Chlorantraniliprole (DPX E-2Y45)–Lychees–Ready-to-eat-unprocessed	1
Chlorfenapyr–Tomatoes (cherry and not)	4
Chlorfenapyr–Sun-dried tomatoes	1
Chlorothalonil–Raspberries (red and yellow)	1
Chlorpyrifos–Sun-dried tomatoes	1
Chlorpyrifos–wheat and similar-	1
Cypermethrin (cypermethrin including other mixtures of constituent isomers (sum of isomers))–Grape leaves–Ready-to-eat	1
Cypermethrin (cypermethrin including other mixtures of constituent isomers (sum of isomers))–Peanut oil, edible	1
Deltamethrin (cis-deltamethrin)– Chard and similar	1
Dicloran–Aubergines	1
Difenoconazole–wheat and similar	1
Dimethoate–Cherries (sweet)	2
Dimethoate–Guavas	1
Dimethomorph (sum of isomers)–Cherries (sweet)	1
Dimethomorph (sum of isomers)–Lychees–Ready-to-eat-unprocessed	1
Etofenprox–Peppers and similar	1
Fenchlorphos–Broccoli	1
Fipronil (sum fipronil + sulfone metabolite (MB46136) expressed as fipronil)–Peanut oil, edible	1

Fludioxonil–Strawberries	1
Imidacloprid–Dates	1
Imidacloprid–Dates-processed-ready-to-eat	1
Imidacloprid–Lettuce and similar	1
Imidacloprid–Lycheese–Ready-to-eat-unprocessed	1
Imidacloprid–Peaches and similar-	2
Imidacloprid–Tomatoes–ready-to-eat-unprocessed	1
Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)–Grape leaves–canning/jarring–not ready-to-eat–non-organic	1
Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)–Lychees–ready-to-eat-unprocessed	1
Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M) (sum of isomers)–Courgettes	1
Metamitron–Broccoli	1
Omethoate–Cherries (sweet)	2
Omethoate–Guavas	1
Phosphonic acid–Tomatoes	1
Procymidone–Cardoons–not ready-to-eat-unprocessed	1
Procymidone–Courgettes	1
Procymidone–Lentils (dry)–not ready-to-eat-unprocessed	1
Propamocarb (Sum of propamocarb and its salts, expressed as propamocarb)–Peanuts	1
Spiromesifen–Parsley and similar	1
Spiroxamine (sum of isomers)–Cherries (sweet)	1
Tebuconazole–Grape leaves–ready-to-eat	1
Tetramethrin–Rice and similar–processed–Not ready-to-eat	1
Thiophanate-methyl–Lychees–ready-to-eat-unprocessed	1

(b) Number of cases.

17.4 Quality assurance

All regions participated in the national programme and the laboratories listed in Table 112 participated in the following proficiency tests.

Our national reference laboratories: Istituto Superiore di Sanità and IZSLPV, also participated in the proficiency tests.

All laboratories are accredited.

Moreover, nine of our laboratories participated in the proficiency test EUPT SRM17 but are not included in the table because the final report is not available.

Table 112: Laboratory participation in the control programme

Country	Laboratory Name	Code	Accreditation Date	Body	Participation in proficiency tests or inter-laboratory tests
IT	IZS LOMBARDIA E EMILIA	I0200000	03/04/1997	Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-AO-BF1 EUPT-FV24 COIPT-22
IT	IZS DELLE VENEZIE	I0300000	18/07/1997	Accredia	EUPT-CF16--- EUPT-AO-17
IT	IZS LAZIO E TOSCANA	I0500000	1998	Accredia	EUPT-CF16 EUPT-AO-17 EU PT-FV24 COIPT-22
IT	IZS UMBRIA E MARCHE	I0600000	14/12/1998	Accredia	EUPT-CF16--- EUPT-AO-BF1
IT	IZS ABRUZZO E MOLISE	I0700000	18/12/2003	Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-FV24
IT	IZS DELLA SICILIA	I1000000	08/07/1999	Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-FV24
IT	IZS DELLA SARDEGNA	I0400000	17/05/2011	Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-FV24
IT	IZS DELLA PUGLIA E BASILICATA	I0800000	31/10/2000	Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-FV24 COIPT-22
IT	IZS DEL MEZZOGIORNO	I0900000	14/07/2010	Accredia	EUPT-CF16 EUPT-FV24

Country	Laboratory Name	Code	Accreditation Date	Body	Participation in proficiency tests or inter-laboratory tests
IT	IZS PIEMONTE - LIGURIA e VALLE D'AOSTA	I0100000		Accredia	EUPT-CF16 EUPT-FV24 COIPT-22
IT	ARPA AOSTA	P0201010	03/10/2007	Accredia	EUPT-FV24 EUPT-CF16
IT	ATS BERGAMO	030325	19/06/2009	Accredia	EUPT-CF16- EUPT-AO-17 - EUPT-FV24 COIPT-22
IT			05/12/2001	Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-FV24 COIPT-22
IT	APPA BOLZANO	P0411010		Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-FV24
IT	APPA TRENTO	P0421010	17/10/2012	Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-FV24
IT	ARPA FRIULI VENEZIA GIULIA	P0601040			EUPT-CF16- EUPT-FV24 COIPT-22
IT	ARPAL LIGURIA	P0701050	25/06/2002	Accredia	EUPT-CF16- EUPT-FV24
IT	ARPA EMILIA ROMAGNA	P0801090	1998	Accredia	EUPT-FV24 EUPT-CF16 COIPT-22
IT	ARPAM MACERATA	P1101090	December 1999	Accredia	EUPT-CF16-- EUPT-FV24
IT	ARPA LAZIO	P1201110	18/03/2004	Accredia	EUPT-CF16-- EUPT-AO-17 EUPT-FV24 COIPT-22
IT	ARPA PUGLIA	P1601040	25/02/2010	Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-FV24 COIPT-22
IT	ATS MILANO	030321	21/12/2010	Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-FV24 COIPT-22
IT	LABORATORIO DI SANITA PUBBLICA FIRENZE	090201	18/12/2006	Accredia	EUPT-CF16--- EUPT-AO-17 EUPT-FV24 COIPT-22

17.5 Processing factors

Table 113 shows the processing factors used by national competent authorities to verify compliance of processed products with EU MRLs. Moreover, when a processing factor is not defined, the laboratories have to establish it themselves. Studies were done from our National reference laboratory (LNR) to define the process factor for the product of cereal and product of milk. These studies are presented various conferences. Publication of these studies is awaited, in order to fix these factors for Italy. Moreover, our laboratories for dry food can use the tools that enable the process factor for these products to be established.

Table 113: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[a]	Comments
All	Pepper	Dry pepper	10	
Nicotine	Fungi	Dry fungi	30	
Other different from nicotine	Fungi	Dry fungi	10	
All	Origan	Dry origan	10	
All	Wheat	Flour	1	
All	Olives	Oil	5	
All	Wine grapes	Wine	1	
All	Dry product	Found with calculator developed by national reference laboratory		

(a) Processing factor for the enforcement residue definition.

18 Latvia

18.1 Objective and design of the national control programme

The Ministry of Agriculture of Latvia in collaboration with the Food and Veterinary Service and the State Plant Protection Service drafted the national control programme for pesticide residues taking into account Article 30 Part 1 of Regulation (EC) 396/2005 of the European Parliament and of the Council of 23 February 2005 on the MRL of pesticides in or on food and feed of plant or animal origin.

18.1.1 Objective

The goal of this programme is to clarify the situation on contamination of the products of animal and plant origin on pesticide residues, as well as to perform a unified pesticide monitoring programme in Latvia and to participate in the coordinated EU pesticide control programme.

18.1.2 Design

The pesticide control programmes are drafted taking into account the relevance of food products in national agricultural production, the performance of plant protection products in Latvia, the metabolism and toxicity of the active substances, RASFF notifications for pesticides, the risk to consumers, and the cost of analysis and results from previous national control programmes for pesticide residues. The food commodities and pesticide residues which are not included in the

EU-coordinated programme are submitted to the national control programme. Sampling was carried out at different stages of the market:

- primary production;
- wholesalers;
- retail;
- processing and manufacturing;
- border inspection activities;

by trained inspectors from the Food and Veterinary Service in accordance with Commission Directive 2002/63/EC.

Table 114: Summary of samples taken in 2022 by product class and origin of samples

Samples	Total	Domestic	EU	Non-EU
Animal products	25	12	13	0
Cereals	60	40	18	2
Baby food	20	12	8	0
Fruit and nuts	99	35	47	17
Vegetables	115	54	51	10
Wine	22	0	16	6
Other plant products	6	4	0	2
Honey	4	4	0	0
Total	**351**	161	153	37

18.2 Key findings, interpretation of the results and comparability with the previous year's results

18.2.1 Key findings

Coordinated programme: under Regulation (EC) No 2021/601 in 2021, a total of 284 samples of fruit: apples, strawberries, peaches/nectarines; vegetables: cabbage, tomatoes, spinach, lettuces; cereals: barley, oats; wine; animal products: fat, milk; and baby food. The proportion of organic samples in year 2022 was 13% (38 samples).

National programme: a total of 54 samples of vegetables: carrots, cauliflowers, potatoes, head cabbages, celery root, onions; cereals: barley, wheat; beans; tea; rape; honey; fruit: blueberries, cranberries, cherries, sea buckthorn, strawberries, all samples of domestic origin. The proportion of organic samples in 2022 was 5% (three samples).

Table 115: Summary results

Product	Total samples	Non-compliant samples
Baby food	20	0
Wine	22	0
Fat (pig)	13	0
Cow milk	12	0
Honey/ product	4	0
Citrus fruits	3	0
Table grapes	6	0
Strawberries	26	1
Small berries	10	0
Apples	29	0
Peaches / nectarines	22	0
Buckwheat	4	0

Rapeseeds	2	0
Wheat	4	0
Rice	1	0
Barley	27	0
Oats	24	0
Tomatoes	26	0
Spinach	24	0
Leaf vegetables	26	0
Head cabbage	24	0
Onions	2	0
Cauliflowers	2	0
Beans	2	0
Potatoes	5	0
Carrots	2	0
Spices	2	0
Courgettes	2	0
Celery root	2	0
Melons	3	0

18.2.2 Interpretation of the results

In 2022, one sample was found to be non-compliant with the EU MRL – strawberries (non-EU countries).

18.2.3 Comparability with the previous year's results

Table 116: Comparability with the previous year's results

	Total	Vegetables	Fruit	Cereals	Animal Products	Baby food	Other products
Year 2018							
Total samples	368	143	100	34	33	26	32
Non-compliant samples	3	2	1	0	0	0	0
Year 2019							
Total samples	392	141	94	58	29	20	50
Non-compliant samples	1	0	1	0	0	0	0
Year 2020							
Total samples	339	113	87	62	27	18	32
Non-compliant samples	0	0	0	0	0	0	0
Year 2021							
Total samples	311	104		30	20	21	36
Non-compliant samples	9	0	6	0	0	0	3
Year 2022							
Total samples	351	115	99	60	29	20	28
Non-compliant samples	1	0	1	0	0	0	0

18.3 Non-compliant samples: possible reasons and actions taken

No reason possible to determine – frozen strawberries from non-EU countries.

18.3.1 Action taken

Rapid alert notification: one sample (lot) of strawberries (omethoate).

Lot withdrawn from the market: one lot of strawberries.

18.4 Quality assurance

All laboratory analyses were carried out by the Institute of Food Safety, Animal Health and Environment (BIOR).

Table 117: Laboratories participating in the national control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or interlaboratory tests
	Name	Code	Date	Body	
LV	Institute of Food Safety, Animal Health and Environment BIOR	90009235333	8 December 2022	Latvian National Accreditation Bureau (LATAK)	Yes, institute participated in proficiency tests and interlaboratory tests

18.5 Processing factors

All samples reported were from unprocessed products.

18.6 Note on confidentiality of certain control data submitted by the reporting country

All data can be shared with stakeholders and third parties as they are reported.

19 Lithuania

19.1 Key findings, interpretation of the results and comparability with the previous year's results

The total number of samples analysed under the EU-coordinated and national control programme was 574 (595 in 2021; 550 in 2020) and under the import control programme was 651 samples (2021 in 773; 774 in 2020), totalling 1,225 samples (1,368 in 2021; 1,324 in 2020), which is 99 fewer samples than the previous year.

Exceedance of MRLs was found in 24 samples (32 in 2021) non-compliant (measurement uncertainty taken into consideration). The total percentage of non-compliance is 1.9%.

Non-compliant samples are shown in Table 118.

Table 118: Non-compliant samples in 2022

No.	Product	Origin country	Programme	Residue	Value
1.	Rye Rye (raw material), (for further processing) 1-22/07019/1 CH	Belarus	Import control	Chlorpyrifos	0.050 ± 0.025 (mg/kg)
2.	Oranges 1-22/07324/1 CH	Egypt	Import control	Chlorpyrifos	0.029 ± 0.015 (mg/kg)
3.	Pomegranates 1-22/07726/1 CH	Turkey	National control (Monitoring)	Azoxystrobin; Pyraclostrobin;	0.44 ± 0.22 (mg/kg); 0.11 ± 0.06 (mg/kg)
4.	Buckwheat 1-22/07230/1 CH	Lithuania	National control (Monitoring)	Glyphosate	0.34 ± 0.17 (mg/kg)
5.	Roasted buckwheat groats 1-22/09096/1 CH	Poland	National control (Monitoring)	Glyphosate	0.26 ± 0.13 (mg/kg)
6.	Pomegranates 1-22/08719/1 CH	Turkey	National control (Monitoring)	Azoxystrobin; Pyraclostrobin	0.26 ± 0.13 (mg/kg); 0.064 ± 0.032 (mg/kg)
7.	Bee corpses 1-22/13311/1 CH	Lithuania	Feed monitoring	Thiamethoxam; Clothianidin; Azoxystrobin	0.10 ± 0.05 (mg/kg); 0.015 ± 0.008 (mg/kg); 0.063 ± 0.032 (mg/kg)
8.	Grapes 1-22/18052/1 CH		Import control	Propamocarb	0.071 ± 0.036 (mg/kg)
9.	Organic buckwheat 1-22/17000/1 CH	Lithuania	National control (Monitoring)	Glyphosate	0.013 ± 0.0039 (mg/kg)
10.	Linseed 1-22/18984/1 CH	Ukrain	Import control	Tiametoksamas	0.10 ± 0.05 (mg/kg)
11.	Honey 1-22/16737/1 CH		Monitoring of residues	AMPA; Glyphosate	0.011 ± 0.0033 (mg/kg); 1.5 ± 0.45 (mg/kg)
12.	Cumin seeds 1-22/19472/1 CH	India	Import control	Chlorpyrifos; Epoxiconazole; Famoxadone; Fipronil (sum fipronil + sulfone metabolite (MB46136) expressed as fipronil); Fluksapiroksad; Hexaconazole; Carbendazim and benomyl (sum of benomyl and	0.17 ± 0.08 (mg/kg), 0.38 ± 0.19 (mg/kg), 0.89 ± 0.44 (mg/kg), 0.067 ± 0.034 (mg/kg), 0.42 ± 0.21 (mg/kg), 0.35 ± 0.18 (mg/kg), 2.4 ± 1.2 (mg/kg), 0.51 ± 0.26 (mg/kg), 1.7 ± 0.9 (mg/kg), 9.2 ± 4.6 mg/kg)

				carbendazim expressed as carbendazim); Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M) (sum of isomers); Pyraclostrobin; Tricyclazole	
13.	Rice 1-22/21128/1 CH	Paraguay	Import control	Imidacloprid	0.052 ± 0.026 (mg/kg)
14.	Rice 1-22/21127/1 CH	Paraguay	Import control	Imidacloprid	0.042 ± 0.021 (mg/kg)
15.	Organic buckwheat 1-22/21326/1 CH	Lithuania	National control (Monitoring)	Glyphosate	0.013 ± 0.0039 (mg/kg)
16.	Organic buckwheat 1-22/21183/1 CH	Lithuania	National control (Monitoring)	Glyphosate	0.012 ± 0.0036 (mg/kg)
17.	Organic peas 1-22/22143/1 CH	Rusija	Import control	Thiamethoxam	0.019 ± 0.010 (mg/kg)
18.	Carrots 1-22/22644/1 CH	Lithuania	National control (Monitoring)	Linuron	0.10 ± 0.05 (mg/kg)
19.	Chamomile flowers 1-22/23391/1 CH	EU	Inspection control	Chlorpyrifos	0.10 ± 0.05 (mg/kg)
20.	Chamomile herbal tea 1-22/22641/1 CH	Poland	Inspection control	Chlorpyrifos	0.046 ± 0.023 (mg/kg)
21.	Persimmon 1-22/25611/1 CH	Spain	National control (Monitoring)	Imazalil	0.11 ± 0.06 (mg/kg)
22.	Buckwheat 1-22/27603/1 CH	Kazakhstan	Import control	Glyphosate	1.2 ± 0.6 (mg/kg)
23.	Buckwheat 1-22/27604/1 CH	Kazakhstan	Import control	Glyphosate	0.51 ± 0.26 (mg/kg)
24.	Buckwheat 1-22/27605/1 CH	Kazakhstan	Import control	Glyphosate	2.3 ± 1.2 (mg/kg)

19.2 Quality assurance

According to Regulation No 882/2004 the competent authority should designate laboratories that may carry out the analysis of samples taken during official controls. And designated laboratories are assessed and accredited in accordance with EN ISO/IEC 17025:2017 on 'General requirements for the competence of testing and calibration laboratories'.

Table 119: Laboratory participation in the national control programme

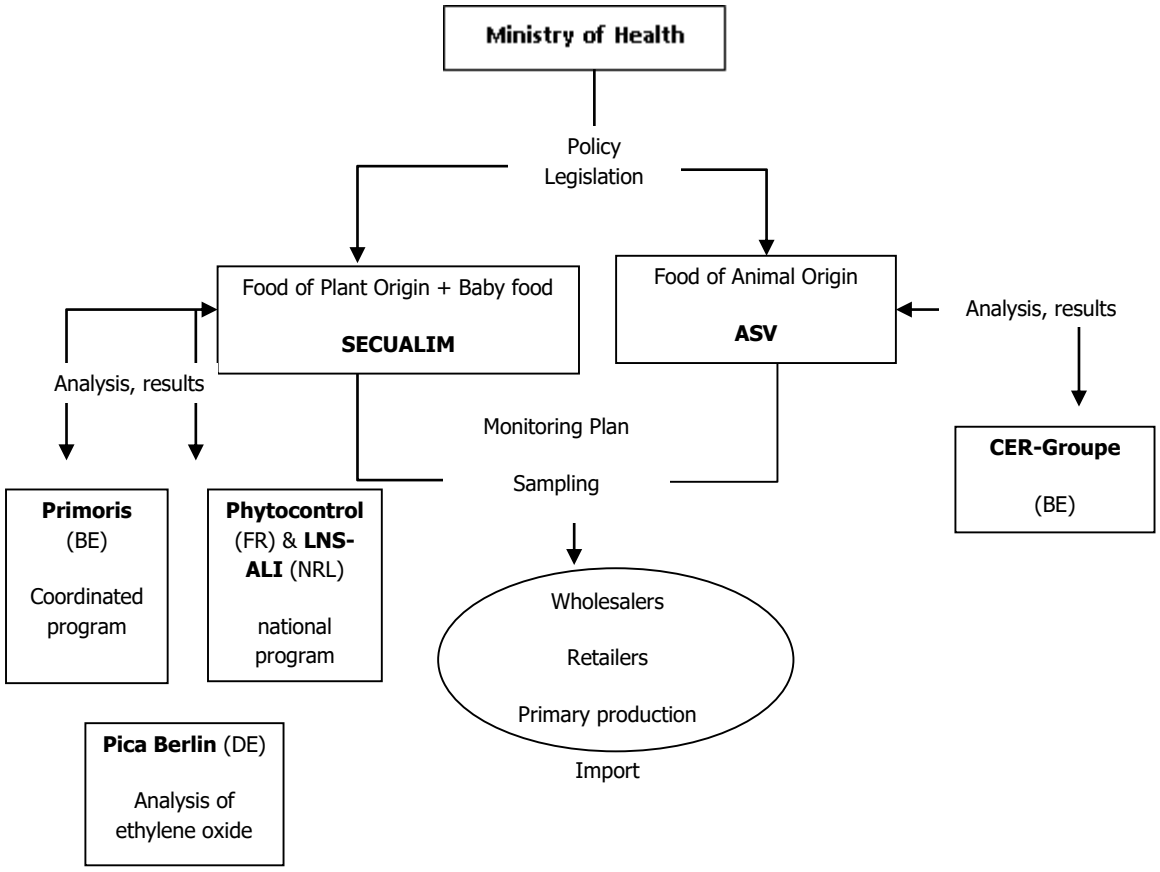
Country code	Laboratory name	Laboratory code	Accreditation date	Accreditation body	Participation in proficiency tests or interlaboratory tests
LT	National Food and Veterinary Risk Assessment Institute	NFVRAI	Accreditation certificate, valid until 08.04.2025	NAB, Lithuania	EURL EUPT-CF 16, Denmark; EURL EUPT-FV-SM 14, Spain; EURL EUPT-FV24, Spain; EURL EUPT AO17, Germany; EURL EURL-SRM17, Germany. EURL, EUPT-FV-SC05, Spain

20 Luxembourg

The Ministry of Health is the competent authority for the control of pesticide residues in food of both plant and animal origin. Within this Ministry, the Division of Food Safety (Secualim) of the Directorate for Public Health is the executive, competent authority responsible for the control of pesticide residues in food of plant origin, including cereals and baby food. As regards the control of pesticide residues in food of animal origin, the executive competent authority is the Administration of Veterinary Services (ASV). Secualim and ASV are also responsible for transferring notifications to the RASFF via the national contact point (COMALIM: Commissariat du gouvernement à la qualité, à la fraude et à la sécurité alimentaire) for these same categories of food.

The collected samples are sent to the appropriate laboratories: the samples from food of animal origin are analysed by the laboratory for the products of animal origin (CER). For products of plant origin, including cereals and baby food, samples collected for both the coordinated and national programmes are sent to Primoris Belgium, a laboratory for pesticide and residue analysis. Samples collected for the national programme are sent to either Primoris, Phytocontrol or the food laboratory of the National Health Laboratory (LU). One part of the pesticide analysis, notably the analysis of ethylene oxide and 2-chloroethanol, was performed by Pica Berlin (DE).

The implementation of the various services during the sample collection process at wholesalers, retailers and during import are shown in Figure 5 below.



Secualim: Division of Food Safety of the Directorate for Public Health.
ASV: Administration of Veterinary service.
CER: Centre d'économie rurale, laboratory for the products of animal origin.
LNS-ALI: Food Laboratory of the National Health Laboratory.
Primoris: Laboratory for the products of plant origin.
Phytocontrol: Laboratory for products of plant origin.
Pica Berlin: Laboratoy for the analysis of ethylene oxide.

Figure 5: Implementation of the various departments involved in the control plan

The various roles of these two authorities for the control of pesticide residues in food, both operating under the Ministry of Health, are summarised in Table 120.

Table 120: The various roles of the Secualim and ASV departments for the control of pesticide residues in food

Role	Organisation name	Organisation address	Products
Official reporting organisation residue programme design Sample collection Enforcement agencies	Division of food safety (Secualim)	7 A, rue Thomas Edison L-1445 Strassen	Food of plant origin (fruit, vegetables, nuts, cereals) and baby food
Official reporting organisation Residue programme design Sample collection Enforcement agencies	Administration of Veterinary Services (ASV)	7 A, rue Thomas Edison L-1445 Strassen	Food of animal origin

Please note that the responsibility for the control of the food chain changed in October 2022. The Luxembourg Veterinary and Food Administration was created in 2022 by bringing together most of the food chain control bodies into a single administration.

Following the logic of Regulation 2017/625 which sets out common and uniform criteria for all controls in the agri-food chain, the Luxembourg Veterinary and Food Administration (ALVA) is made up of the following pre-existing units:

- Administration of Veterinary Services;
- Food Safety Division of the National Health Directorate;
- Feed Control Department of the Administration of Agricultural Technical Services;
- Government Commissariat for Quality, Fraud and Food Safety.

The Luxembourg Veterinary and Food Administration is under the sole supervision of the Minister of Agriculture, Viticulture and Rural Development.

20.1 Objective and design of the national control programme

20.1.1 Objective

The aim of the national control programme is to judge the contamination of plant products regarding pesticide residues that can be found on fruit, vegetables and cereals as a result of the use of plant protection products during primary production.

To protect consumers and to check the good use of plant protection products (i.e. the use of authorised products and the application of GAP), MRLs are set out in European legislation. An MRL exceedance, while showing the incorrect use of a plant protection product, does not necessarily involve a risk to the health of consumers.

More information on the pesticide products authorised in Luxembourg can be found online[42].

20.1.2 Design

The Division of Food Safety (Secualim) is responsible for drafting the sampling plan and for controlling the presence of pesticide residues in fruit and nuts, vegetables, cereals, baby food and other plant products.

The control programme included two different programmes:

- the Coordinated Community control programme based on Commission Regulation (EU) 2021/601on a coordinated multiannual control programme;
- the national programme based on a risk assessment where several factors were taken into account: results from previous checks, data from the RASFF, toxicological data of residues, national production and available consumption.

Samples for the EU-coordinated programme included apples, strawberries, peaches, wine, lettuce, head cabbage, tomatoes, spinach, oat grains, barley grains, cow milk, swine fat, and baby food (Regulation (EC) 2021/601).

For the national programme, samples collected included cereals (oats, rice, rye, spelt, wheat), fruit (i.e. apples, avocados, blackberries, blackcurrants, blueberries, carambolas, cherries,

[42] https://saturn.etat.lu/tapes/tapes_de_mnu_pdt.htm

clementines, currants, eddos, figs, granadillas, pomegranates, guavas, jackfruit, kaki, kiwi, kumquats, lemons, limes, mandarins, mangoes, mirabelles, nectarines, oranges, papayas, peaches, pears, pineapples, plums, rambutans, raspberries, strawberries, sweetcorn, table grapes, tamarillos, wine grapes), dried fruit, legume seeds, aromatic herbs, tea, spices, nuts, oilseeds, vegetables (i.e. asparagus, beans, beetroots, broccoli, brussels sprouts, butternut squash, cabbages, carrots, celeriac, celery, courgettes, cucumbers, garlic, ginger roots, kohlrabies, leeks, lemongrass, lettuces, onions, peas, potatoes, radicchio, radishes, rocket, shallots, spinach, turnips).

For both parts of the programme, the national production was taken into account, as well as food originating from other EEA countries and from non-EU countries. Furthermore, where available, samples were taken from products originating from organic farming that reflect the market share of organic products. Sampling was done mainly at wholesalers and on retail level, but also during import. The choice of the matrixes is based largely on fresh products to conduct the controls at the origin of the food chain and avoid the need to use a processing factor.

As far as the use pattern of pesticides and the toxicity of the active substances are concerned, Luxembourg works in collaboration with the laboratory responsible for controlling the samples for choosing the pesticides to be screened for as regards to a specific matrix (in function of their toxicity).

20.2 Key findings, interpretation of the results and comparability with the previous year's results

20.2.1 Key findings

In 2022, a total of 634 samples were analysed for pesticide residues. Of those, 625 samples were collected as part of surveillance (152 samples within the coordinated Community control programme and 473 samples within the national programme) and nine samples were collected during enforcement.

Table 121: Summary of results for the samples collected (surveillance and enforcement)

Matrix	Organic samples	Total samples	<LOQ	Quantified <MRL	Result >MRL but compliant considering uncertainty	Result non-compliant
Grains and grain-based products	34	**69**	53	13	0	3
Sugar plants	0	**1**	1	0	0	0
Oilseeds and oilfruits	11	**14**	13	1	0	0
Alcoholic beverages	1	**12**	0	12	0	0
Food products for	8	**10**	10	0	0	0

Matrix	Organic samples	Total samples	<LOQ	Quantified <MRL	Result >MRL but compliant considering uncertainty	Result non-compliant
young population						
Garden vegetables	21	**181**	100	78	1	2
Milk	0	**15**	15	0	0	0
Nuts	5	**25**	20	3	1	1
Herbs and spices	17	**67**	33	24	5	5
Fruit	17	**163**	43	109	7	4
Mammal and bird meat	0	**12**	12	0	0	0
Ingredients for hot drinks and infusions	2	**40**	22	10	6	2
Starchy roots and tubers	2	**25**	21	4	0	0
Grand total	**118**	**634**	**343**	**254**	**16**	**21**
	(19.89%)		**(54.1%)**	**(40.1%)**	**(2.52%)**	**(3.3%)**

Table 122: Summary of results of non-compliant samples

Product	Origin	Pesticide residue	Level (mg/kg)	MRL (mg/kg)
National multiannual control programme				
Cherry tomatoes	IT	Chlorfenapyr	0.045	0.01
Buckwheat flour	FR	Glyphosate	0.44	0.1
Paprika powder	ES	2,4-D	0.84	0.5[(a)]
Curcuma	FR	Cypermethrin	0.51	0.2
Turmeric powder	IN	Chlorpyrifos	0.18	0.01
Organic oat flour	DE	Dodine	0.025	0.01
Cherries	LU	Tebufenozide	0.038	0.01
Celeries	IT	Lambda-cyhalothrin	0.55	0.2
Hibiscus infusion flowers	PT	Chlorpyrifos	0.027	0.01
Other infusion flowers	FR	Chlorpyrifos	0.056	0.01
Black tea	VN	Acetamiprid	0.49	0.05
		Chlorpyrifos	0.03	0.01
		Imidacloprid	0.13	0.05
Red tea powder	TH	Acetamiprid	0.17	0.05
Pitayas	EC	Chlorothalonil	0.05	0.01
		Dithiocarbamates	1.1	0.05
		Thiabendazole	1.69	0.01
Pistachios	IR	Clothianidin	0.03	0.01
Organic oat flakes	ES	Chlormequat	0.03	0.01

Product	Origin	Pesticide residue	Level (mg/kg)	MRL (mg/kg)
		Fosetyl-Al	0.25	0.01
Import (2017/625)				
Green tea	JP	Difenoconazole	0.12	0.05
		Dinotefuran	0.15	0.01
		Methoxyfenozide	0.26	0.05
		Tebuconazole	0.41	0.05
Green tea	VN	Anthraquinone	0.051	0.01
		Chlorpyrifos	0.025	0.01
		Dinotefuran	0.03	0.01
Sumac	LB	Ethylene oxide (sum)	3	0.05
Thyme (spice)	LB	Ethylene oxide (sum)	77.7	0.05
Figs	MX	Chlorantraniliprole	0.064	0.01
		Cypermethrin	0.17	0.05
		Malathion	0.34	0.02
		Tebuconazole	0.065	0.02
		Thiophanate-methyl	0.21	0.1
Raspberries	MX	Imidacloprid	0.14	0.01

[(a)] Dehydration factor taken into account (10×).

20.2.2 Interpretation of the results

In 2022, 3.3% of the samples collected (enforcement and surveillance) were non-compliant (19 samples of fruit, vegetables, grains and tea and herbal infusions from conventional production, as well as two organic oat-based products) with the MRL set by EU legislation.

Of the non-compliant samples, 15 were sampled as part of the national multiannual control programme and the products were withdrawn from the market. For one of the samples of celery, a risk to the consumer could not be excluded due to the presence of lambda-cyhalothrin, according to EFSA PRIMO rev 3.1. The product was recalled from the consumer and a rapid alert notification was issued.

Six non-compliant samples were taken in the context of border inspection activities under Regulation (EU) No 2017/625. The products were not yet on the market and could be blocked.

Ten of the non-compliant samples were of EU origin, while 11 originated from a non-EU country.

Of the samples collected for enforcement (Regulation (EU) 2019/1793), none of the products were non-compliant.

To note that also two samples of organic production (one sample of wine and one sample of oat flour) were non-compliant as regards Regulation (EU) No 2018/848 on organic production. These samples would have been compliant with Regulation (EC) No 396/2005 on MRLs of pesticides in or on food and feed (conventional production). A follow-up at the producer has been initiated in each case.

20.2.3 Comparability with the previous year's results

Table 123: Number of samples collected between 2018 and 2022 and non-compliance rates

Year	Total number of samples collected	Coordinated programme	National programme	Enforcement	Non-compliance (%)
2022	634	152	473	9	3.3
2021	709	153	548	8	1.97
2020	479	136	343	6	4.59[(a)]
2019	490	156	329	5	1.51

Year	Total number of samples collected	Coordinated programme	National programme	Enforcement	Non-compliance (%)
2018	349	156	189	4	2.3

(a) Please note that this compliance rate is biased by the sampling of sesame seeds and derived products expected to be non-compliant as part of the crisis on ethylene oxide in various food products – without those samples the non-compliance rate lies at 2.9%.

20.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

Table 124: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]	Comments
(c)	Chlorfenapyr / Tomatoes (Italy)	1	Regulation 899/2012
GAP not respected: use of a pesticide not authorised on the specific crop	Chlormequat / organic oat flakes (Spain)	1	Regulation 2018/848 (Regulation on organic production)
GAP not respected: use of a pesticide not authorised on the specific crop	Fosetyl-Al / organic oat flakes (Spain)	1	Regulation 2018/848 (Regulation on organic production)
(b)	Glyphosate / Buckwheat flour (France)	1	Regulation 293/2013
(b)	2,4-D / Paprika powder (Spain)	1	Regulation 2019/1791
(b)	Cypermethrin / Curcuma (France)	1	Regulation 2017/626
(c)	Chlorpyrifos /Turmeric powder (India)	1	Regulation 2020/1085
(b)	Dodine / Organic oat flour (Germany)	1	Regulation 2022/1290
(b)	Tebufenozide / Cherries (Luxembourg)	1	Regulation 2021/1807
(b)	Lambda-cyhalothrin / Celery (Italy)	1	Regulation 2021/590
(c)	Chlorpyrifos / Hibiscus infusion flowers (Portugal)	1	Regulation 2020/1085
(c)	Chlorpyrifos/Other infusion flowers (France)	1	Regulation 2020/1085
(b)	Acetamiprid / Black tea (Vietnam)		Regulation 2019/88
(c)	Chlorpyrifos / Black tea	1	Regulation 2020/1085

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]	Comments
(c)	(Vietnam) Imidacloprid / Black tea (Vietnam)	1	Regulation 2021/1881
(b)	Acetamiprid / Red tea powder (Thailand)	1	Regulation 2019/88
(c)	Chlorothalonil / Pitayas (Ecuador)	1	Regulation 2021/155
(b)	Dithiocarbamates / Pitayas (Ecuador)	1	Regulation 2017/171
(b)	Thiabendazole / Pitayas (Ecuador)	1	Regulation 2021/1807
(c)	Clothianidin / Pistachios (Iran)	1	Regulation 2017/671
(b)	Difenoconazole / Green tea (Japan)	1	Regulation 2019/552
(c)	Dinotefuran / Green tea (Japan)	1	Regulation 491/2014
(b)	Methoxyfenozide / Green tea (Japan)	1	Regulation 2015/1040
(b)	Tebuconazole / Green tea (Japan)	1	Regulation 2018/1514
(c)	Antraquinone / Green tea (Vietnam)	1	Regulation 1146/2014
(c)	Chlorpyrifos / Green tea (Vietnam)	1	Regulation 2020/1085
(c)	Dinotefuran / Green tea (Vietnam)	1	Regulation 491/2014
(c)	Ethylene oxide / Sumac (Lebanon)		Regulation 2015/868
(c)	Ethylene oxide / Thyme (spice) (Lebanon)		Regulation 2015/868
(b)	Chlorantraniliprole / Figs (Mexico)	1	Regulation 2021/1884
(b)	Cypermethrin / Figs (Mexico)	1	Regulation 626/2017
(b)	Malathion / Figs (Mexico)	1	Regulation 399/2015
(b)	Tebuconazole / Figs (Mexico)	1	Regulation 2018/1514
(c)	Thiophanate-methyl / Figs (Mexico)	1	Regulation 599/2011
(c)	Imidacloprid / Raspberries	1	Regulation 2021/1881

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]	Comments
	(Mexico)		

(a) Number of cases.
(b) GAP not respected: use of a pesticide not authorised on the specific crop / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected.
(c) GAP not respected: use of a pesticide not authorised in the EU.

All of the non-compliant samples were removed from the market. In 2022, one of the samples exceeded the acute reference dose (lambda-cyhalothrin in celeries from Italy). The sample was removed from the market and the consumer was informed about the non-compliance.

20.4 Quality assurance

Table 125: Laboratories participating in the national control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or interlaboratory tests
	Name	Code	Date	Body	
BE	Centre d'économie rurale	CER	20 May 2014	BELAC (073 Test)	Yes
BE	Primoris	Primoris	27 July 2012	BELAC (057-TEST)	Yes
FR	Phytocontrol	Phytocontrol	2019-09-24	COFRAC	Yes
LU	Laboratoire national de santé – Laboratoire de surveillance alimentaire	LNS-ALI	22 September 2009	OLAS (1/002)	Yes

20.5 Processing factors

Processing factors are applied when necessary to verify compliance of processed products with EU MRLs according to Article 20 of Regulation 396/2005. Processing factors were mainly applied to cover the dehydration of fruit or vegetables.

The main processing factors that were used to verify the compliance of the processed products with EU MRL are compiled in the table below.

Table 126: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
All	Cereal grains (except rice)	Flour	1	Default processing factor
All	Sweet pepper	Dried product	10	EFSA processing techniques, 2018
All	Oregano, Parsley	Dried product	6	EFSA processing techniques, 2018
All	Basil, Rosemary, Thyme	Dried products	7	EFSA processing techniques, 2018

20.6 Note on confidentiality of certain control data submitted by the reporting country

Luxembourg confirms that reported data on the 2022 pesticide monitoring results do not contain confidential information and can be shared with third parties if required.

21 Malta

21.1 Objective and design of the national control programme

21.1.1 Objective

Malta's sampling programme for pesticide residues in produce of plant and animal origin for 2022 was based on the EU-Coordinated Multiannual Community Control Programme as adopted by Commission Implementing Regulations made by virtue of Article 29(2) of Regulation (EC) 396/2005, and the risk-based national programme. For the coordinated programme, the products to be sampled, the number of samples to be taken and analysed, the pesticides to be analysed and the pesticide–product combinations were as laid down in Commission Implementing Regulations made by virtue of Article 29(2) of Regulation (EC) 396/2005. The ratio of the number of domestic samples to non-domestic samples is determined on a year-by-year basis, depending on the most recent data on produce grown in Malta and products brought into Malta. With regard to the commodities as part of the risk-based national programme, several factors were considered to determine the type and frequency of monitoring for the particular produce, the number of samples to be taken and analysed and the pesticides to be analysed:

- Commission Implementing Regulation(s) in force concerning a Coordinated Multiannual Community Control Programme;
- Local production/imports of commodities;
- Past findings that may indicate a historical residue problem and the pesticide–product combination used when the finding was identified;
- New risks known to the competent authorities, if any, (e.g. knowledge on use of banned pesticides) or other country monitoring schemes, as applicable;
- Cumulative annual amount of crops sold through organised markets.

Detailed information on the commodities can be found in Table 127 below.

21.1.2 Design

Sampling programmes

A total of 20 different food commodities (including fruit and vegetables, food of animal origin and baby food) were analysed during 2022.

The commodities and quantities sampled were as follows:

- Apples = 12 samples
- Strawberries = 12 samples
- Peaches, including nectarines and similar hybrids = 12 samples
- Lettuce = 12 samples
- Head cabbages = 12 samples
- Tomatoes = 12 samples
- Spinach = 12 samples

- Wine (red or white) = 12 samples
- Cow milk = 12 samples
- Swine fat = 13 samples
- Oat grain = 12 samples
- Barley grain = 12 samples
- Food for infants and young children other than infant formulas, follow-on formulas and processed cereal-based baby food = 10 samples
- Table grapes = 2 samples
- Melons = 2 samples
- Carrots = 2 samples
- Potatoes = 2 samples
- Bell peppers = 2 samples
- Cultivated fungi = 2 samples
- Chicken eggs = 2 samples.

Sampling (personnel, procedures, sampling points)

The sampling strategy adopted was mainly objective sampling unless there was a reasonable suspicion on specific produce and thus, a selective or suspect sampling strategy was adopted. The sampling methodology used was in accordance with Commission Directive 2002/63/EC which is implemented in the internal quality system of the Malta Competition and Consumer Affairs Authority (MCCAA). MCCAA officials were responsible for implementing the sampling procedures and elevating samples as per internal procedures. Samples were mainly taken from producers, wholesalers and importers. Samples were of Maltese origin (local produce), as well as of EU and non-EU origin.

21.2 Key findings, interpretation of the results and comparability with the previous year's results

21.2.1 Key findings

In 2022, a total number of 169 samples of fruit, vegetables, animal products and food for infants and young children other than infant formulas, follow-on formulas and processed cereal-based baby food were sampled by the MCCAA and analysed for the presence of pesticide residues. As a minimum, depending on the commodity type, for products of animal origin, 730 pesticide residues were tested for, 1,414 pesticide residues were tested for in the fruit and vegetable commodities, while 730 pesticide residues were tested for in baby food as listed in Commission Implementing Regulation (EU) 2021/601 and also Commission Directive 2006/125/EC[43] of 5 December 2006 on processed cereal-based baby foods and baby foods for infants and young children. The products analysed were of Maltese origin (49.1%) and imported (50.9%). Imported produce consisted of that of EU origin (48.5%) and non-EU origin (2.4%). Of samples analysed, 93.5% were compliant with the pesticide residue legislation (in 30.4% no residues were found, while 69.6% were below the MRL). Some 6.5% of the samples (11 samples) had residue levels above the MRL. Table 127 summarises the type of commodities tested as per the sampling programme and the results obtained.

[43] Commission Directive 2006/125/EC of 5 December 2006 on processed cereal-based foods and baby foods for infants and young children. OJ L 339, 6.12.2006, p. 16–35.

Table 127: Type of commodities tested as per the sampling programme and the results obtained

Sampling programme	Types of commodities	No. of samples analysed	% No residue found	% Residue <MRL	% Residue >MRL
EU-Coordinated Multi Annual Community Control Programme	Apples	12	0	100	0
	Strawberries	12	0	75	25
	Peaches including nectarines and similar hybrids	12	0	100	0
	Wine (red or white)	12	16.7	83.3	0
	Lettuce	12	16.7	83.3	0
	Head cabbage	12	8.3	66.7	25
	Tomatoes	12	8.3	75	16.7
	Spinach	12	16.7	83.3	0
	Oat grain	12	66.7	33.3	0
	Barley grain	12	58.3	41.7	0
	Food for infants and young children other than infant formulas, follow-on formulas and processed cereal-based baby food	10	90	10	0
	Cow milk	12	50	50	0
	Swine fat	13	38.5	46.1	15.4
National programme	Table grapes (2020)	2	0	100	0
	Melons (2020)	2	0	100	0
	Carrots (2020)	2	0	100	0
	Potatoes (2020)	2	50	0	50
	Bell peppers (2021)	2	50	50	0
	Cultivated fungi (2021)	2	50	50	0

Chicken eggs (2021)	2	100	0	0

21.2.2 Interpretation of the results

Eleven samples had pesticide residues exceeding the MRL. These were two samples of swine fat, one sample of potatoes, two samples of tomatoes, three samples of strawberries and three samples of head cabbage.

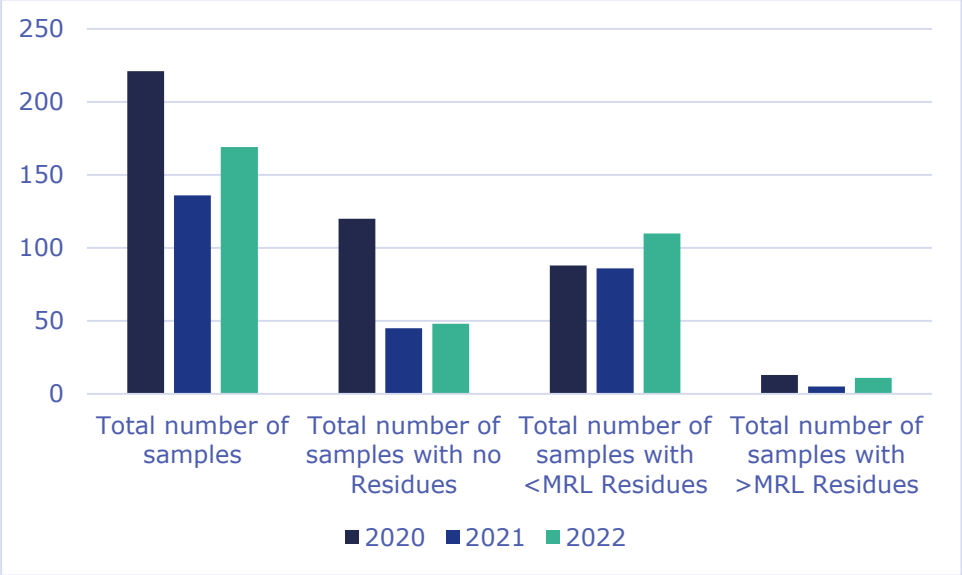


Figure 6: Comparison of sample numbers for 2020, 2021 and 2022

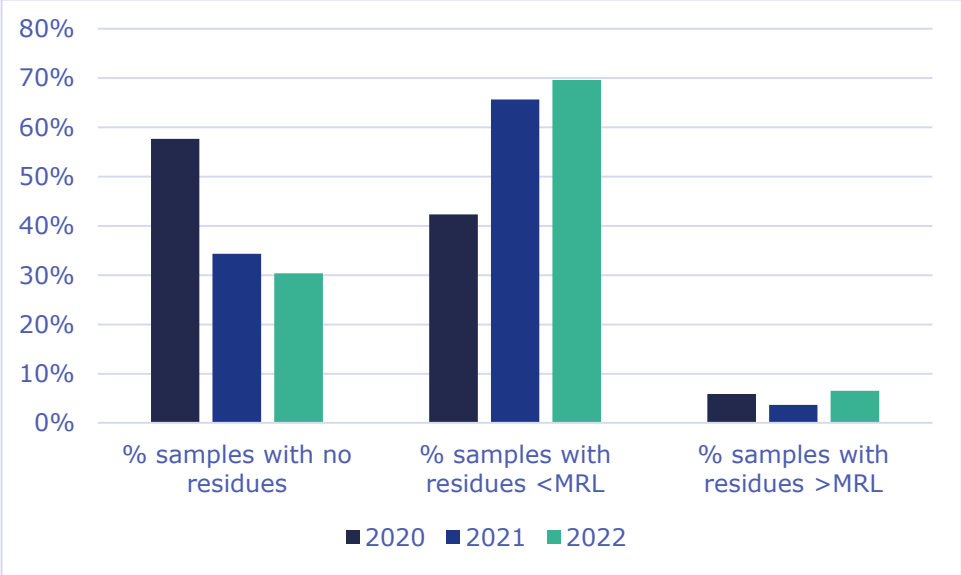


Figure 7: Comparison of the percentage of samples with residue content for 2020, 2021 and 2022 (values are to the nearest whole)

21.2.3 Comparability with the previous year's results

The total number of samples tested increased from 2021 to 2022 (136 in 2021 vs 169 in 2022). Malta continued to strengthen the monitoring of pesticide residues in food of animal and plant origin by achieving the minimum number of samples and increasing the total number of samples analysed by 24% compared with 2021. The percentage of samples with residues below the MRL increased from 2020 to 2021 to 2022 (42% in 2020, 66% in 2021 and 70% in 2022). All numbers have been rounded to the nearest whole number.

21.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

Eleven different pesticide residues were found in commodity samples which exceeded the EU MRL value set at the time of sampling. In all the cases found with residues above the MRL value, actions were taken as stipulated in the Pesticides Control Act, Chapter 430 of the Laws of Malta.

The residues found are summarised in Table 130.

Table 128: Results of pesticide residues which were quantified above the MRL value

Commodity	Origin	Residue above MRL found	Residue level in mg/kg	MRL mg/kg
Strawberries	Local	Famoxadone	0.13	0.01
Strawberries	Local	Ethephon	0.13	0.05
Strawberries	Local	Cyazofamid	0.075	0.01
		Perchlorate	0.12	0.05
Swine fat	Local	2-Phenylphenol	0.038	0.01
Swine fat	Local	2-Phenylphenol	0.041	0.01
Tomatoes	Local	Chlorfenapyr	0.061	0.01
Tomatoes	Local	Chlorfenapyr	0.10	0.01
Head cabbage	Local	Chlorate	0.35	0.07
Head cabbage	Local	Famoxadone	0.079	0.01
		Lufenuron	0.035	0.01
Head cabbage	Local	Methiocarb Sum	2.7	0.03
		Chlorpyrifos	0.12	0.01
Potatoes	France	Imazalil	0.22	0.01

21.3.1 Possible reasons for non-compliant samples

Table 129: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]
Good Agricultural Practice not respected, use of an approved pesticide, but application rate,	Strawberries / Famoxadone	1
	Tomatoes/ Chlorfenapyr	2

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]
number of treatments, application method or pre-harvest interval not respected; use of non-approved pesticides	Potatoes/ Imazalil	1
	Cabbages/ Chlorate	1
	Cabbages/ Famoxadone	1
	Cabbages/ Lufenuron	1
	Cabbages/ Chlorpyrifos	1
	Cabbages/ Methiocarb Sum	1
	Strawberries/Ethephon	1
	Strawberries/ Cyazofamid	1
	Strawberries/ Perchlorate	1
	Swine fat/ 2-Phenylphenol	2

(a) Number of cases.

21.4 Actions taken

Table 130: Actions taken

Number of non-compliant samples concerned	Action taken
11	Actions were taken according to the Pesticides Control Act (Cap 430 of the Laws of Malta) and applicable regulations made thereunder. An Administrative Assistance and Cooperation notification was issued for the non-compliant sample of potatoes.

21.5 Quality assurance

Samples are to be sent for multi-residue analysis to a laboratory which should have a quality assurance system in place in compliance with the criteria of the latest edition of European standard EN ISO/IEC 17025 'General requirements for the competence of testing and calibration laboratories' as specified under Regulation (EU) 2017/625 and accredited by the relevant accreditation body

Table 131: Laboratory participation in the sampling programme

Country	Laboratory name	Accreditation		Participation in proficiency tests or inter-laboratory tests
		Date/certification	Body	
IT	Water & Life	Issued: 27/10/1994 Expires: 11/12/2022 Re-issued 21/05/2020	ACCREDIA	Yes
ES		15/02/2021	DAkkS	Yes

Analytica Alimentaria GmbH	02/09/2021	IAS	Yes

22 The Netherlands

22.1 Objective and design of the national control programme

The national control programme combines the two purposes of official control: risk-based inspection, sampling and analysis, and evaluating the market situation with respect to MRL compliance. In the national control programme, choices were made concerning the type and number of samples to be taken for analysis as many different pesticides, vegetables, fruit and processed and composed products are involved. Therefore, a number of considerations are of importance:

- Consumption of the commodity.
- Production or import volume of the commodity.
- Experience from the previous years concerning violations. These experiences do not only extend to type of product and country of origin, but take into account results of sampling at individual companies as well as RASFF notifications from other Member States.
- The occurrence of pesticide/crop combinations that might lead to an exceedance of the acute reference dose.
- EFSA and Commission recommendations.
- Availability of cost-effective analytical methods, preferably multi-residue methods.

Regulation (EC) 396/2005 mentions two main objectives of the official control programme: enforcement of MRLs and obtaining data to be able to assess consumer exposure. For the latter, non-risk-based (objective) sampling is a prerequisite, whereas the first objective is optimised by risk-based products. The Dutch programme is a mixture of both strategies. Sampling in the market is in general non-risk-based; such data can be used for intake exposure calculations. Products which are sampled at border control points, importers of products historically known to show high violation rates are typically risk-based and selected from an enforcement point of view. High violation rates can indicate both an efficient sampling strategy and problems in the agricultural practice.

The national control programme is primarily directed to major products in the consumption pattern. These products are in line with the products the EU has chosen for the multi-annual rolling programme of Regulation (EU) 2020/585. Considerable capacity is reserved for minor products with minor consumption but historically with high violation rates. Especially, imported products show historically frequent non-compliance. For 2022 the number of samples from commodities which were imported from outside the EU was 1,035 samples of fruit, vegetables, herbs, etc. within the total number of 2,724.

The coordinated control programme also implies analysis of products of animal origin. As the veterinary control programme (Directive 96/23/EU) requires pesticide analysis to some extent as well, the samples of that programme were analysed with an additional scope in line with Regulation (EU) 2020/585.

The main sampling points are supermarkets, factories, distribution centres, trade houses, importers and warehouses, for both domestic and non-domestic products. At those inspection

points, it is clear who is responsible for the product, so that appropriate legal action can be taken in the event of non-compliance.

The control programme involves both domestically produced products as well as products of EU origin and products of non-EU origin. The EU-harmonisation of MRLs has resulted in a decrease of exceedance rates and pesticide concentration levels in EU products compared with 2004.

For monitoring and enforcement purposes, raw agricultural products are preferred over processed foods, because MRLs are defined on the raw products. Further, validation of pesticide analysis methods is more complicated for processed and/or composite products than raw agricultural commodities. Nevertheless, it is still useful to monitor processed products in the following cases:

- the primary product is not accessible. Examples are:
  - products processed in other countries, e.g. fruit juices, wines and vegetable oil;
  - products obtained by the processing industry directly from the grower, without trade step;
- processed food gives a good overview of the situation of the market as to dietary intake, e.g. flour and baby food.

The Netherlands Food and Consumer Product Safety Authority (NVWA) applies multi-residue methods as often as possible for the analysis of pesticide residues. The main procedure is extraction with acetone, followed by solvent partitioning with dichloromethane/petroleum ether (QuEChERS). The extract is analysed with GC/MS-MS and LC/MS-MS. Depending on laboratory capacity, these apparatus are run in different modes. For the LC/MS-MS a choice had to be made between a short run narrow scope and a long run extensive scope, depending on capacities. Whenever possible LC/MS-MS was applied in negative mode as well. Dry products and baby food were analysed using the QuEChERS-method, followed by triple-quad GC/MS-MS and LC/MS-MS. Following these possibilities, scopes applied to the samples varied from 175 to more than 500. For pesticides outside the scope of multi-residue methods, single-residue methods must be applied. As these only give information on one or a few analytes, they are much less cost-effective than multi-residue methods, and only applied when the following criteria are met:

- For the commodity–pesticide combination an MRL above the LOQ exists, indicating that residues may be expected.
- For the commodity–pesticide combination improper use of the pesticide is expected.
- The pesticide is part of the EU-coordinated control programme.

22.2 Key findings, interpretation of the results and comparability with the previous year's results

During 2022, app 2,724 samples were analysed. This is somewhat lower than in 2021 (3,110) due to budget constraints.

Both domestic and non-domestic products were analysed for pesticide residues.

The national and coordinated control plan accounted for about 2,724 samples.

Under the import control Regulation (EU) 2019/1793, 1,444 (2021: 829) samples were analysed, of which 78 (2021: 63) were non-compliant, accounting for 5.4% (7.0% in 2021) and were rejected at the EU border. Most of this non-compliance was due to haricots-vert from Kenia; rice

from India; peanuts from Brazil; vine leaves from Turkey; chilli pepper from Uganda; and piathaya from Vietnam. Please be aware that these official border controls are not part of the national pesticide residue programme and are therefore not within the scope of this summary.

Within the national control plan, domestic products made up around 40% of the fresh produce samples, 20% of the samples came from other EU countries and 40% from non-EU countries; these numbers are comparable to 2021.

Within the national control programme, 154 (2021: 88) samples were non-compliant due to MRL violations (MRL violation taking measurement uncertainty into account). These account for 5.6% (2021: 2.8%) of the total volume. The non-compliance rate doubled in 2022 compared with 2021. We feel that this was caused by the increased focus on risk-based sampling; samples from frozen products and herbs, especially, were yielding a high non-compliance rate. Non-risk-based sampling was yielding much lower non-compliance rates. For example, objective sampling of fruit and vegetables sold in Dutch supermarkets yields a non-compliance rate of 0.8%.

22.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

In 2022, all samples of infant and follow-on formula (baby food) were MRL compliant.

When food safety issues are involved in pesticide residues, it is mainly with respect to acute effects. Therefore, it is important to notice to what extent pesticides are used that give acute intake hazards. Most of the unsafe products were imported from outside the EU.

For product–pesticide combinations, the Critical Crop/Pesticide Concentration (CCPC) was evaluated based on EFSA's PRIMO 3.1. At the CCPC limit, 100% of the acute reference dose is reached based on a point-estimate and a product is considered to be unsafe and 'injurious to health' within the meaning of the General Food Law (Regulation EC/178/2002[44]). Dutch authorities also consider carcinogenic, reprotoxic or (potentially) genotoxic properties of the active substance as unsafe. In such cases the product is subject to a recall and a rapid alert is issued. In total, 22 non-compliant samples were identified as 'unsafe', which accounts for 0.8% of all samples taken as part of the Dutch national programme on pesticide residues.

Table 132: Non-compliance evaluated as 'unsafe (health risk: serious)'

Product	Pesticides	Number >MRL	Countries of origin
Quinces	Chlorpyriphos	1	Turkey
Melons	Chlorpyriphos	1	Brazil
Cumin	Chlorpyriphos	3	India
Tea	Chlorpyriphos; anthraquinone	4	Vietnam; Indonesia; Argentina

[44] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. OJ L 31, 1.2.2002, p. 1–24.

Herbs	Chlorpyriphos	5	Laos; Turkey; Vietnam
Lemons	Chlorpyriphos	1	Cyprus
Beans	Carbofuran	1	China
Spinach	Chlorpyriphos; cyhalotrin lambda	2	Vietnam; Cameroon
Buckwheat	Carbofuran	1	China
Dill	Chlorpyriphos	1	Egypt
Peaches	Carbendazim	1	Turkey
Vine leaves	Chlorpyriphos	1	Egypt

22.4 Actions taken

Table 133: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
Financial fine	22	
Administrative sanctions	130	

22.5 Quality assurance

Information about the laboratory is given in Table 134.

Table 134: Laboratory participation in the national control programme

Country	Laboratory		Accreditation ISO17025		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
NL	Wageningen Food Safety Research	NVWA	1-8-1998	RVA	EU-RL, FAPAS, Q

22.6 Processing factors used in MRL compliance assessment

Table 135 shows the processing factors that were used by the national competent authorities to verify compliance of processed products with the EU MRLs. For risk assessment, processing factors were used as compiled by RIVM and the EU/EFSA. Further, there are several cases where either food business operators or branch organisations supply a relevant processing factor.

Table 135: Processing factors

Pesticide (report name)	Unprocessed product (RAC)	Processed product	Processing factor	Comments
All	Grape	Raisin	4.7	
All	Grape	Wine	1	
All	Goji berries	Dried berries	5	
All	Curcuma root	Dried curcuma	5	
Fat soluble	Oil seeds	Crude oil	Oil percentage	Agreement on oil content with oil producing industry

23 Norway

23.1 Objective and design of the national control programme

23.1.1 Objective

The Norwegian Food Safety Authority is the competent authority for the enforcement of the pesticide residue monitoring in Norway.

The Norwegian monitoring programme for pesticide residues in fresh fruit and vegetables, cereals, baby food and animal products and some other products. in the last year comprised 1,293 samples, including 151 organic samples. In addition to the monitoring programme, this report also includes official controls on imports of certain food and feed of non-animal origin, EU Regulation No 2019/1793 (border control samples).

23.1.2 Design

The number of each commodity and the percentage of imported versus domestic samples are based on Norwegian statistic of food consumption rates, the risk of residues, previous RASFF notifications and the national three-year plan. The criteria for taking organically grown samples are dependent on their market share and the availability on the market. The sampling includes products that are important in the Norwegian diet, but products that are eaten more sporadically are included as well.

The balance of organic and conventional products in the national monitoring programme was higher in 2022 (11.7%) than in 2021 (9.7%). There were fewer samples of organic products than normal in 2021 because of the COVID-19 pandemic.

Inspectors from the Norwegian Food Safety Authority take the monitoring samples mainly at importers' and wholesalers' warehouses in different parts of Norway. Some samples were also collected at farms or points of retail sale.

The Norwegian Institute of Bioeconomy Research (NIBIO) was responsible for all analyses in the monitoring programme.

23.2 Key findings, interpretation of the results and comparability with the previous year's results

23.2.1 Key findings

In 2022, 1,310 samples were analysed for pesticide residues in Norway. Of these samples, 1,293 were from the national monitoring programme and the EU-coordinated programme. In addition, samples taken as border control in line with Regulation (EC) No 2019/1793 (nine samples) and enforced control (eight samples).

In 2022, Norway made 12 RASFF notifications. These notifications included nine samples from the ordinary monitoring programme. It was one sample of quince from Turkey, four samples of raisins from Turkey (1), Iran (2) and Afghanistan (1), two samples of rice from Vietnam, one sample of long green beans from Thailand and one sample of ground pepper from Vietnam. There were three RASFF notifications for enforced control samples; one sample of raisins from Iran and two samples of long green beans from Thailand. For enforced control samples two RASFF notifications were ordered but not sent (rice from Vietnam and raisins from Iran). All products that were evaluated to pose an acute health risk to consumers originated from countries outside the EU and EEA.

In the ordinary monitoring programme, the surveillance samples included 97 different commodities. Forty samples (63 findings) had residues above the MRLs. There were two domestic samples with residue levels that exceeded the MRLs. Some 28 samples were non-compliant after the measurement uncertainty was considered. Of these non-compliant samples, 24 were from non-EU countries, two from the EU and two from Norway.

In addition to the monitoring programme, nine samples from border control were analysed and one of the samples was non-compliant.

There were no findings of pesticide residues in baby food or food of animal origin. Every sample of plant origin was analysed by two multi-residue methods, which covered 379 different pesticides including some metabolites. Some samples were analysed by single-residue methods. In 2022, 14 single-residue methods were used, covering 61 substances. In 2022 we analysed 30 samples of dried commodities for ethylene oxide as part of the national monitoring programme. Ethylene oxide was detected in two of five samples of dried pepper corn.

23.2.2 Interpretation of the results

The monitoring programme shows that the level of pesticide residues in food is generally low and that there are few instances of exceedance. This implies that the food with these measured levels of pesticide residues is safe to eat. In the period 2017 to 2022, the total percentage of samples with pesticide residues above the MRLs ranged from 1.4 to 3.5% (Table 136). The percentage of samples with findings above the MRLs was at the same level as in 2020. Findings above the MRLs in samples from the EU/EEA (excluding Norway) are at the same level as in previous years, while the number of samples from non-EU countries with findings above the MRLs has increased the last two years. There is a significantly lower proportion of findings above the MRLs in samples from the EU/EEA including Norway than in samples from non-EU countries.

Table 136: Percentage of samples with pesticide residues above the MRL (2017–2022)

	2017	2018	2019	2020	2021	2022
Norway	-	-	-	0.6	-	0.6

	2017	2018	2019	2020	2021	2022
EU/EEA*	1.2	1.4	1.4	0.8	1.3	1.1
Non-EU countries	3.3	5.1	4.8	5.7	8.8	8.0
Total	1.4	2.2	2.1	2.4	3.5	3.5

*Except Norway.

Some of the factors that can influence the number of findings above the MRLs are the selection of products sampled, changes in the regulation including the analytical scope and MRLs.

The Norwegian Food Safety Authority publishes all samples that exceed the MRL on their website[45].

The results from 2022 show that 38% of the samples in the ordinary monitoring programme (surveillance) had two or more pesticide residues in the same sample. The mean number of pesticides in samples with multiple residues was 3.6. This is in accordance with the three previous years (Table 137).

Table 137: Mean number of pesticide residues in surveillance samples, in which more than one pesticide has been detected (2019–2022)

	2019	2020	2021	2022
Mean number of pesticide residues in samples where more than one pesticide has been detected	3.5	3.5	3.6	3.6

The highest number of different pesticides in one sample was detected in raisins from Turkey. Residues of 20 different pesticides were detected, one of which exceeded the MRL.

23.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

Overall, 2.5% of the surveillance samples (28 samples) in the monitoring programme were found to be non-compliant with the EU MRL. The pesticides found were compared with the MRLs and the measurement uncertainty has been taken into consideration for all samples.

Nine samples from the border control were analysed for pesticide residues. One of those was found to be non-compliant with the EU MRL and rejected at the border.

23.3.1 Possible reasons for non-compliant samples

Table 138: Possible reasons for MRL non-compliance and suspected illegal use

Reasons for MRL non-compliance	Pesticide/food product
GAP not respected: use of an approved pesticide not authorised on the specific crop. In 2022 there were 10 samples of domestic products produced in Norway that raised suspicion of possible illegal use of plant protection products. This was followed up by local plant inspectors.	For domestic products the rules for authorised use of pesticide residues can also be followed up in different cases of possible illegal use of a pesticide (not authorised for the crop, substance not authorised for use in Norway or substance not authorised as an active substance in the EU/EEA).

[45] www.mattilsynet.no

Reasons for MRL non-compliance	Pesticide/food product
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected.	Most cases involving possible illegal use in Norway involve active substances that are approved for use in Norway, but where the plant protection products are not authorised to be used in the culture/crop.
Residues resulting from other sources than plant protection products (e.g. biocides, veterinary drugs, biofuel).	

23.3.2 Acute reference dose exceedance

Norway notified 12 (two more ordered, but not sent) samples in RASFF due to health risk related to the monitoring programme for pesticide residues in food. These consignments were withdrawn as soon as possible from the market. New imports of these products were followed up by new samples and there were seven enforced controls.

Table 139: RASFF notifications from Norway for pesticide residues analysed in the monitoring programme in 2022

Product	Origin	Findings above MRL related to the RASFF notifications	RASFF number
Quince	Turkey	Chlorpyrifos 0.025 mg/kg	2022.1191
Long green beans	Thailand	Fipronil 0.055 mg/kg	2022.7203
		Lufenuron 0.099 mg/kg	
Raisins	Turkey	Acetamiprid 1.1 mg/kg	2022.3023
Rice	Vietnam	Tricyclazole 0.025 mg/kg	2022.3020
Raisins	Iran	Fenpropathrin 0.11 mg/kg	2022.3643
		Propargite 0.076 mg/kg	
		Chlorpyrifos 0.014 mg/kg	
		Captan 0.11 mg/kg	
Rice	Vietnam	Hexaconazole 0.01 mg/kg	2022.4011
		Tricyclazole 0.014 mg/kg	
Raisins	Iran	Chlorpyrifos 0.087 mg/kg	2022.6344
		Thiophanate-methyl 0.22 mg/kg	
Pepper (grounded)	Vietnam	Ethylene oxide 0.18 mg/kg	2022.6905
Raisins	Afghanistan	Chlorpyrifos 0.023 mg/kg	2022.7157
Raisins	Iran	Fenpropathrin 0.034 mg/kg	RASFF not sent*
		Chlorpyrifos 0.012 mg/kg	
		Captan 0.076 mg/kg	
Raisins	Iran	Chlorpyrifos 0.058 mg/kg	2022.6344

Product	Origin	Findings above MRL related to the RASFF notifications	RASFF number
Rice	Vietnam	Tricyclazole 0.017 mg/kg	RASFF not sent*
Beans (long, green)	Thailand	Carbofuran 0.061 mg/kg	2022.7203
		Bifenthrin 0.12 mg/kg	
Beans (long, green)	Thailand	Chlorpyrifos 0.11 mg/kg	2022.7203
		Carbofuran 0.077 mg/kg	
		Fenobucarb 0.062 mg/kg	

*RASFF was requested after risk assessment, but not sent (reported as RASFF notified to EFSA).

23.3.3 Actions taken

Table 140 gives an overview of what sort of actions have been taken when a non-compliant product was proven.

Table 140: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
A - Administrative consequences	7	
E - Destruction of animals and/or products	17	
F - Follow-up (suspect) sampling	7	
N - No action	1	
O - Other	1	
I - Follow-up investigation	18	
R - rapid alert notification	14 (12 sent)	RASFF no 2022.7203 (3 samples notified) RASFF no 2022.4011 RASFF no 2022.1191 RASFF no 2022.3023 RASFF no 2022.3020 RASFF no 2022.6905 RASFF no 2022.3643 RASFF no 2022.6344 (2 samples notified) RASFF no 2022.7157
M - Lot not released on market	7	
W - Warnings	8	
U – Animals and products classified as unfit for human consumption	19	
S - Lot recalled from the market	10	

Because all the RASFF notifications were on products from non-EU countries and we do not follow up imported products at the farms or at food businesses abroad, we do not have the knowledge to conclude anything about the use of pesticides in these cases. The RASFF system flags other countries for follow-up and gives important information about hazards (pesticide residues) in different products from certain countries.

23.4 Quality assurance

An overview of the laboratories involved in the pesticide residue programme is shown in Table 141.

Table 141: Laboratories participating in the control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or interlaboratory tests
	Name	Code	Date	Body	
NO	NIBIO, Biotechnology and Plant Health, Pesticides and Natural Products Chemistry	NIBIO	27 April 1995, valid to 30 September 2027	Norwegian accreditation	EUPT-AO-17, EUPT-AO-BF1, EUPT-CF-16, EUPT-FV-24, EUPT-FV-SM-14, EUPT SC-06, EUPT-SRM-17, EURLPT MP-07

23.5 Processing factors

An overview of the processing factors used in the pesticide residues programme is shown in Table 142.

Table 142: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]
Glyphosate	Barley	Barley flour	1
Chlormequat	Barley	Barley flour	1
Chlormequat	Oat	Oat groats	0.75
Clopyralid	Oat	Oat flour	1
Chlormequat	Oat	Oat flour	1
Acetamiprid	Rice	Rice, polished	0.5
Azoxystrobin	Rice	Rice, polished	0.5
Carbendazim	Rice	Rice, polished	0.5
Difenoconazole	Rice	Rice, polished	0.5
Flutriafol	Rice	Rice, polished	0.36
Hexaconazole	Rice	Rice, polished	0.5
Imidacloprid	Rice	Rice, polished	0.78
Isoprothiolane	Rice	Rice, polished	0.5, 1
Tebuconazole	Rice	Rice, polished	0.57
Thiamethoxam	Rice	Rice, polished	0.41
Tricyclazole	Rice	Rice, polished	0.5
Acetamiprid	Grapes	Raisins	0.93
Azoxystrobin	Grapes	Raisins	2.99
Bifenazate	Grapes	Raisins	3.2
Boscalid	Grapes	Raisins	2.4
Bromopropylate	Grapes	Raisins	4.7
Captan	Grapes	Raisins	1.1
Carbendazim	Grapes	Raisins	2.8, 3.6
Chlorantraniliprole	Grapes	Raisins	3.5
Chlorfenapyr	Grapes	Raisins	4.7
Chlorpyrifos	Grapes	Raisins	0.21

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]
Cyflufenamid	Grapes	Raisins	3.6
Cypermethrin	Grapes	Raisins	3.3
Cyprodinil	Grapes	Raisins	4.7, 2.1
Deltamethrin	Grapes	Raisins	3.6
Difenoconazole	Grapes	Raisins	1.2, 2.8
Ethion	Grapes	Raisins	4.7
Famoxadone	Grapes	Raisins	1.9
Fenhexamid	Grapes	Raisins	2.42, 1.9
Fenpropathrin	Grapes	Raisins	1.4
Fenvalerate	Grapes	Raisins	4.7
Fludioxonil	Grapes	Raisins	1.1
Fluopyram	Grapes	Raisins	2.9
Flupyradifurone	Grapes	Raisins	2.5
Flutriafol	Grapes	Raisins	4.7
Fluxapyroxad	Grapes	Raisins	4.92
Hexaconazole	Grapes	Raisins	4.7
Imidacloprid	Grapes	Raisins	1.05
Indoxacarb	Grapes	Raisins	2.7
Iprodione	Grapes	Raisins	4.7
Isofetamid	Grapes	Raisins	2.3
Lambda-cyhalothrin	Grapes	Raisins	4.7
Metalaxyl	Grapes	Raisins	3.03, 2.8
Methoxyfenozide	Grapes	Raisins	2.3
Metrafenone	Grapes	Raisins	1.7
Myclobutanil	Grapes	Raisins	4.7
Penconazole	Grapes	Raisins	1.2
Phosalone	Grapes	Raisins	4
Phosmet	Grapes	Raisins	0.9
Procymidone	Grapes	Raisins	4.7
Propamocarb	Grapes	Raisins	4.7
Propargite	Grapes	Raisins	0.85
Propiconazole	Grapes	Raisins	1.89
Proquinazid	Grapes	Raisins	2.8
Pyraclostrobin	Grapes	Raisins	2.9
Pyrethrins	Grapes	Raisins	4.7
Pyrimethanil	Grapes	Raisins	4.7, 1.63
Spirodiclofen	Grapes	Raisins	2.1
Spirotetramat	Grapes	Raisins	2.6
Sulfoxaflor	Grapes	Raisins	3.5
Tebuconazole	Grapes	Raisins	1.2
Tebufenozide	Grapes	Raisins	4.7, 1.2
Tebufenpyrad	Grapes	Raisins	0.9
Tetraxonazole	Grapes	Raisins	2.16
Thiamethoxam	Grapes	Raisins	4.7
Thiophanate-methyl	Grapes	Raisins	0.33, 0.25
Triadimefon	Grapes	Raisins	4.7
Triadimenol	Grapes	Raisins	6

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]
Trifloxystrobin	Grapes	Raisins	2.3
Ametoctradin	Wine grapes	Wine	0.0075
Cyprodinil	Wine grapes	Wine	0.01
Dimethomorph	Wine grapes	Wine	0.49, 0.26
Fenhexamid	Wine grapes	Wine	0.42, 0.22
Fenpyrazamine	Wine grapes	Wine	1.1
Fludioxonil	Wine grapes	Wine	0.04
Fluopicolide	Wine grapes	Wine	0.43
Fosetyl-Al	Wine grapes	Wine	0.56, 0.66
Iprodione	Wine grapes	Wine	0.24
Iprovalicarb	Wine grapes	Wine	0.65
Mandipropamid	Wine grapes	Wine	0.99
Metalaxyl	Wine grapes	Wine	0.5, 1.02
Methoxyfenozide	Wine grapes	Wine	0.33
Pyrimethanil	Wine grapes	Wine	0.43
Spirotetramat	Wine grapes	Wine	0.53

(a) Processing factor for the enforcement residue draft.

23.6 Additional information

In the national monitoring programme for 2022 mainly the pesticide multi-residue method was applied.

Norway has a delay in the implementation of new legislations/new MRLs. New legislation must be approved by the EEA Joint Committee before implementation, which will cause a delay compared with the EU.

24 Poland

24.1 Objective and design of the national control programme

The national control programme for pesticide residues in food of plant and animal origin, including processed products, is carried out in Poland under the authority of the Chief Sanitary Inspectorate. The major objective of official food control is to guarantee comprehensive consumer and health protection. Food safety is achieved in the national control programme through regular monitoring and official controls, along with EU-coordinated surveillance projects. The programme investigates and ensures compliance with applicable regulations to assess consumer exposure to pesticide residues, as well as to closely monitor pesticide residues surpassing admissible levels by means of conducting additional controls.

The 2022 national programme was designed to cover around 339 pesticides in 81 distinct commodities, such as fruit, vegetables, cereals, etc. In accordance with Commission Implementing Regulation (EU) 2021/601, the analytical scope of the national control programme was established based on the following criteria:

- food products with a high non-compliance rate identified in previous years;
- frequency of pesticide findings in previous years;

- origin and regional characteristics (e.g. domestic, EU, non-EU countries), with special regard to countries and regions of Poland that have a high historical non-compliance rate;
- dietary consumption specific to the region;
- high RASFF notification rate;
- results of monitoring and official controls reported by other Member States in EFSA's annual report; and
- cost of analysis and analytical capacities of the official laboratories.

The multi-annual sampling plan, in accordance with Directive 2002/63/EC, is revised annually to incorporate new requirements. According to this plan, sampling is conducted randomly at various supply chain levels – from primary production and wholesaling, to processing, manufacturing and border inspection. Samples are then subject to analysis using both multi-residue and single-residue methods in laboratories that have been designated and accredited, in compliance with the EN ISO/IEC 17025 standards.

Pesticide residues that are included in the national control programme are selected on the basis of the aspects listed below:

- high RASFF notification rates for the pesticide;
- toxicity and the high-risk nature of the active substance;
- scope of the laboratory's accreditation, as well as its capacity.

24.2 Key findings, interpretation of the results and comparability with the previous year's results

24.2.1 Key findings

In the year 2022, a total of 4,706 samples of plant and animal origin were analysed to detect the presence of pesticide residues as part of national monitoring, official control, an EU-coordinated programme and border control inspection. Among these, 4,345 samples were collected as per an objective sampling strategy, while the remaining 361 samples were obtained according to a suspect sampling strategy. The percentages of non-compliant samples for objective and suspect sampling were 3.7% and 3.6%, respectively.

In the year 2022, pesticide residues could not be quantified in 42.7% of the samples. Nearly half of the total number of samples (2,351) contained one or more pesticide residue below or at legally permitted levels (MRL). Among them, 345 samples (7.3%) exceeded the permissible limits. However, upon accounting for measurement uncertainty, 174 samples (3.7%) were identified as non-compliant.

In different commodity groups, vegetable samples were found to be non-compliant most frequently, with 76 out of 1,712 samples. They were approximately twice as likely to be non-compliant compared with fruit. In other commodity categories, 33 samples of processed products, seven samples of cereals, five samples of baby food, one sample of an animal-origin product, and 11 samples of other products were identified as non-compliant.

Regarding the origin of the analysed samples, 2,873 (61.0%) were produced in Poland, 720 (15.3%) originated from other EU countries and 1,089 (23.1%) came from non-EU countries. Import control at the border covered 232 samples from seven different countries, i.e. Argentina (1), Brazil (68), China (83), Egypt (1), India (70), Pakistan (6) and Turkey (3). Leading import products were peanuts (30.0%), tea (27.1%) and sesame seeds (11.2%).

The data are summarised in Table 143.

Table 143: Results by origin of samples

Samples	Number of samples collected	Number/percentage of samples without residues (<LOQ)		Number/percentage of samples with residues ≥LOQ ≤MRL		Number/percentage of samples with residues > MRL	
			%		%		%
Poland	2,873	1,461	50.9	1,218	42.4	194	6.8
EU	3,593	1,648	45.9	1,732	48.2	213	5.9
Non-EU countries	1,089	349	32.0	609	55.9	131	12.0
Non-specified	24	13	54.2	10	41.7	1	4.2

Noteworthy is the fact that significantly more instances of MRL exceedance were observed in product samples from non-EU countries (12.0%) than domestic (6.8%) or European samples (5.9%). Similarly, when comparing non-compliant samples from non-EU countries, domestic sources and the EU, the percentage values, respectively, amount to 5.9%, 3.7% and 3.0%. The highest non-compliance rates were found in lemons and grapefruit from Turkey, reaching nearly 30.0% and 20.0%, respectively. On the domestic market, sweet peppers exhibited a non-compliance rate of nearly 30%, primarily attributed to the presence of ethephon, which averaged 26,500 mg/kg.

Table 144: Overview of the 2022 results (summary of monitoring, official control and border control)

Samples	Number of samples collected	Number/percentage of samples without residues (<LOQ)		Number/percentage of samples with residues ≥LOQ≤MRL		Number/percentage of samples with residues > MRL*	
		N	%	N	%	N	%
Vegetables	1,712	760	44.4	817	47.7	135	7.9
Fruit	1,315	264	20.0	978	74.4	73	5.6
Cereals	331	164	49.5	140	42.3	27	8.2
Baby food	81	76	93.8	0	0.0	5	6.2
Processed products	706	352	49.9	282	39.9	72	10.2
Animal products	216	192	88.9	15	6.9	9	4.2
Other	345	202	58.6	119	34.5	24	7.0
Summary	**4,706**	**2,010**	**42.7**	**2,351**	**49.7**	**345**	**7.3**

* The expanded measurement uncertainty was not taken into account (numerical exceedance).

Table 145: Overview of the 2022 results of domestic samples

Origin	Number of samples collected	Number/percentage of samples without residues (<LOQ)		Number/percentage of samples with residues ≥LOQ ≤MRL		Number/percentage of samples with residues >MRL*	
		N	%	N	%	N	%
Vegetables	1,371	690	50.3	563	41.1	118	8.6
Fruit	601	157	26.1	424	70.5	20	3.3
Cereals	238	133	55.9	92	38.7	13	5.5
Baby food	71	66	93.0	0	0.0	5	7.0
Processed products	331	216	65.3	90	27.2	25	7.6
Animal products	209	185	88.5	15	7.2	9	4.3
Other	52	14	26.9	34	65.4	4	7.7
Summary	**2,873**	**1,461**	**50.8**	**1,218**	**42.4**	**194**	**6.7**

* The expanded measurement uncertainty was not taken into account (numerical exceedance).

Based on the data presented in Table 144, the largest group of sampled commodities was fruit and vegetables – 3,027 samples, which accounts for 64.3% of all samples, followed by 706 samples (15.0%) of processed products, 331 samples (7.0%) of cereals, 216 samples (4.6%) of animal products, and 81 samples (1.7%) of baby food. A group of other products, containing nuts, oilseeds, herbs and tea, was represented by 345 samples (7.3%). Data compiled in Table 145, presenting the results for domestic samples, stays comparable with the aforementioned distribution of samples within specific commodity groups.

The highest MRL exceedance was reported twice for chlormequat (the sum of chlormequat and its salts, expressed as chlormequat-chloride) in sunflower seeds. The detected concentrations surpassed the permissible limits 8,400 and 1,770 times. In addition, exceedances were also identified for fipronil (sum fipronil combined with sulfone metabolite (MB46136) expressed as fipronil) in raspberries with a concentration 240 times higher, and for ethephon in sweet peppers, being beyond the limit 158 times.

24.2.2 Interpretation of the results

In the year 2022, over half of all samples (57.3%) contained detectable pesticide residues. Approximately one fifth (965 cases) of all samples exhibited the presence of five or more pesticide residues, while more than 10 pesticide compounds were found in 22 samples (0.5%). A maximum number of 21 residues was detected in strawberries with 16 identified in raspberries and 15 in table grapes. Notably, all these samples originated from non-EU countries. As previously discussed, products from non-EU countries tend to have a greater likelihood of pesticide presence; nearly 70% of the total imported commodities contained quantified residues.

Consistent with previous years, the category with the highest proportion of quantifiable residue-containing products was fruit (79.9% of all these samples), followed by vegetables (55.6%), cereal-based products (50.5%), and processed food (50.1%). In contrast, the lowest number of detectable residues was reported for animal origin products (11.1%) and baby food (5.0%).

The 1,712 samples of vegetables cover almost 40 distinct products, among which sweet peppers, tomatoes, potatoes and cucumbers represent the largest portion of analysed samples (more

than 80 samples in each group). While 55.6% of vegetables contained detectable residues, 7.9% of them were above the MRLs without measurement of uncertainty. In addition, 76 samples (4.4%) were identified as non-compliant. Among these, sweet peppers constituted the majority with 15 samples, followed by Chinese cabbage (13 samples), celeriac and cucumbers (seven samples each). In 207 samples (12.1%), the analysis revealed the presence of five or more pesticides, in four samples (0.2%) even 10 different pesticide residues were reported. The largest number of pesticide residues, 12, was recorded for a sample of Brussels sprouts. What is important to note is that pesticide residues were quantified in 44 out of 45 samples (97.8%) of Roman rocket. A similar pattern has been observed in Brussels sprouts (94.5%), garlic (87.5%) celery (86.2%), curly kale (85.7%), celeriac (77.5%) and parsley roots (77.3%).

Pesticides that have been most frequently detected in vegetables included acetamiprid, azoxystrobin, boscalid, bromide ion, carbendazim and benomyl, chlorates, chlorpyrifos, cyprodinil, difenoconazole, dithiocarbamates, flonicamid, fludioxonil, fluopyram, fluxapyroxad, pendimethalin, propamocarb, prosulfocarb, pyraclostrobin, spinosad, spirotetramat, tebuconazole and thiophanate-methyl. Among the sampled vegetables, those of pleurotus, pumpkins and onions proved to be the cleanest.

Within the fruit group, encompassing nearly 30 different commodities, 1,315 samples were taken. The analysed products predominantly included strawberries (112 samples), apples (90), blueberries (81), raspberries, plums, table grapes and pears (each with more than 70 samples). Approximately 80% of the fruit samples were determined to contain residues. Of these, 73 samples (5.6%) exceeded the MRLs; however, when accounting for the 50% margin of uncertainty this number was reduced to 39 (3.0%). The highest rates of non-compliance were observed in cranberries (20.0%), lemons (15.7%) and grapefruit (11.7%). Among all fruit samples, 466 (35%) were found to exhibit the presence of five or more pesticide residues, 40 samples (3%) contained 10 or more identified residues, with the maximum of 18 different pesticide substances detected in a single sample of strawberries. Pesticide residues were quantified in all 60 (100%) grapefruit and 11 (100%) nectarine samples. Detectable residues were found in over 90% of the samples from bananas, oranges, lemons, table grapes, apricots, mandarins and sweet cherries. The most frequently detected pesticides in the fruit group included 2-phenylphenol, acetamiprid, azoxystrobin, boscalid, captan, carbendazim and benomyl, chlorantraniliprole, cyprodinil difenoconazole, dithiocarbamates, fenpyroximate, fludioxonil, fluopyram, fosetyl-Al, imazalil, pyraclostrobin, pyrimethanil, pyriproxyfen, spirotetramat, tebuconazole, tetraconazole, thiabendazole, thiophanate-methyl and trifloxystrobin. Among the analysed fruit, avocados exhibited the lowest levels of pesticide contamination.

As for the 331 cereal samples, which represented 7.0% of the entire sample set, it is crucial to note that processed cereal products such as flour, groats, etc. were excluded from this category and grouped under processed products. Almost half of the cereal samples (164 cases) tested positive for at least one pesticide residue, while more than five pesticide substances were identified for 26 samples (7.6%). One sample of common wheat grain set a record with 11 different residues present. Among the cereal samples, 27 (8.2%) exceeded the MRLs, while seven samples (2.1%) displayed non-compliance when considering the uncertainty measurement. Pesticide residues were quantified mainly in the samples of common wheat grain (72.1%), brown rice grain (60.6%), barley grains (58.5%) and rye grain (52.8%). Specifically, chlormequat and tebuconazole were determined in 45.0% of all common wheat grain samples. Similarly, chlormequat was found in 40.0% of rye grain samples. At the same time, nearly one fifth of brown rice grain samples were contaminated with imidacloprid, cyproconazole and folpet.

A group of animal products, such as cow milk, hen eggs, pig fat tissue and honey, was represented by 216 samples (around 51–55 samples per each product), which accounts for 11.1% of all tested samples. Pesticide residues were quantified only in 24 samples of honey. Among these, nine samples exceeded the MRLs and one sample was identified as non-compliant after taking into account the measurement uncertainty. The primary sources of pesticide contamination were acetamiprid (19 cases) and thiacloprid (eight cases).

The category of processed products constituted the third-largest group among the tested samples, totalling 706, which represented 15.0% of all samplings and encompassed a diverse array of products, such as cereal-based processed food (e.g. flour, groats), dried vegetables and fruit, alcoholic beverages or teas. The largest subgroup within this category was processed cereals with 246 samples, out of which 96 (39.0%) had detectable pesticide content and 21 (8.5%) exceeded MRLs. Upon considering uncertainty measurement, 11 samples (4.5%) of buckwheat groats (seven cases), millet groats (three) and millet rolled grains (one) were identified as non-compliant mainly due to the exceedance of the MRL of glyphosate.

Tea samples exhibited a conspicuous presence of pesticide residues, with more than 80.0% (135 cases) showing quantifiable levels. Among these, 16.5% (27 cases) were above the MRLs and 4.5% (seven cases) proved to be non-compliant due to exceedance of dinotefuran and tolfenpyrad. The pesticides detected in tea samples prominently include bifenthrin, chlorfenapyr, thiamethoxam and folpet.

With regard to wine samples, nearly half of them (29 cases) contained detectable pesticide residues, but only two samples (3.3%) were found to be non-compliant due to impermissible propamocarb levels.

Across 81 baby food samples, five (6.2%) were found to be non-compliant due to them surpassing EU MRLs for phosphoric acid and fostetyl-Al in fruit and vegetable juices and nectars specific for infants (four cases) and ready-to-eat fruit-based meals (one case).

Herbs and species were also targeted in 2022 and they were represented by 37 samples, among which only three samples displayed detectable residues, but none was classified as non-compliant. The primary source of pesticide contamination in herbs and species was identified as ethylene oxide.

In the context of oilseeds and nuts, nearly half of the samples showed quantified pesticide residues. Of these, 7.5% (23 cases) recorded values above MRLs and 4.2% (13 cases) became non-compliant after uncertainty was considered. Of the oilseeds and nut samples, 54.4% contained at least one pesticide residue. The highest number of residues found in a single sample was nine, which occurred in milk thistle seeds. The main pesticides detected within this group were fosetyl-Al (30 times), pirimiphos-methyl (27), bromide ion (26) and dithiocarbamates (21).

In the year 2022, 62 samples (1.3% of the entire sample set) were collected from organically grown production. Most of these samples showed no detectable residues, while 19.6% (12 samples) proved to contain quantifiable pesticide residues. Most of them had only one residue detected, but in one specific sample, wheat grains, as many as seven different pesticide residues were found. The pesticides identified in the organically produced samples encompassed a range of substances, including acetamiprid, azoxystrobin, bifenthrin, bromide ion, boscalid, carbendazim and benomyl, chlorates, chlormequat, diphenylamine, dithiocarbamates, iprodione, pirimiphos-methyl, pyraclostrobin, tefluthrin and thiabendazole.

24.2.3 Comparability with the previous year's results

The total number of samples is consistently rising by approximately 20.0% each year. While the growth rate from 2022 and 2021 remains at 20.0%, the increase from 2019 to 2022 surpassed 40.0%.

The scope of analysed compounds increases each year and depends on the matrix and analytical capacity of the laboratories participating in the national programme.

Fruit and vegetables remain the main products analysed in all programmes, accounting for 64.0% in both 2022 and 2020, 72.0% in 2021 and 68.0% in 2019. Among all groups of commodities, cereals and processed products (comprising nearly 40.0% of processed cereal products) have demonstrated the most extensive expansion. The number of samples increased between 2022 and 2021 by about 30.0% for cereals and 60.0% for processed products. On the other hand, the analysis of baby food diminishes each year. The sample count declined from 180 in 2020, through 119 in 2021, to 81 in 2022, marking a significant 50.0% reduction.

The share of domestic samples within the total number rises by 20.0% annually. However, the quantity of imported samples is growing even faster when one compares 1,809 samples in 2022 with 1,006 samples in 2020. Significantly, this trend is primarily observed in products originating from non-EU countries. In the year 2020, their representation stood at 13.9%, amounting to 17.1% in 2021 and 23.1% in 2022.

In the year 2022, the percentage of samples with no residues (42.7%) remained nearly consistent with the levels of 2021 (43.1%), 2020 (46.5%) and 2019 (45.9%). However, the rate of non-compliant samples (3.7%) is slightly higher compared with previous years, standing at 3.6% in 2021 and 3.5% in 2020. The same trend is observed for domestic samples where the rate of non-compliance equates to 3.7% compared with 3.8% in 2021 and 4.0% in 2020.

The quantity of organic samples remained consistent with the previous year (61 in 2022 versus 64 in 2021), which, in light of an increasing total number of samplings, signifies a decrease in percentage share from 2.2% in 2020 to 1.3% in 2022. In contrast, highly developed countries exhibit much higher participation of organic samples, reaching up to 15.0%.

24.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

24.3.1 Possible reasons for non-compliant samples

In the year 2022, 345 samples, accounting for 7.3% of the entire sample set, were identified as having residues that exceeded MRLs. However, when considering an expanded measurement uncertainty of 50%, this number dropped to 174 samples (3.7%) labelled as non-compliant. The highest rates of non-compliance were observed in mustard seeds (40.0%), cranberries (20.0%), Chinese cabbage (18.8%), sweet peppers (16.6%), lemons (15.7%) and dried beans (13.0%), but also for fruit and vegetable juice and nectars specific for infants (12.5%). This diversification highlights the varying degrees of non-compliance across different sample types. For a more comprehensive understanding of the possible reasons behind the MRL non-compliance, please refer to Table 146.

Table 146: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product[a]	Frequency[b]	Comments
GAP not respected: use of a pesticide not approved in the EU[c]	Anthraquinone/Tea leaves and stalks, fermented	11	
	Anthraquinone/ Non-fermented tea leaves (green or white tea)	12	
	Bifenthrin (sum of isomers)/ Redcurrants	2	
	Bromopropylate/ Strawberries	1	
	Carbendazim and benomyl/ Cucumbers	11	
	Carbendazim and benomyl/ Redcurrants	7	
	Carbendazim and benomyl/ Gooseberries (green, red and yellow)	2	
	Chlorates/ Tomatoes	3	
	Chlorates/ Cucumbers	2	
	Chlorates/ Strawberries	1	
	Chlorates/ Soyabeans and similar-	1	
	Chlorfenapyr/ Cucumbers	1	
	Chlorothalonil/ Peas (without pods) and similar-	3	
	Chlorpropham/ Potatoes	5	
	Chlorpyrifos/ Chinese cabbages	9	
	Chlorpyrifos/ Curly kales	1	
	Chlorpyrifos/ Celeriacs	3	
	Chlorpyrifos/ Parsley roots	2	
	Chlorpyrifos/Radishes	4	
	Chlorpyrifos/ Blackcurrants	1	
	Chlorpyrifos/ Cucumbers	2	
	Chlorpyrifos/ Sunflower seeds	1	
	Chlorpyrifos/ Lemons	1	
	Chlorpyrifos/ Grapefruit	4	
	Chlorpyrifos/ Apples	2	
	Chlorpyrifos/ Bananas and similar-	1	
	Chlorpyrifos-methyl/ Lemons	2	
	Chlorpyrifos-methyl/ Grapefruit	9	
	Chlorpyrifos-methyl/ Oranges	1	
	Cyhalothrin/ Curly kale	2	
	Diflubenzuron/ Pears	2	
	Dimethoate/ Chinese cabbage	1	
	Dimethoate/ Radishes	1	
	Dimethoate/ Strawberries	1	
	Dinotefuran/ Tomatoes	1	
	Dinotefuran/ Tea leaves and stalks, fermented	3	
	Dithiocarbamates/ Mustard seeds	8	
	Dithiocarbamates/ Blackberries	1	
	Ethylene oxide/ Chili peppers	2	
	Ethylene oxide/ Sesame seeds	2	
	Famoxadone/ Strawberries	1	
	Fenbutatin oxide/ Lemons	2	
	Flutriafol/ Raspberries (red and yellow)	1	

	Glufosinate/ Beans (dry) and similar-	3
	Haloxyfop/ Buckwheat groats	1
	Haloxyfop/ Mustard seeds	4
	Haloxyfop/ Strawberries	1
	Haloxyfop/ Apricots	1
	Imazethapyr/ Lentils (dry)	3
	Imidacloprid/ Celeriac	1
	Imidacloprid/ Lentils (dry)	1
	Linuron/ Carrots	5
	Linuron/ Celeriac	16
	Linuron/ Parsley roots	3
	Methomyl/ Chinese cabbage	2
	Permethrin/ Millet groats	1
	Picoxystrobin/ Rapeseeds	1
	Propargite/ Strawberries	3
	Propiconazole/ Rice grain, brown	2
	Propiconazole/ Lemons	1
	Quinclorac/ Cranberries	2
	Quizalofop/ Milk thistle seeds	1
	Thiacloprid/ Buckwheat	1
	Thiamethoxam/ Pleurotus	1
	Tolfenpyrad/ Tea leaves and stalks, fermented	4
GAP not respected: use of approved pesticide not authorised for the specific crop	2.4-D/ Beans (dry) and similar-	1
	Chlormequat/ Sunflower seeds	2
	Cyantraniliprole/ Curly kale	1
	Ethephon/ Sweet peppers	15
	Fenpropidin/ Cucumbers	1
	Flonicamid/ Broccoli	1
	Fludioxonil/ Curly kale	2
	Fluopicolide/ Beans (with pods) and similar-	1
	Fluxapyroxad/ Buckwheat	1
	Formetanate/ Blueberries	1
	Glyphosate/ Buckwheat	1
	Glyphosate/ Buckwheat groats	10
	Glyphosate/ Honey	3
	Glyphosate/Millet groats	3
	Glyphosate/Millet rolled grains	1
	Mepanipyrim/ Cherries (sweet)	1
	Mepiquat/ Apples	3
	Pirimiphos-methyl/ Rapeseed	6
	Pirimiphos-methyl/ Peas (dry) and similar	2
	Propamocarb/ Beans (with pods) and similar-	4
	Propamocarb/ Table grapes	1
	Propamocarb/ Wine, white	2
	Prothioconazole/ Spinach	1
	Prothioconazole/ Celeriac	1
	Sulfoxaflor/ Redcurrants	1

	Sulfoxaflor/ Baby leaf spinach	2
	Tebufenpyrad/ Raspberries (red and yellow)	1
	Triticonazole/ Buckwheat	1
GAP not respected: use of an approved pesticide but application rate, number of treatments, application method or PHI not respected	Acetamiprid/ Chinese cabbage	5
	Cypermethrin/ Celeries	3
	Fenpropidin/ Beetroots	2
	MCPA and MCPB/ Barley grains	3
	Tebuconazole/ Chinese cabbage	15
Use of pesticide according to authorised GAP: Unexpected slow degradation of residues		0
Cross-contamination: spray drift or other accidental contamination		0
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)		0
Residues resulting from sources other than a plant protection product (e.g. biocides, veterinary drugs, biofuel)		0
Natural occurrence (e.g. dithiocarbamates in turnips)		0
Changes of the MRL		0
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set[(d)]	Acetamiprid/Tea leaves and stalks, fermented	6
	Buprofezin/ Lemons	5
	Buprofezin/ Strawberries	1
	Folpet/ Apricots	1
	Folpet/ Non-fermented tea leaves (green or white tea)	29
	Fosetyl-Al/Beans (dry) and similar-	2
	Glyphosate/ Milk thistle seeds	1
	Hexythiazox/ Raspberries (red and yellow)	1
	Lambda-cyhalothrin/ Apples	1

	Malathion/ Beans (dry) and similar-	1
	Pirimiphos-methyl/ Lentils (dry)	3
	Pirimiphos-methyl/ Peas (dry) and similar-	1
	Tetraconazole/ Peanuts	1
Unknown		0

24.3.2 Acute reference dose exceedance

The responsibility for conducting risk assessments lies with the National Institute of Public Health – National Institute of Hygiene. In the year 2022, the agency carried out 112 risk assessments for the non-compliant samples. Among these, two cases, i.e. permethrin in millet groats and cypermethrin in celery leaves, proved to exhibit residue levels that posed a potential health risk to consumers. Additionally, it was established that pesticide residues detected in 41 samples may pose a health risk to consumers. Notably, most of them (11 samples) were linked to ethephon in sweet peppers. Furthermore, 10 samples contained chlorpyriphos determined in Chinese cabbage (six samples), blackcurrants, parsley roots, celeriac and radishes (one sample each). Other pesticides detected in samples that may raise health concerns included linuron (five cases), carbendazim and benomyl (three cases), buprofezin (three cases), chlorpyriphos-methyl (three cases), chlormequat, chlorothalonil, diflubenzuron, dimethoate, fluazifop-P and prothioconazole (one case each). For nine samples the risk assessment could not be conducted due to insufficient data.

The largest exceedance of the acute reference dose was mainly associated with the presence of ethephon in various samples of sweet peppers. The calculated acute reference dose values spread from 116.6% to 940.1% for children and 32.0% to 257.7% for adults. Additionally, significant acute reference dose exceedance was also observed for carbendazim and benomyl in cucumbers, amounting to 426.0% for children and 180.7% for adults, as well as for cypermethrin in celery leaves with values of 299.3% for children and 128.0% for adults.

24.3.3 Actions taken

Several actions (detailed in Table 147) were undertaken in response to non-compliance of the tested samples.

Table 147: Actions taken

Actions taken	Number of non-compliant samples
Rapid alert notification	30
Administrative sanctions (e.g. fines)	128
Lot recalled from the market	14
Rejection of a non-compliant lot	35
Destruction of a non-compliant lot	2
Intensive investigation before introducing onto the market	4
Follow-up (suspect) sampling of similar products, samples of the same producer or the same country of origin	30
Warnings to the responsible food business operator	24
Other actions	21
No action	2

24.4 Quality assurance

The analyses of the collected samples were carried out by six official laboratories and one research institute designated by the Ministry of Agriculture and Rural Development. All these laboratories (listed in a Table 148) hold accreditation according to EN ISO/IEC 17025 standards by the Polish Centre for Accreditation. Furthermore, these institutions are obliged to regularly participate in proficiency tests, as outlined in Table 148.

Table 148: Laboratories participation in the national control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or interlaboratory tests
	Name	Code	Date	Body	
Poland	Voivodship Sanitary – Epidemiological Station in Warsaw	LAB 1 (NRL)	19/10/2004	The Polish Centre for Accreditation	EUPT-CF 17 EUPT-FV 25 EUPT-SRM 17 P2201 RT QFCS PT-FC-868
Poland	Voivodship Sanitary – Epidemiological Station in Łódź	LAB 2	03/01/2006	The Polish Centre for Accreditation	E EUPT-SRM 17 EUPT-FV 24 EUPT-SRM 17
Poland	Voivodship Sanitary – Epidemiological Station in Opole	LAB 3	15/11/2004	The Polish Centre for Accreditation	EUPT-FV 24 EUPT-CF 16
Poland	Voivodship Sanitary – Epidemiological Station in Rzeszów	LAB 4	18/06/2004	The Polish Centre for Accreditation	EUPT-CF 17 EUPT-AO 18 FAPAS 19364
Poland	Voivodship Sanitary – Epidemiological Station in Wrocław	LAB 5	08/12/2005	The Polish Centre for Accreditation	EUPT-FV 24 EUPT-SRM 17
Poland	Voivodship Sanitary – Epidemiological Station in Bydgoszcz	LAB 6	01/09/2020	The Polish Centre for Accreditation	EUPT-SRM 17 EUPT-FV 24 BIPEA 19e P2201 RT DLA ptRE01

Country	Laboratory		Accreditation		Participation in proficiency tests or interlaboratory tests
	Name	Code	Date	Body	
Poland	Institute of Horticulture - National Research Institute, Food Safety Laboratory	LAB 7	03/08/2006	The Polish Centre for Accreditation	EUPT-FV 24 EUPT-SRM 17 EUPT-CF 16 EUPT-AO 17 FAPAS 19329 FAPAS 19335 FAPAS 19339 FAPAS 19346 DLA ptRE01 LGC FC316

24.5 Processing factors

Table 149 provides an overview of the processing factors which national competent authorities applied to assess the compliance of the processed products with EU MRLs.

Table 149: Processing factors

Pesticide (report name)[a]	Unprocessed product (RAC)	Processed product	Processing factor[b]
Deltamethrin (cis-deltamethrin) **Oxyfluorfen**	Olives for oil production	**Olive oil, virgin or extra virgin**	5
2.4-D **Bromide ion Chlormequat Chlorpyrifos Clopyralid Deltamethrin Diphenylamine Dithiocarbamates Etofenprox fosetyl-Al Glyphosate Mepiquat Permethrin Pirimiphos-methyl Tebuconazole Trinexapac Tefluthrin**	Barley grains Buckwheat Common millet grain Oat grains **Rye grains** **Common wheat grain**	Barley groats Barley rolled grains Buckwheat flour Buckwheat groats Millet flour Millet groats Millet rolled grains Oat flour Oat rolled grains Oat rolled grains, wholemeal Rolled oats, instant Rye flour, wholemeal wheat groats **Wheat, wholemeal flour**	1
Carbendazim and benomyl Chlorfenapyr Folpet	**Marjoram**	**Marjoram, dry**	1

Propargite Propiconazole Azoxystrobin Buprofezin Isoprothiolane Tebuconazole	Rice grain	Rice polished	0.5
Azoxystrobin Boscalid Carbendazim and benomyl Cyprodinil Dimetomorf Fenhexamid Flupyradifurone Folpet Glufosinate Metalaxyl and metalaxyl-M Methoxyfenozide Pirimetanil Propamocarb Spirotetramat **Thiophanate-methyl**	**Wine grapes**	**Wines**	1

(a) Report name as specified in the MatrixTool2016.
(b) Processing factor for the enforcement residue definition.

25 Portugal

25.1 Objective and design of the national control programme

The objectives and design of the control programme took into account the following:

- The relevance of a food product to the diet or in national agricultural production – High.
- Food products with a high non-compliance rate identified in the previous years/high RASFF notification rate – High.
- Unprocessed – High; or processed products – Low.
- Food relevant to a sensitive group of consumers (e.g. baby food) – Low.
- Organic – Low; or conventional products – High.
- Sampling of products during the main marketing season – High; outside of the marketing season (e.g. strawberries during winter) – Low.
- Sample origin reflecting geographic distribution of food products consumed (e.g. domestic, EU, non-EU countries) – High; or focusing on countries with a high non-compliance rate in the past – Low.

To decide which pesticides should be included in national control programmes the following aspects were taken into consideration:

- Capacity of the labs – High.
- Those defined in Regulation 2021/601– High.
- Non-compliance of samples from previous control programmes – High.
- Food commodities not included in the EU-coordinated programme – High.

25.2 Key findings, interpretation of the results and comparison with the previous year's results

25.2.1 Key findings

Table 150: Summary results: 2022 (coordinated and national programme)

Samples	Total	Without	%	With residues	%	Exceeding MRL	%	Non-compliant	%

		residues		below the MRL					
Cereals (unprocessed)	53	22	41.5	25	47.2	6	11.3	3	5.7
Processed products	25	7	8.7	15	60	3	12.0	2	8.0
Baby food	5	2	40	1	20	2	40	2	40.0
Sum of fruit and nuts, vegetables, other plant products (unprocessed)	871	296	34.2	514	59	61	7.0	30	3.4
Animal products[(a)]	10	2	20	2	20	6	60	4	40
Total	**964**	**329**	**34.1**	**557**	**57.8**	**78**	**8.1**	**41**	**4.3**

(a) With reference to animal product samples, only the samples under the EU-coordinated programme were considered for this report, as was the case in previous reporting years.

25.3 Comparison with previous results

Results for 2018–2021 are presented in Tables 151–155.

Table 151: Summary results: 2021 (coordinated and national programme)

Samples	Total	Without residues	%	With residues below the MRL	%	Exceeding MRL	%	Non-compliant	%
Cereals (unprocessed)	26	15	57.6	12	46.2	1	3.8	0	0.0
Processed products	20	14	0.7	6	0.3	0	0.0	0	0.0
Baby food	11	9	81.8	0	0.0	2	18.2	2	18.2
Sum of fruit and nuts, vegetables, other plant products (unprocessed)	801	329	41.1	420	52.4	80	10.0	29	36.2
Animal products*	38	1	2.6	1	2.6	36	94.7	30	78.9
Total	**896**	**368**	**41.1**	**439**	**49.0**	**119**	**13.3**	**61**	**6.8**

Table 152: Summary results: 2020

Samples	Total	Without residues	%	With residues below the MRL	%	Exceeding MRL	%	Non-compliant	%
Cereals (unprocessed)	37	29	78.4	6	16.2	2	5.4	0	0
Processed products	0	-	-	-	-	-	-	-	-
Baby food	10	10	100	0	0	0	0	0	0

Sum of fruit and nuts, vegetables, other plant products (unprocessed)	644	265	41.1	338	52.5	41	6.3	26	
Animal products	32	32	0.0	0	0.0	0	0.0	0	0
Total	**723**	**336**	**4.5**	**344**	**47.6**	**43**	**5.9**	**26**	**3.6**

Table 153: Summary results: 2019

Samples	Total	Without Residues	%	With residues below the MRL	%	Exceeding MRL	%	Non-com-pliant	%
Cereals (unprocessed)	41	27	65.9	12	29.3	2	4.9	2	4.9
Processed products	82	23	28	57	69.5	2	2.4	1	1.2
Sum of fruit and nuts, vegetables, other plant products (unprocessed)	834	350	42	414	49.6	70	8.4	40	5
Animal products	17	7	41.2	10	58.8	0	0	0	0
Total	**974**	**407**	**41.8**	**493**	**50.6**	**74**	**7.6**	**43**	**4.4**

Table 154: Summary results: 2018 (Coordinated and national programme)

Samples	Total	Without residues	%	With residues below the MRL	%	Exceeding MRL	%	Non-compliant	%
Baby food	20	20	100	0	0	0	0	0	0
Animal products	35	35	100	0	0	0	0	0	0
Total	**55**	**55**	**100**	**0**	**0**	**0**	**0**	**0**	**0**

Table 155: Summary results: 2018 (Coordinated and national programme) continued

Samples	Total	Non-compliant	%
Cereals (including processed products)	69	7	10.00
Processed products	81	0	0
Sum of fruit and nuts, vegetables, other plant products	650	19	2.9
Total	**800**	**26**	**3.25**

Out of 800 samples, 61 (7.6%) refer to organic farming, and one of them was non-compliant.

25.4 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken (coordinated and national programme)

25.4.1 Possible reasons for non-compliant samples

Table 156: Possible reasons for non-compliance with MRLs

Reasons for MRL non-compliance	Pesticide[a]/food product	Frequency[b]	Comments
GAP not respected: use of a pesticide not approved in the EU[c]	Bromide ion/pig fat tissue	4	LRVSA Madeira
	Bromide ion/processed cereal-based food for infants and young children	1	LRVSA Madeira
	Chlorates/ processed fruit-based food for infants and young children	1	LRVSA Madeira
	Chlorates/bananas	3	LRVSA Madeira
	Linuron/bananas	1	LRVSA Madeira
	Chlorates/tangerines	6	LRSVA Madeira
	Thiacloprid/tangerines	1	LRSVA Madeira
	Chlorates/head cabbages	1	LRSVA Madeira
	Clothianidin/spinach	1	LRSVA Madeira
	Iprodione/tomato	1	LRSVA Madeira
	Clorfenapyr/tomato	1	AGQ Labs
	Methomyl/ summer savory	1	LRVSA Madeira
	Chlorates/cider	1	LRVSA Madeira
	Tetramethin/pears	1	AGQ Labs
GAP not respected: use of an approved pesticide not authorised on the specific crop[c]	Imazalil/pears	1	AGQ Labs
	Tebufenpyrad/summer savory	1	LRSVA Madeira
	Dimethomorph/oat	1	AGQ Labs
	Fluazifop-p/spinaches	1	AGQ Labs
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Deltamethrin/oranges	1	AGQ Labs
	Deltamethrin/spinach	1	LRSVA Madeira
	Fosetyl/cherries	1	AGQ Labs
Natural occurrence (e.g. dithiocarbamates in turnips)	No non-compliance		
Use of a pesticide on food imported from non-EU countries for which no import	Deltamethin/spinach	1	LRVSA
	Azoxystribin/cherimoyas	1	Labiagro
	Imazalil/banana	1	Labiagro

tolerance was set[(d)]	Acetamiprid/carambolas	1	Labiagro
(Control at import programme)	Tebuconazol/guavas	1	Labiagro
	Chlorpyriphos/saffron	1	Labiagro
	Chlorfenapyr/tomato	1	Labiagro
	Tricyclazole/rice	1	Labiagro
	Bifentrin/carambolas	1	Labiagro
	Fludioxonil/papayas	1	Labiagro
	Acephate/melon	1	Labiagro
	Metamidophos/melon	1	Labiagro
	Dimetoate/passionfruit	1	Labiagro
	Ometoate/passionfruit	1	Labiagro
	Profenofos/sweet pepper	1	Labiagro
	Thiamethoxam/rice	1	Labiagro

(a) Report name as specified in the MatrixTool.
(b) Number of cases.
(c) Applicable only for food products produced in the EU.
(d) For imported food only.

25.4.2 Acute reference dose exceedance (coordinated and national programme)

Table 157: Number of samples

Pesticide/food product	Frequency	Lab
Chlorates/bananas	3	LRVSA Madeira
Linuron/bananas	1	Labiagro
Thiacloprid/tangerines	1	LRVSA Madeira
TOTAL	5	

Table 158: Acute reference dose exceedance non-compliant (import control programme)

Pesticide/food product	Frequency	Origin
Acephate +Metamidophos/melon	1	Angola
Tricyclazole/rice	1	India
TOTAL	2	

Table 159: Origin of the non-compliant products

Pesticide/food product	Frequency	Origin
Bromide ion/pig fat tissue	4	Portugal

Acephate/melon	1	Angola
Metamidorfos/melon	1	Angola
Bromide ion/processed cereal-based food for infants and young children	1	Portugal
Thiamethoxam/rice	1	India
Chlorates/ processed fruit-based food for infants and young children	1	Portugal
Chlorates/bananas	1	Portugal
Linuron/bananas	1	Portugal
Chlorates/tangerines	6	Portugal
Thiacloprid/tangerines	1	Portugal
Chlorates/head cabbage	1	Portugal
Clothianidin/spinach	1	Portugal
Deltamethrin/spinach	1	Portugal
Fluazifope-P/spinach	1	Portugal
Iprodione/tomato	6	Portugal
Clorfenapyr/tomato	1	Morrocco
Methomyl/ summer savory	1	Portugal
Chlorates/cider	1	Portugal
Dimethomorph/oat	1	Portugal
Tebufenpyrad/summer savory	1	Portugal
Imazalil/pears	1	Portugal
Deltamethrin/oranges	1	Portugal
Fosetyl/cherries	1	Chile
Azoxystrobin/cherimoyas	1	Brazil
Imazalil/banana	2	Colombia
Acetamiprid/carambolas	1	Brazil
Tebuconazol/guavas	1	Angola
Chlorpyriphos/saffron	1	Iran
Tryciclazole/rice	1	India
Bifentrin/carambolas	1	Brazil

Fludioxonil/papayas	1	Brazil
Dimetoate/passionfruit	1	Angola
Ometoate/passionfruit	1	Angola
Profenofos/sweet pepper	1	Uganda

25.4.3 Actions taken

Table 160: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
Rapid alert notification	7	-
Administrative sanctions (e.g. fines)	10	-
Rejection of a non-compliant lot at the border	13	All non-compliant lots rejected at the border
Other actions	5 (bromide ion) 3(chlorates)	No action considering possible natural occurrence

25.5 Quality assurance

Table 161: Laboratory participation in the control programme

Country	Laboratory Name	Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or inter-laboratory tests
PT	Laboratório Regional de Veterinária e Segurança Alimentar - Madeira (LRVSA Madeira)	DAVA - DSLIA	08/07/2011	IPAC	PT 2018: EUPT-FV20, EUPT-CF12, EUPT-SRM-13, EUPT-AO-13
ES	AGQ LAB		19/01/2007	ENAC, IAS	FAPAS 19245,19248,19251,19257,19258,19261
PT	LABIAGRO		13/02/2003	IPAC	
IT	NEOTRON (LAB N.º 0026L)		1991	ACCREDIA	

25.6 Additional information

Other cases of non-compliance: MRLs (CS_2) and uses (organic production) are given in Table 162.

Table 162: Non-compliant uses (organic farming)

Reasons for MRL non-compliance	Pesticide/food product	Frequency	Comments
GAP not respected: use of a pesticide not approved in the organic farming	-	-	Administrative sanctions by competent authorities for Organic Farming certification

26 Romania

26.1 Objective and design of the national control programme

In Romania three competent authorities are involved in the elaboration and implementation of the national control programme for pesticide residues: the National Sanitary Veterinary and Food Safety Authority (NSVFSA), the Ministry of Agriculture and Rural Development and the Ministry of Health.

The national annual report is published online at www.ansvsa.ro and www.madr.ro

The NSVFSA (the coordinator) has responsibility for preparing the national multiannual control programme for pesticide residues in cooperation with the other two competent authorities. The NSVFSA is also responsible for elaboration and implementation of its own national programme for surveillance and control of food of plant and animal origin.

Implementation of the national programme for surveillance and control of food of plant and animal origin is performed by the Sanitary Veterinary and Food Safety County Divisions and BIPs.

The programme specifies the samples of food of plant origin from Member States and non-EU countries, the point of sampling and the active substances to be analysed.

The Romanian Ministry of Agriculture and Rural Development is responsible for the national monitoring plan of pesticide residues in fruit, vegetables and cereals from the domestic market.

Implementation of the monitoring programme is performed by the Ministry through the Laboratory for Pesticide Residue Control in Plants and Vegetable Products and the Zonal Laboratory for Pesticide Residue Determination in Plants and Vegetable Products – Mures, which analyses the samples taken by the counties and Bucharest phytosanitary units.

In the monitoring programme of the Ministry for 2022, 2,217 samples from 45 agricultural products were planned and 2,631 samples were analysed. The number of active substances analysed was 357.

The Ministry of Health is responsible for food for special nutritional purposes.

It implements monitoring and control of pesticide residues in food for special nutritional purposes within the national programme for monitoring of environmental and work life determinants – Subprogram for public health protection by preventing diseases associated with food and nutrition risk factors.

The Ministry of Health analysed 42 samples in 2022. All of them complied with the legislative provisions.

26.1.1 Design

The selection of the products that were tested for pesticide residue determination is made taking into consideration the following factors:

- Food commodities with high residues/non-compliance rate in previous monitoring years:
  - all data from the last three years were compared and the products with high residue levels were selected to be analysed at a higher frequency: lettuce, spinach, apple, parsley leaves, lemons, grapefruit, mandarins, oranges, peppers, tomatoes, table grapes and wine grapes.
- Origin of food:
  - compared with 2021, in 2022 the proportion of samples analysed for pesticide residues from the EU market has been increased (from 62.22% in 2021 to 67.08% in 2022) and for samples from non-EU countries the proportion of samples was reduced (from 37.17% in 2021 to 32.38% in 2022) (Table 163).
- Sampling at different stages of the market: farm gates, wholesaler, import activities, border inspection activities, farming, slaughtering.
- Sampling of products during the main marketing season/outside of the main marketing season (e.g. citrus fruit during the autumn and winter).
- RASFF notifications and all other useful information.
- Food for sensitive consumer groups, e.g. baby food.
- The importance of the commodity in the country's production, the national statistical data presented by the National Institute of Statistics (production of the main agricultural products per inhabitant). Thus, a great number of samples were planned for cereals (wheat), fruit (apples, grapes) and vegetables (potatoes, tomatoes).
- Food commodities not included in the EU-coordinated programme.

Table 163: Summary results by sample origin

Origin of samples	2020 (%)	2021 (%)	2022 (%)
EU	57.5	62.22	67.08
Non-EU countries	42.5	37.17	32.38
Unknown	0	0.6	0.54

To decide which pesticides are included in national control programmes, the following aspects were taken into consideration:

- The pesticides included in the EU-coordinated programme.
- The use pattern of pesticides.
- The cost of the analysis: multiple methods.
- The capacity of the laboratories.
- The toxicity of the active substance.

26.2 Key findings, interpretation of the results and comparability with the previous year's results

26.2.1 Key findings

In 2022, a total number of 4,642 samples were taken in order to check the MRL compliance of pesticide residues in different crops. From these, 4,402 samples were sampled under the

objective sampling strategy, 223 samples were sampled under the selective sampling strategy and 17 samples were sampled under the suspect sampling strategy.

Some 1,459 samples were fruit and primary derivatives thereof, 2,416 samples were garden vegetables and primary derivatives thereof, 166 were grains and grain-based products, 42 samples were from food products for the young population and 24 samples were of animal products.

From the total number of 4,642 samples that include fruit, vegetables, cereals, processed products (including baby food) and animal products, 2,802 were produced in Romania, 3,114 samples were produced in the EU and 1,503 samples were produced outside of the EU.

Table 164: Summary results

Samples	2020	2021	2022
Total	4,289	3,941	4,642
Without residues (%)	2,916 (67.99%)	2,668 (67.70%)	2,811 (60.56%)
With residues below the MRL (%)	1,322 (30.82%)	1,177 (29.87)	1,657 (35.70%)
Exceeding (%)	51 (1.19%)	96 (2.43)	174 (3.74%)
Non-compliant (%)	34 (0.79%)	51 (1.29)	81 (1.74)

26.2.2 Interpretation of the results

The most frequent pesticides detected in:

- the animal products were: DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT), diazinon, lindan (γ HCH), hexachlorocyclohexane;
- cereals were: bifenthrin (sum of isomers), chlorpyrifos-methyl, imidacloprid, propiconazole (sum of isomers), pirimiphos-methyl, diazinon, permethrin (sum of isomers);
- fruit and nuts were: acetamiprid, boscalid, cyprodinil, fludioxonil, pyrimethanil, thiabendazole, 2-phenylphenol (sum of 2-phenylphenol and its conjugates, expressed as 2-phenylphenol), propiconazole (sum of isomers), imazalil, pirimiphos-methyl, diazinon, permethrin (sum of isomers);
- vegetables were: acetamiprid, azoxystrobin, boscalid, carbendazim and benomyl, chlorothalonil, metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers), pyrimethanil, fludioxonil.

From the total number of samples, 1,831 foodstuffs samples had two or more findings. Below there are mentioned some products with a different number of pesticide residues:

- apples – 107 samples with a number of residues from two up to seven;
- strawberries – 45 samples with a number of residues from two up to six;
- lettuce – 79 samples with a number of residues from two up to nine;
- tomatoes – 332 samples with a number of residues from two up to seven;
- banana – 79 samples with a number of residues from two to five;
- grapefruit and similar – 91 samples with a number of residues from two up to five;
- lemons - 112 samples with a number of residues from two up to six;
- oranges – 70 samples with a number of residues from two up to five;

- pears – 49 samples with a number of residues from two up to seven;
- table grapes – 85 samples with a number of residues from two up to 12;
- wine grapes – 45 samples with a number of residues from two up to eight;
- sweet peppers – 93 samples with a number of residues from two up to seven.

All the data presented above will be taken into account when amending the national control programme for pesticide residues for the coming years.

26.2.3 Comparability with the previous year's results

Compared with 2021, in 2022 the number of samples with residues below the MRL has been increased (from 29.87% in 2021 to 35.75% in 2022) and the number of samples exceeding the MRL has increased (from 2.43% in 2021 to 3.74% in 2022) (Table 164). Pesticides were validated according to SANCO 12682/2019.

26.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

26.3.1 Possible reasons for non-compliant samples

From 4,642 samples in 2022, 81 samples were found to be non-compliant with the EU MRL. The follow-up actions taken in the event of samples non-compliant with the EU MRL are given in Table 166 (measurement uncertainty taken into consideration).

Table 165: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency	Comments	Country
GAP not respected: use of a pesticide not approved in the EU	Carbendazim/lettuce	2		Romania
	Carbendazim/dill	1		Romania
	Chlorothalonil/lettuces	4		Romania
	Chlorpyrifos/apples	2		Romania
	Chlorpyrifos/celery	1		Romania
	Chlorpyrifos/barley	1		Romania
	Dimethoate/lovage	1		Romania
	Dimethoate/strawberries	1		Romania
	Iprodione/lettuce	1		Romania
	Iprodione/tomatoes	1		Romania
	Linuron/lovage	1		Romania
	Linuron/celery	2		Romania
	Linuron/celeriac	1		Romania
	Propiconazole/lovage	1		Romania
	Thiamethoxam/spring onions	1		Romania
	Thiophanate-methyl/lettuce	2		Romania
	Thiophanate-methyl/dill	1		Romania
	Indoxacarb/quince	1	RO321ANSVSA-30539-1	Turkey
	Chlorpyrifos/grapefruit	2	RO321ANSVSA-32411-1 RO321ANSVSA-32807-5	Turkey

	Chlorpyrifos/tomatoes	1	RO321ANSVSA-32497-3	Albania
	Chlorpyrifos-methyl/grapefruit	1	RO321ANSVSA-32833-3	Turkey
	Prochloraz/lemons	1	RO321ANSVSA-32835-3	Turkey
	Chlorpyrifos-methyl/ sweet peppers	1	RO321ANSVSA-32918-5	Turkey
	Chlorpyrifos-methyl/ tomatoes	1	RO321ANSVSA-32975-1	Turkey
	Chlorothalonil/ tomatoes	1	RO321ANSVSA-32975-1	Turkey
GAP not respected: use of an approved pesticide not authorised on the specific crop	Kresoxim-methyl/dill	2		Romania
	Formetanate/lettuce	1		Romania
	Fosthiazate/dill	1		Romania
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Chlormequat/tomatoes	1		Romania
	Diflubenzuron/pears	1		Romania
	Fenhexamid/spring onions	1		Romania
	Pirimiphos-methyl/pears	1		Romania
	Propyzamide/spring onions	1		Romania
	Pirimiphos-methyl/beans (dry)	2		Romania

Exceeding the MRL for imported products	Propiconazole (sum of isomers)/oranges	1	RO223-LSVSA-23076.1	Egypt
	Propiconazole (sum of isomers)/lemons	1	RO223-LSVSA-23163.1	Argentina
	Propiconazole (sum of isomers)/oranges	1	RO223-LSVSA-23227.1	South Africa
	Propiconazole (sum of isomers)/oranges	6	RO223-LSVSA-23320.5 RO223-LSVSA-23320.6 RO223-LSVSA-23320.7	Argentina
	Prochloraz/grapefruit	1	RO321-ANSVSA-31089.1	Turkey
	Diflubenzuron/pears	1	RO223-LSVSA-23527.1	Turkey
	Chlorpyrifos/orange	1	RO223-LSVSA-24525.1	Egypt
	Dimethoate/orange	1	RO223-LSVSA-24525.1	Egypt
	Buprofezin /grapefruit	2	RO223-LSVSA-21521.1 RO223-LSVSA-24214.1	Turkey
	Buprofezin /lemons	1	RO223-LSVSA-24481.1	Turkey
	Propiconazole (sum of isomers)/grapefruit	1	RO223-LSVSA-24214.1	Turkey
	Chlorpyrifos/lemons	1	RO223-LSVSA-23672.1	Turkey
	Chlorpyrifos/grapefruit	1	RO223-LSVSA-24091.1	Turkey
	Chlorpyrifos/grapefruit red	1	RO223-LSVSA-24487.1	Turkey

	Chlorpyrifos-methyl/ grapefruit	1	RO223-LSVSA-24214.1	Turkey

26.3.2 Actions taken

Table 166: Actions taken

	Action taken	Number of non-compliant samples concerned	Comments	Country of origin
Rapid alert notification	81	81		
Administrative sanctions (e.g. fines)	1	1		
Lot recalled from the market	27	27		
Follow-up (suspect) sampling of similar products, samples of same producer or country of origin	84	84		
Warnings to the responsible food business operator	21	21		

26.4 Quality assurance

Table 167: Laboratory participation in the national control programme

Country	Laboratory Name	Code	Accreditation Date	Body	Participation in proficiency tests or inter-laboratory tests
RO	Laboratory for Control Pesticide Residues in Plant and Plant Products	RO_321_ LCRPPPV	LI 1071 16/01/2006 Reaccreditations in 18/12/2021	RENAR-Bucharest	EUPT- CF 16 EUPT- FV 24
RO	Sanitary Veterinary and Food Safety Laboratory Bucharest	RO321-ANSVSA	LI 496 11/04/2007	RENAR-Bucharest	EUPT- CF 16 EUPT- FV 24
RO	Zonal Laboratory for Pesticides Residues determination in Plants and Vegetable	RO_125_ LZDRPPPV	26/04/2013 Reaccreditation in 18/12/2017	RENAR-Bucharest	EUPT- CF 16 EUPT- FV 24

	Products – Mures				
RO	Environmental hygiene laboratory	MS-RO113-MS	LI 1189/04.10.2018	RENAR-Bucharest	FC 312
RO	Institute of Hygiene and Veterinary Public Health	RO321-IISPV	01/04/2002	RENAR-Bucharest	EUPT - CF 16 EUPT - AO 17 PT-FAPAS Test 19349
RO	Sanitary Veterinary and Food Safety Laboratory Constanta	RO223-LSVSA	Accreditation Certificate no. LI 276/ 17.09.2019 RENAR Accreditation Certificate no. LI 276/ 05.04.2023 (temporary suspended AO pesticides analysis) Accreditation Certificate no. LI 276/ 04.01.2023 (NAO pesticides analysis)	RENAR Bucharest	IISPV - NAC - PESTICIDE-AO (matrix liquid egg) EUPT- FV- 24 (matrix tomatoes) PT-FC-836 (LGC AXIO PT)(matrix pear)
RO	Sanitary Veterinary and Food Safety Laboratory Olt	RO41-ANSVSA	LI 1174 05.05.2018	RENAR Bucharest	EUPT- FV 24-
RO	Sanitary Veterinary and Food Safety Laboratory Cluj	RO113-ANSVSA	LI 456 27.11.2006	RENAR Bucharest	EUPT-CF 16 EUPT-AO 17 IISPV-NAC-PCB-AO; IISPV-NAC-Pesticide-AO
RO	Sanitary Veterinary and Food Safety Laboratory Suceava	RO215-ANSVSA	Reaccreditation in 31/07/2023	RENAR Bucharest	EURL CRL FREIBURG EUPT-AO-18 (HONEY), IISPV-NAC PESTICIDE –AO (EGGS).

Table 168: Processing factors

Pesticide(report name)[a]	Unprocessed product (RAC)	Processed product	Processing factor
All pesticides	Oranges	Orange juice	1

All pesticides	Olives for oil production	Oliver oil	5
All pesticides	Wheat	Flour	1
All pesticides	Rye	Flour	1
All pesticides	Wine grapes	White wine	1
All pesticides	Wine grape	Red wine	1

(a) Processing factor for the enforcement residue definition

27 Slovakia

27.1 Objective and design of the national control programme

In the year 2022, the pesticide residue control was conducted in compliance with the Multi-annual Control Programme for Pesticide Residues in Food and Baby Food in Slovakia, issued for the years 2022–2024, ('the programme'), in which Commission Implementing Regulation No 2021/601/EU was incorporated. In developing the national plan, we focused on several priorities. For a selection process as regards the types and number of samples to be collected and analysed, certain criteria were set such as: knowledge from sample analyses from the previous year, consumption and production of a given commodity in Slovakia, as well as the RASFF information. In the selection of commodities, we focused on fresh fruit and vegetables. Under the EUCP 2022, the following commodities were sampled: peaches and nectarines, apples, strawberries, head cabbage, tomatoes, lettuce, spinach, oat grain, barley grain, grape wine (white/red), cow milk and swine fat. Beyond the scope of EUCP commodities, other fruit and vegetables were also collected. In compliance with legislative requirements, a total of 15 samples of organic food and 40 samples of baby food were collected and analysed. The percentage of samples upon their origin for the purpose of pesticide residue analysis reflected the food offer on the Slovak market and also consumption trends in Slovakia: food of domestic origin – 25%, EU countries – 45%, non-EU countries – 26% (unknown origin –10 samples). The extension of the scope of analyses in 2022 was based on the requirements of Regulation No 2021/601/EU. Collected samples were analysed at two official laboratories. Food samples were analysed in the State Veterinary and Food Institute – Veterinary and Food Institute in Bratislava and samples of food for infants and young children were analysed in the Laboratory of the Public Health Authority of Slovakia. Two multi-residue methods and nine single-residue methods were used for food analyses (besides baby food). Three multi-residue methods and one single-residue method were used to analyse samples of food for infants and young children.

27.2 Key findings, interpretation of the results and comparability with the previous year's results

In 2022, 444 samples were analysed.

Table 169: Summary results

Samples	Total	Non-compliant
Animal products	24	0
Cereals	59	1

Baby food	40	0
Fruit and nuts, vegetables and other plant products	321	11
Total	444	12

No pesticide residues were detected in 213 samples which represent 47.97% of all analysed samples. One or more pesticide residues under the MRL were detected in 210 samples which represent 47.30% of all analysed samples. Residues exceeding the MRL were found in 21 analysed samples, of which 12 samples were non-compliant.

In compliance with the legislative requirements, a total of 15 samples of organic food were collected. No pesticide residues were detected in any organic sample.

Table 170: Comparability with the previous year's results

Year	Total number of samples	Without residues (%)	With residues below the MRL (%)	Exceeding the MRL (%)	Non-compliant (%)
2020	468	43.6	51.3	5.1	3.4
2021	419	31.3	62.5	6.2	4.2
2022	444	47.97	47.30	4.73	2.70

27.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

In total, 2.70% of the samples in the monitoring programme were found to be non-compliant with the EU MRL.

Table 171: Non-compliant samples

Food	Country of origin	Pesticide	Residue level
Lemons	Turkey	Prochloraz	0.022
Lemons	Turkey	Chlorpyrifos-methyl	0.081
		Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	0.045
Oranges	Egypt	Profenofos	0.03
Mandarins	Turkey	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	0.135
Mandarins	South Africa	Propiconazole	0.035
Chamomile	Poland	Chlorpyrifos	0.025
Pears	Turkey	Azoxystrobin	0.054
Apples	Poland	Mepiquat (sum of mepiquat and its salts, expressed as mepiquat chloride)	0.013
Oat grain	Slovakia	Chlorpyrifos	0.053
Borlotti or other common beans (dry)	Egypt	Propoxur	0.16

Strawberries	Unknown	Propamocarb (Sum of propamocarb and its salts, expressed as propamocarb)	0.071
Blueberries	Unknown	Fenpropathrin	0.067

Table 172: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]
GAP not respected: use of a pesticide not approved in the EU[b]	Chlorpyrifos/Oat grain Chlorpyrifos/Chamomile	2
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Mepiquat (sum of mepiquat and its salts, expressed as mepiquat chloride)/apples	1
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set[c]	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)/Mandarins Profenofos/Oranges Propiconazole/Mandarins Chlorpyrifos-methyl/Lemons Prochloraz/Lemons Propoxur /Borlotti or other common beans (dry) Azoxystrobin/Pears	9
Unknown	Propamocarb (sum of propamocarb and its salts, expressed as propamocarb)/strawberries Fenpropathrin/blueberries	2

(a) Number of cases.
(b) Applicable only for food products produced in the EU.
(c) For imported food only.

27.3.1 Acute reference dose exceedance

Assessment of the risk to health in Slovakia is carried out by the National Agricultural and Food Centre – the Food Research Institute.

Table 173: Acute reference dose exceedance and/or risk to health

Pesticide	Crop	Sample origin	Residue level (mg/kg)	ARfD (mg/kg bw)	ARfD%	RASFF notification
Chlorpyrifos-methyl	Lemons	Turkey	0.081	Not set	Not set	2022.2680

27.3.2 Actions taken

Table 174 gives an overview of what sort of actions have been taken when a non-compliant product was proven.

Table 174: Actions taken

Action taken	Number of samples	Reference
Rapid alert notification	1	2022.2680
Lot recalled from the market	7	
Other	1	
No action	3	

27.4 Quality assurance

An overview of the laboratories involved in the pesticide residues programme is shown in Table 175.

Table 175: Laboratories participating in the national control programme

Country	Laboratory Name	Code	Accreditation Last audit from the Slovak National Accreditation Service (SNAS)	Body	Participation in proficiency tests or inter-laboratory tests
Slovakia	State Veterinary and Food Institute	156434	Supervision 5.10.2021-11.10.2021	SNAS	EUPT-FV 24, EUPT-CF 16, EUPT-SRM 17, EUPT-AO 17
Slovakia	Pesticide Lab of Public Health Authority (PHA) SR - Bratislava	607223	22.3.2021	SNAS	EUPT-AO BF1, EUPT-CF 16

27.5 Processing factors

An overview of the processing factors used in the pesticide residues programme is shown in Table 176.

Table 176: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
All pesticides	Herbs, spices and similar	Dried herbs	4	Drying (dehydration)
All pesticides	Grains and grain-based products	Oat flour	1	Grain milling - flour production
All pesticides	Grains and grain-based products	Wheat flour white	1	Grain milling - flour production

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
All pesticides	Grains and grain-based products	Wheat wholemeal flour	1	Grain milling - flour production
All pesticides	Ingredients for hot drinks and infusions	Non-fermented tea leaves (green or white tea)	1	Drying (dehydration)
All pesticides	Garden vegetables and primary derivatives thereof	Dried vegetables	5	Drying (dehydration)
All pesticides	Grains and grain-based products	Buckwheat	1	Polishing
All pesticides	Grains and grain-based products	Rice grain, polished	1	Polishing
All pesticides	Alcoholic beverages	Wine (red, rosé, white)	1	Winemaking

28 Slovenia

28.1 Objective and design of the national control programme

The national control programme is defined in accordance with Article 30 of Regulation 396/2005. The administration of the Republic of Slovenia for Food Safety, Veterinary Sector and Plant Protection prepare a multiannual national control programme of pesticide residues in food, previously coordinated with representatives of governmental and non-governmental organisations. It constitutes the basis for carrying out official sampling for checking the conformity of foods.

For the implementation of the programme and reporting to EFSA in accordance with Article 31 of Regulation 396/2005 the Administration of the Republic of Slovenia for Food Safety, Veterinary Sector and Plant Protection and the Health Inspectorate of the Republic of Slovenia are responsible, each in accordance with their respective jurisdiction.

The set of pesticides to be determined in 2022 was selected on the basis of the EU-coordinated programme defined by Commission Implementing Regulation (EU) 2021/601 on a coordinated multiannual EU programme, the European Commission's work programme, data on the registration and sale of pesticides in Slovenia and national data on the authorisation of plant protection products.

The selection of foodstuffs in which pesticide residues will be determined is based on the following criteria:

- The permanent part of the programme, which includes children's food and foods that Slovenians enjoy the most. These are apples, potatoes, lettuce, baby food, flour or cereals and milk. Pesticide residues in these foods are identified annually and these foods may coincide with the selection of foods in the EUCP.

- Part of the programme is rotating because all foods cannot be included in the annual control programme and the selected samples of fruit and products from fruit, vegetables and products from vegetables, cereals and their products and foodstuffs of animal origin are examined on the three-year cycle. Some foods from the rotating programme are also part of the EUCP.
- The EU-coordinated pesticide residue monitoring programme ('EU' in the tables), which is fully integrated into the control programme.
- Tracing foods where in previous years (2020) the pesticide content exceeded the MRLs or other relevant information.
- Additional controls, which include problematic foods (those regularly exceeding the MRLs or with an increased pesticide burden in the past), the topicality of problematic foods or the inclusion of additional pesticides, given the current issues.
- A review of the conditions, which means the inclusion of individual foods in order to check the situation.

28.1.1 Objective

When Slovenia decides with food products will be analysed in the national control programmes, high or low importance is given to one or several factors listed below:

- the relevance of a food product in the diet or in national agricultural production;
- food products with a high non-compliance rate identified in previous years, high RASFF notification rate;
- unprocessed or processed products;
- food relevant for sensitive group of consumers (e.g. baby food);
- organic or conventional products;
- sampling of products during the main marketing season/outside of the main marketing season (e.g. strawberries during winter);
- sample origin reflecting geographic distribution of food products consumed (e.g. domestic, EU, non-EU countries); or focusing on countries with high non-compliance rate in the past;
- food commodities not included in EU-coordinated programme.

28.1.2 Design

In deciding which pesticides should be included in national control programmes, the following aspects were taken into consideration:

- RASFF notifications for a pesticide;
- the use pattern of the pesticide;
- the toxicity of the active substance;
- the cost of analysis (single method/multiple method);
- the capacity of the labs.

In 2022, 972 food samples were included in the national control, which were examined for the content of pesticide residues. There are foods of animal origin (such as milk, beef fat and eggs) and foods of non-animal origin, such as vegetables, fruit (fresh or frozen), cereals and cereal products, processed foods such as baby food, tea, canned vegetables, dried fruit and spices.

In 29 samples (3.0%), the levels of pesticides found, even taking into account measurement uncertainty, exceeded the limit values. The samples did not comply with the legislation.

An overview of the results of the national control programme for 2022 is shown in Table 177.

Table 177: Summary results of the national control programme from the Administration of the Republic of Slovenia for Food Safety, Veterinary Sector and Plant Protection for 2022

Samples	Number of samples	No MRL exceedance	Non-compliant	Percentage non-compliant
Animal products	34	34	0	0
Cereals	66	65	1	0,1
Baby food	10	10	0	0
Processed products	186	183	3	0.3
Fruit, vegetables, other plant products	676	651	25	2.6
Total	**972**	**943**	**29**	**3.0**

By origin, there were 286 samples (29.4%) from Slovenia, 332 samples (34.2%) from other EU countries and 354 samples (36.4%) from non-EU countries.

An overview of the summary of samples taken in 2022 by region of origin is shown in Table 178.

Table 178: Summary of samples taken in 2022 by region of origin

Origin	Number of samples	Non-compliant samples	%
Slovenia	286	5	0.5
Other EU countries	332	4	0.4
Non-EU countries	354	21	2.1
Total	**972**	**29**	**3.0**

28.2 Key findings, interpretation of the results and comparability with the previous year's results

In 2022 there were 29 food samples which were not compliant with the limit values for pesticide residues set by Regulation 396/2005. They represent 3.0% of all tested samples taken for pesticide residue analysis.

In the previous year (2021) there were 50 food samples which were not compliant under Regulation 396/2005, which represents 5.3% of all tested samples.

The share of non-compliant foods has grown compared with previous years. The most important contributors to this were from the imported products. There were six samples of oranges and one sample of strawberries from Egypt and five samples of grapefruit, lemons or tomatoes from Turkey, which were non-compliant. We will continue to monitor these foods more closely also in the coming years.

28.2.1 Key findings

Table 179 summarises the key findings from 2022.

Table 179: Summary of results of non-compliant and unsafe samples taken in 2022

Samples	Number of samples	Non-compliant
Animal products	34	0

Samples	Number of samples	Non-compliant
Baby food	10	0
Cereals	66	1
Processed products	186	2
Fruit, vegetables, other products	676	26
Total	972	29

28.2.2 Interpretation of the results

In 2022, 972 food samples were tested from Slovenia. There were:

- 676 samples (69.5%) of vegetables (fresh or frozen), fruit (fresh or frozen), and other products;
- 10 samples (1.0%) of baby food;
- 66 samples (6.8%) of cereals;
- 186 samples (19.1%) of processed foods; and
- 34 samples (3.5%) of food of animal origin.

In 29 conventional food samples, the levels of pesticides found, even taking into account measurement uncertainty, exceeded the limit values; the samples did not comply with Regulation (EC) No 396/2005.

The samples which did not comply with legislation were:

- Seventeen samples of fruit:
  - 6x oranges;
  - 3x grapefruit;
  - 2x persimmons;
  - 1x lemons;
  - 1x strawberries;
  - 1x raspberry;
  - 1x cherry;
  - 1x kiwi;
  - 1x peach.
- Eight samples of vegetables:
  - 2x cucumbers;
  - 1x sweet pepper;
  - 1x tomato;
  - 1x lettuce;
  - 1x beetroot;
  - 1x chard;
  - 1x cabbage.
- One sample of cereal:
  - 1x wheat flour.
- Three samples of other food products:
  - 1x rice;
  - 1x instant soup;
  - 1x green tea.

28.2.3 Comparability with the previous year's results

In 2022, 3.0% of the samples (29 samples in total, from 972 samples taken) were found to be non-compliant with the EU or national legislation. The following follow-up actions were taken for non-compliant samples. It is less than in 2021 and more than in 2020. In 2021, 5.3% of the samples (50 samples in total, from 944 samples taken) were found to be non-compliant with the EU or national legislation. In 2020, 2.7% of the samples (23 samples in total, from 862 samples taken) were found to be non-compliant with the EU or national legislation. In 2022 there were fewer non-compliant foods than the previous year.

28.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

If we identify non-compliant samples according to the instructions, a batch is usually seized and prevented from entering the market.

For all samples which exceed the MRLs, we take the appropriate measures according to the risk to the consumer. We also taken follow-up actions to verify the violation and to identify its cause.

When we identify non-compliant samples, we draw up an official report.

Foods sampled at import will usually be rejected at the border if there are results inconsistent with our legislation.

28.3.1 Possible reasons for non-compliant samples

In 2022 there were five non-compliant samples originating in Slovenia. The reason for non-compliance was that GAP was not respected according to the EU or national legislation, use of a pesticide not approved in organic food legislation, residues resulting from sources other than a plant protection product (e.g. biocides, veterinary drugs, biofuel) or use of an approved pesticide, but with an application rate, number of treatments, application method or PHI not respected.

There are also other non-compliant samples from EU countries and non-EU countries. The main reasons are use of a pesticide on food imported from non-EU countries for which no import tolerance was set. Other reasons for non-compliance mostly remain unknown as the highest proportion of non-compliant samples occurs in products from non-EU countries.

28.4 Quality assurance

The laboratories performing analysis for the official controls in the pesticide residue area meet the requirements of technical standard ISO 17025. The laboratories are accredited by the Slovenian Institute for Accreditation. They regularly examine control samples both at national and international levels and the methods of analysis used are validated.

An overview of the laboratories involved in the pesticide residue programme is shown in Table 180.

Table 180: Laboratory participation in the national control programme

Country	Laboratory Name	Code	Accreditation Date	Body	Participation in proficiency tests or inter-laboratory tests
Slovenia	National laboratory of Health, Environment and Food	LP-014	6.3.2023	Slovenian Accreditation	1.) EUPT-FV20 2.) EUPT-SM10 3.) EUPT-AO13 4.) EUPT-CF12 5.) EUPT-SRM13

28.5 Processing factors

Processing factors are applied when necessary to verify compliance of processed products with EU MRLs according to Article 20 of Regulation 396/2005. The processing factors were reported by national competent authorities to verify compliance of processed products with EU MRLs.

In addition to these, factors based on water content from food composition tables in fresh versus dried commodities were used for dried samples where the MRL was set on the fresh commodity. Processing factors were mainly applied to cover the dehydration of fruit, oil production using pressing and polishing of rice.

An overview of the processing factors used in the pesticide residues programme is shown in Table 181.

Table 181: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
All	Wheat grains	Wheat flour	1	Treatment: grinding

29 Spain

29.1 Objective and design of the national control programme

29.1.1 Responsibilities

The following areas participate in the preparation and execution of the national control programme:

- The general subdirectorate of foreign health of the Ministry of Health, consumer affairs and social welfare (*the Spanish acronym is MSCBS*).
- The general subdirectorate for official control and alerts of the Spanish Agency for Food Safety and Nutrition Autonomous Organisation (*the Spanish acronym is AESAN OA*).
- The control units of the regional competent authorities (*the Spanish acronym is CCAA*).

Each unit has assigned coordination or execution functions within its scope.

The AESAN OA is an autonomous body attached to the Ministry of consumer affairs and acts as a link between the European Commission, EFSA and the regional competent authorities (CCAA), which are responsible for the execution of the programmes at regional level.

For the development and implementation of the annual national programme based on risk, a Programming Guide has been developed and approved in Spain. This document aims to support the autonomous control units and the foreign health unit in their programming functions.

The national programme is made up of two sub-programmes, which are based on the point at which the samples are collected:

- Market subprogramme, coordinated by AESAN OA.
- Imports subprogramme, coordinated by MSCBS.

29.1.2 Official controls on pesticides

The national pesticide residue control programme includes the controls carried out by the CCAA, with AESAN OA acting as the coordinator. The annual plans developed by the CCAA and coordinated by AESAN OA include supervision of unauthorised products.

29.1.3 Objectives

The objectives of the national control plan are:

- to ensure that official controls are carried out to avoid food products treated with unauthorised pesticides entering the market.
- To ensure that official controls are carried out in order to avoid food products with pesticide residue levels higher than those established by current regulations entering the market, which may pose a risk to the health of consumers.

29.1.4 Design of programmes

Those responsible for sampling are the inspectors of the regional competent authorities.

Those samples taken at the border inspection posts/points of entry, are taken by staff from the General Directorate of Public Health.

The selection of samples is based on:

- Consumer data: Spanish diet model to determine exposure to chemical products; food intended for populations at risk (baby foods).
- Production data.
- Products with a high consumption in each region.
- Information from import programme.
- Information from the Plant Health of the Ministry of Agriculture services on recent inspections, prohibited use of pesticide, etc.
- The pattern of use of plant protection products (commonly used, time of application).
- Toxicity of the active substances.
- Recent changes in the MRL or withdrawal of authorisations for use/approval of active substances.
- Scope of accreditation of the laboratory/analytical capacity/resources.
- Non-compliant results obtained in previous years.
- Pesticide residue selection: in the national risk-based programming work, the Working Document SANCO/12745/2013 is also taken into consideration, as it includes the pesticides that should be considered for inclusion in the national control programmes to guarantee

compliance with the maximum levels of pesticide residues in food of plant and animal origin.

The combination of sample-pesticide residues is based on:

- Frequency of findings of residues of active substances in food products in reporting plans (national and EU) official control from prior years.
- RASFF notifications.
- The products listed in Implementing Regulation (EU) 2021/601.

29.2 Key findings, interpretation of the results and comparability with the previous year's results

This report includes the pesticide residues analysed during the year 2022 as part of the monitoring and control programme for pesticide residues in food. These data have been provided by the Health Affairs and Public Health services of the regional competent authorities and by the general sub-directorate of foreign affairs.

Within the multiannual national control programme for pesticides residue, the phytosanitary residues that the different laboratory entities have been able to determine were analysed, based on legal requirements defined in the legislation and the available detection methodology.

Food matrixes have been categorised in this report following the classification settled in Annex I of Regulation (EC) 396/2005 (which is defined in Regulation (EC) 2018/62) as well as the standardised nomenclature for the classification and description of EFSA's FOODEX2, following the standards established by that authority.

In order to better understand the information on the number of samples per number of inhabitants taken by Spain, it must be taken into account that the results sent to EFSA from Spain do not include samples taken from primary production. Due to the organisation of the Spanish administration, primary production samples are considered excluded from the scope of Regulation (EC) No 396/2005.

Pesticide residue control data for the year 2022 were collected in two ways:

- The main route: the application developed by the official control and alerts general sub-directorate which name is 'GEDA'. This application was developed to standardise and facilitate the collection of data, thus generating a database that allows the management of information. Overall, 92.82% of the data received were sent using this application.
- The second option: the tool provided by EFSA for manual data collection: 'EFSA XML TOOL'. This tool, in Excel format, enables information to be entered as codes defined by EFSA, collected in various catalogues and facilitates the creation of XML files for direct submission to the EFSA platform. Through this system, 7.08% of the data were collected.

The data are received following the scheme designed by EFSA; the 'Standard Sample Description 2' (SSD2). This scheme sets out the structure in which the information must be described, which uses a controlled terminology (catalogues that codify each possible definition, to harmonise criteria), and allows the validation rules to be followed to guarantee the quality of the data provided. This allows the harmonisation of the data received by EFSA for subsequent analysis. This scheme is submitted to EFSA in XML format to the Data Collection Framework.

29.2.1 Key findings

In 2022, a total of 1,743 samples were analysed for pesticide residues as part of the monitoring and control programme for pesticide residues in food. The analysis of those 1,743 samples led to 292,340 results.

Of the analysed samples, 0.75% showed pesticide residue levels that exceeded the EU MRL. In particular, there have been 13 non-compliant samples that correspond to 16 non-compliant results, since there are samples that have tested positive for more than one substance (e.g. a honey sample, was positive for chlorfenvinphos, coumaphos and fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate).

None of the baby food samples were non-compliant. The group of 'Fruit and other vegetables' shows the highest number of non-compliant results, but this is the group that accounts for 78.37% of the samples tested. The parameter that has been confirmed in more samples within this group was acetamiprid and diflubenzuron with two positive results one of each. The biggest number of samples and analysed substances belong to this group, and 10 of the 16 pesticides detected appeared within the group.

From the group 'Products of animal origin', three samples presented residues: two fish products, and one honey product.

The main results are detailed in Tables 182 and 183.

Table 182: General summary – Part 1

Matrix	Total number of samples	Total number of results	Compliant samples	Samples with residues >MRL	% NC
Products of animal origin	152	11,940	149	3	1.97
Baby food	26	3,162	26	0	0
Cereals	117	20,043	117	0	0
Fruit and other vegetables	1,448	257,195	1,438	10	0.69
Total	**1,743**	**292,340**	**1,730**	**13**	**0.75**

Table 183: General summary – Part 2

Matrix	Samples without residues detected	Samples with residues detected	Samples compliant due to the analytical method uncertainty	% With presence	% Without residues
Products of animal origin	11,940	4	0	2.63	97.37
Baby food	3,162	0	0	0	100
Cereals	20,043	11	1	9.4	90.60

Fruit and other vegetables	257,195	603	15	41.64	58.36
Total	**292,340**	**618**	**16**	**35.46**	**64.54**

From the 1,743 samples taken:

- 97.71% of the samples were objective samples,
- 0.06% of the samples were selective samples,
- 2.24% were suspect sampling.

Samples were collected in the context of the following legal references:

- Regulation (EC) No 396/2005 (amended) – 99.66% of the samples,
- Commission Directive (EC) No 125/2006 and 2006/141/EC – 0.17%,
- Commission Implementing Regulation (EU) 2019/1793 – 0.17%.

Below, you can see how the samples sent had been scheduled and taken.

- Official (national and EU) programme – 20.54%,
- Official (EU) programme – 34.88%,
- Official (national) programme – 44.58%.

29.2.2 Interpretation of the results

The number of samples received is slightly lower than in previous years, as shown in the graphic.

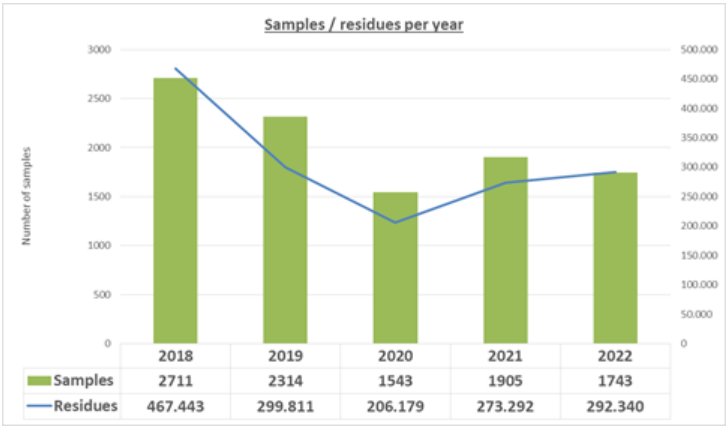


Figure 8: Samples/ residue per year

However, the number of residues tested is slightly higher than in previous years, which could be interpreted as an improvement of the analysis of the samples taken.

Overall, 91.11% of the samples taken were of Spanish origin while the rest of the samples were from non-EU countries and other European countries. Related to the non-compliant results, 12 out of 13 samples were Spanish, and just one was from a non-EU country.

The quality of the data sent to EFSA has improved because the AESAN OA application (GEDA) was adapted to EFSA's latest requirements, which only allow the reporting of substances that are part of the of the legal residue definitions described by the European Commission. Perhaps

for this reason, some autonomous communities may not have been able to report all the substances analysed by their laboratories (part of the sum).

To decide on any compliance action, all laboratories have procedures for estimating analytical uncertainty. The SANTE/11312/2021 document is also considered.

Some new confirmation methods were implemented in Spanish laboratories to increase the number of pesticide residues measured and lower the detection limits of some from them.

The results are detailed in Table 184.

Table 184: Non-compliant results, summary

Matrix	Samples	Results	Pesticide	Frequency
Animal products	3	6	Acrinathrin	1
			Chlorfenvinphos	1
			Coumaphos	2
			DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT)	1
			Fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate	1
Baby foods	0	0	--	0
Cereals	0	0	--	0
Fruit and other vegetables	10	10	Acetamiprid	2
			Anthraquinone	1
			Bifenthrin (sum of isomers)	1
			Chlorfenapyr	1
			Diflubenzuron	2
			Ethirimol	1
			Lenacil	1
			Propyzamide	1
Total	13	16		16

29.2.3 Comparability with the previous year results

In 2022, a total of 1,743 samples were analysed for pesticide residues compared with a total of 1,905 samples analysed in 2021, and 1,543 samples analysed in 2020.

This year, the number of analyses has decreased slightly compared with the number taken in 2021.

Table 185: Comparability samples/results by year

Year	Total number of samples	Total number of results
2019	2,314	299,811
2020	1,543	206,179
2021	1,905	273,292
2022	1,743	292,340

Chlorpyrifos has not been detected in the samples tested in 2022, as seen in Table 186. The residues checked were:

- Chlorpyrifos.
- Chlorpyrifos-methyl.
- Sum of chlorpyrifos-methyl and desmethyl chlorpyrifos-methyl.

Table 186: Frequency of residue chlorpyrifos by year

Year	Residue non-compliant more common	Number of samples analysed	Number of non-compliant	%	Product more common
2020	Chlorpyrifos	1,041	4	0.2	Fruit and other vegetables (2 coffee beans/2 sweet peppers)
2021	Chlorpyrifos	1,720	6	0.2	Fruit and other vegetables (1 coffee beans/5 oranges)
2022	Chlorpyrifos	1,632	0	0	–

29.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

29.3.1 Possible reasons for non-compliant samples

As the data element N.06.01. Conclusion of follow-up investigation (evalInfo.conclusion) is considered 'Optional' in the current SSD2 guidance, we have not received this information from some data providers.

This is the reason for the high number of 'unknown' conclusions.

Table 187: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency
Environmental contamination	Acrinathrin/ honey Chlorfenvinphos/ honey Coumaphos/ honey Fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate/ honey	2
Good Agricultural Practice (GAP) not respected: use of an approved pesticide not authorised on the specific crop	Diflubenzuron/ tigernuts Ethirimol/ spinach	3

	Acetamiprid/ kaki/ persimmon	
	Anthraquinone/ maté infusion material	
	Bifenthrin (sum of isomers)/ kaki/ persimmon	
Unknown	Chlorfenapyr/ tomatoes	7
	DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT)/ Fish product	
	Lenacil/ spinach	
Other	Propyzamide/ celery	1

29.3.2 Actions taken

Table 188: Actions taken

Action taken	No. of non-compliant samples concerned	Residue/Product
Administrative consequences	1	Lenacil/ Spinach
Follow-up action due to a residue of a pesticide detected in a EU sample, which is not approved for use in the EU territory	10	Propyzamide/ Celery Acetamiprid/ Kaki/ Persimmon Bifenthrin (sum of isomers)/ Kaki/ Persimmon Diflubenzuron/ Tigernuts Ethirimol/ Spinach Acrinathrin/ Honey Chlorfenvinphos/ Honey Coumaphos/ Honey Fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate/ Honey Chlorfenapyr/ Tomatoes DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT)/ Fish product
Follow-up (suspect) sampling	1	Diflubenzuron/ Tigernuts
Lot not released on the market	1	Anthraquinone/ Maté infusion material

29.4 Quality assurance

Table 189: Laboratory participation in the national control programme

Country	Laboratory	Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Date	Body	
Spain	AINIA. ASOCIACIÓN DE INVESTIGACIÓN DE LA INDUSTRIA AGROALIMENTARIA	20/12/1996	ENAC	FAPAS, EUPT, Testqual
Spain	CENTRO NACIONAL DE TECNOLOGÍA Y SEGURIDAD ALIMENTARIA- CNTA	12/06/1997	ENAC	
Spain	LABORATORIO DE SAÚDE PÚBLICA DE GALICIA. Laboratorio de Lugo	10/07/1998	ENAC	FAPAS, EUPT, Testqual
Spain	LABORATORIO REGIONAL DEL GOBIERNO DE LA RIOJA	28/05/1999	ENAC	FAPAS, EUPT, Testqual
Spain	LABORATORIOS AGROALIMENTARIO Y ENOLÓGICO DE LA GENERALITAT VALENCIANA.	22/10/1999	ENAC	FAPAS, EUPT, Testqual
Spain	LABORATORIO DE SALUD PÚBLICA DE BIZKAIA	04/02/2000	ENAC	FAPAS, EUPT, Testqual
Spain	LABORATORIO REGIONAL DE SALUD PÚBLICA DE MADRID	18/02/2000	ENAC	FAPAS
Spain	LABORATORIO DE SALUD PÚBLICA (MADRID SALUD). AYUNTAMIENTO DE MADRID	02/06/2000	ENAC	EUPT
Spain	LABORATORIO DE LA AGENCIA DE SALUD PÚBLICA DE BARCELONA	21/07/2000	ENAC	FAPAS, EUPT, Testqual
Spain	Laboratorio KUDAM SLU	24/05/2002	ENAC	FAPAS, EUPT, Testqual
Spain	FItosoil Laboratorios SL	03/10/2003	ENAC	
Spain	LABORATORIO DE SALUD PÚBLICA DE ALMERÍA	08/09/2005	ENAC	FAPAS, EUPT
Spain	LABORATORIO QUÍMICO MICROBIOLÓGICO. MURCIA	14/07/2006	ENAC	EUPT, Testqual
Spain	Laboratorio Regional: AGQ LABS: Labs & Technological Services AGQ, S.L. (Sevilla)	19/01/2007	ENAC	FAPAS, EUPT, Testqual

Spain	LABORATORIO AGROALIMENTARIO Y DE SANIDAD ANIMAL DE MURCIA	16/10/2009	ENAC	FAPAS, EUPT, Testqual
Spain	LABORATORIO AGROAMBIENTAL DE ARAGON	18/12/2009	ENAC	FAPAS, EUPT, Testqual
Spain	INSTITUTO TECNOLÓGICO DE CANARIAS	21/10/2011	ENAC	FAPAS, EUPT, Testqual
Spain	LABORATORIO DE SALUD PÚBLICA DE CUENCA	02/12/2011	ENAC	FAPAS, EUPT
Spain	LABORATORIOS APINEVADA, S.L.	06/07/2012	ENAC	
Spain	LABORATORIO DE SALUD PÚBLICA DE BADAJOZ	24/05/2013	ENAC	FAPAS, EUPT
Spain	LABORATORIO AGRARIO REGIONAL DE LA CONSEJERÍA DE AGRICULTURA Y GANADERÍA DE LA JUNTA DE CASTILLA Y LEÓN	28/11/2014	ENAC	FAPAS, EUPT

29.5 Processing factors

Table 190 gives the processing factors that were used by national competent authorities to verify compliance of processed products with EU MRLs.

Table 190: Processing factors overview

Pesticide (report name)	Unprocessed product (RAC)	Processed product	Processing factor
All pesticides	Wine grapes	Wine	1
All pesticides	Olives for oil production	Olive oil	3
All pesticides	Olives for oil organic production	Organic extra virgin olive oil	3
All pesticides	Rye	Rye Flour	2.4

29.6 Notified residues vs accepted residues: pesticides excluded from the EU report

AESAN have received the analysis carried out on 1,743 samples, and only 1,737 samples will be included in the European report.

Those six samples not included in the report are from fish and seafood products, which are not within the scope of this report.

Regarding the residues notified, AESAN have received and forwarded to EFSA 292,340 residues, from which only 289,043 were included in the European report.

Those 3,297 residues rejected were excluded because they were part of a sum and didn't comply with the full definition of the residue, and those residues are excluded from the scope of the report.

30 Sweden

30.1 Objective and design of the national control programme

30.1.1 Objective

The Swedish Food Agency has developed a scoring model to clarify the criteria that form the basis for the prioritisation of the products included in the national monitoring programme for pesticide residues. The score model is valid for a period of three years and revised every third year. The score model takes the risks to the consumer into account, ranking the products based on their score. The 20 products with the highest scores are taken as the most important products, and they are included annually and constitute about 60% of the control programme. The rest of the products recur on a regular basis, such as every three years. Baby food is an exception and is always included in the programme.

The following criteria are included in the scoring model:

- Acute Swedish consumption, 97.5 percentile, for adults and children.
- Positive results from pesticide control in relation to the number of samples taken over a three-year period. This is done on a product basis. A minimum of 30 selected samples over the three years is required for the product to be included in this criterion.
- The proportion of samples with residues above the MRL over the three-year period, expressed as a percentage.
- Whether products are processed or not before consumption.
- Edible or inedible peel.
- RASFF messages.
- If the measured levels have led to the intake of acute toxic substances above 50 or 100% of the acute reference dose.

30.1.2 Design

In 2022 the sampling distribution between the origins of the food was roughly 30% domestic, 40% other EU countries and 30% from non-EU countries.

Fresh fruit and vegetables were sampled at wholesalers' warehouses in the first trade channel. The imported cereal grains were sampled at the port where the shipment was discharged. Samples of domestically produced cereal grains were collected at the mill. Most of the samples of processed or frozen fruit and vegetables, juices, fruit drinks, rice and cereal products were collected from retail outlets.

The number of samples from the organic sector was roughly dependent on its market share and availability on the market. In total, 62 organic samples (23.0%) were collected in 2022.

All samples were analysed by a multi-residue method. Depending on the use pattern of pesticides and the products to be analysed, we complement the multi-residue method by using one or more single-residue methods. Overall, we used 15 analytical methods. In all, by using both

multi-residue methods and single-residue methods it was possible to determine about 600 analytes which of about a hundred are metabolites or break-down products.

30.2 Key findings, interpretation of the results and comparability with the previous year's results

30.2.1 Key findings

In 2022, 270 selective samples of fruit, vegetables, baby food, juices, cereal grains, bovine fat and eggs were analysed for residues of about 600 analytes (pesticides, metabolites and break-down products). EU MRLs were exceeded in 13 samples (4.8%). The history of exceedance has looked as follows; 2017 – 3.3%, 2018 - 3.3%, 2019 – 3.0%, 2020 – 3.4%, 2021 – 4.3% and for 2022 it was 4.8%. Looking over time the exceedance over the last seven years is in the range of 3.0–4.8%.

Table 191 shows the total number of samples taken for each category, the number of samples with the concentration of pesticides below the LOQ, i.e. no residues are found, the number of samples with residues located between the LOQ and the limit (MRL), and the samples with residue concentrations over the limit were noted (not taking the measurement uncertainty into account).

Table 191: Summary results from the national monitoring programme for pesticide residues 2022

Food category	Total no of samples	No of samples <LOQ	No of samples >LOQ and ≤MRL	No of samples >MRL
Fruit and berries (fresh or frozen)	74	13	59	2 (2.7%)
Vegetables (fresh or frozen)	78	41	33	4 (5.1%)
Baby food	25	25	0	--
Cereals	45	33	8	4 (20%)
Products of animal origin	30	30	0	--
Others (e.g. juice, dry products, vegetable oils)	18	3	12	3 (16.7%)
Total	**270**	**144**	**113**	**13 (4.8%)**

30.2.2 Interpretation of the results

When measurement uncertainty was taken into consideration, only seven samples, of the 13 samples, were non-compliant.

Table 192: Summary over non-compliant samples 2022

Commodity	Origin	No. of Sample	Pesticides
Pomegranate	Turkey	1	Sulfoxaflor
Beans with pods	Kenya	1	Chlorpyrifos

Spinach	Italy	1	Tau-fluvalinate
Cucumber	Turkey	1	Chlorthianil
Raisins	Iran	2	Chlorpyrifos, Fenpropathrine, Iprodione
Rice	Thailand	1	Tricyclazole

The suspect samples were 111 samples according to Regulation (EC) No 2019/1793. Including measurement uncertainty 31 (27.90%) of those samples contained residues above the MRL.

30.2.3 Comparability with the previous year results

An overview of exceedance in fresh fruit and vegetables is illustrated in Figure 9. Looking over a 10-year period, the exceedance trend has declined and then slightly raised since 2018.

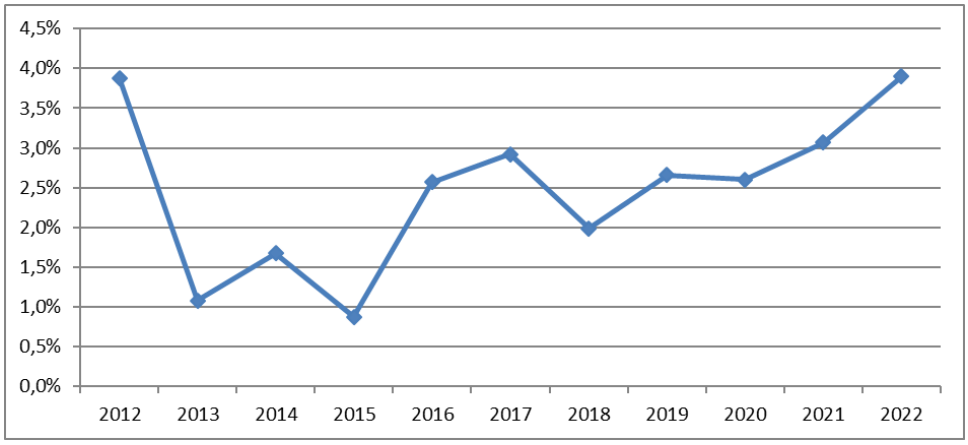


Figure 9: Exceedance rate for fresh fruit and vegetables between 2012 and 2022.

30.3 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

30.3.1 Possible reasons for non-compliant samples

Table 193: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency[b]
GAP not respected: use of a pesticide not approved in the EU[c]	Chlorpyrifos/Raisins	2
	Fenpropathrine/Raisins	2
	Iprodione/Raisins	2
	Chlorpyrifos/Beans with pods	1
	Sulfoxaflor/Pomegranate	1
GAP not respected: use of an approved pesticide not authorised on the specific crop[c]		
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Tau-fluvalinate/Spinach	1
Use of pesticide according to authorised GAP: unexpected slow degradation of residues Cross-contamination: spray drift or other accidental contamination		

Reasons for MRL non-compliance	Pesticide/food product	Frequency[b]
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past) Residues resulting from other sources than plant protection product (e.g. biocides, veterinary drugs, biofuel) Natural occurrence (e.g. dithiocarbamates in turnips) Changes to the MRL Use of a pesticide on food imported from non-EU countries for which no import tolerance was set[c]	Tricyklazol/rice	1

(a) Report name as specified in the MatrixTool.
(b) Number of cases.
(c) Applicable only for food products produced in the EU.
(d) For imported food only.

30.3.2 Acute reference dose exceedance

The short-term intake was estimated for all acute toxic pesticides with an acute reference dose set by the EU or WHO. The calculation was based on the residue found in a selective (composite) sample and the EFSA calculation model PRIMO rev 3 was used. Two of the samples exceeded the acute reference dose during 2022.

30.3.3 Actions taken

A total of 38 follow-ups actions has been taken in 2022.

Table 194: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
Rapid alert notification	2	Raisins from Iran
Administrative sanctions (e.g. fines)	-	
Lot recalled from the market	-	
Rejection of a non-compliant lot at the border	31	Within the frame of Regulation (EC) no 2019/1793
Destruction of non-compliant lot	-	
Follow-up (suspect) sampling of similar products, samples of same producer or country of origin	-	
Warnings to responsible food business operator	-	
Other follow-up investigations to identify the reason for non-compliance or responsible food business operator	7	
Other actions		

30.4 Quality assurance

Laboratory participation in the national control programme.

Table 195: Laboratory participation in the national control programme

Country	Laboratory Name	Accreditation Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or inter-laboratory test
SE	Eurofins Food Feed Sweden AB	Eurofins	02/09/1991	SWEDAC	**EUPT 2022:** EUPT-AO17 EUPT-AO-BF1 EUPT-CF16 EUPT-FV24 EUPT-FV-SM14 EUPT-SRM17 **FAPAS 2022:** FAPAS 05161 FAPAS 09146 FAPAS 09148 FAPAS 09150 FAPAS 19336 FAPAS 19342 FAPAS 19348 FAPAS 19350 FAPAS 19354 **TestQual 2022:** TestQual F22
SE	National Food Agency	SLV/Kem1	02/26/2007	SWEDAC	**EUPT 2022**: EUPT-AO17 EUPT-CF16 EUPT-FV24 EUPT-SM14 EUPT-SRM17

30.5 Processing factors

Table 196 lists the processing factors that were used by the Swedish Food Agency to verify compliance of processed products with EU MRLs.

Table 196: Processing factors

Pesticide[a]	Unprocessed product (RAC)	Processed product	Processing factor [b]	Comments
Acetamiprid	Table grapes	Raisins	4.5	
Ametocratin	Table grapes	Raisins	4.5	
Azinphos-methyl	Table grapes	Raisins	4.5	
Azoxystrobin	Table grapes	Raisins	4.5	
Bifenthrin	Table grapes	Raisins	4.5	
Boscalid	Table grapes	Raisins	4.5	
Bromopropylate	Table grapes	Raisins	4.5	
Buprofezin	Table grapes	Raisins	4.5	
Chlorantraniliprole	Table grapes	Raisins	4.5	
Chlormequat	Table grapes	Raisins	4.5	
Chlorpyrifos	Table grapes	Raisins	4.5	
Cypermethrin (RD)	Table grapes	Raisins	4.5	
Cyprodinil	Table grapes	Raisins	4.5	
Deltamethrin	Table grapes	Raisins	4.5	
Difenconazole	Table grapes	Raisins	4.5	
Dithiiocrbamates	Table grapes	Raisins	4.5	
Etoxazole	Table grapes	Raisins	4.5	
Fenbbutatin oxide	Table grapes	Raisins	4.5	
Fenhexamide	Table grapes	Raisins	4.5	
Fenpyroximate	Table grapes	Raisins	4.5	
Fenvalerate (RD)	Table grapes	Raisins	4.5	
Fludioxinil	Table grapes	Raisins	4.5	

Pesticide[a]	Unprocessed product (RAC)	Processed product	Processing factor [b]	Comments
Fluopyram	Table grapes	Raisins	4.5	
Fluzilazole	Table grapes	Raisins	4.5	
Flutriafol	Table grapes	Raisins	4.5	
Hexythiazox	Table grapes	Raisins	4.5	
Imidcloprid	Table grapes	Raisins	4.5	
Indoxacarb (RD)	Table grapes	Raisins	4.5	
Iprodione	Table grapes	Raisins	4.5	
Iproalicarb	Table grapes	Raisins	4.5	
Lambda-Cyhalothrin	Table grapes	Raisins	4.5	
Metalaxyl (RD)	Table grapes	Raisins	4.5	
Methoxyfenoxide	Table grapes	Raisins	4.5	
Metrafenone	Table grapes	Raisins	4.5	
Myclobutanil	Table grapes	Raisins	4.5	
Penconazole	Table grapes	Raisins	4.5	
Propargite	Table grapes	Raisins	4.5	
Proquinazid	Table grapes	Raisins	4.5	
Pyraclostrobin	Table grapes	Raisins	4.5	
Pyrimethanil	Table grapes	Raisins	4.5	
Quinoxyfen	Table grapes	Raisins	4.5	
Tebuconazole	Table grapes	Raisins	4.5	
Triadimefon (RD)	Table grapes	Raisins	4.5	
Trifloxystrobin	Table grapes	Raisins	4.5	

(a) Report name as specified in the MatrixTool2016.
(b) Processing factor for the enforcement residue definition.

31 Northern Ireland[1]

31.1 Department of Agriculture, Environment and Rural Affairs, Health and Safety Executive

The Health and Safety Executive (HSE) acts as the competent authority for plant protection products including pesticide residues in Northern Ireland on behalf of the Northern Ireland Government's Department of Agriculture, Environment and Rural Affairs (DAERA).

The Expert Committee on Pesticide Residues in Food (PRiF) is a panel of independent experts that advises the UK governments on their pesticide residue monitoring programmes including the Northern Ireland programme.

UK results are published in a range of formats, including detailed quarterly PRiF reports and an annual report. Reports and associated ODS format files containing detailed results are available online[46]. Results for samples in the Northern Ireland programme are differentiated from Great Britain's (GB) results.

General enquiries about HSE'S work on pesticide residue monitoring should be sent through DAERA to SPSEUReporting@daera-ni.uk

Enquiries about PRiF reports can be sent to prif@hse.gov.uk

[46] https://www.gov.uk/government/collections/pesticide-residues-in-food-results-of-monitoring-programme and https://data.gov.uk/dataset/5d5028ef-9918-4ab7-8755-81f3ad06f308/pesticide-residues-in-food

31.2 Objective and design of the national control programme

The Northern Ireland national control programme is made up of surveys of commodities selected every year based on an established prioritisation system.

Proposals for the programme for 2022 were reviewed by PRiF in 2021 before the programme was finalised. Full details of the programme and supporting justifications were previously provided to EFSA and the European Commission.

Factors of particular importance in determining surveys for this year's programme were:

- EU monitoring programme – all foods covered by the required EU monitoring for 2022 were classified as high priority for incorporation into the national programme.
- Staple foods – potatoes, bread and milk are always included in the UK programmes. These are foods of high dietary importance, whether for the entire population or for vulnerable sub-groups, in particular infants and children.
- Foods for which RASFF notifications were issued for pesticide residues during 2021 and/or where previous results showed a high rate of non-compliance with MRLs.
- Lower priority foods which had not been surveyed for some years.
- All residues that measure above the MRL are included in 'exceedance' figures but each value when published online is marked as whether the MRL is exceeded when measurement uncertainty is applied.

31.3 Key findings, interpretation of the results and comparability with the previous year's results

31.3.1 Key findings

- 633 samples were tested in total.
- 49.29% of samples contained no detectable residues, 49.92% of samples contained residues at or below the MRL or were assessed as compliant, and 0.79% of samples contained residues assessed as being over the MRL.

A detailed interpretation of results is published in PRiF reports. PRiF quarterly reports for 2022[47] contain additional detailed interpretation of the results, including consumer risk assessments.

The presentation of some detailed data points may vary between the published NI results and the data submitted to EFSA, due to differing data handling requirements.

Fresh and frozen fruit and vegetables (including potatoes)

A total of 309 samples were tested. Within this category, 0.65% of samples contained residues above the MRL.

Animal products including fish

A total of 216 samples were tested.

[47] Pesticide residues in food: quarterly monitoring results for 2022. GOV.UK (www.gov.uk). Available online: https://www.gov.uk/government/publications/pesticide-residues-in-food-quarterly-monitoring-results-for-2022

Fish were included in the national programme because fish is an important part of the national diet, and the results have been supplied to EFSA. These results will not be included in EFSA's analysis of results because there are no MRLs for fish set in Regulation 396/2005.

Starchy foods and grains

A total of 84 samples were tested. Within this category, 3.57% of samples contained residues above the MRL, all of these were barley.

Processing factors were applied to consider compliance in bread.

Bread and gluten-free bread were included in the national programme because they are key parts of the national diet, and the results have been supplied to EFSA. These results will not be included in EFSA's analysis of results because they are composite foods.

Miscellaneous groceries

A total of 12 samples of wine were tested. None of the samples had residues above the MRL.

Infant food

A total of 12 samples of infant food (fruit- or vegetable-based) were tested. None of the samples contained residues.

31.3.2 Summary results

Table 197: Summary results

	Samples tested	Samples with residues over the MRL
Fruit and vegetable		
Apples	39	0
Apricots	8	0
Beans with pods	25	0
Cabbage	26	1
Cherries	8	0
Cucumbers	8	0
Grapes	26	0
Lettuce	26	0
Peaches and nectarines	29	1
Potatoes	33	0
Spinach	26	0
Strawberry	29	0
Tomatoes	26	0
Starchy foods and grains		
Bread (ordinary)	20	0
Bread (gluten-free)	4	0
Barley	24	3
Oats	36	0
Animal products (including fish)		
Pork	48	0
Milk	72	0
Game	48	0
Fish (sea)	48	n/a
Miscellaneous other groceries		
Wine	12	0
Infant food		
Infant food (Fruit- or vegetable-based)	12	0

31.4 Interpretation of the results

Fresh and frozen fruit and vegetables (including potatoes)

Residues above the MRL were detected in one sample of cabbage and one sample of peaches and nectarines. Due to this small number no further meaningful interpretation could be made of the root cause.

Animal products including fish

None of the samples contained residues above the MRL.

Starchy foods and grains

The most frequent non-compliant samples were in the barley survey. Three samples contained residues of fosetyl (sum). The residues were detected as phosphonic acid: like similar findings in GB , the HSE considers it likely that the residues are from the use of fertilisers or other non-PPPs.

- None of the samples from miscellaneous other groceries contained residues above the MRL.
- None of the samples from infant food contained residues above the MRL.

31.5 Comparability with the previous year's results

This is the second year in which Northern Ireland samples have been reported separately from other UK samples. The Northern Ireland programme is planned to be made up of surveys of different foods each year and so it will generally not be appropriate to compare results statistically with previous years. Results for most foods are broadly consistent with previous and current UK results.

31.6 Non-compliant samples: possible reasons, acute reference dose exceedance and actions taken

31.6.1 Possible reasons for non-compliant samples

Fresh fruit and vegetables (including potatoes)

One sample of cabbage from GB contained a residue of spirotetramat measured above the MRL but within the bounds of measurement uncertainty. Spray records and other enquiries indicated the grower had abided by conditions of use including harvest intervals. As such no cause of the residue level could be identified.

One sample of peaches and nectarines from South Africa contained a residue of glufosinate measured above the MRL but within the bounds of measurement uncertainty.

Animal products including fish

None of the samples contained residues above the MRL.

Starchy foods and grains

Three samples of barley contained residues of fosetyl-AL above the MRL. One was labelled as being from Northern Ireland; the other two simply as UK (i.e. not differentiating between GB and Northern Ireland). No further information was received on how these specific findings

occurred. The residues were detected as phosphonic acid like similar findings in GB. The HSE considers it likely that the residues are from use of fertilisers or other non-PPP products.

Miscellaneous and other groceries

None of the samples contained residues above the MRL.

Infant food

None of the samples contained residues.

31.6.2 Acute reference dose exceedance

All individual results were screened against UK intakes.

No detailed risk assessments relating to samples taken in Northern Ireland during 2022 were conducted and no samples were identified as meeting the criteria for RASFF notification.

31.6.3 Actions taken

Advisory letters were issued to sampling points and/or brand owners about residues above the MRL. Where residues were in breach of the MRL after measurement uncertainty these were highlighted as non-compliant when the brand name details were published. Brand name details are routinely published for all samples taken from the UK supply chain. For samples of non-UK food, the appropriate authorities were also notified.

Reasons for non-compliance were not always provided.

Compliance was high in general, the residue which caused non-compliance was mainly fosetyl in the form of phosphonic acid and we have explained that the residue found may have arisen from non-PPP use. The other two findings were isolated findings, and no substantive reason could be identified for non-compliance.

31.7 Quality assurance

All laboratories conducting analyses for the UK national control programmes are required to be accredited for the tests conducted and to participate in EU proficiency tests (EUPT) where appropriate and FAPAS proficiency tests relevant to the surveys they are working on (all laboratories analyse samples from across the UK for specific foods).

PRiF's Analytical Sub-Group, which includes representatives from all GB laboratories, reviews the outcome of proficiency testing as well as results of analysis by the laboratories before they are sent to HSE, to ensure their reliability. A similar process is being developed for Northern Ireland.

Samples of animal origin are tested by the official laboratory based in Northern Ireland.

During 2021, the use of GB laboratory facilities for NI was re-considered in the light of emerging interpretation of the requirements of the Windsor Framework. A full procurement process was conducted in 2022 to appoint an EU or EEA official laboratory to test Northern Ireland samples for plant-based foods collected in Northern Ireland. GB laboratories continued to conduct the analyses until the new EU laboratory partner for this work commenced during autumn 2022.

Table 198: Accreditation of laboratories

All laboratories taking part in the programme are accredited by their national accreditation body for the necessary tests and analytical services required to deliver official pesticide residue testing.

Laboratory location	Laboratory		Accreditation	
	Name	Code	Date	Body
Northern Ireland	Agri-Food and Biosciences Institute	AFBI	11/11/2010	UKAS
GB	Fera Science Ltd	Fera Science Ltd	1996	UKAS
GB	SASA	SASA	18 July 1994	UKAS
France	Service Commun des Laboratoires, Paris Laboratory	SCL	31/01/2023	COFRAC

31.8 Processing factors

Processing factors were applied to some results for samples collected during 2022.

Full details are provided in our quarterly reports[48].

Otherwise, a processing factor of 1 was applied to simple processed foods where appropriate as an initial check.

[48] Pesticide residues in food: quarterly monitoring results for 2022. - GOV.UK (www.gov.uk). Available online: https://www.gov.uk/government/publications/pesticide-residues-in-food-quarterly-monitoring-results-for-2022

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Abbreviations

AESAN	Spanish Agency for Food Safety and Nutrition
AFBI	Agri-food and Biosciences Institute
ANSES	French Agency for Food, Environmental and Labour Safety
ARC	Agricultural Research Centre – Laboratory for residues and contaminants of Saku
ARfD	Acute reference dose
ASV	Veterinary Administration Services of Luxembourg
BAC	Benzalkonium chloride
BELAC	Belgian Accreditation Council
BfR	Bundesinstitut für Risikobewertung
BFSA	Bulgarian Food Safety Agency
BIOR	Institute of Food Safety, Animal Health and Environment of Latvia
BIPEA	International Bureau for Analytical Studies
BMWA	Federal Ministry of Labour, Health and Social Affairs of Austria
BVL	Federal Office of Consumer Protection and Food Safety [Germany]
CAFIA	Czech Agriculture and Food Inspection Authority
CAI	Czech Accreditation Institute
CCPC	Critical crop/pesticide concentration
CISTA	Central Institute for Supervising and Testing in Agriculture [Czechia]
CLCTC	Central Laboratory for Chemical Testing and Control [Bulgaria]
COFRAC	French Committee for Accreditation
COIPT	Olive oil proficiency test
DAFM	Department of Agriculture, Food and the Marine [Ireland]
DAkkS	German accreditation body
DANAK	Danish accreditation body
DDAC	Didecyl dimethylammonium chloride
DDT	Dichlorodiphenyltrichloroethane
DGCCRF	French General Directorate of Competition, Consumption and Fraud Repression
DPPSCA	Directorate of Plant Protection, Soil Conservation and Agri-environment of Hungary

DVFA	Danish Veterinary and Food Administration
EEA	European Economic Area
EFSA	European Food Safety Authority
ENAC	Spanish accreditation body
ESYD	Greek accreditation body
EU	European Union
EUCP	EU-coordinated multiannual control programme
EUPT-AO	European Union Proficiency Test in Animal Origin
EUPT-CF	European Union Proficiency Test in Cereals and Feed
EUPT-FV	European Union Proficiency Test in Fruit and Vegetables
EUPT-SRM	European Union Proficiency Test in Single-Residue Methods
FAPAS	Food analysis performance assessment scheme
FASFC	Federal Agency for the Safety of the Food Chain [Belgium]
FINAS	Finnish accreditation service
FSA	Food Standards Agency
FSAI	Food Safety Authority of Ireland
GAP	Good agricultural practice
GC	Gas chromatography
GC–MS/MS	Gas chromatography with tandem mass/mass spectrometer
HB	Tartu Laboratory of Estonian Health Board
HCH	Hexachlorocyclohexane
INAB	The Irish National Accreditation Board
IPAC	Portuguese Accreditation Institute
ISO	International Organization for Standardization
JMD	Joint ministerial decision
LATAK	Latvian National Accreditation Bureau
LC	Liquid chromatography
LC-MS	Liquid chromatography mass spectrometry
LC-MS/MS	Liquid chromatography with tandem mass/mass spectrometer
LOQ	Limit of quantification

LRVSA	Veterinary and Food Safety Laboratory of the Regional Directorate of Agriculture and Rural Development of Madeira
MRL	Maximum residue limit
MSCBS	Spanish Ministry of Health, Consumer Affairs and Social Welfare
NFCSO	National Food Chain Safety Office [Hungary]
NIBIO	Norwegian Institute of Bioeconomy Research
NSVFSA	National Sanitary Veterinary and Food Safety Authority [Romania]
NVWA	Netherlands Food and Consumer Product Safety Authority
PCD	Pesticide Controls Division [Ireland]
PHI	Pre-harvest interval
PPP	Plant protection product
PR	Pesticide residues
PRiF	Expert Committee on Pesticide Residues in Food [Northern Ireland]
PRIMo	Pesticide residue intake model
PR-SGL	Pesticide Residues Lab of the State General Laboratory [Cyprus]
QuEChERS	Quick, easy, cheap, effective, rugged and safe method
RAC	Raw agricultural commodity
RACFC	Risk Assessment Centre on Food Chain [Bulgaria]
RASFF	Rapid Alert System for Food and Feed
RENAR	Romanian Accreditation Association
RvA	Dutch Accreditation Council
SASA	Science and Advice for Scottish Agriculture
SCL	Common Laboratory Network of France
Secualim	Food Safety Service of the Direction of Public Health [Luxembourg]
SGL	State General Laboratory of Cyprus
SNAS	Slovak National Accreditation Service
SRM	Single-residue method
SVA	State Veterinary Administration [Czechia]
SWEDAC	Swedish Board for Accreditation and Conformity Assessment
USMAF	Office of the Maritime Health, Air and Border of the Ministry of Health [Italy]
WHO	World Health Organization

Country codes

AT	Austria
BE	Belgium
BG	Bulgaria
HR	Croatia
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
ES	Spain
ET	Estonia
FI	Finland
FR	France
GB	Great Britain
GR	Greece
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NI	Northern Ireland
NL	The Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SK	Slovakia
SL	Slovenia
SV	Sweden