Technical Report

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National summary reports on pesticide residue analysis performed in 2021

European Food Safety Authority (EFSA)

Abstract

In accordance with Article 31 of Regulation (EC) No. 396/2005, European Union (EU) Member States provide to the European Food Safety Authority (EFSA) the results of their official controls on pesticide residues in food. In this framework, 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 of the reporting countries.

Key words: pesticide residues, food, Regulation (EC) No. 396/2005, pesticide monitoring 2021

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Summary

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

EFSA prepared a scientific report reflecting the 2021 European Union Annual Report on Pesticide Residues in Food (EFSA, 2023). In addition to the submission of the results in 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 compiled in this technical report. In particular, the information was 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 the results and provided further information on follow-up actions taken and possible reasons for samples that were found to be non-compliant with the legal limits. Some reporting countries included a trend analysis in which the 2020 results were compared with the results of previous years. The information also addressed quality assurance aspects, such as 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 2021 control year (EFSA, 2023).

[1] *Pursuant to Article 5(4) and Section 24 of Annex 2 of the Protocol on Ireland/Northern Ireland, which is an integral part of 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, the EU requirements on data sampling are also applicable to Northern Ireland and, for the purpose of this report, references to Member States are read as including the United Kingdom in respect of Northern Ireland.

1 Contents

2 Introduction

2.1 Background and terms of reference as provided by the requestor

In accordance with Article 31 of Regulation (EC) No. 396/2005, Member States shall submit their updated national control programme for pesticide residues to EFSA and publish all results of the national residue monitoring on the internet. EFSA decided to compile in a technical report additional information provided by the reporting countries. In November 2019 SCoPAFF – pesticide residue meeting the usefulness of this document was highlighted. To harmonise the whole document layout and to align it according to the EFSA technical reports' style, EFSA made minor changes in 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 2021 control year (EFSA, 2023).

2.2 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, 2023).

There might be a discrepancy between the information provided by reporting countries and the information published in the 2021 European Union Report on Pesticide Residues on food (EFSA, 2023), because EFSA included additional data-cleaning steps in the preparation of the European Union Report to ensure that the results reported by the 30 countries were comparable. So, these data-cleaning steps might have an impact on the overall results, such as the maximum residue level (MRL) compliance rates. By means of this technical report, reporting countries can explain possible differences to its data.

3 Austria

3.1 Objective and design of the national control programme

The national pesticide monitoring is conducted according to a nation-wide 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 dietary consumption, production and import of fruits, 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 were taken from the Austrian market by the responsible bodies.

3.1.1 Objective

In particular, the task of official food control is the comprehensive protection of consumers against health hazards when consumption of food in addition to checking compliance with legal requirements. It is not only about detecting infringements in individual cases, but also about gaining general information that makes it possible to take the appropriate measures to reduce

risk potential. Monitoring and control programme results are also suitable for contributing to a realistic assessment of the impact of legal regulations (ZEBS, 1995[2]).

3.1.2 Design

The data collected are representative for the Austrian market. Based on the results of the previous years, selected parameter/commodity combinations were targeted in the monitoring programme and chosen for further examination with the aim of reflecting the results of the previous years (usually repeated in a 3-year cycle).

Besides analysis of representative commodities for the Austrian diet, a significant number of samples was also analysed for usually underrepresented products like cultured mushrooms, fresh figs, millet and pseudo cereals.

Samples are analysed and evaluated in terms of consumer exposure and legal compliance within AGES (Austrian Agency for Health and Food Safety) and compiled data submitted to 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 about Residues of Plant Protection Products in Foodstuffs'. This report is further used as a basis for discussing and improving risk-minimising measures in food safety issues.

3.1.3 Sampling

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

3.1.4 Analytical methods used

The samples were analysed up to a maximum of 700 substances (part of sums included). The multiresidue methods were based on the QuEChERS (Quick, Easy, Cheap, Effective, Rugged, and Safe) method, combined with gas chromatography (GC)-MS/MS and liquid chromatography (LC)-MS/MS. Single-residue methods were used for dithiocarbamates (GC-MS), inorganic bromide (GC-ECD) and highly polar residues (glyphosate/glufosinate, ethephon, fosetyl and phosphonic acid, chlorate and perchlorate etc.) via LC-MS/MS.

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

In 2021, 983 samples were examined for pesticide residues. These samples were primarily fruit and primary derivatives thereof (401 samples), garden vegetables and primary derivatives thereof (351 samples), starchy roots and tubers and primary derivatives thereof (100 samples) and grains and grain-based products (75 samples).

3.2.1 Key findings

All 983 samples were taken as objective sampling (Table 1). 74.4% came from the European market, 25.1% from third countries and the rest (0.5%) were of unknown origin. The percentage

[2] ZEBS (1995) Modellhafte Entwicklung und Erprobung eines bundesweiten Monitorings zur Ermittlung der Belastung von Lebensmitteln mit Rückständen und Verunreinigungen - Abschlussbericht. Zentrale Erfassungs- und Bewertungsstelle für Umweltchemikalien, Berlin.

of objective sampling with residues above the MRL were 2.5%, 17.0% and 20.0% respectively (without considering the measurement uncertainty).

In 28.4% of the samples no pesticide residues could be quantified; 65.4% of the samples had residues below or at the MRL. Disregarding measurement uncertainties, 6.2% of the samples contained one or more pesticide(s) numerically above the MRL (61 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 37 samples (3.8%). 17 of the 37 samples non-compliant were fruit and primary derivatives thereof (4.2% of 401 samples), twelve were garden vegetables and primary derivatives thereof (3.4% of 351 samples) and eight were grains and grain-based products (10.7% of 75 samples).

In 530 of all samples (53.9%), more than one pesticide was found. The maximum number of different pesticides was analysed in one sample of table grapes and one sample of dried vine fruits (21 compounds).

765 samples were of non-organic production and 218 samples were labelled as organic. In 92.8% of non-organic samples, the MRL was not exceeded, while 97.2% 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	401	324	300	24	17
Garden vegetables and primary derivatives thereof	351	253	230	23	12
Grains and grain-based products	75	45	32	13	8
Eggs and egg products	15	15	14	1	0
Starchy roots and tubers and primary derivatives thereof	100	45	45	0	0
Isolated purified ingredients (including mineral or synthetic)	16	9	9	0	0
Mammals and birds meat and products thereof	15	3	3	0	0
Food products for young population	10	10	10	0	0
Total	**983**	**704**	**643**	**61**	**37**

3.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

3.3.1 Possible reasons for non-compliant samples

In 2021, 37 samples (3.8%, all commodities) were non-compliant with the EU MRLs, taking into account the measurement uncertainty. For these samples, administrative actions were set by the responsible officials from the local Food Inspection Service. In general, there is no verified knowledge of the reasons for non-compliant results.

3.3.2 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	18	In addition to administrative sanctions RASFF-Reference 2021.746; 2021.7234; 2021.6599; 2021.5493; 2021.5493; 2021.5493; 2021.5410; 2021.3949; 2021.3989; 2021.2552; 2021.2229; 2021.1186; 2021.1193; 2021.1193; 2021.1353; 2021.1186; 2021.1234; 2021.1186
Administrative sanctions (e.g. fines)	37	

3.4 Quality assurance

The analysis of the coordinated programme, the national monitoring programme and routine samples was conducted by the Austrian NRL (Table 3), Institute for Food Safety Innsbruck of the Austrian Agency for Health and Food Safety. The laboratory received accreditation in the year 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 proficient tests (EUPT) SM13 Screening PT, multi-residue method) EUPT FV23 (multi-residue method) EUPT AO16 (multi-residue method) EUPT SRM16 (single-residue method) EUPT CF15 (multi-residue method) EUPT-FV SC05 (multi-residue method) FAPAS PT 09142 - Animal Feed (multi-residue method) PROOF-ACS_P2121-RT_Black-tea (multi-residue method)

4 Belgium

4.1 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. Maximum residue levels (MRL) are set in the European legislation[3] in order to check the good use of plant protection products (use of authorised products according to their good agricultural practices) and to protect the 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 the sign of incorrect use of a plant protection product but does not necessarily involve a risk for the health of consumers.

More information regarding 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].

Official controls

The approach used by the Federal Agency for the Safety of the Food Chain (FASFC) for the control of pesticide residues is risk based. The programme is drawn up following the general statistical approach developed within the FASFC[6]. Several factors are taken into account: the toxicity of the active substances, food consumption statistics, food commodities with a high residues/non-compliance rate in previous monitoring years, origin of food (domestic, EU or third country), RASFF notifications[7] and all other useful information. Specific attention is then paid to products with high risk of MRL non-compliances.

Most of the groups of fruits and vegetables are included in the programme and a rotation programme is applied for less important commodities. The coordinated control programme[8] of the European Commission and some targeted sampling, mainly targeted sampling of products from certain third countries at border controls (harbours, airports, …) according to Regulation 1793/2019[9], are also included in the control programme (see Table 4). 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[10] that has been implemented in Belgian legislation. Samples are analysed in ISO 17025 accredited laboratories by means of multi-residues and single-residues methods which in 2021 allowed the detection of more than 600 pesticide residues.

[3] Regulation (EC) N°396/2005 of the EU Parliament and the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin
[4] http://www.fytoweb.be
[5] https://ec.europa.eu/food/plant/pesticides/max_residue_levels_en
[6] Maudoux J-P., Saegerman C., Rettigner C., Houins G., Van Huffel X. & Berkvens D., Food safety surveillance by a risk based control programming: approach applied by the Belgian federal agency for the safety of the food chain (FASFC), Vet. Quart. 2006, 28(4): 140-154. http://www.favv-afsca.fgov.be/publicationsthematiques/food-safety.asp
[7] https://webgate.ec.europa.eu/rasff-window/portal/
[8] Commission Implementing Regulation (EU) 2020/585 concerning a coordinated multiannual control programme of the Union for 2021, 2022 and 2023 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.
[9] Regulation (EU) N°1793/2019 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) N° 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
[10] 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

In the event that the MRL is exceeded, a risk assessment for the consumer is always carried out. This assessment is based on the European approach which estimates the amount of residue that will be ingested by consumers (PSTI - Predicted Short Term Intake) and compares it to health-based guidance values.

Table 4: Targeted sampling and EU coordinated control programme included in the control programme 2021

Reinforced checks at border controls (Reg 1793/2019)		EU Coordinated programme 2021 (Reg 2020/585)
Origin	**Products**	**Products**
Brazil	Peanuts	Tablegrapes
Cambodia	Yardlong beans, chinese celery	Bananas
China	Tea	Grapefruits
Dominican Republic	Yardlong beans, aubergines, sweet peppers, chili peppers	Aubergines
Egypt	Sweet peppers, chili peppers	Broccolis
India	Curry leaves, okra, chili peppers, sesame seeds	Melons
Kenya	Beans	Mushrooms
Malaysia	Jack fruits	Paprika
Nigeria	Dried beans	Wheat
Pakistan	Chili peppers	Olive oil
Thailand	Chili peppers	Bovine fat
Turkey	Lemons, oranges, mandarins, vine leaves, sweet peppers, chili peppers, pomegranates	Chicken eggs
Uganda	Chili peppers	
Vietnam	Basil, mint, pitahayas, coriander leaves, okras, chili peppers, parsley	Cereal based babyfood

Self-checking

Food business operators are responsible for placing on the market food and feed products that comply with MRLs. In order to verify the compliance of their products, they carry out analyses as part of their self-checking system. If they find food or feed that do not comply with the MRLs, they may not market, use or dilute them in order to make them compliant. Moreover, food or feed that represent a serious risk to human or animal health must be notified to the FASFC in the framework of the compulsory notification[11].

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

In 2021, a total number of 3173 samples of food (including baby food) and feed products were taken by the Federal Agency for the Safety of the Food Chain (FASFC) and analysed for the presence of pesticide residues in the context of Regulation 396/2005.

The products analysed were of Belgian origin (29,8%), EU origin (23,3%), non-EU origin (37,8%) and non-specified origin (9,1%).

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

[11] https://www.fasfc.be/control-system/compulsory-notification

notifications or follow-up enforcement samples following MRL violations identified in a first analysis of the product in focus).

Full details on the analytical scope, results per products and non-compliant samples can be found in the three annexes of this summary report.

4.2.1 Surveillance sample

Out of the total of 3173 samples, 2653 surveillance samples were analysed within the context of the control programme. 97,8% were compliant with the legislation in force (Table 5)

Table 5: Surveillance samples - Summary results

Sampling strategy	Types of products	Number of samples analysed	Without quantified residues (%)	With residues		With residues >MRL[2] (Non-compliant) (%)	Compliance rate (%) In bracket comparison with 2020
				With residues at or below MRL (%)	With residues > MRL[1] (%)		
Surveillance	Fruit, vegetables, cereals & other	2045	32,3%	61,9%	5,8%	2,4%	97,6% (-0,2%)
	Processed products	117	62,4%	35,9%	1,7%	0%	100% (=)
	Baby food	269	97,4%	0,7%	1,9%	1,5%	98,5% (-0,8%)
	Animal products[3]	31	74,2%	25,8%	0%	0%	100% (=)
	Feed	179	39,7%	58,1 %	2,2%	2,2%	97,8% (-1,5%)
	Food additives	12	75%	25%	0%	0%	100%
		2653	**41,4%**	**53,7%**	**4,9%**	**2,2%**	**97,8% (-0,4%)**

[1] Measurement uncertainty is taken into account (non-compliant samples)
[2] Measurement uncertainty is not taken into account (numerical MRL exceedances)
[3] Only animal products analysed in the framework of the coordinated control program are included in this report. Additional samples are analysed in the framework of the veterinary legislation controls and are reported accordingly.

- **Fruit, vegetables, cereals and other:** 97.6% of the 2045 samples analysed complied with the MRLs (-0,2% compared with 2020). Figure 1 gives an overview of the evolution of the results over the last 5 years.

  32,3% of the samples were free of pesticide residues. Citrus fruits, pome fruits, stone fruits & 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 rate of non-compliances are teas & infusions (10,9%), miscellaneous fruits (8,6%) and fresh herbs (7,5%) mainly imported from third countries. An overview of the detection frequencies and compliance to MRLs per product group is given in

Figure 1**:** Overview of the evolution of the results for fruits, vegetables, cereals & other products of plant origin from 2017 to 2020 (surveillance samples)

Table 6. Full details on non-compliant samples can be found in Section 4.3 of this summary report. As in previous years, more MRLs violations were proportionally observed in non-EU products (4.1%) than in products grown in the EU (1,6%).

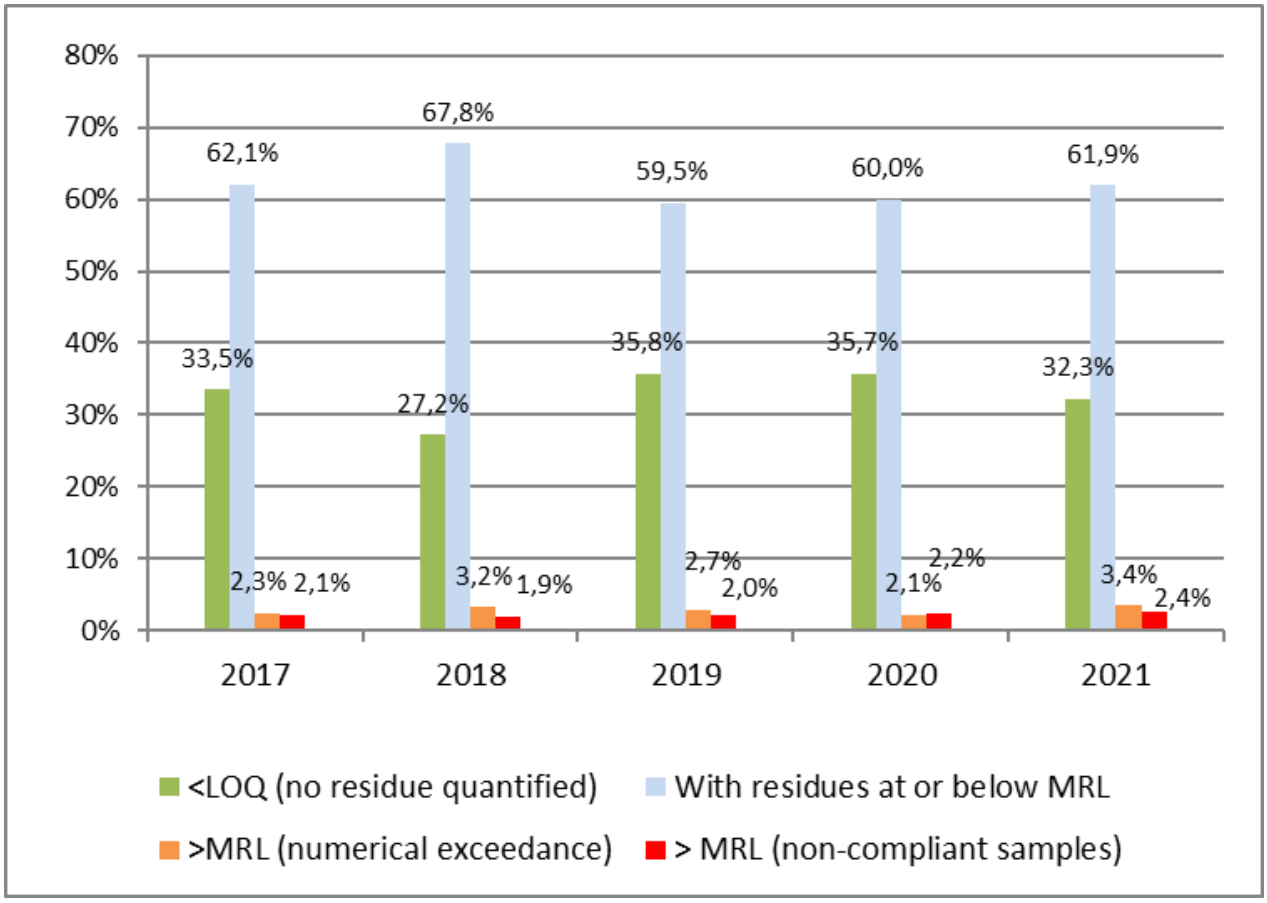


Figure 1: Overview of the evolution of the results for fruits, vegetables, cereals & other products of plant origin from 2017 to 2020 (surveillance samples)

Table 6: Overview of the results 2021 per group of products [fruits, vegetables, cereals & others 2021 (surveillance samples)]

	Groups of products	Number of samples analysed	Samples with one of more residues >LOQ (%)	Compliant samples (%)
Fruit	Citrus fruits	111	93,7%	99,1%
	Pome fruits	43	97,7%	100,0%
	Stone fruits	45	93,3%	97,8%
	Berries and small fruits	258	87,2%	98,1%
	Miscellaneous fruits	128	59,4%	91,4%
Vegetables	Root vegetables	141	58,9%	100,0%
	Bulb vegetables	35	68,6%	94,3%
	Brassica vegetables	226	61,1%	98,2%
	Leafy vegetables	97	85,6%	100%
	Fresh herbs	53	90,6%	92,5%
	Fruiting vegetables	136	64,0%	98,5%
	Stem vegetables	125	80,0%	98,4%
	Legume vegetables	126	64,3%	97,6%
	Champignons	90	47,8%	100,0%
Cereals	Cereals	137	59,1%	98,5%
Oilseeds	Oilseeds	148	33,1%	98%
Tea & infusions	Tea and infusions	92	60,9%	89,1%

	Groups of products	Number of samples analysed	Samples with one of more residues >LOQ (%)	Compliant samples (%)
Other products	Hops, cocoa beans & spices	54	42,6%	100,0%
Total		**2045**	**67,7%**	**97,6%**

- **Processed products:** 117 processed products (oil, dried fruits, canned vegetables, …) were analysed. All of them were compliant with the legislation.

- **Babyfood:** 97,4% of the 269 babyfood samples analysed did not contain any quantifiable pesticide residues. Four samples did not comply with the MRLs set in the babyfood legislation.

- **Feed:** 97,8 % of the 179 feed products analysed was compliant with the legislation. Non compliances were observed in cereals and oilseeds.

4.2.2 Enforcement samples

Besides surveillance samples, 520 enforcement samples were analysed in the case of suspicion about the non-compliance of a product with EU MRLs (Table 7). These products were mainly targeted products analysed according to Regulation 1793/2019 (suspected products coming from non-EU countries from among others Uganda, Kenya, Dominican Republic and China) and products analysed within the context of following up violations found previously. 90,8% were compliant with the legislation (+0,4% in comparison with 2020).

Table 7: Enforcement samples - Summary results

Sampling strategy	Types of products	Number of samples analysed	Without quantified residues (%)	With residues		>MRL[1] (Non-compliant) (%)	Compliance rate (%) In bracket comparison with 2019
				With residues at or below MRL (%)	> MRL[2] (%)		
Enforcement (targeted samples)	Fruit, vegetables cereals & other[3]	512	23,2%	58,2%	18,6%	10,4%	89,6% (-1,2%)
	Feed	6	33,3%	16,7%	50%	0,0%	100% (=)
	Processed products	2	50%	50,0%	0%	0%	100% (+25%)
		520	**23,5%**	**58%**	**18,5%**	**10,2%**	**90,8% (+0 ,4%)**

[1] Measurement uncertainty is taken into account (non-compliant samples)
[2] Measurement uncertainty is not taken into account (numerical MRL exceedances)
[3] Including samples analysed in the framework of Regulation (CE) N°1793/2019

- **Fruit, vegetables and cereals:** 89,6% of the 512 samples analysed complied with the MRLs (-1,2% in comparison with 2020). Figure 2 gives an overview of the evolution of the results of enforcement samples these last 5 years. Table 8 gives an overview of the group of products analysed and non-compliances observed.

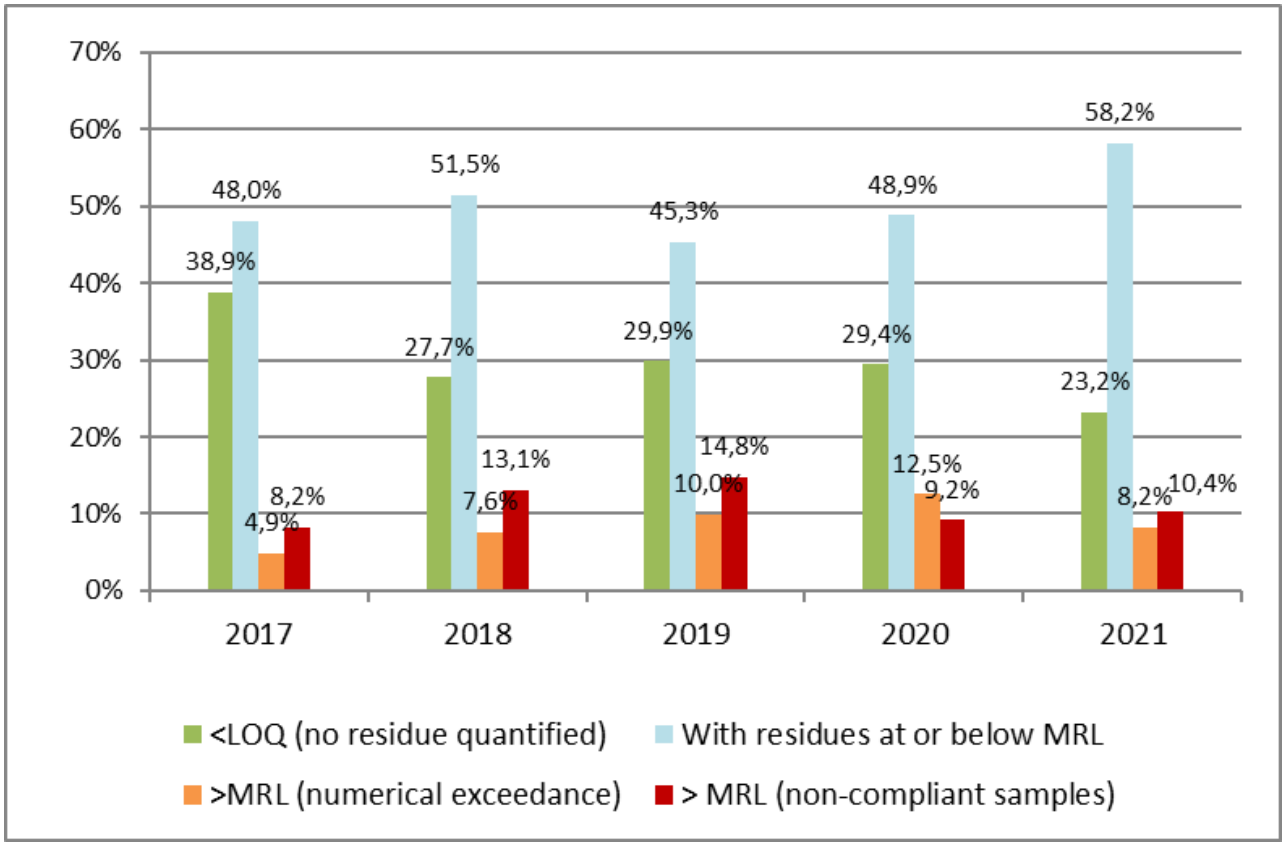


Figure 2: Overview of the evolution of the results for fruit, vegetables, cereals & other products of plant origin from 2017 to 2021 (enforcement samples)

Table 8: Overview of the results per group of products (enforcement samples)

Groups of products	Number of samples analysed	Compliant samples (%)	Main non-compliant products (>MRL) and origin
Cereals	11	45,5%	Rice (India & Pakistan)
Fruiting vegetables	138	86,2%	Chili peppers (Uganda, Vietnam)
Legume vegetables	209	95,2%	Beans (Kenya, Dominican Republic)
Miscellaneous fruits	35	74,3%	Passion fruits (Colombia, Kenya) Mangoes (Ghana)
Tea and infusions	57	89,5%	Tea (China)
Oilseeds	43	100%	
Others	19	84,3%	Grapes leaves (Turkey)
	512	**89,6%**	

4.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

4.3.1 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 in case of non-compliances in imported products but these non-compliances are in general related to the use of plant protection products not authorised in the EU and for which no import tolerances were set.

4.3.2 ARfD exceedances and RASFF notifications

An assessment of the risk for consumers is performed on all MRLs exceeding observed during official controls or notified to the FASFC by food operators in the framework of self-checking and mandatory notification.

A tool[12] to estimate the risk for the consumer in case of MRLs exceeding is available on the website of the FASFC. When a MRL exceeding for a pesticide residue in a product indicates an exceeding of the health-based guidance value applicable (in general Acute Reference Dosis also known as ARfD), the product is considered as unsafe and has to be withdrawn from the market and/or recalled from the consumers.

Recalls of products are published on the website of the FASFC[13]. Unsafe products are also notified via the European Rapid Alert System for Food and Feed (RASFF) in order to inform other Member states and allow them to take further actions on products possibly distributed on their market.

Ninety-six products of food of plant origin analysed by the FASFC in the framework of the control plan or by food business operators during self-checking were notified via the RASFF in 2021. The majority of the notifications issued by Belgium concerned issues with ethylene oxide[14], chlorpyriphos and chlorpyriphos-methyl in various products. RASFF notifications can be found on the RASFF portal website.

4.3.3 Actions taken

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

Follow-up action is taken to identify its cause. When non-compliant samples are identified, the producer or importer is subject to enhanced control and an official report is drawn up and sent to the legal department of the FASFC which proposes in general a fine.

4.4 Quality assurance

Seven ISO17025 accredited laboratories analysed pesticide residues in the framework of the national control program 2021 of the FASFC.

Table 9: Laboratories participation in the national control program

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
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
DE	LUFA-ITL	LUFA	Yes	DAkkS (Deutsche Akkreditierungsstelle)	Yes
NL	Groenagro Control	GROENAGRO	Yes	RvA	Yes

[12] https://www.favv-afsca.be/productionvegetale/produitsphytopharmaceutiques/#PSTI
[13] https://www.favv-afsca.be/consommateurs/
[14] https://www.favv-afsca.be/consommateurs/rappelsdeproduits/oxydedethylene/recalls.asp

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

4.5 Processing Factors (PF)

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 fruits or vegetables (Table 10). Specific processing factors reported in the EFSA database of processing factors for pesticide[15] residues were also applied where appropriate.

Table 10: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
	Mushrooms	Dried mushrooms	9	General processing factor
	Table grapes	Dried grapes	5	General processing factor
	Gojiberries	Dried gojiberries	5	General processing factor

4.6 Additional Information

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 MRLs set in Regulation 396/2005. Products containing pesticide residues are notified to the Regions for eventual follow-up according to the legislation applicable to organic farming.

Valorisation of control data

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). These advice can be consulted on the website of the FASFC: https://www.favv-afsca.be/scientificcommittee/.

The Scientific Committee concluded in its last opinion (09/2022) based on FASFC control results for the period 2014 to 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.

5 Bulgaria

5.1 Objective and design of the national control programme

[15] https://www.efsa.europa.eu/nl/supporting/pub/en-1510

5.1.1 Objective

The Bulgarian Food Safety Agency (BFSA) within the Ministry of Agriculture (MA) is the competent authority for the enforcement of pesticide residues monitoring in Bulgaria. BFSA and the Risk Assessment Centre on Food Chain (RACFC) within MA are responsible 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 implementation of coordinated multiannual control programme of the EU and taking samples in terms of Commission Regulation (EC) No. 2020/2041of 11 December 2020 on a coordinated multiannual control programme of the Union. A coordinated multi-Community monitoring programme is included in the national programme on pesticide residues monitoring.

5.1.2 Design

The sampling plan for pesticide residues monitoring is always drawn up for one calendar year. The plan is drafted by the BFSA Headquarters, national reference laboratories within the BFSA and scientific experts from RACFC. The sampling plan is distributed to the Regional Food Safety Directorates (RFSD), 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 2021 was based on several factors of high importance listed below:

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

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

- countries with high non-compliance rate in the past;
- sampling of products during main marketing season/outside of main marketing season;
- non-processed or processed products;
- organic or conventional products;
- sample origin reflecting geographic distribution of food products consumed.

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

5.2.1 Key findings

In 2021, 875 samples (Table 11) were analysed: 420 samples of vegetables and primary derivatives thereof, 238 of fruit and primary derivatives thereof, 187 grains and grain-based products, 20 of legume seeds and primary derivatives thereof, and 10 starchy roots and tubers and primary derivatives thereof in the national and coordinated monitoring programs. In 8 samples results for residues are below MRL (0.91%) – 858 samples were below LOQ and 9 samples were exceeding MRL (1.03%).

Table 11: Summary results

Matrix class	Total samples	Below LOQ	Above MRL
Grains and grain-based products	187	171	8
Garden vegetables and primary derivatives thereof	420	419	1
Legume seeds and primary derivatives thereof	20	20	0
Fruit and primary derivatives thereof	238	2381	0
Starchy roots and tubers and primary derivatives thereof	10	10	0
Total	**875**	**858**	**9**

5.2.2 Interpretation of the results

In total, 875 samples were analysed, of which 9 (1.03%) samples contained pesticide residues above the MRL. All the samples were of EU origin.

In 731 samples of all the 748 with EU origin there is no detection of residues. Residues above MRL were detected in 9 of them.

A total count of 127 samples were imported products which were suspect samples. The laboratories do not identify residues above the MRL and all of the samples were below LOQ.

The most analysed products were vegetables – 420 samples and fruits – 238. The third count of samples is for grains and thereof products (187) The samples for legume seed are 20 and for the starchy root and tubers are 10 per group.

Out of all the vegetable analysed samples, 419 were below LOQ and at one sample was detected higher level of residues above the MRL. The most tested products were Broccoli (45) and Melons (45) all of which are below MRL. The total amount of other sampled vegetables (Alfalfa sprouts, Aubergines, Broccoli, Brussels sprouts, Carrots, Cauliflowers, Common mushrooms, Courgettes, Crisp lettuces, Cucumbers, Lettuces (generic), Melons, Pumpkins, Radishes, Shiitake, Spinaches, Sweet peppers, Tomatoes) was 420. In 1 of them the result is over the MRL and in 419 are below LOQ.

Table grapes (45) and bananas (306) were the most analysed for residues of all the fruit samples (238). Residues were not detected in 1 sample of table grapes and in one sample of bananas. All other 148 tested fruits samples (Common banana, Table grapes, Grapefruits, Apples, Pears, Raspberries (red and yellow), Blueberries, Cherries (sweet), Common peaches, Plums, Strawberries), are below LOQ.

Of the other 217 samples (grains and similar, legumes, starchy roots and tubers products thereof) 201 were below LOQ and in 8 samples of grains and similar are above MRL.

Table 12: Analysed samples

Product	Samples
Alfalfa sprouts	15
Apples	20
Aubergines	39
Blueberries	10
Broccoli	45
Brussels sprouts	10

Product	Samples
Alfalfa sprouts	15
Apples	20
Aubergines	39
Blueberries	10
Carrots	10
Cauliflowers	2
Cherries (sweet)	10
Common banana	45
Common mushrooms	39
Common peaches	10
Common wheat grain	42
Courgettes	18
Crisp lettuces	10
Cucumbers	20
Garden peas (without pods)	20
Grapefruits	42
Lettuces (generic)	40
Melons	45
Pears	20
Plums	10
Potatoes	10
Pumpkins	10
Radishes	8
Raspberries (red and yellow)	20
Shiitake	3
Spinaches	24
Strawberries	6
Sweet peppers	42
Table grapes	45
Tomatoes	40
Wheat and similar-	145
Total products	**875**

5.2.3 Comparability with the previous year results

As a comparison in 2020 a total number of 9370 samples were analyzed: 3007 samples were with residues below MRL (51.57%).1 531 samples were exceeding MRL (15.78%).

As a comparison in 2019, a total number of 7263 samples were analyzed: 2484 samples were with residues below MRL (58.20%). 552 samples were exceeding MRL (7.60%).

As a comparison in 2018, a total number of 7685 samples were analyzed: 4446 samples were with residues below LOQ (57.85%). 678 samples were exceeding MRL (8.82%).

As a comparison, in 2017, a total number of 6807 samples were analyzed: 3559 samples were with residues below LOQ (52.28 %). 257 samples were exceeding MRL (4.99%).

As a comparison, in 2016, a total number of 5153 samples were analyzed: 2598 samples were with residues below LOQ (50.42 %). 634 samples were exceeding MRL (9.31%).

As a comparison, in 2015, a total number of 3934 samples were analyzed: 1481 samples were with residues below LOQ (37.6 %). 77 samples were exceeding MRL (2.0 %).

As a comparison, in 2014, a total number of 3428 samples were analyzed: 210 samples were with residues below LOQ (6.1%). 72 samples were exceeding MRL (2.1%).

As a comparison, in 2013, a total number of 3237 samples were analyzed: 166 samples were with residues below LOQ (5.1%) and 64 samples were exceeding MRL (2.0%).

As a comparison, in 2012, a total number of 3174 samples were analyzed: 198 samples were with residues below MRL (6.2%) and 60 samples were exceeding MRL (1.9%).

As a comparison, in 2011, a total number of 4516 samples were analyzed: 245 samples were with residues below LOQ (5.4%) and 108 samples were exceeding MRL (2.4%).

The percentage of samples with residues below LOQ in 2021 (98.06 %) has drastically increased as compared to 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).

The percentage of samples exceeding MRL in 2022 (1.03%) extremely decreased as compared to years from 2011 to 2021 (vary from 1.9% to 15.78%).

Table 13: Compared to previous year's results

Year	Total	Below LOQ (%)	Above MRL (%)
2021	875	98.06	1.03
2020	9370	51.57	15.78
2019	7263	34.20	7.60
2018	7685	57.85	8.82
2017	6807	52.28	4.99
2016	5153	50.42	9.31
2015	3934	37.6	2.0
2014	3428	6.1	2.1
2013	3237	5.1	2.0
2012	3174	6.2	1.9
2011	4516	5.4	2.4

5.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

5.3.1 Possible reasons for non-compliant samples

In 2022 eighteen (18.86%) percent of total samples were determined as non-complaint with the EU MRL legislation. The main of the non-compliance reason were residues detection activities following of detection of non-approved pesticide residues in EU and border control activities.

Table 14: Non-compliance of the results

Matrix class	Food product	Non-compliant	% Non-compliant
Garden vegetables and primary derivatives thereof	Alfalfa sprouts	10	66,67%
Garden vegetables and primary derivatives thereof	Broccoli	15	50,00%
Garden vegetables and primary derivatives thereof	Common mushrooms	13	33,33%
Fruit and primary derivatives thereof	Grapefruits	12	33,33%

Matrix class	Food product	Non-compliant	% Non-compliant
Fruit and primary derivatives thereof	Grapefruits	2	33,33%
Garden vegetables and primary derivatives thereof	Shiitake	1	33,33%
Fruit and primary derivatives thereof	Table grapes	15	33,33%
Grains and grain-based products	Wheat and similar-	97	66,90%
		165	**18.86%**

5.3.2 ARfD exceedances

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

5.3.3 Actions taken

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

Investigation is proceeded by the control authority according to the legalisation to be assessed the risk for consumers.

Rapid risk assessment has been performed on all samples showing an exceeding of the MRLs and according to the risk for the consumers; the appropriate measures are taken (withdrawal from the market, recall from the consumers, etc.).

RASFF notifications are send according to EU Regulations taking into account the results of the risk assessment and the instructions of the RASFF WI 2.2 (alert notification, border rejection notification or information notification for attention).

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

5.4 Quality assurance

The laboratory tests were carried out in two laboratories as detailed in Table 15. All had undergone accreditation procedures from the Executive Agency – 'Bulgarian Accreditation Service'.

Table 15: 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

6 Croatia

6.1 Name of the national competent authority/organisation

For the National Monitoring Programme for pesticide residues in and on food National competent authority/organisation: Ministry of Agriculture

Web address where the national annual report is published: http://fisportal.mps.hr/hr/sve/izvjestaji/

For other official controls of pesticide residues in food: State Inspectorate

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

The Ministry of Agriculture was 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 Commission and EFSA and publishing the results of the programme on the Internet;
- submitting the information referred to in Article 31 of Regulation (EC) No 396/2005.

Ministry of Agriculture is the Official Contact Point in Croatia designated according to Article 38 of Regulation (EC) No 396/2005.

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

- carrying out official controls referred to in Article 19 of Regulation (EU) 2017/62
- performing the sampling activities referred to in Article 1 of Regulation (EU) 2021/2244
- implementing the national monitoring programme for pesticide residues in food referred to in Article 30 of Regulation (EC) No 396/2005;
- implementing the emergency measures referred to in Article 35 of Regulation (EC) No 396/2005

6.2 Objective and design of the national control programme

6.2.1 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 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.

Objectives of the Programme were:

- To determine the quantity of pesticide residues in food and verify compliance with the Regulation (EC) No 396/2005
- To assess the risk to consumers
- Acquire information related to the use of PPPs pursuant to the instructions on labels and GAP
- Control of the unauthorised use of plant protection products.

The National Monitoring Programme for pesticide residues in and on food is implemented pursuant to Article 6 of the Act on Implementation of Regulation (EC) No. 396/2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin (Official Gazette of the Republic of Croatia, No. 80/13, 115/18 and 32/20).

The National Monitoring Programme for pesticide residues in and on food in 2021 was funded by Ministry of Agriculture.

Products were selected according to Commission Implementing Regulation (EU) 2020/585 of 27 April 2020 concerning a coordinated multiannual control programme of the Union for 2021, 2022 and 2023 to ensure compliance with maximum levels of pesticides and to assess the consumer exposure to pesticide residues in and on food of plant and animal origin.

Products were also selected with regard to the assessment of their importance in the nutrition of the Croatian population and determined pesticide residues in the previous monitoring programmes especially products for which the previous monitoring programmes was found exceeding's of the MRLs or were misused (non authorised uses).

Risk factors taken into account:

- Importance of the crop
- MRL exceedances (products, pesticide, region)
- Multiple pesticides (products)
- Illegal use – non authorised pesticides
- Misuse

Products sampled according to Regulation (EU) 2020/585 – EUCP were: table grapes, bananas, grapefruits, aubergines, broccoli, melons, cultivated fungi, sweet peppers/bell peppers wheat grain, virgin olive oil, bovine fat, chicken eggs, processed cereal-based baby food.

Products sampled by national priorities – NP taking into account

- previous exceedings: strawberries, peaches, apples, lemons, kiwi, tangerines, spinach, sesame seeds (origin India), cucumbers;
- importance in the nutrition: potatoes, barley, carrots;
- new products: raspberries.
- Pesticides to be analysed were chosen according to:
- Part C and D of the Regulation (EU) 2020/585
- PPPs authorised in the country
- Forbidden PPPs (at national/EU level)
- Analitical capacities of national control laboratories.

6.2.2 Sampling strategy: selective sampling and objective sampling.

Sampling methods: according to Commission Directive 2002/63/EC of 11th July 2002 laying down sampling methods for official control of pesticide residues in and on products of plant and animal origin.

Area of sampling: 4 major cities, 1 smaller city, 4 regional units.

Sampling periods:

- Sanitary inspection: March/April, May/June /July/August/ September/October/ November
- Agricultural inspection (sampling in periods adjusted to the agricultural production, harvest and picking: March/April, May/June/July/August/September/October.
- Veterinary Inspection - sampling throughout the year.

Points of sampling:

- Sanitary Inspection: sampling products of plant and animal origin in large shopping centres - central distribution warehouses, green markets, wholesale markets and cold stores where are affordable, comprehensive batches, in shops and at markets.

- Agricultural inspectors – sampling products of plant origin from primary production - 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 inspectors – sampling products of animal origin in from primary production, facilities for the production, processing and storage of products of animal origin and retail where it is prescribed by a special regulation.

For the purpose of the good implementation and coordination of the Programme, the Ministry of Agriculture prepared the Guidance for the implementation of the Programme in 2021 which is documented procedure for sampling including number and description of samples for each inspection, sampling area, sampling strategy, sampling methods, sampling periods, sampling procedures, sampling form, storage, packing and delivery of samples, analysis and analytical reports, notification HR RASFF and measures taken.

Laboratories for analysis products of plant origin: Andrija Štampar Teaching Institute of Public Health, Deapartment of Environmental Protection and Health Ecology.

Laboratory for analysis products of animal origin: the Croatian Veterinary Institute (CVI), Laboratory for Determination of Residues.

Risk assessment and HR RASFF

Risk assessment for consumers was conducted by Croatian Centre for Agriculture and Food – Centre for Plant Protection.

HR RASFF system was under responsibility of the Ministry of Agriculture, Veterinary and Food Safety Directorate which represents the national RASFF contact point for the European Commission.

6.3 Key findings, interpretation of the results and comparability with the previous year results

6.3.1 Key findings

In 2021 were analysed 549 samples within National Monitoring Programme for pesticide residues in and on food.

National Monitoring Programme for pesticide residues in and on food

Within National Monitoring Programme for pesticide residues in and on food 35 samples exceeded MRL of which 12 samples were compliant taking into account measurement uncertainty and 23 samples non compliant.

Multiple residues in EUCP were found in bananas, grapefruits, table grapes, aubergines, cultivated fungi, melons, sweet peppers, apples, kiwi, lemons, mandarins, peaches, raspberries, strawberries, carrots, spinaches.

There were 255 samples found pesticide residues below LOQ and 259 quantified below MRL.

MRL non - compliances was determined in following samples: sweet peppers (2 samples), aubergines (1 sample), melons (1 sample), spinaches (1 sample), cultivated fungi (3 samples), lemons (2 samples), mandarins (1 sample), grapefruits (3 samples), apples (1 sample), peaches (2 samples), bananas (1 sample), cucumbers (1 sample), potatoes (1 sample), kiwi fruits (3 samples).

Regarding the comparability with the previous year, results showed some changes in the trend (Table 16):

Table 16: Trend results

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

When compared with the previous year, it is evident that the number of analysed samples had firstly increased, then decreased in 2019, and increased from 2020, continuing increasing in 2021.

The percentages of samples without residues of pesticides has decreased and starting increasing in 2020 again, continuing increasing in 2021.

The percentage of samples with pesticide residues below the MRLs has increased until 2019, decreased in 2020, and increased again in 2021.

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

Table 17: Summary results of National Monitoring Programme for pesticide residues in and on food

Matrix detailed	Total samples	Below LOQ	% Below LOQ	Quantified	% Quantified	Quantified below MRL	% Quantified below MRL	Above MRL	% Above MRL	Non compliant	% Non compliant
Wheat and similar-	19	17	89,47%	2	10,53%	2	10,53%	0	0,00%	0	0,00%
Wheat wholemeal flour	8	5	62,50%	3	37,50%	3	37,50%	0	0,00%	0	0,00%
Broccoli and similar-	25	16	64,00%	9	36,00%	8	32,00%	1	4,00%	0	0,00%
Sweet peppers	20	9	45,00%	11	55,00%	9	45,00%	2	10,00%	2	10,00%
Aubergines	20	12	60,00%	8	40,00%	7	35,00%	1	5,00%	1	5,00%
Melons and similar-	24	10	41,67%	14	58,33%	13	54,17%	1	4,17%	1	4,17%
Spinaches and similar-	20	11	55,00%	9	45,00%	8	40,00%	1	5,00%	1	5,00%

Cultivated fungi and similar-	26	13	50,00%	13	50,00%	10	38,46%	3	11,54%	3	11,54%
Lemons and similar-	27	6	22,22%	21	77,78%	18	66,67%	3	11,11%	2	7,41%
Mandarins	10	6	60,00%	4	40,00%	3	30,00%	1	10,00%	1	10,00%
Grapefruits and similar-	20	0	0,00%	20	100,00 %	17	85,00%	3	15,00%	3	15,00%
Apples and similar-	15	0	0,00%	15	100,00 %	14	93,33%	1	6,67%	1	6,67%
Strawberries	32	3	9,38%	29	90,63%	25	78,13%	4	12,50%	0	0,00%
Raspberries and similar-	16	9	56,25%	7	43,75%	6	37,50%	1	6,25%	0	0,00%
Peaches and similar-	21	2	9,52%	19	90,48%	16	76,19%	3	14,29%	2	9,52%
Bovine fat tissue	15	10	66,67%	5	33,33%	5	33,33%	0	0,00%	0	0,00%
Hen eggs	15	15	100,00 %	0	0,00%	0	0,00%	0	0,00%	0	0,00%
Olive oil, virgin or extra-virgin	23	14	60,87%	9	39,13%	9	39,13%	0	0,00%	0	0,00%
Processed cereal-based food for infants and young children	25	24	96,00%	1	4,00%	1	4,00%	0	0,00%	0	0,00%
Bananas and similar-	25	0	0,00%	25	100,00 %	24	96,00%	1	4,00%	1	4,00%
Barley and similar-	16	14	87,50%	2	12,50%	2	12,50%	0	0,00%	0	0,00%
Sesame seeds and similar-	15	11	73,33%	4	26,67%	0	0,00%	4	26,67%	0	0,00%
Cucumbers and similar-	20	7	35,00%	13	65,00%	12	60,00%	1	5,00%	1	5,00%
Carrots and similar-	26	9	34,62%	17	65,38%	17	65,38%	0	0,00%	0	0,00%
Potatoes and similar-	26	19	73,08%	7	26,92%	6	23,08%	1	3,85%	1	3,85%
Kiwi fruits and similar-	15	8	53,33%	7	46,67%	4	26,67%	3	20,00%	3	20,00%
Table grapes and similar-	25	5	20,00%	20	80,00%	20	80,00%	0	0,00%	0	0,00%
Total	**549**	**255**	**46,45 %**	**294**	**53,55 %**	**259**	**47,18 %**	**35**	**6,38%**	**23**	**4,19%**

6.4 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

6.4.1 Possible reasons for non-compliant samples

National Monitoring Programme for pesticide residues in and on food

Table 18: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product[a]	Frequency[b]	Comments
GAP not respected	Chlorpyrifos/Sweet peppers	1	North Macedonia
GAP not respected	Chlorfenapyr, Formetanate /Sweet peppers	1	Albania
GAP not respected	Thiabendazole/Aubergines	1	Italy

Reasons for MRL non-compliance	Pesticide/food product[a]	Frequency[b]	Comments
Use of an approved pesticide, but not approved on melons in Croatia	Fluazifop P/Melons	1	Croatia
GAP not respected	Dithiocarbamates/Spinaches	1	Italy
Use of a non-approved pesticide	Dithiocarbamates/Cultivated fungi	3	Croatia
GAP not respected	Prochloraz/Lemons	1	Turkey
GAP not respected	Chlorpyrifos/Lemons	1	Turkey
GAP not respected	Fluopicolide, Propiconazole /Mandarins	1	Turkey
GAP not respected	Prochloraz, Chlorpyrifos, Pirimiphos-methyl/Grapefruits	1	Turkey
GAP not respected	Fenbutatin oxide, Prochloraz, Chlorpyrifos/Grapefruits	1	Turkey
GAP not respected	Chlorpyrifos, Pirimiphos-methyl/ Grapefruits	1	Turkey
Use of a non-approved pesticide in Croatia	Dimethoate, Omethoate/Apples	1	Croatia
Use of a non-approved pesticide in Croatia	Chlorpyrifos /Peaches	1	Croatia
Use of a non-approved pesticide	Cyhalothrin/Peaches	1	Spain
GAP not respected	Chlorpyrifos/Bananas	1	Ecuador
GAP not respected	Oxamyl/Cucumbers	1	Italy
GAP not respected	Oxamyl /Potatoes	1	Greece
GAP not respected	Acetamiprid/Kiwi fruits	1	Chile
GAP not respected	Acetamiprid/Kiwi fruits	1	Italy
GAP not respected	Dithiocarbamates/Kiwi fruits	1	Greece

a) Report name
b) Number of cases
c) Applicable only for food products produced in the EU
d) For imported food only

6.4.2 ARfD exceedances

For 22 non-compliant samples within National Monitoring Programme for pesticide residues in and on food risk assessment was done. For one sample (peaches) the wrong MRL was put in analytical report (MRL for lambda-Cyhalothrin instead for Cyhalothrin) so exceedance was not recognised.

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

Pesticide/food product	Action taken	Number of non-compliant samples concerned	Comments
Fluazifop P/Melons	Administrative measures taken, no food found on the market	1	No risk
Dimethoate, Omethoate/Apples	Administrative measures	1	No risk
Fluopicolide, Propiconazole /Mandarins	Administrative measures taken, no food found on the market, RASFF (food intended for another MS)	1	No risk

Pesticide/food product	Action taken	Number of non-compliant samples concerned	Comments
Acetamiprid/Kiwi fruits	Withdrawal from the market	1	No risk
Acetamiprid/Kiwi fruits	Administrative measures taken, no food found on the market	1	No risk
Chlorfenapyr, Formetanate /Sweet peppers	Withdrawal from the market	1	No risk
Chlorpyrifos/Sweet peppers	Withdrawal from the market, recall	1	Risk cannot be excluded
Chlorpyrifos/Bananas	Withdrawal from the market, recall	1	Risk cannot be excluded
Dithiocarbamates/Kiwi fruits	Administrative measures taken	1	No risk
Dithiocarbamates/Cultivated fungi	Administrative measures taken	3	No risk
Oxamyl /Potatoes	Withdrawal from the market, recall	1	Risk
Chlorpyrifos, Pirimiphos-methyl/ Grapefruits	Withdrawal from the market, recall	1	Risk cannot be excluded (for chlorpyrifos)
Prochloraz, Chlorpyrifos, Pirimiphos-methyl/Grapefruits	Withdrawal from the market, recall	1	Risk cannot be excluded (for chlorpyrifos)
Fenbutatin oxide, Prochloraz, Chlorpyrifos/Grapefruits	Withdrawal from the market, recall	1	Risk cannot be excluded (for chlorpyrifos)
Chlorpyrifos/Lemons	Withdrawal from the market	1	No risk
Thiabendazole/Aubergines	Withdrawal from the market	1	No risk
Dithiocarbamates/Spinaches	Administrative measures taken	1	No risk
Prochloraz/Lemons	Withdrawal from the market	1	No risk
Chlorpyrifos /Peaches	Administrative measures	1	Risk cannot be excluded (for chlorpyrifos)
Oxamyl/Cucumbers	Withdrawal from the market, recall	1	Risk

6.5 Quality assurance

There are two accredited and designated laboratories analyse pesticide residues within National Monitoring Programme for pesticide residues in and on food: Andrija Štampar Teaching Institute of Public Health (for products of plant origin) and Croatian Veterinary Institute (for products of animal origin).

The analyses of products of plant origin in Andrija Štampar Teaching Institute were performed by the GC - MS technique (gas chromatography - mass spectrometry), GC-MS/MS technique (gas chromatography - tandem mass spectrometry) and LC-MS-MS technique (liquid chromatography - tandem mass spectrometry method according to DIN EN 12393:2013 and HRN EN 15662:2018.

Analyses of products of animal origin were performed by the GC-MS/MS method.

Table 20: Laboratories participation in the national control program

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
Croatia	Croatian Veterinary Institute Laboratory for Residue Control	HVI	First: May 14, 2013 Last: May 27, 2022	Croatian Accreditation Agency	2021: Pesticides in animal fat, organisation: FAPAS, UK 2021: Pesticides in whole egg, organisation: EURL-AO, Freiburg, Germany 2021: Pesticides in rape seed cake, organisation: EURL-CF, Copenhagen, Denmark
Croatia	Andrija Štampar Teaching Institute of Public Health	Stampar	2003 Flexibile acreditation	Croatia Accreditation Agency	EURL-PT-FV EURL-PT-SRM EURL-PT-CF EUPT-AO 2015-2021

7 Cyprus

7.1 Objective and design of the national control programme

The Ministry of Health is the competent authority for the enforcement of the Pesticide Residues (PR) Legislation and the execution of the national monitoring and surveillance programs. The enforcement of Legislation and sampling is allocated to the Department of Medical and Public Health Services (MPHS). For products of animal origin, sampling is carried out by the Veterinary Services of 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 PR in Food of Plant and Animal Origin. The PR-SGL Lab in cooperation with the MHPS design and implement the monitoring program for both the local market and imports. The sampling is focused at the key points of 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 (DA) of Ministry of Agriculture, Rural Development and Environment. The results are evaluated by the competent authority in accordance to the provisions of the Regulation on organic products.

The sampling regime is based on a combination of "at random" sampling and target oriented sampling focusing on problematic pesticides/food combination. This combination is, in a way, bias towards problematic products and might end up with higher violation rates. Nevertheless, it can provide higher degree of consumer protection and cost-effectiveness. Main criteria used

in the sampling design are: EU coordinated program, violations from previous years, information from RASFF, consumption rate especially for children and the needs of imports control.

The increase in the number of compounds monitored is a continuous process and is mainly defined by the requirements of the EU coordinated program. The provisions of the SANTE working document on the inclusion of pesticides in the national control plan as well as the pesticides included in the 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.

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

In 2021 a total of 629 food samples of plant and animal origin were analysed in the framework of the official controls. Sampling rate was 70.8 samples /100 000 inhabitants.

Plant Origin samples

The number of plant origin samples analysed in 2021 was 468. The number of fruits tested was 156, vegetables 151, cereals 55 and pulses 19. Processed foods such as dry fruits, wines, olive oil, teas and dry herbs were also analysed. A total of 13 wheat samples were analysed as required by the EU coordinated plan, but due to the limited number of wheat grains found in the market, samples of wheat flour were also analysed. For the purpose of the import controls, 135 samples were analysed, out of which 14 samples of sesame seeds originated from India were analysed also for the compound ethylene oxide. The main imported products were vegetables, fruits, cereals, pulses and oil seeds.

The 65.2 % of the plant origin samples were found to be positive with pesticide residues while residues of more than one pesticide were found in the 47 % of the samples.

The most frequently found pesticides within 2021 were Acetamiprid and Cypermethrin in 11.5%, Tebuconazole in 8.5%, Imidacloprid and Pyrimethanil in 77 %, Boscalid and Carbendazim in 7.1%, Chlorpyrifos in 6.6%, Azoxystrobin in 6.4% and Thiabentazole in 6.2 % of the samples analysed for.

For statistical purposes, the violation rate of the MRLs is calculated taking into account only the samples of plant origin. For the year 2021, the 8.5% of the 468 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 53 out of which the 43 samples were analysed in the framework of the national monitoring program of organic products. Eight samples were found to be positive with pesticide residues. All the results, which are presented in Table 21, were reported to the competent authority of the organic products so that the appropriate measures to be taken.

Table 21: Results of organic farming samples

Product	Pesticide	Found value (mg/kg)
Tomatoes	Bromide ion	4.7
Mushrooms	Chlorate	0.057

Product	Pesticide	Found value (mg/kg)
Melons	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.012
Grapes	Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	0.30
Nectarines	Spinetoram (sum of spinetoram-J and spinetoram-L)	0.01
	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.48
Apples	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.03
Mandarins	Acetamiprid	0.075
	Imidacloprid	0.080
	Spirodiclofen	0.027
Pomegranates	Acetamiprid	0.010

Comparing the results of 2021 with those of 2020, the violation rate was found to show a significant increase from 5.1% to 8.5% and the frequency of multiple residues in 2021 was higher (47%) compared to 2020 (32.2%). It is noted that, due to the pandemic Covid 19, the 2020 monitoring plan had not been fully implemented.

Animal Origin Samples

Within 2021, 161 samples of animal origin have been analysed for pesticide residues: 68 samples of meat (muscles, liver and fat), 22 milk samples, 26 hen egg samples, 28 fish samples and 17 samples of honey. In the framework of the Community control plan, 12 bovine fat samples and 12 hen eggs were analysed. The rest of the samples have been analysed under the National monitoring plan in order to fulfil the requirements of the EU directive 96/23.

In total 22 samples of animal origin products found to contain pesticides at quantifiable levels: Two bovine fat samples and two trout samples were positive with DDT at very low concentrations.

The 82% of the honey samples found to be positive with Amitraz at concentrations ranging between 0.026 - 0.95mg/kg, two of the samples contained also Coumaphos at concentrations lower than the legal limit.

The concentrations of Amitraz determined in eight honey samples were higher than the MRL but only in three samples the concentration was still higher than the MRL after subtracting the measurement uncertainty.

For investigation purposes, 16 fish farming samples were analysed for the substance ethoxyquin, four samples were positive with ethoxyquin at low concentrations ranging from 0.0051 – 0.014 mg/kg.

7.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

In 2021, 17.9% of the samples of plant origin (84 samples in total out of 468 samples of plant origin were found non-compliant with the EU MRLs, whereas the 8.5% of the samples (40 samples in total) were considered as legal violations (meaning that they were found as non-compliant with the legal limits taking into account the measurement uncertainty).

Acute exposure assessment using the Primo v 3.1 has been performed for all legal violations. In nine cases, for which no toxicological data were available, exposure assessment was not carried

out (Chlorpyrifos in grapefruits, clementines, parsley, olives, peppermint dry, rice and dry beans and Tricycazole in rice).

In two cases (Cypermethrin, Ethephon and Lufenuron, Tebuconazole in table grapes) the exposure of both population groups, adults and children, exceeded the toxicological reference value ARfD. Furthermore, in the case of flonicamide in broccoli, only the children's exposure exceeded the acute reference dose (ARfD).

The following follow-up actions (Table 22) were taken in the cases of non-compliant samples.

Table 22: Possible reasons for MRL non-compliance and actions taken

Reason for MRL non-compliance	Pesticide/food product	Frequency	Action taken
GAP not respected	Chlorpyrifos/Grapefruits & Mandarins	1	Administrative consequences
	Cypermethrin/Table olives		
	Linuron & Triadimenol/Carrots		
GAP not respected: use of an approved pesticide not authorized on the specific crop	Acetamiprid/Celeries	1	
	Boscalid/Grape leaves		
	Captan/Table Grapes		
	Chlorpyrifos/Parsley		
	Clofentezine/Sweet Peppers		
	Cypermethrin/Celeries & Spinaches		
	Dimethomorph/Beans with pods		
	Famoxadone/Celeries		
	Flonicamid/Broccoli		
	Fluopicolide/Beans with pods		
	Flupyradifurone/Oranges & Parsley		
	Formetanate/Sweet Peppers		
	Imidacloprid/Grape leaves		
	Lufenuron/Table Grapes		
	Myclobutanil/Celeries		
	Penconazole/Celeries & Grape Leaves		
GAP not respected: application rate, number of treatments, application method or PHI not respected	Acrinathrin/Sweet Peppers	1	
	Cypermethrin/Table Grapes	2	
	Ethephon/Table Grapes	1	
	Tebuconazole/Table Grapes	1	
GAP not respected: use of a pesticide not approved in the EU	Chlorpyrifos/Clementins	1	
	Dimethoate/Table Grapes		
	Fenvalerate/Grape leaves		
	Omethoate/Table Grapes		
Use of a pesticide on food imported from third countries which no import tolerance was set	Chlorpyrifos/Pomegranates	1	Rapid Alert Notification /Lot not released on the market
	Cyfluthrin/Pomegranates		
	L-Cyhalothrin/Pomegranates		
	Thiamethoxam/Rice		
	Tricyclazole/Rice		

Reason for MRL non-compliance	Pesticide/food product	Frequency	Action taken
Use of a pesticide on food imported from third countries which no import tolerance was set	Acetamiprid, Ametoctratin, Azoxystrobin, Chlorpyrifos, Cyflufenamid, Cymoxanil, Cyprodinil, Difenoconazole, Dimethomorph, Famoxadone, Fluxapyroxad, Metalaxyl, Metrafenone, Penconazole, Pyrimethanil, Tebuconazole/Grape Leaves	1	Rapid Alert Notification/ Lot not released on the market /Destruction of products
	Chlorpyrifos/Rice & Table Olives		
	Cyfluthrin/Pomegranates		
Use of a pesticide on food imported from third countries which no import tolerance was set	Acetamiprid/Rice	1	Lot not released on the market /Destruction of products
	Chlorpyrifos/Dry Beans		
	Thiamethoxam/Rice		
	Tricyclazole/Rice		
Use of a pesticide on food imported from third countries which no import tolerance was set	Chlorpyrifos/Dry Mint	1	Rapid Alert Notification/ Lot recalled from the market/Administrative consequences
	Chlorothalonil/Chilli Peppers		
	Malathion/Dry Mint		
GAP not respected: use of a pesticide not approved in the EU	Chlorate/Baby food cereal based		
Use of a pesticide on food imported from third countries which no import tolerance was set	Chlorpyrifos/Dry Mentha	1	Rapid Alert Notification/Lot recalled from the market/Destruction of products/ Administrative consequences
	Propiconazole/Rice		
	Tricyclazole/Rice		
Use of a pesticide on food imported from third countries which no import tolerance was set	Chlorate/Broccoli	1	Lot recalled from the market/Administrative consequences
GAP not respected: use of an approved pesticide not authorized on the specific crop	Deltamethrin/Pomegranates		
Use of a pesticide on food imported from third countries which no import tolerance was set	Hexaconazole/Sweet Peppers	1	Rapid Alert Notification/Lot recalled from the market

7.4 Quality assurance

The PR Lab of the SGL is accredited since 2002 according to EN ISO/IEC 17025:2017. The PR-Lab applies Quality Control procedures, which are in line with provisions of SANTE document "Analytical Quality Control and Method Validation Procedures for Pesticide Residues Analysis in Food and Feed". Details on the laboratory can be found in Table 23.

Table 23: 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 2021: EUPT-SRM-16 (milled hulled sesame seeds) EUPT-AO-16(liquid whole eggs) EUPT-FV-23(aubergines) EUPT-SC-05(dried white beans)

7.5 Processing Factors (PF)

Processing factors were applied to verify the compliance with EU MRLs of the processed food. Table 24 presents the PFs applied for different food.

Table 24: Processing factors

Pesticides	Unprocessed product (RAC)	Processed product	Processing factor	Source of PF
Ametoctradin	Table grapes	Raisins	3.4	EFSA (EU) Database
Boscalid			2.4	EFSA (EU) Database
Fludioxonil			1.1	EFSA (EU) Database
Fluopyram			2.9	EFSA (EU) Database
Methoxyfenozide			2.3	EFSA (EU) Database
Metrafenone			1.7	EFSA (EU) Database
Penconazole			1.2	EFSA (EU) Database
Proquinazid			2.8	EFSA (EU) Database
Azoxystrobin			3	BfR
Cyflufenamid			3.6	BfR
Fluxapyroxad			3.3	BfR
Imidacloprid			5.5	BfR
Metalaxyl			3	BfR
Pyrimethanil			1.6	BfR
Acetamiprid , Cypermethrin, Cyprodinil, Dimethomorph, Fenvalerate, Methomyl, Myclobutanil, Thiodicarb, Phosalone, Sulfoxaflor, Tebuconazole, Tebufenpyrad, Tetraconazole			1	Default Processing factor
Carbentazim	Apricot	Apricot, dried	1.3	BfR

Pesticides	Unprocessed product (RAC)	Processed product	Processing factor	Source of PF
Thiacloprid, Trifloxystrobin			1	Default Processing factor
Imidacloprid	Plums	Plums, Dried	3.1	BfR
Methoxyfenozide			1	Default Processing factor
Acetamiprid, Amitraz, Chlorpyrifos, Cypermethrin, Dimethomorph, Fenpyroximate, Malathion, Profenofos	Spearmint & Peppermint	Spearmint & Peppermint, Dried	5.2	Drying factor
Fluopyram	Wine grapes	Wines	0.75	EFSA (EU) Database
Methoxyfenozide			0.33	EFSA (EU) Database
Spinosad sum			1	EFSA (EU) Database
Tebuconazole			0.11	EFSA (EU) Database
Triadimenol			0.5	BfR
Metalaxyl			0.5	BfR
Boscalid, Carbendazim, Chlorantraniliprole, Cyprodini, Fenhexamidl, Pyrimethanil			1	Default Processing factor
Imidacloprid	Rice grain	Rice, polished	0.78	EFSA (EU) Database
Propiconazole			0.24 & 1	EFSA (EU) Database
Acetamiprid, Azoxystrobin, Buprofezine, Carbendazim, Chlorpyrifos, Clothianidin, Cyproconazole, Dichlorvos, Hexaconazole, Isoprothiolane, Tebuconazole, Thiamethoxam, Triazophos, Tricyclazole			1	Default Processing factor
Bixafen, Chlorpyrifos	Olives for oil production	Olive Oil	5	
Cypermethrin			7.6	EFSA (EU) Database
Boscalid	Tomatoes	Tomato paste	0.73	EFSA (EU)Database
Imidacloprid			7.4	EFSA (EU)Database

Pesticides	Unprocessed product (RAC)	Processed product	Processing factor	Source of PF
Azoxystrobin, Carbendazim, Chlorfenapyr, Chlorpyrifos, Cypermethrin, Difenoconazole, Indoxacarb, Propamocarb, Propargite, Tebuconazole			6.2	Production factor

8 Czechia

8.1 Objective and design of the national control programme

8.1.1 Objective

Pesticide residues monitoring in foodstuffs in the Czechia (CR) is guided by the Multiannual Control Plan for the Control of Pesticide Residues in CR submitted by the Ministry of Health, in cooperation with the Ministry of Agriculture and other supervisory bodies (CAFIA, SVA, CISTA).

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

The requirements of the multi-annual control plan programme are included in the control plans of official authorities (CAFIA, SVA and CISTA), competent to monitor pesticide residues in foodstuffs of plant and animal origin and feeds.

8.1.2 Design

The multi-annual pesticide residue control plan covers food and feed throughout the food chain. The control programme is based on Commission Implementing Regulation (EU) 2020/585[8]. These are the minimum numbers of commodities checked, the minimum number of samples taken, and the range of pesticide residues that must be analysed. During their activities, supervisors may increase the number of controlled 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 the commodities to be included in the national pesticide residue control programme:

- total food consumption in the Czechia in 2018 (https://www.czso.cz/csu/czso/spotreba-potravin-2018; english version: https://www.czso.cz/csu/czso/food-consumption-2018);
- consumer food basket (http://czvp.szu.cz/spotrebapotravin.htm);
- the results of controls and monitoring of pesticide residues in previous years (http://www.svscr.cz; http://www.szpi.gov.cz/; http://www.ukzuz.cz);
- products with more stringent requirements for pesticide use (organic food and biofeeds);
- reporting in the RASFF system - annual EC reports (http://ec.europa.eu/food/food/rapidalert/index_en.htm);
- Commission Implementing Regulation (EU) 2020/585 of 27 April 2020 on a coordinated, multi-annual control programme of the Union for 2021, 2022 and 2023 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;

- final reports on the results of Community monitoring
- (http://ec.europa.eu/food/fvo/specialreports/pesticides_index_en.htm);
- EU reports on pesticide residues in food published on the EFSA website

  http://www.efsa.europa.eu/en/efsajournal/pub/3694 - 2011,

  http://www.efsa.europa.eu/en/efsajournal/pub/3942 - 2012,

  http://www.efsa.europa.eu/en/efsajournal/pub/4038 - 2013,

  http://www.efsa.europa.eu/en/efsajournal/pub/4611 - 2014,

  http://www.efsa.europa.eu/en/efsajournal/pub/4791 - 2015,

  http://www.efsa.europa.eu/en/efsajournal/pub/5348 - 2016,

  http://www.efsa.europa.eu/en/efsajournal/pub/5743 - 2017,

  http://www.efsa.europa.eu/en/efsajournal/pub/6057 - 2018.

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 analysed commodities, with regard to the possibility for statistical evaluation. The national programme is based on the multi-annual EU control programme set out in Commission Implementing Regulation (EU) 2020/585.

The number of samples in the Regulation (EU) No 2020/585 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 which are analysed on the content of pesticide residues. A real extent of samples is in the validation report.

Analysed pesticide residues

- the most commonly used active substances (source - CISTA);
- the database of authorized plant protection products and the active substances they contain, maintained by the CISTA and available on-line on the CISTA 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 (http://www.svscr.cz; http://www.szpi.gov.cz/; http://www.ukzuz.cz);
- RASFF system reporting - EC Annual Reports (http://ec.europa.eu/food/food/rapidalert/index_en.htm);
- Commission Implementing Regulation (EU) 2020/585 of 27 April 2020 on a coordinated, multi-annual control programme of the Union for 2021, 2022 and 2023 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;
- the final reports on the results of Community monitoring
- (http://ec.europa.eu/food/fvo/specialreports/pesticides_index_en.htm);
- the consumer food basket
- (http://www.szu.cz/tema/bezpecnost-potravin; http://czvp.szu.cz/spotrebapotravin.htm);
- the toxicological profiles of pesticides (National Institute of Public Health, Prague);
- laboratory capacity.

Sampling

7 CAFIA regional Inspectorates participate in sampling for determination of pesticide residues. They take samples in compliance with requirements of Commission Directive 2002/63/EC[10]. Samples are taken in particular in retail and wholesale.

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 (6 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.

8.2 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 the total of 1218 samples in 2021. The samples were taken within official controls focused on verification of presence of pesticide residues. The main proportion of the sample taken represented samples of fresh fruit, vegetables, cereals, cereals products and products of plant origin (1026 samples). Foodstuffs of animal origin include 121 samples and feeding stuffs consist of 71 samples were further sampled.

8.2.1 Key findings

Out of the total number of the samples taken, 755 samples (62.0%) contained positive finding of any of the analysed active substances. MRL was exceeded in 66 samples (5.4%). 35 samples (2.9%) were assessed as non-compliant, i.e. the samples exceeded the MRL even when uncertainty of measurement was taken into account.

Out of the total number of taken samples, the largest proportion comprised samples from EU countries (69.8% analysed samples) followed by samples from third countries (21.8%). In 8.4% of the samples, the country of origin was not known.

The largest proportion of the analysed samples was represented by samples of fruit, vegetables and other plant products (1026 samples). Presence of pesticide residues was not detected in 26.9% analysed plant origin samples. In 66,9% samples, the detected residues were under MRL value. Regardless uncertainty measurement, 64 samples of fruit, vegetables and other 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 33 (3.2 %).

As regards foodstuffs of animal origin, out of the total number of the samples taken (121), 106 samples comprised non-processed foodstuffs: hen eggs, bovine, poultry, pig and sheep fat, beef liver, poultry and bovine fresh meat, milk, honey and 15 samples comprised processed products: butter, milk products (yoghurt, cheese curd, cream).

All 121 analysed samples of foodstuffs of animal origin came from EU. Pesticide residues were not found in 78.5% of foodstuffs of animal origin. As regards 21.5% of samples with residues, the detected residues were found under the MRL. Exceeding of the MRL was not detected in any of the analyzed samples of animal origin.

Organic products of plant and animal origin comprised 6.9% (79 samples) of the total amount of the samples taken compared to 93.1% (1068 samples) of foodstuffs produced within conventional farming. Out of the total number of samples taken from non-organic foodstuffs, positive finding of pesticide residues was detected in 71.6 % (738 samples) of samples compared to 25.3% (15 samples) of positive cases of samples taken from organic foodstuffs.

In 597 samples of plant origin (58.2%) more than one active substance was detected. The maximum number various pesticide substances and their metabolites was found in sweet peppers from (29 compounds).

As regards non-organic feeding stuffs, the total of 52 samples of non-processed raw materials has been taken. Out of the total number of the analysed samples of feeding stuffs, 81 % originated in the CR, 2 samples in EU countries, 2 samples in third countries and 7 samples were of unknown origin. Positive detections of pesticide residues were found in 74% feed. Two samples were above the MRL. Out of the total number of 13 samples of feed from organic farming, in 2 cases pesticide residue under MRL value was detected.

8.2.2 Comparability with the previous year results

Pesticide residues were in 2021 analysed in a total of 1,218 samples (Table 25) compared to the total number of 1,520 of samples analysed in 2017, 1,390 analysed samples in 2018, 1,478 samples in 2019 and 1,029 samples in 2020. Positive findings of pesticide residues (with residues below MRL) were in 2021 detected in 62.0 % samples compared to 56.2% in 2017, 73.8% in 2018, 64.9% in 2019 and 64.0% in 2020.

MRL value was in 2021 exceeded in 5.4% of samples (4.5% in 2016, 3.1% in 2017, 3.5% in 2018,
3.9 % in 2019, 4.4% in 2020), 2.9% 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). The results found in 2021 are comparable with data from previous years.

In connection with the measures taken during the COVID-19 pandemic, the control activities of the supervisory authorities were reduced during 2021, which was reflected in a lower number of samples taken for the determination of pesticide residues compared to the total number of samples analysed in previous years.

Table 25: Summary results of samples taken in 2021 by product class

Samples	Total	Without residues	With residues below MRL	Exceeding MRL	Non-compliant
Animal products	121	95	26	0	0
Baby food	18	18	0	0	0
Cereals and cereal products	65	37	23	5	1
Feeding stuffs	71	26	43	2	2
Fruits	329	29	288	12	3
Legume seeds	21	9	12	0	0
Oil seeds	42	20	19	3	1
Other plant products	3	2	1	0	0
Potatoes	26	8	17	1	0
Processed products	70	27	36	7	4
Vegetables inl. herbs	452	126	290	36	24
Sum	1218	397	755	66	35

8.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

Out of the total number of samples taken in 2021, 66 samples exceeded the MRL (5.4%). Out of this number, 35 samples (2.9%) were assessed as non-compliant even after uncertainty in measurement was taken into account. 2 non-compliant samples originated in the CR, 6 non-compliant samples originated in the EU and 27 non-compliant samples originated from third countries.

Following commodities were concerned: sweet pepper - 10 non-compliant samples, basil - 4 non-compliant samples, tea leaves – 4 non-compliant samples, coriander leaves – 3 non-compliant samples, 1 non-compliant sample of broccoli, cauliflower, Chinese cabbage, cucumber,

tomato, parsley, mandarins, clementines, grapefruit, long-grain rice, turmeric root, poppy seeds was registered.

Based on the risk of health assessment were notified clofentenzine and methomyl in sweet peppers originating from Morocco and ethylene oxide in turmeric root originating from India into the RASFF.

2 samples of feed exceeded the MRL. Both samples were non-compliant when measurement uncertainties were taken into account. One sample of mungo beans originated in Argentina, presence of fluazifop, glyphosate and haloxyfop (above MRL) was detected. In oats originated in the CR chlorpyrifos-methyl above MRL was detected.

8.3.1 Possible reasons for non-compliant samples

Table 26: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]	Comments
GAP not respected: use of a pesticide not approved in the EU[b]	Chlorpyrifos/Poppy seeds	1	Hungary
	Chlorpyrifos /Cucumbers	1	Poland
	Chlorpyrifos/Broccoli	1	Poland
	Chlorfenapyr/Tomatoes	1	Italy
	Propiconazole/Clementines	1	Spain
GAP not respected: use of an approved pesticide not authorised on the specific crop[c]	Fluazifop-P/Chinese cabbage	1	Poland
	Flonicamid/Cauliflower	1	Czechia
Use of a pesticide on food imported from third countries for which no import tolerance was set[c]	Chlorpyrifos/Mandarins	1	Albania
	Chlorpyrifos/Sweet pepper	1	Albania
	Carbendazim and benomyl/Basil	2	Cambodia
	Carbofuran/Basil	1	Cambodia
	Fipronil/Basil	1	Cambodia
	Chlorfenapyr/Basil	1	Cambodia
	Chlorothalonil/Basil	1	Cambodia
	Isoprothiolane/Basil	1	Cambodia
	Lufenuron/Basil	1	Cambodia
	Methomyl/Basil	3	Cambodia
	Triadimefon/Basil	1	Cambodia
	Triadimenol/Basil	1	Cambodia
	Chlorfenapyr/Coriander leaves	1	Cambodia
	Fipronil/Coriander leaves	1	Cambodia
	Buprofezin/Parsley	1	Cambodia
	Chlorfenapyr/Parsley	1	Cambodia
	Fenpropathrin/Parsley	1	Cambodia
	Profenofos/Parsley	1	Cambodia
	Acephate/Chilli peppers	1	Cambodia
	Benzalkonium chloride/Chilli peppers	1	Cambodia
		1	Cambodia
	Famoxadone/Chilli peppers	1	Cambodia
	Fenpropathrin/Chilli peppers	2	Cambodia
	Hexaconazole/Chilli peppers	4	Cambodia
	Chlorfenapyr/Chilli peppers	1	Cambodia
	Chlorpyrifos/Chilli peppers	1	Cambodia
	Isoprothiolane/Chilli peppers	1	Cambodia
	Profenofos/Chilli peppers	1	Cambodia
	Prochloraz/Chilli peppers	1	Cambodia
	Propargite/Chilli peppers	1	Cambodia
	Propiconazole/Chilli peppers	1	Cambodia
	Tebufenpyrad/Chilli peppers	1	Cambodia
	Tolclofos-methyl/Chilli peppers	1	Cambodia
	Tolfenpyrad/Chilli peppers	1	Cambodia
	Triazophos/Chilli peppers	1	Cambodia

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]	Comments
	Tricyclazole/Chilli peppers	1	China
	Carbendazim and benomyl/Tea	1	China
	Dinotefuran/Tea	1	China
	Tolfenpyrad/Tea	1	India
	Ethylene oxide/Turmeric root	1	India
	Tricyclazole/Long-grain rice	1	Morocco
	Clofentezine/Sweet peppers	1	Morocco
	Methomyl/Sweet peppers	2	Pakistan
	Acetamiprid/Tea	2	Pakistan
	Dinotefuran/Tea	1	Pakistan
	Hexaflumuron/Tea	1	Pakistan
	Chlorpyrifos/Tea	2	Pakistan
	Lambda-cyhalothrin/Tea	2	Pakistan
	Tolfenpyrad/Tea	1	Thailand
	Acetochlor/Coriander leaves	1	Thailand
	Dinotefuran/Coriander leaves	1	Thailand
	Flusilazole/Coriander leaves	1	Thailand
	Chlorfenapyr/Coriander leaves	1	Thailand
	Chlorpyrifos/Coriander leaves	1	Thailand
	Propiconazole/Coriander leaves	1	Thailand
	Triadimefon/Coriander leaves	1	Thailand
	Triadimenol/Coriander leaves	1	Turkey
	Chlorpyrifos/Grapefruit	1	Turkey
	Chlorpyrifos-methyl/Sweet	1	Vietnam
	peppers	1	Vietnam
	Acetamiprid/Tea	1	Vietnam
	Imidacloprid/Tea		
	Tolfenpyrad/Tea		
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

8.3.2 ARfD exceedances

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

8.3.3 Actions taken

In case any non-compliant sample is detected, assessment of health risk for consumers is carried out for the purposes of notification into 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 health risk assessment, notified into the RASFF.

In case MRL of the given analytes laid down by obligatory legislation is exceeded, the supervisory body imposes a ban on sale or distribution of the non-compliant foodstuff. If the foodstuff is not dispatched at the time when the analyses are finished, withdrawal of the foodstuff is ordered. The inspected person is authorised to take a measure leading to the minimisation of further occurrence of the non-compliant foodstuff.

Within follow-up inspections, causes of detections of exceeding limits of pesticide residues in foodstuffs are found out at domestic growers and producers. Detected non-compliant findings

lead to more intensive inspections at producers and imports. A fine that will be imposed to the inspected person that placed the foodstuffs in question on the market is suggested within an administrative procedure. However, the fine could be dropped based on the circumstances.

Table 27: Actions taken

Action taken	Commodity/ pesticide	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	Sweet peppers/Clofentezine Sweet peppers/Methomyl Ethylene oxide/Turmeric root	2	Reference number 2021.1733 Reference number 2021.4025
Administrative sanctions (e.g. fines)		27	
Lot recalled from the market		3	
Destruction of non-compliant lot		1	Tea leaves/China

8.3.4 Quality assurance

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

Table 28: Laboratories participation in the national control program

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
Czechia	Czech Agriculture and Food Inspection Authority (CAFIA)	S01	EN ISO/IEC 17025, Certificate No. 298/2021 (1.6.2021)	Czech Accreditation Institute (CAI), Prague, Czechia	EUPT-CF15, EUPT-FV23, EUPT-SM13, EUPT-SRM16
Czechia	State Veterinary Institute Prague	V01	EN ISO/IEC 17025, Certificate No. 472/2021 (27.8.2021)	Czech Accreditation Institute (CAI), Prague, Czechia	EUPT-AO16
Czechia	Metrological and Testing laboratory, University of chemistry and technology	O01	EN ISO/IEC 17025, Certificate No. 599/2021 (12.11.2021), previous Certificate No. 568/2020 (15.9.2020)	Czech Accreditation Institute (CAI), Prague, Czechia	EUPT-FV23, EUPT-SM13, EUPT-SRM16, EUPT-AO16, CF15
Czechia	Central Institute for Supervising and Testing in Agriculture	U01	Certificate of accreditation No. 422/2021	Czech Accreditation Institute (CAI), Prague, Czechia	EUPT-FV23, EUPT-CF15, EUPT-SRM16

8.4 Processing Factors (PF)

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 applied to cover the dehydration of fruits, goji, pepper, polishing and parboiled rice, oil production using pressing.

Table 29: Processing factors

Pesticide[a]	Unprocessed product (RAC)	Processed product	Processing factor[b]	Comments
Abamectin (sum of avermectin B1a, avermectin B1b and delta-8,9 isomer of avermectin B1a, expressed as avermectin B1a), acetamiprid, clofentezin, clothianidin, difenoconazol, flonicamid (sum of flonicamide, TFNG a TFNA expressed as flonicamid) chlorpyrifos, imidacloprid pyraclostrobin, pyridaben, spirodiclofen, spirotetramat and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330 enol-glucosid, expressed spirotetramat, tebuconazole thiametoxam	Goji	Dried goji	5	Processing factor was calculated from content of water in fresh and dried gojiberries
Acetamiprid, boscalid, fluopyram, penconazole, pyrimethanil, thiabendazol boscalid, fenhexamid, fluopyram, imidacloprid penconazole, profenofos quinoxyfen, trifloxystrobin	Grapes	Raisins	4.5	Processing factor was calculated from content of water in fresh grapes and raisins
Acetamiprid, captan, carbendazim, cypermethrin, dodine, tebuconazole, trifloxystrobin	Apricots	Dried apricots	5	Processing factor was calculated from content of water in fresh and dried apricots
Oxyfluorfen, phosmet prosulfocarb, chlorpyrifos	Olives	Olive oil	5	Processing factor was applied according to Commission Implementing Regulation (EU) No. 2017/660
Acetamiprid, azoxystrobin, buprofezin, chlorantraniliprol, chlorpyrifos, clothianidin, difenoconazol, flonicamid (suma flonicamidu, TFNG a TFNA vyjádřená jako flonicamid), imidaloprid,	Pepper		10	Processing factor was taken over from website of „European Spice Association“

Pesticide[a]	Unprocessed product (RAC)	Processed product	Processing factor[b]	Comments
lufenuron, novaluron, propamocarb, pyraclostrobin, tebuconazol, tebufenozid, thiamethoxam, trifloxystrobin				
Difenoconazole, imidacloprid, tebuconazole,tricyclazole	Rice	Polishing rice	0.5	Processing factor was applied according to Commission Implementing Regulation (EU) No. 2017/660
Pirimifos-methyl	Rice	Parboiled rice	0.5	Processing factor was derived from a publication Review on pesticide residue on rice (IOP Conference Series: Earth and Environmental Science))
Acetamiprid, benomyl (sum of benomyl and carbendazim expressed as carbendazim), fluopyram, propargite, benzalkonium chloride with alkyl chain lengths of C12, dodine, pyraclostrobin, boscalid, carbendazim and cypermethrin (cypermethrin including other mixtures of constituent isomers), difenoconazole, fludioxonil, chlorpyrifos, methoxyfenozide, permethrin (sum of isomers), pyrimethanil, tebuconazole, trifloxystrobin	Rosehip	Dried Rosehip	4,1	Processing factor was calculated from content of water in fresh and dried rosehip
Cypermethrin (cypermethrin including other mixtures of constituent isomers (sum of isomers)), pirimiphos-methyl	aronia (chokeberry)	Dried aronia (chokeberry)	5	Processing factor was calculated from content of water in fresh and dried aronia
Azoxystrobin, boscalid; carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim), dimethomorph (sum of isomers), fluxapyroxad, folpet (sum of folpet and phtalimide, expressed as folpet), metalaxyl including other mixtures of	Wine grapes	Wine	1	Default

Pesticide[a]	Unprocessed product (RAC)	Processed product	Processing factor[b]	Comments
constituent isomers including metalaxyl-M (sum of isomers), pyrimethanil, tebuconazole thiophanate-methyl				

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

9 Denmark

9.1 Objective and design of the national control programme

9.1.1 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 include both sample strategies listed as objective or selective sampling as well as samples listed as suspect sampling.

9.1.2 Design

The National Food Institute, Technical University of Denmark, designed the monitoring programme in cooperation with the Danish Veterinary and Food Administration. Since 2006 the sampling plan has been based on dietary consumption pattern with regard to pesticide exposure, described in published reports[16,17,18], 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 (Top25 commodities). The monitoring plan has been designed in such a way that most samples are taken of commodities with 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 may 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 as well as 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 according to Regulation (EC) No 2019/1793. Another project was designed to cover suspect sampling and included sampling of direct import via Copenhagen Airport or other border entries. A third project was control of imported organic foods from Ukraine, Kazakhstan, China, Turkey and Russia. Sampling strategy for these projects is listed as suspect sampling.

[16] M.E. Poulsen, J.H. Andersen, A. Petersen, H. Hartkopp (2005). Pesticide Food Monitoring, 1998-2003 Part2.ISBN87-91569-54-0. http://www.fodevarestyrelsen.dk/Publikationer/Alle_publikationer/2005/002.htm

[17] Petersen A., Hamborg Jensen B., Andersen J.H, Poulsen M.E., Christensen T., Nielsen E. (2013). 'Pesticides Residues, results from the period 2004-2011', ISBN 978-87-92763-78-5. www.food.dtu.dk

[18] Jensen, B.H., Petersen, A., Pernille, B.P., Poulsen, M.E,. Nielsen, E.E., Christensen, T., Fagt, S., Trolle, E., Andersen, J.H . Pesticide Residues in Food on the Danish Market. Results from the period 2012 - 2017 . 2019, ISBN 978-87-7120-067-6. www.food.dtu.dk

Sampling was performed by authorised personnel from the four Food Control Offices of the Danish Veterinary and Food Administration. Directive 2002/63/EC on sampling procedures for control of pesticide residues is implemented in the Danish legislation. All samples for control of the MRL, except the directly imported samples, were sampled 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 Directive 96/23.

In total 344 pesticides (counted as residue definitions) were included in the analytical methods. Most samples of fruit and vegetables were analysed for about 344 pesticides (counted as residue definitions). In addition, part of the samples (95 samples) were analysed for dithiocarbamates, bromide ion (5 samples), chlormequat and mepiquat (141 samples), fipronil (29 samples), chlorthalonil (120 samples) and glyphosate (29 samples). Due to the methodology applied, it was not possible to distinguish between the specific dithiocarbamates included in the residue definition for enforcement.

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

9.2.1 Key findings

In 2021 1528 surveillance samples of fruit, vegetables, cereals, processed products, baby food and animal products were analysed. Furthermore, 99 samples were taken from direct import from third countries at the Copenhagen Airport, 11 samples were taken according to Regulation 2019/1793 and 62 samples were taken to control import of products imported from Ukraine, Kazakhstan, China, Turkey and Russia. 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 1528 samples, 530 samples were produced in Denmark and 998 samples were produced in other EU countries and outside EU. The samples included 1141 samples of fruit, vegetables and cereals, 270 samples of animal origin, 113 samples of processed vegetable foods and 4 samples of baby foods.

113 (11%) of the fruit and vegetable samples and 39 (27%) of the cereal samples were organically produced.

Pesticide residues were found in 84% of the conventionally grown fruit, 42% of the conventionally grown vegetables and in 32% of the conventionally grown cereal samples. Residues exceeding the MRL were found in 4% of the conventionally grown fruit and vegetables samples (35 samples). Of these, 19 samples (2.1%) had non-compliant (measurement uncertainty taken into consideration) residues. Four cereal samples (3.9%) had residues exceeding the MRL. One sample was non-compliant. In conventional grown processed samples, no residues exceeded the MRL. No residues were found in samples of baby food.

For fruits, pesticide residues were found in 95% and 82% of the samples produced in EU and outside EU, respectively, whereas pesticide residues were found in 60% of the samples from Denmark. For vegetables, residues were found in 52% and 49% of the samples produced in EU and outside EU, respectively, while residues were found in 24% of the samples from Denmark.

The frequency of conventionally grown samples exceeding the MRLs was 0.6 % and 8.7% for fruit produced in EU and outside the EU, respectively. For vegetables, the frequency of samples

exceeding the MRL was 1.3% and 10.1% for vegetables originating from EU and outside the EU, respectively. The frequency of residues exceeding the MRL in Danish grown fruit was 5.7% while the frequency of Danish grown vegetables exceeding the MRLs was 2.4%.

A total of 110 samples (conventionally grown crops; fruit, vegetables and cereals) were taken using sampling strategy "Suspect". Residues exceeding the MRL were found in 28 samples (25.5%). Of these 21 samples (19%) had non-compliant residues.

9.2.2 Interpretation of the results

- Generally, the results from the monitoring programme in 2021 are comparable with the results from previous years.
- For conventionally grown fruit, pesticides residues were found in 84% of the samples.
- For conventionally grown vegetables pesticides residues were found in 42% of the samples.
- For conventionally grown fruit and vegetables exceedances of the MRL were found in 5% and 3.1% of the samples, respectively.
- Generally, more exceedances of the MRL are seen in fruit and vegetables produced in third countries compared to fruit and vegetables produced in EU countries.
- In cereals, pesticide residues were found in 32% of the conventionally grown samples. Exceedance of the MRL were found in 3.9% of the samples.
- In processed commodities, no exceedances of the MRL were found.
- No residues were found in baby food.
- In animal commodities, residues of were found in two samples of honey (0.9% of samples of animal – from Denmark). The content was below the MRL.
- In organically grown surveillance samples, pesticide residues were found in 5.7 % of the samples. Four samples were found to be produced in accordance with the rules for organic production, and four samples were found not to be produced in accordance with the rules for organic production, while two samples are still pending the results of their investigation.
- More than one residue was found in more samples. These samples were more often found in other EU countries than Denmark and in samples outside the EU.
- All exceedances of the MRL, except 34 samples, were found not to result in any health concern. Furthermore,
- All other samples with multiple residues were found not to result in any health risk

9.2.3 Comparability with the previous year results

In 2021 1699 samples were analysed for pesticide residues compared to a total of 1751 samples analysed in 2020. The number of samples is lower compared to previous years due to Covid-19.

In 2021, residues were found to exceed the MRL in 3.9% of the conventionally grown samples of non-animal origin (39 samples) taken by objective or selective sample strategy, compared to 1.5 % in 2020 Of these, 1.9% (21 samples) was found to be non-compliant with the MRL compared to 1.0 % in 2020.

For conventional grown samples taken as suspect sampling strategy in 2021 residues were found to exceed the MRL in 25.5% of the samples compared to 16% in 2020. Of these, 19% were found non-compliant with the MRL compared to 11% in 2020.

9.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

9.3.1 Possible reasons for non-compliant samples

In 2021, residues were found to exceed the MRL in 3.9 % of the conventionally grown samples of non-animal origin (39 samples) taken by objective or selective sample strategy. Of these, 2.1 % (21 samples) was found to be non-compliant with the MRL.

For samples taken by suspect sampling strategy, residues in 25.5% (28 samples) were found to exceed the MRL. Of these, 19% were found non-compliant with the MRL.

Follow-up actions were taken for samples that were found non-compliant with the MRL or non-compliant with the conditions for organic farming, see Table 30.

In general, there is no verified knowledge of the reasons for non-compliant results. For residues in organic produced products, the reasons for evaluation have been stated below.

9.3.2 ARfD exceedances

No samples exceeded the ARfD. However, it was concluded for 34 samples, that either there was a health concern, or a health concern could not be excluded. 18 of these samples were taken as objective sampling and 16 samples were taken as suspect sampling: orange from Egypt (dimethoat and chlorpyrifos), orange from Egypt (chlorpyrifos), two samples of orange from Marocco (chlorpyrifos), orange from Marocco (imazalil), orange from den South African Republic (imazalil), mung bean from India (chlorpyrifos), lemon fra Argentina (imazalil) grapefruit from Turkey (chlorpyrifos), grapefruit from Turkey (chlorpyrifos-methyl), grapefruit from Turkey (chlorpyrifos), carrot from the Netherlands (quintozene and deldrin) Pepper from Turkey (buprofezin and chlorpyrifos-methyl), Pear from China (chlorpyrifos), rice straw mushroom from Vietnam (chlorpyrifos), wheat kernel from India (chlorpyrifos), Rice from the Netherlands (tricyclazol), rice from India (tricyclazol).

The 16 samples taken as suspect sampling were: Beans with pod from India (Carbendazim and benomyl), chili from Cambodia (dimethoat and omethoat), two samples of spring onion from Thailand (carbendazim and benomyl), dried ginger from India (chlorpyrifos, carbendazim and benomyl), curry from India (chlorpyrifos), Nigella seeds from India (chlorpyrifos, HCH-alfa, HCH-beta and lindane), papaya from Thailand (carbendazim and benomyl), sapodilla from Thailand (chlorpyrifos), celery leaves from Thailand (chlorpyrifos), squash from Pakistan (omethoat), puff rice from India (tricyclazol and ethylenoxid), rice from Bangladesh (chlorpyrifos and tricyclazol), rice from India (tricyclazol), dried ajwan seeds from India (ethylenoxid), dried ajwan seeds from India (dimethoat).

Due to health risk concern all samples were withdrawn from the market and 32 of them were notified to RASFF. Table 30 gives an overview of actions taken in response to non-compliant products.

Table 30: Action Taken to non-compliant samples

Action taken	Number of non-compliant samples concerned
Follow up action	0
Rapid Alert Notification	32
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	3
Warnings to responsible food business operator	8
Other actions	29
No action	13

9.4 Quality assurance

Table 31: Laboratories participation in the control program

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-CF15, EUPT-FV23, EUPT-AO16, EUPT-SRM16, FAPAS 19305, FAPAS 19311, FAPAS 19312, FAPAS 19318, FAPAS 19320, FAPAS 19326, FAPAS 09138, FAPAS 09141, FAPAS 09142, FAPAS 05150, FAPAS 05155, Progetto Trieste SF1701

9.5 Processing Factors (PF)

Table 32 list 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 MRL was set on the fresh commodity.

Table 32: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor
Acetamiprid	Grape	Raisin	5.6
Ametoctradin	Grape	Raisin	5.6
Azoxystrobin	Grape	Raisin	5.6
Boscalid	Grape for wine production	Wine	1.3

Boscalid	Grape	Raisin	5.6
Carbendazim	Grape	Raisin	5.6
Carbendazim	Grape for wine production	Wine	1.3
Cypronidil	Grape	Raisin	5.6
Dimethomorph	Grape for wine production	wine	1.3
Dimethomorph	Grape	Raisin	5.6
Famoxadon	Grape	Raisin	5.6
Fenhexamid	Grape for wine production	wine	1.3
Fenhexamid	Grape	Raisin	5.6
Fenpyroximat	Grape	Raisin	5.6
Fenvalerat	Grape	Raisin	5.6
Fludioxonile	Grape	Raisin	5.6
Fluopicolide	Grape for wine production	wine	1.3
Fluopyram	Grape for wine production	wine	1.3
Fluopyram	Grape	Raisin	5.6
Fluxapyroxad	Grape for wine production	Wine	1.3
Fluxapyroxad	Grape	Raisin	5.6
Indoxacarb	Grape	Raisin	5.6
Metalaxyl	Grape for wine production	wine	1.3
Tebuconazol	Grape	Raisin	5.6
Tebufenpyrad	Grape	Raisin	5.6
Tetraconazol	Grape	Raisin	5.6
Thiabendazol	Grape	Raisin	5.6

9.6 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 Danish Veterinary and Food Administration. Most samples were analysed at the laboratory of the Danish Veterinary and Food Administration. Both laboratories are accredited to 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.

"Guidelines concerning Quality Control Procedures for Pesticide Residue Analysis" has 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 in case of enforcement actions.

Each year, the National Food Institute, Technical University of Denmark, and the Danish Veterinary and Food Administration prepare a report on pesticide residues in foods on the Danish market. Since the 1st of 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 samples of fresh and frozen fruit and vegetables as well as cereals – both conventionally and organically grown. The National Food Institute, Technical University of Denmark, prepares and publishes the quarterly reports on the web site of the institute.

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 for the consumers except for 34 samples (section 8.3.2). In addition, all samples, where more than one pesticide residue were found, were evaluated using the Hazard Index method, using the sum of each residue in relation to the ADI and ARfD, respectively, taking into account the estimated consumption of the sample commodity for an adult and a child. For all samples taken in 2021 with multiple residues besides the samples, which constituted a health risk or where a health risk could not be excluded, it was evaluated that the residues were not expected to result in any risk for the consumer.

In 2021, samples were taken according to Regulation (EU) 2019/533 of 28 March 2018. The requirements for analysed number of samples were fulfilled for all commodities in the 2021 EUCP.

Table 33: The Danish summary table for the EUCP commodities

EUCP Commodity	Number
Table grapes	41
Banana	24
Grapefruit	16
Aubergine	35
Broccoli	34
Melons	7
Cultivated fungi	8
Sweet pepper	42
Wheat grain	27
Olive oil	15
Bovine fat	48
Chicken egg	27
Total number of samples	324

Furthermore, a total of 185 samples were analysed for copper and mercury. The samples included 153 samples of animal products, 21 samples of soja, 6 samples of lentils and 5 samples of fruit juice.

10 Estonia

10.1 Objective and design of the national control programme

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 Union (a legal requirement from Commission Implementing Regulation No 2020/585 that gives the list of commodities and pesticide residues to be analysed and the number of samples to take for year 2021). Another part of the pesticide residue monitoring programme is the national control programme. National control programme contains commodities important for local consumption, commodities where the MRL-s were exceeded in previous years and commodities reported in EFSA report as problematic products.

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

In 2021 249 samples were analysed for pesticides residues (from 34 different food commodities).

71 samples (34%) were Estonian origin, 90 samples (42%) were European Union origin and 52 samples (24%) were originated from Third Countries.

Table 34: Summary of samples taken in 2021

Samples	Total	Without Residues	%	With Residues below MRL	%	Exceeding MRL	%
Vegetables	**66**	20	30	43	65	3	5
Fruits, nuts and other plant products	**88**	8	9	68	77	12	14
Cereals	**8**	2	25	6	75	0	0
Baby food	**5**	5	100	0	0	0	0
Animal products	**21**	21	100	0	0	0	0
Fish	**13**	4	31	9	69	0	0
Processed products	**13**	13	100	0	0	0	0
Total	**214**	**73**	**34**	**126**	**59**	**15**	**7**

The matrixes, where the exceedance was detected are banana (1), broccoli (1), cucumber (1), sweet pepper (1), lemon (1), cultivated fungi (4) and grapefruits (6).

Table 35: Summary of organic samples taken in 2021

Samples	Total	Without Residues	%	With Residues below MRL	%	Exceeding MRL	%
Vegetables	**3**	3	100	0	0	0	0
Fruits, nuts and other plant products	**9**	9	100	0	0	0	0
Cereals	**8**	7	88	0	0	1	12
Baby food	**5**	5	100	0	0	0	0
Animal products	**7**	7	100	0	0	0	0
Processed products	**3**	3	100	0	0	0	0
Total	**35**	**34**	**97**	**0**	**0**	**1**	**3**

The matrixes, where the exceedance was detected are 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 identified in 2020 and 2021 is significantly higher.

Table 36: Estonian non-compliant samples 2018-2021

Year	non-compliant samples	% of all samples
2018	4	2
2019	2	0.8
2020	10	4.1
2021	**16**	**6,4**

The overall percentage of samples with no residues have stayed in the range of 40% to 60% over the years.

Table 37: Summary results

Sampling year	Total number of taken samples	The percentage of samples with no residues	Residues detected > LOQ and ≤ MRL level	Residues > MRL level
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%

10.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

Table 38: Actions taken

Actions taken	Frequency	No of samples
Rapid Alert Notification	10	1 sample (lot) of bananas, 1 sample (lot) of broccoli, 1 sample (lot) of sweet pepper 1 sample (lot) of lemon 6 samples (lot) of grapefruit
Lot withdrawn from the market	6	1 sample (lot) of cucumber, 4 samples (lot) of cultivated fungi 1 sample (lot) of buckwheat (organic)

Table 39: Possible reasons for MRL non-compliance

Possible reason	Pesticide/commodity combination	Frequency
Use of a pesticide on food imported from third countries for which no import tolerance was set[(b)]	Chlorpyrifos –Methyl/ grapefruit	3
	Chlorpyrifos –Methyl/ lemon	1
	Buprofezin/grapefruit	1
	Prochloraz (sum of prochloraz and its metabolites containing the	1

Possible reason	Pesticide/commodity combination	Frequency
	2,4,6 - Trichlorophenol moiety expressed as prochloraz)/ grapefruit Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)/ cucumber	
Contamination during handling, storage or transport of food item/crop	2-phenylphenol (sum of 2-phenylphenol and its conjugates, expressed as 2-phenylphenol)/ cultivated fungi Fluxapyroxad/ buckwheat Fludioxonil/ buckwheat	4 1
Reason unknown	Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)/ broccoli Ethephon/ Sweet pepper	1 1

10.4 Quality assurance

According to Regulation No 882/2004 (since 14.12.2019 according to Regulation No 2017/625) the competent authority shall designate laboratories that may carry out the analysis of samples taken during official controls. And designated laboratories are assessed and accredited in accordance with the EN ISO/IEC 17025 on "General requirements for the competence of testing and calibration laboratories". The laboratories are accredited by the Estonian Accreditation Centre (EAK) and designated by Agriculture and Food Board 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" was implemented.

There are two accredited and designated laboratories analyse pesticide residues: Tartu Laboratory of Estonian Health Board (HB) and 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 was participating in the pesticide residues control program. They analyse the pesticide residues in the food samples that was taken by Agriculture and Food Board.

Table 40: Laboratories participation in the national control program

Country	Laboratory		Accreditation		Participation in proficiency tests or interlaboratory tests
	Name	Code	Date	Body	
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

11 Finland

11.1 Objective and design of the national control programme

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

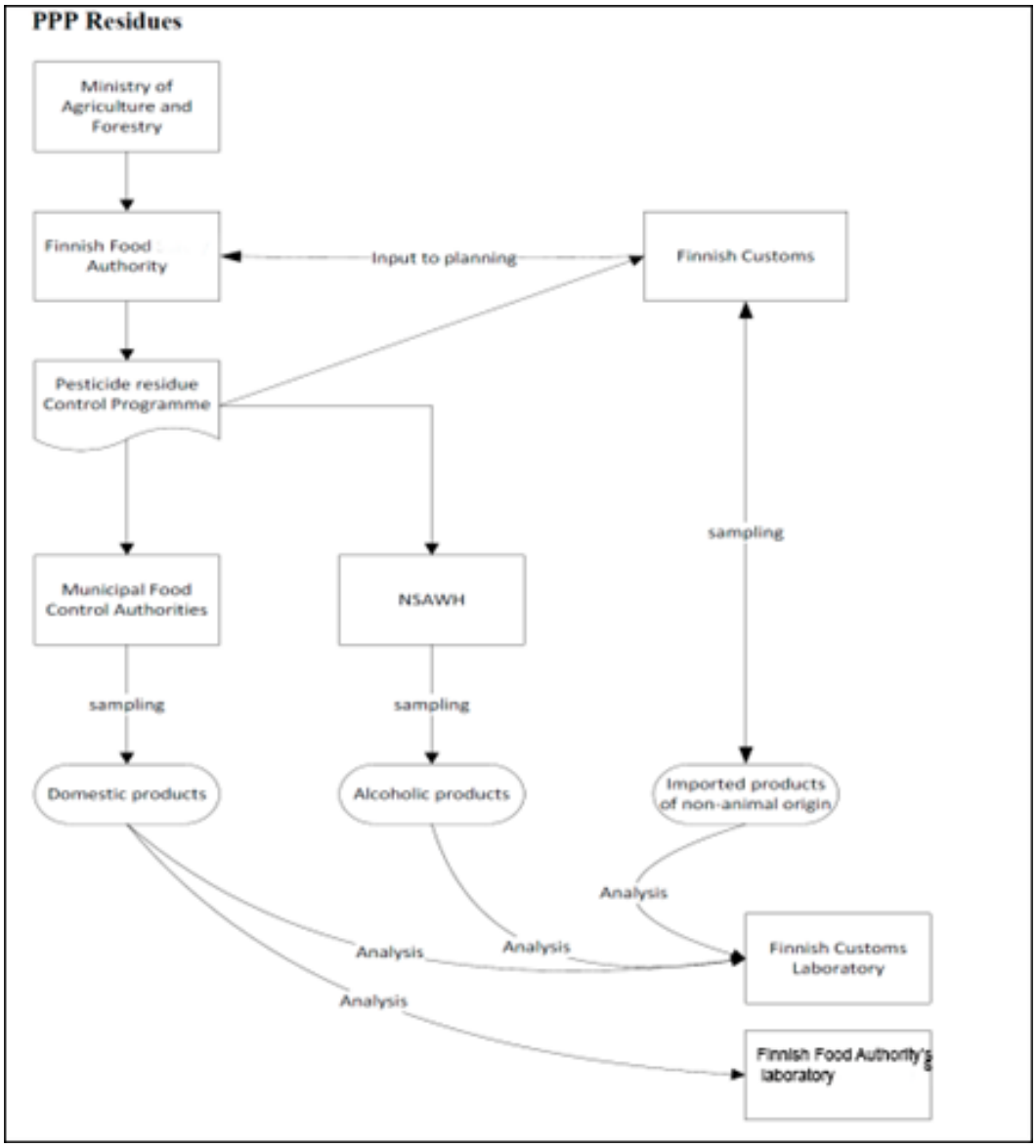


Figure 3: Control system of pesticide residues in Finland

11.1.1 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.

11.1.2 Design

The control program is comprised of 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 of samples with a history of non-compliances and commodities listed in Regulation (EC) No. 2019/1793 for pesticide residues).

The control program consists of two parts: the EU coordinated multiannual control program (EUCP, Commission Regulation (EU) No. 2020/585) and separate, national control programs of the above-mentioned authorities based mainly on the dietary intake patterns of Finnish consumers as well as on the relevance of the national agricultural production.

Defining out food products to be analysed in the control programme:

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

- EU Commissions Regulation concerning a coordinated multiannual control programme of the Union ((EU) No 2020/585);
- relevance of a food product in national dietary patterns and in the national agricultural production;
- food products with a high non-compliance rate identified in the previous years;
- high RASFF notification rate;
- organic or conventional products;
- origin of the food product (e.g. domestic, EU, third countries);
- co-operation possibilities in sampling with different contaminant projects and organic control programme;
- needs of the national risk assessment projects.
- Defining the pesticides to be included in the control programme

For defining 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.
- use pattern of pesticides: commonly used pesticides as well as pesticides that are known to leave residues in foods,
- pesticides that are authorized for use in Finland (when relevant),
- 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 the developing countries),
- cost of analysis: multiple residue methods are preferred, as the cost of analysis in case of single residue methods is higher; if several single residue analyses are performed the total number of samples to be analysed is decreased,
- capacity of the labs: single residue methods are run as required by the EU coordinated program and a limited number of other samples; instrument and personnel capacity in the laboratories is limiting the number of single residue analyses.

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

11.2.1 Key findings

The sampling for pesticide residue control program was carried out in accordance with the plan of 2021. The summary of samples and their results are presented in (Table 41 - Table 47). In general, the results presented in this report include data from Finnish Food Authority and the Finnish Customs submitted successfully to EFSA Data Warehouse (DWH).

Table 41: Summary of samples taken in 2021 by product class

Samples	Total	Without Residues	%	With Residues below MRL	%	Exceeding MRL	%	Non-Compliant	%
Cereals	129	85	65.9	31	24.0	13	10.1	13	10.1
Baby food	40	40	100	0	0	0	0	0	0
Vegetables	545	280	51.4	259	47.5	6	1.1	1	0.2
Fruits, nuts and other plant products	694	258	37.2	400	57.6	36	5.2	17	2.4
Animal products[(a)]	23	23	100	0	0	0	0	0	0
Processed products [(b)]	258	126	48.8	107	41.5	25	9.7	19	7.4
Total*	**1,689**	**812**	**48,1**	**797**	**47,2**	**80**	**4,7**	**50**	**3,0**

(a): Bovine fat and chicken eggs as regulated in (EU) 2020/585

(b): Including herbs, spices and similar and alcoholic beverages

*Percentages calculated from sum of classified samples, total 1,689

Additionally, 172 other samples of animal origin were analyzed for pesticide residues as part of the National Residue Control Program (NRCP) based on Council Directive 96/23 and regulation (EU) 625/2017. No pesticide residues exceeding MRLs were found.

Table 42: Summary of the number of samples taken, MRL exceedances and non-compliances in 2021 by region of origin

Origin	Samples	%	Exceeding MRL	%	Non-compliant	%
Domestic	125	7,4	1	1,25	0	0
EU	726	43,0	9	11,25	4	8
Third countries	784	46,4	65	81,25	43	86
Unknown	54	3,2	5	6,25	3	6
Total	**1,689**	**100**	**80**	**100**	**50**	**100**

Table 43: Summary of organic samples taken in 2021 by product class and results

Samples	Total	Without residues	%	With Residues below MRL	%	Exceeding MRL	%	Non-compliant	%
Fruits and nuts, and other plant products	81	76	93,8	4	4,9	1	1,2	1	1,2
Vegetables	58	54	93.1	4	6.9	0	0	0	0
Cereals	11	8	72.7	0	0	3	27.3	3	27.3
Baby food	35	35	0	0	0	0	0	0	0
Animal products	0	0	100	0	0	0	0	0	0
Other plant products	64	60	93.8	2	3.1	2	3.1	2	3.1
Total	**249**	**233**	**93.6**	**10**	**4.0**	**6**	**2.4**	**6**	**2.4**

11.2.2 Interpretation of the results

The total number of samples analysed under the EU coordinated and national programmes was 1,689 which is a couple samples more than previous year (1,648). The distribution of all the samples by origin was domestic 7 %, EU 43 % and third countries 46 %. Actually, the percentage of the samples that originate in third countries was greater, as some sampled products have arrived through other Member States and are therefore classified as samples of EU origin, and many products of unknown origin originate in third countries.

52 % of all samples had residues of one or more pesticide active ingredients. Exceedances of MRLs were found in 80 samples, of which 50 were non-compliant (measurement uncertainty taken into consideration; number including surveillance and enforcement samples). The total percentage of non-compliances (3,0 %) is about the same as previous year (2,9 %).

The non-compliant lots originated from 19 different countries. Highest number of non-compliances were in products from China (7 samples) and Egypt and India (5 samples), followed by Pakistan (4 samples). The number of non-compliant samples was highest in the food group of fruits, nuts plant products (26 samples), cereals (15 samples) followed by processed products (12 samples) and fruits, nuts and other The product with highest number of MRL-exceedances was rice (11 samples) followed by oranges (5 samples) and tea (5 samples).

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

Total of 249 samples from organic production were analysed. 16 of them had residues above reporting level. In 6 samples residue levels exceeded MRLs set for conventional farming.

11.2.3 Comparability with the previous year results

Table 44: Summary of the results of pesticide residue control programme results in Finland during 2011-2020

Year	Samples	Without residues (%)	With residues (%)	Number of samples exceeding MRL	Number of non-compliant samples
2021	1689	48	52	80	50
2020	1648	55	45	65	47
2019	1753	59	41	63	27
2018	1217	47	53	70	38

2017	1664	64	36	84	51
2016	1969	57	43	65	37
2015	2088	55	45	55	35
2014	2383	54	46	126	49
2013	2408	49	51	117	63
2012	2243	48	52	66	31
2011	2104	47	53	54	22

11.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

11.3.1 Possible reasons for non-compliant samples

No domestic samples were found non-compliant.

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

11.3.2 ARfD exceedances

The acute reference dose (ARfD) calculated according to the pesticide residue intake model (PRIMo 3.1) of the European Food Safety Authority EFSA was exceeded in 2 of the samples. There was also 15 samples with residues from subances to which there was no toxicological data available. All these lots were recalled from the market and withdrawn from consumers.

11.3.3 Actions taken

In 2021, 3.0 % of the samples (50 samples in total) were found to be non-compliant with the EU MRLs. For 27 samples RASFF notifications and for 12 organic samples OFIS notifications were issued.

For all non-compliant samples detected, effective and appropriate actions were taken in order to protect the European consumers (Table 45).

Table 45: Actions taken for samples non-compliant with the EU MRLs

Action taken	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	27	Number of RASFFs notified by Finland for pesticide residues
OFIS notifications	7	
Lot recalled from the market	94	72 lots of foodstuffs with ethylene oxide residues included
Lot withdrawn from the market	10	
Rejection of a non-compliant lot at the border	42	
Warnings to responsible food business operator	50	
Marketing as organic prohibited	7	

11.4 Quality assurance

All the laboratories conducting the official analyses of pesticide residues were accredited according to ISO-17025, have routine quality assurance activities and participate regularly in proficiency tests regarding their expert opinion (Table 46).

Table 46: Laboratories participating in the national control program

Country	Laboratory		Accreditation		Participation in proficiency tests or interlaboratory tests
	Name	Code	Date	Body	
FI	Finnish Customs Laboratory	FI01	10 June 2021	FINAS-Espoo, Finland	EUPT-FV23, EUPT-CF15, EUPT-FV-SM13, EUPT-FV-SC05, EUPT-SRM16, Bipea 13-1719, Bipea 24-0619, Bipea 06-5419, Bipea 05-5319
FI	Finnish Food Authority	FI03	28 October 2021	FINAS-Espoo, Finland	EUPT-SRM16, EUPT-AO16, EUPT-CF15, EUPT-FV23, FAPAS 05153, FAPAS 19316, FAPAS 19320, FAPAS 09140

11.5 Processing factors

The processing factors used by national competent authorities to verify the compliance of processed products with EU MRLs are presented in Table 47.

Processing factors for processed products were mainly acquired from the database of EFSA and Bundesinstitut fur Risikobewertung (BfR). In the cases were processing factors were not available in the database, the crude estimate based on Table 47 was used.

Table 47: 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
All pesticides	Fresh vegetables	Dried vegetables	10	estimation, in case of
All pesticides	Fresh fruits	Dried fruits	5	non-compliance, more detailed information is requested from the stake holder
All pesticides	Rice	Polished rice	0.5	

a) Processing factor for the enforcement residue draft.

11.6 Additional information

In this national summary report the data from Finnish Food Authority and Finnish Customs Laboratory successfully submitted to EFSA Data Warehouse (DWH) (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.

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.

12 France

12.1 Objective and design of the national control programme

12.1.1 Objective

12.1.1.1 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 fruits, 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 from any fraud or unfair commercial practice.

12.1.1.2 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 pesticides residues monitoring on food of non-animal origin, before customs clearance.
The DGDDI is managing the border control post (BCP) of Dunkerque since January 1, 2020, the BCP of Calais since January 1, 2021, and the BCPs of Le Havre and Marseille since November 1, 2021.

12.1.1.3 DGAL

The General Directorate for Food (DGAL), within the Ministry of Agriculture and Food, is the competent authority for the enforcement of pesticide residues monitoring in primary plant products (samples collected from crops harvested by farmers, relating, therefore, only to domestic production). The aim of this program is to identify non-compliance 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.

Regarding 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 actions plan that have been put in place in response to the strong concerns expressed by the population concerning the effects of pollution by the chlordecone which constitutes, by its scale and its persistence over time, a health, environmental, economic and social issues in Martinique and Guadeloupe. The aim of this program is, on the one hand, to assess the prevalence of chlordecone in these food and feed and, on the other hand, to detect non-conformities, bad practices and fraud and thus to limit consumer exposure.

12.1.2 Design

12.1.2.1 DGCCRF

The national pesticide monitoring is conducted according to a nation-wide sampling. The monitoring programme is based on data concerning dietary consumption, national agricultural production and import of fruits, 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 samplings (notably implementing the European coordinated programme), "control" for targeted samplings (based on strong suspicion of non-compliance or on specific concerns, such as the presence of chlordecone in vegetable-roots) and "samplings on imports within the framework of regulation No (EC) 2019/1793".

The national plan takes into account:

- The level of risk exposure (calculated according to the frequency of detections of active substances, balanced with matrices 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 modifications and changes in the scope of phytopharmaceutical products approved in the European Union or authorised in France (authorisations and withdrawals).

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

Samples are taken from all stages of the supply chain, but they are taken more often by the responsible of placing the products on the market (wholesaler, importer).

The samplings cover 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 experimented inspectors from local services (departments) of the DGCCRF, in compliance with the Commission Directive 2002/63/EC.

Analyses are performed by four official laboratories from the SCL network. Two of these laboratories are located overseas and deals mainly with local productions. 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-residues 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, glyphosate, ethephon, chlormequat, mepiquat, chlordecone, maleic hydrazide) following the recommendations of the European reference laboratories.

12.1.2.2 DGDDI

The monitoring of pesticide levels is carried out according to European regulations:

- Regulation No (EU) 2019/1793 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 on organic production and labelling of organic products, and its delegated and execution 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;
- Regulation (EU) 2018/273 as regards the scheme of authorisations for vine plantings, the vineyard register, accompanying documents and certification, the inward and outward register, compulsory declarations, notifications and publication of notified information.

The samples are taken by local services of the DGDDI (BCPs), in compliance with the 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 SCL network. The multi-residues method used the 'Quechers' method. Single residue methods are used for specific substances (dithiocarbamates, glyphosate, ethephon, chlormequat, mepiquat, maleic hydrazide...) following the recommendations of the European reference laboratories.

12.1.2.3 DGAL

The samples are taken by the regional departments of the DGAL (DRAAF), in compliance with Directive 2002/63 EC requirements, 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 regarding plant products of EU provenance;
- MRL modifications affecting phytopharmaceutical products authorised in France;
- Changes in the use of phytopharmaceutical products authorised in France (authorisations and withdrawals);
- The importance of cultures in national plant products and their geographical distribution nation-wide.

This "control" programme is also established in order to sample, in a multi-annual programme of 3 years, the first 70 cultures which production is the most important in France.

The 2021 "surveillance" programme was aimed at leafy vegetables, aromatic herbs, cucurbits fruiting vegetables, root and tuber vegetables, stems/stalks eaten as vegetables.

In addition to these samples taken as part of the control and surveillance plans, further samples may be taken from any matrix if non-compliance of a product is suspected.

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

Table 48: Distribution of samples by culture (detail by plant product) – 2021 national "control" programme

Plant product		Number of samples
Aromatic herbs		**28**
	Basil	4
	Chives	4
	Celery leaves	1
	Chervil	2
	Coriander leaves	1
	Lemon balm	1
	Parsley	9
	Rosemary	1
	Spearmint	3
	Tarragon	1
	Thyme	1
Bulb vegetables		**57**
	Onions	45
	Spring onions	12
Cereals		**88**
	Barley	42
	Oat	43
	Rice	2
	Triticale	1
Cucurbits fruiting vegetables		**1**
	Gourds	1
Leafy vegetables		**149**
	Baby leaf crops	3
	Cauliflowers	35
	Chicory roots	20
	Kales	20
	Lamb's lettuces/corn salads	19
	Lettuces	51
	Roman rocket / rucola	1
Legume vegetables		**58**
	Beans	1
	Broad beans	26
	Lentils	31
Miscellaneous fruits		**54**
	Avocados	8
	Dessert banana	15
	Figs	14
	Litchis	8
	Mangoes	9
Oilseeds		**83**

Plant product		Number of samples
	Soyabeans	39
	Sunflower seeds	44
Pome fruits	**71**	
	Apples	48
	Pears	23
Root and tuber vegetables	**154**	
	Beetroots	1
	Carrots	47
	Celeriacs	16
	Turnips	26
	Potatoes	49
	Sweet potatoes	15
Solanacea	**2**	
	Sweet peppers/bell peppers	1
	Tomatoes	1
Stems/stalks eaten as vegetables	**40**	
	Celeries	8
	Florence fennels	9
	Leeks	23
Stone fruits	**24**	
	Apricots	24
Tree nuts	**1**	
	Walnuts	1
Total	**810**	

Table 49: Distribution of samples by culture (detail by plant product) – 2021 national "surveillance" programme

Product group	Plant product	Number of samples
Aromatic herbs	**24**	
	Chervil	2
	Coriander leaves	6
	Lemon balm	4
	Sage	3
	Spearmint	2
	Thyme	7
Cucurbits fruiting vegetables		**61**
	Cucumbers	26
	Courgettes	34
	Gherkins	1
Leafy vegetables	**20**	
	Baby leaf crops	4
	Lamb's lettuces	1

	Lettuces	11
	Roman rocket / rucola	1
	Spinaches	3
Root and tuber vegetables	**33**	
	Black Radishes	3
	Jerusalem artichokes	5
	Parsnips	15
	Radishes	2
	Rutabagas	8
Stems/stalks eaten as vegetables		**8**
	Globe artichokes	2
	Leeks	6
Total	**146**	

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

The samples are taken by inspectors from the departmental services of the DGAL (DD(CS)PP), in compliance with Directive 96/23/CE, Commission Implementing Regulation (EU) 2020/585, Decision 97/747/CE and Directive 2002/63 EC requirements.

Sampled products are raw and unprocessed, organic and non-organic products. They 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 carried out partly on hens reared exclusively in buildings (on the ground or in cages) and partly on outdoor hens and / or organic.

In honey, the target analytes are: Bromopropylate, Chlorfenvinphos, Coumaphos, Fluvalinate, Amitraz, Acetamipride, Clothianidine, Thiacloprid, Imidacloprid and Thiamethoxam.

In the other products of animal origin, the target analytes are amongst aldicarbe, aldicarbe sulfone, aldicarbe sulfoxyde, Aldrine, Aldrine + Dieldrine, Azinphos éthyl, 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, Chlordécone, Chlorothalonil, Chlorpyriphos éthyl, Chlorpyriphos méthyl, Cyfluthrine, Cyhalothrine lambda, Cyperméthrine (sum of isomers), DDT (pp'DDT + op'DDT + pp'DDE + pp'TDE (DDD)), Deltaméthrine (cis-deltaméthrine), Diazinon, Dicofol (p, p'-dicofol + o,p'-dicofol), Dieldrine, Diflubenzuron, Disulfoton, Disulfoton + sulfoxide + sulfone, Disulfoton sulfone, Disulfoton sulfoxide, Endosulfan (alpha- + beta- + endosulfan-sulphate), Endosulfan alpha, Endosulfan beta, Endosulfan-sulphate, 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), Fenvalérate and Esfenvalérate RS and SR, Heptachlore, Heptachlore + Heptachlore époxyde, Heptachlore époxyde, Hexachlorobenzène, Hexachlorocyclohexane alpha, Hexachlorocyclohexane bêta, Hexachlorocyclohexane gamma (Lindane), Méthacrifos, Méthidathion, méthomyl, Methomyl and Thiodicarb (sum of methomyl et thiodicarb, expressed as methomyl) Méthomyl + Thiodicarbe, Methoxychlor, o,p'-dicofol,

op'DDT, p, p'-dicofol, Paraoxon-methyl, Parathion ethyl, Parathion-methyl, Parathion-methyl + Paraoxon-methyl, Pendimethalin, Perméthrine (sum of isomers), Perméthrine cis, Perméthrine trans, Phorate, Phorate +Phorate oxon + phorate sulfone, Phorate oxon, Phorate sulfone, Pirimiphos méthyl, pp'DDE, pp'DDT, pp'TDE (DDD), Profenofos, Propoxur, Pyrazophos, Teflubenzuron, Thiodicarbe and Triazophos.

According to the Commission Implementing Regulation (EU) 2020/585, new analytes were added to the list of analytes above:

- Glyphosate, fipronil pendiméthaline and glufosinate d'ammonium in bovine's kidney fat,
- fipronil, pendiméthaline and glufosinate d'ammonium in hens' eggs.

The samples for these analytes are analyzed by the National Reference Laboratory (Anses Maisons-Alfort). The samples (except honey) are analyzed by one of the ten laboratories of the laboratory network. This network consists in 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 to the inter-laboratory aptitude tests, organized by the European Reference laboratory.

Honey is analyzed by one specific National Reference Laboratory (Anses Sophia-Antipolis) for both diagnostic and confirmation (at the last inter-laboratory aptitude test performed in 2015, the lab obtained satisfactory results).

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 2021, as part of DGAL's control programme for food of animal origin, 1,239 samples (not counting samples analysed for chlordecone specifically) were taken and analysed out of 1,310 samples planned (Table 50).

Table 50: Distribution of samples by animal species or type of products

Animal species or type of products	Matrice	Number of samples planned in 2021	Number of samples taken in 2021
Bovine	Kidney fat	333 for organochlorine (OC), organophosphorus (OP) pesticides and pyrethroids (Pyr)	289 for organochlorine (OC), organophosphorus (OP) pesticides and pyrethroids (Pyr)
	Kidney fat	73 for fipronil, glyphosate, glufosainate d'ammonium and pendiméthaline	77 for fipronil, glyphosate, glufosainate d'ammonium and pendiméthaline
	Muscle	50 for carbamates	49 for carbamates
	Cow milk	55 for OC, OP & Pyr	53 for OC, OP & Pyr
Porcine	Kidney fat	280 for OC, OP & Pyr	273 for OC, OP & Pyr
	Muscle	50 for carbamates	49 for carbamates
Ovine and caprine	Kidney fat	80 for OC, OP & Pyr	72 for OC, OP & Pyr
	Muscle	10 for carbamates	13 for carbamates
	Goat milk	8 for OC, OP & Pyr	7 for OC, OP & Pyr
Equine	Kidney fat	7 for OC, OP & Pyr	7 for OC, OP & Pyr
	Muscle	3 for carbamates	3 for carbamates
Poultry	Muscle and skin	163 for OC, OP & Pyr	161 for OC, OP & Pyr
	Muscle and skin	20 for carbamates	20 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	3 for OC & Pyr
Aquaculture	Muscle	33 for OC, OP & Pyr	31 for OC, OP & Pyr
Hens eggs	Eggs	70 for OC, OP & Pyr et 70 for fipronil, pendiméthaline and glufosinate d'ammonium	66 for OC, OP & Pyr et 68 for fipronil, pendiméthaline and glufosinate d'ammonium
Quail eggs	Eggs	5 for OC, OP & Pyr	4 for OC, OP & Pyr
Honey	Honey	55 (pesticides listed above)	54 (pesticides listed above)

For each specific animal species or type of products, 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 animal and plant origin products

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

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

It is also sought after 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 in farm, according to the matrix considered.

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

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

In 2021, as part of, 2986 samples were taken and analysed (Table 51).

Table 51: Distribution of samples by animal species or type of products

2021	Guadeloupe	Martinique
Animal species or type of product	**Number of samples taken in 2021**	**Number of samples taken in 2021**
Bovine	396	922
Fish product	291	697
Ovine-Caprine	6	90
Swine	184	40
Poultry	30	133
Egg	61	136
TOTAL	968	2018

In 2021, as part of DGAL's control programme for primary plant products and soil, 584 samples were taken and analysed (Table 52).

Table 52: Distribution of samples by products

2021	Guadeloupe	Martinique
	Number of samples taken in 2021	**Number of samples taken in 2021**
Plants	117	297
Soils	-	170
TOTAL	117	467

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

12.2.1 Key findings

12.2.1.1 DGCCRF

In 2021, 6,034 samples of marketed food from plant origin have been analysed. This represents more than 9 samples per 100,000 inhabitants**.**

40% of the 6,034 samples were of French origin. Among the French products, 25.3% have been taken in overseas France. 49.9% of the samples originated from Third Countries and 10.3% were products from the European Union.

For import control (824 samples), the samples came from 9 different countries: China (199 samples), Dominican Republic (61), Egypt (6), India (40), Kenya (404), Thailand (1), Turkey (4), Uganda (29) and Viet Nam (80). On imports the main distributions were beans (405 samples), teas (89 samples), pitayas (63 samples) and sesame seeds (31).

The 6,034 samples were distributed as follows:

- 48.5% vegetables and vegetable products [32.7% of them in the control programme; vegetables represent 64.3% of the controls on imports],

- 19.2% fruits and fruit products [66.8% of them in the "surveillance" programme; fruits represent 8.1% of the controls on imports],
- 10.1% cereals and cereal products,
- 6.1% teas, coffee, herbal infusions, cocoa and carobs, [46% of the controls on imports],
- 5.9% oilseeds and oil fruits,
- 3.4% pulses,
- 3.4% spices,
- 1.3% wines,
- 1.2% other products,
- 0.3% suger plants,
- 0.2% honey,
- 0,2% babyfood,
- 0.1% hop.

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

Organic samples (1345 samplings) were taken in every programme, from all origins and all types of products (raw and processed).

The main results are detailed in Table 53. The highest percentages of samples containing residues above the quantification limit, or samples exceeding the legally permitted MRLs or non-compliant with the MRLs depended on the monitoring programme. The highest rates were obtained for control programmes, and more specifically more than two-thirds of the analysed samples from imports contained at least one residue above the limit of quantification (LOQ).

At least one residue could be quantified in 39.4% of all the samples, with an exceedance of MRLs for 5.3% of them. When measurement uncertainty was taken into account, the number of samples containing pesticide residues above the MRL was significantly reduced, which led to a non-compliance rate of 3.2%.

Table 53: Summary results

Control programme	Number of samplings	% > LOQ[(a)]	% > MRL (before uncertainty)	% of non-compliance to MRL
"Surveillance"	3153	41.6	2.3	1.4
Control	2057	24.6	6.6	5.2
Control on imports	824	68.2	13.1	4.7
Total	6034	39.4	5.3	3.2

[(a)]LOQ: limit of quantification

12.2.1.2 DGDDI

In 2021, 196 samples of food of non-animal origin imported from third countries to the European Union have been analysed.

They are divided between 147 samples of transformed products and 49 of raw products. The breakdown by product type is as follows:

Table 54: Distribution of samples by products

Category of product	Number of samples
Raw products	
Fruits	5
Vegetables	5
Oilseeds	30
Spices	2
SUB-TOTAL	**42**
Transformed products	
Fruit based (juices, compotes, ciders, dried fruits…)	8
Dried vegetables based (flour, gura gum…	88
Cereals based (flour, dough, bread, beer…	9
Sugar crops based (sugar, syrups, rum)	1
Teas, coffees, infusions, cocoas	38
Wine	7
Various (food supplements, preparations, other drinks...)	3
SUB-TOTAL	**154**

90% of the samples contained no detectable traces of pesticide residues. Including 100% of samples of fruits, spices, wines, products processed from legumes, cereals or sugar plants.

Of the 10% of positive samples, teas, coffees, infusions and cocoa are the most represented (29% of positive samples), followed by oilseeds (20% of positive samples). For each of the following categories: vegetables, products processed from fruit and miscellaneous products (supplements, preparations, other drinks, etc.), only 1 sample was found to be positive.

The main results are detailed in Table 55 below.

Table 55: Summary results of samples analysis

		Positive samples		
	Negative samples	**Compliant**	**Non-compliant and to be monitored (organic)**	**Non-compliant to MRL and to be monitored**
Raw products	**35**	**4**	**1**	**2**
Fruits	5	0	0	0
Vegetables	4	1	0	0
Oilseeds	24	3	1	2
Spices	2	0	0	0
Transformed products	**141**	**7**	**3**	**3**
Fruit based	7	0	1	0
Dried vegetables based	88	0	0	0
Cereals based	9	0	0	0
Sugar crops based	1	0	0	0
Teas, coffees, infusions, cocoas	27	6	2	3
Wine	7	0	0	0
Various	2	1	0	0

12.2.1.3 DGAL

Control programme in primary plant products

As part of DGAL's control programme for pesticide residues in primary plant products, 826 samples were analysed, including 810 at harvest, the results of which are presented in this report. 26 were non-MRL compliant, after taking account of analytical uncertainty (i.e., 3,2 % of samples taken nation-wide, all cultures).

Table 56: Control programme 2021 – Main results

MRL Compliant/Non-compliant	Number of samples
Compliant	784
Non-compliant	26
Total	810
Percentage of Non-compliance	**3,2%**

Surveillance programme in primary plant products

As part of DGAL's surveillance programme for pesticide residues in primary plant products, 175 samples were analysed, including 146 at harvest, the results of which are presented in this report. 14 were non-MRL compliant, after taking account of analytical uncertainty (i.e., 9,6 % of samples taken nation-wide, all cultures).

Table 57: Surveillance programme 2021 – Main results

MRL Compliant/Non-compliant	Number of samples
Compliant	132
Non-compliant	14
Total	146
Percentage of Non-compliance	**9,6%**

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

Out of 1,239 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, 2986samples were taken, analysed and 85 were non-MRL compliant, representing 2.8 % of all the samples (Table 58).

Table 58: Programme 2021 on food of animal origin – Main results

2021	Guadeloupe		Martinique	
Animal species or type of product	**Number of samples taken in 2021**	**Number of non-MRL compliant samples**	**Number of samples taken in 2021**	**Number of non-MRL compliant samples**
Bovine	396	11	922	28
Fish product	291	23	697	11
Ovine-Caprine	6	0	90	1
Swine	184	0	40	2
Poultry	30	0	133	0
Egg	61	0	136	9
TOTAL	968	34	2018	51

As part of DGAL's control and surveillance programme for primary plant products and soil, 584 samples were taken and analysed. Five plant samples intended for human consumption were non MRL compliant (Table 59).

Table 59: programme 2021 on primary plant products and soil – Main results

	Guadeloupe		Martinique	
2021	**Number of samples taken in 2021**	**Number of non-MRL compliant samples**	**Number of samples taken in 2021**	**Number of non-MRL compliant samples**
Plants	117	4	297	1
Soils	-		170	(Beware: there is no MRL for chlordecone in soil, it represents a level of contamination)
TOTAL	117		467	

12.2.2 Interpretation of the results

12.2.2.1 DGCCRF

In 2021 almost half of all samples (2,825 samples, representing 46.8% of all the samples) contained detectable residues. They were distributed as follows: 49.5% of the "surveillance" samples, 29.3% of the control samples, and 80.5% of the control on imports. More specifically, 50.9% of the sampled vegetables contained detectable residues, 55.1% of fruits, 36.4% of cereals and cereal products, 53.9% of the analysed teas, coffee, herbal infusions, cocoa and carobs, 7.6% of wines, and 25.9% of oilseeds and oil fruits. In positive samples a mean of 3 detectable residues per sample was found, with a maximum number of 38 residues found in dried vine fruits from Turkey (no residue exceeded the MRL), followed by 20 residues in an Indian spice mixes, and 19 residues in Gojiberry from China (with 1 residue being above the MRL after taking into account the measurement uncertainty). 1.4% of all the analysed samples contained at least 10 detectable residues, and 8.8% contained 5 or more detectable residues.

Quantifiable residues were found in 2,405 samples (39.9%): the highest contribution came from the import controls (68.9% of all the samples).

In accordance with the sample distribution, the highest proportion of quantifiable residue-containing products were fruits (49.1% of all these samples), teas, coffee, herbal infusions, cocoa and carobs (46.6%), vegetables (43.1%), spices (32.4%), pulses (31.8%), cereals and cereal-based processed food (29.8%) and oilseeds and oil fruits (19.9%).

55 samples (0.9% of the analysed samples) contained at least 10 residues exceeding the LOQ, with a maximum of 31 residues quantified in dried vine fruits from Turkey (among 38 detected residues, see above). 325 samples (13.5% of all the samples exceeding the LOQ) contained at least 5 quantifiable residues.

The "surveillance" samples showed, in 2021, the lowest percentages of MRL exceedance (2.3%) and non-compliance with the R396/2005 (1.4%).

The highest figures were obtained for import control, both in terms of samples containing residues above the LOQ (68.9% of the control on import samples) and samples exceeding the MRLs (13.1%), leading to a non-compliance rate of 4.7% 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 the ones obtained for "surveillance" and control programmes. 64.3% of the control on imports samples were vegetables, 23.7% tea, 8.1% fruits. A high rate of 80.5% of the controlled products on imports, originating from all the targeted countries, exhibited detectable residues. On average, these import samples contained 2.5 residues, and 38.6% of the samples contained 3 or more than 3 residues, with 17 samples containing between 10 and 19 residues. More than 25% of the non-compliant samples originated from Vietnam and Dominican Republic respectively. The main non-compliant products were chili peppers (from several countries, 38.5% of the non-compliant samples) and pitayas from Vietnam (20.5%).

2,928 samples of vegetables, covering more than 100 distinct products or group of products, were analysed. Beans (16.4% of the vegetable samples), sweet potatoes (6.5%), cucumbers (4.5%), potatoes (4.1%), yams (4%), chili peppers (4%), melons (3.6%), dasheen taros (3.5%) and aubergines (3.3%) were the main sampled products. Almost half of the analysed vegetable were taken in the "surveillance" programme (49.1%), 32.8% in the control programme and 18.1% controlled on imports.

1,491 samples contained at least one detectable residue, representing an average of 1.4 residues on analysed vegetables. 221 samples showed 5 and more residues with a maximum of 19 residues found in a sample of gojiberry from China (3 residues being above the MRLs).

1261 samples contained at least one quantifiable residue (43.1% of the analysed vegetables).

97 samples exceeded the MRLs without taking into account the measurement uncertainty, leading to 69 cases of non-compliance after taking into account the measurement uncertainty, for 18 distinct products. The highest rates of non-compliance were found for Chili peppers (31.9% of the non-compliant samples of vegetable), okra (11.6%) and yams (11.6%). 52.2% of the non-compliant samples were taken within the control programme, 31.9% controlled on imports and 15.9% within the "surveillance" programme.

1,159 samples were reported as fruits, covering more than 70 distinct products including fruit-based products such as dried fruits, purees or cider. The main analysed products were bananas (11.9% of the analysed fruits), table grapes (7.3%), pomelos (6.7%), apricots (6%), mangoes (5.8%), oranges (5.4%) and pitayas (5.3%).

66.8% of the fruit samples were taken within the "surveillance" programme, 27.4% within the control programme, and 5.8 % as control on imports.

While 55.1% of fruits contained detectable residues, 197 samples showed 5 and more residues, and 4.2% of all the sampled fruits were above the MRLs without measurement uncertainty.

In positive samples, a mean of 4.2 residues were detected. 52 samples contained at least 10 detectable residues. The highest numbers of residues per sample were 38 and 30 residues in dries vine fruits from Turkey. Samples with quantifiable residues contained on average 3.7 residues.

Only 35 samples (3%) of fruits were non-compliant with MRLs: 8 of them were pitayas (22.9%), 6 were oranges (17.1%) and 5 were figs (14.3%). 45.7% were taken within the "surveillance" programme, 31.4% within the control programme and 22.9% as import control.

Cereals and cereal products represented 10.1% of all samples. 72.8% were sampled within the "surveillance" programme. 36.4% of cereal and processed food samples contained at least one detectable residue, and 29.8% quantifiable residues. 37.2% of rice, 65.9% of barley, 50 of wheat samples contained detectable residues, as well as 41% of the processed wheat flours. More than 5 residues were detected in 2.6% of the samples (from 5 to 12 residues). 21 samples including 17 samples of rice were non-compliant with R396/2005 (3.4% of the sampled cereals). Piperonyl butoxide is included in the list of searched residue and compliance is evaluated as regard to national MRLs. 103 samples contained piperonyl butoxide, above the LOQ for 90 of them.

207 pulses were sampled in 2021 (3.4% of all the samples). 44% of the samples contained detectable residues and 31.9% quantified residues. In 9 samples (4.3% of the sampled pulses) including 5 lentils, residues have been quantified above the LMR. Only 5 samples were non-compliant with the MRL set for 2,4-D on lentils, dimethomorph on peas and spinosad on beans, all the other residues levels being under the corresponding MRLs.

Among the 352 oilseeds, oil fruits and processed products from oilseeds and oil fruits sampled in 2021 (5.8% of all the samples), 91 exhibited detectable residues (mainly sesame seeds or olive oil). 34 distinct residues were detected in these products. Ethylene oxyde was the main residue detected; it was found in 32 samples, followed by phosmet found in 12 samples and chlorpyriphos found in 10 samples. 51.7% of these samples were collected within the "control" programme. 29 samples were non-compliant with the EU MRLs including 26 samples of sesame seeds containing ethylene oxide.

Honey and sugar plants from organic and non-organic productions were targeted and represented 34 samples. All samples were compliant with the EU MRLs.

79 wines were sampled: residues were detected for 6 of them and above the quantification limit in 5 cases. No sample was non-compliant with R396/2005.

Detectable residues were found in 80 samples of spices (38.6% of the sampled spices), 20 of them originating from organic production and containing residues of unauthorised pesticides. 5 of these organic samples were non-compliant with MRLs.

12 samples of baby food were analysed. All samplings were compliant with the 0.010 mg/kg limit set for baby food products.

Only 4 samples of hops were analysed in 2021. Residues were quantified 3 of them (no residue exceeded the MRL).

More than half of the samples of tea, coffee, herbal infusions, cocoa and carobs were sampled for control on imports (52.6%), and 39.4% were sampled within the control programme. 53.9% of the sampled products contained detectable residues, and 46.6% quantifiable residues. 12 samples were non-compliant with the R396/2005 (3.2%). Up to 18 residues could be detected by sample. More than one-fifth of the analysed tea, coffee, herbal infusions, cocoa and carobs contained more than 5 detectable residues.

Organic products of all types (raw or processed food) represented 22.2% of all the samplings (1345 organic samples). For the majority of them, no residue could be detected. Residues were detected in 201 samplings (14.9% of the organic samplings), above LOQ for 123 of them (9.1% of the organic samples). More than 2 residues were detected in 4.9% of the organic samplings (one samplings containing 23 residues, and 5 containing between 5 and 6 residues). 1% of the

organic samplings (teas, spices, fruits, cereals, pulses) were non-compliant with the R396/2005, which represents 0.2% of all the samplings.

12.2.2.2 DGDDI

In 2021, 113 pesticide residues were detected: 29 of them below the limit of quantification (LOQ) and 84 above the LOQ.

Of the 84 pesticides residues above the LOQ, 59 were below the maximum residue limits (MRLs) and 25 above MRLs. Including 18 residues with results greater than 1.5 times the MRLs.

Teas, coffees and infusions are the most represented, with 80 results above the LOQ. 24 of them were above the MRLs (6 located between 1 times and 1.5 times the MRLs and 18 located above 1.5 times the MRLs).

The results are detailed in Table 60 below.

Table 60: Pesticide residues detected

	Nb residues < LOQ	Nb résidus > LOQ		
		Nb residues ≤ LMR	Nb residues > MRL and ≤ 1,5x MRL	Nb residues > 1,5x MRL
Raw products	**12**	**2**	**1**	**0**
Vegetables	3	0	0	0
Oilseeds	9	2	1	0
Transformed products	**17**	**57**	**6**	**18**
Fruit based	1	0	0	0
Teas, coffees, infusions, cocoas	16	56	6	18
Various	0	1	0	0

12.2.3 Comparability with the previous year results

12.2.3.1 DGCCRF

In 2021 the control pressure could be brought back to the level of 2019 before the degraded conditions due to the health crisis (6034 samples in 2021 versus 4490 in 2020 and 6039 in 2019).

The proportion of samplings by control programme was almost constant between 2020 and 2021, with one third of the samples taken in the control programme and 13.7% for controls on import. The scope of residues analysed was the same as in 2020. Only the type of analysed products differs between years.

In 2021 the samples originated from third countries increased from 39% to 50% while samples from France represent in 2021 40% versus 50% previously. This trend may be due to the ethylene oxide crisis for which it was necessary to adapt the targeting of controls. The part of samples taken in overseas France is still important (10% of all the samples) in order to notably target tropical commodities associated with a significant risk of exposure.

Fruits and vegetables remained the main products analysed in all programmes (68% in 2021 and 75% in 2020).

The proportion of organic samples continues to increase in control programmes (22.2% in 2021 compared to 20.5% in 2020), in relation to a larger availability of these products on the market. The rate of 1% of non-compliance is significantly low but the rate of 4,9% calculated for 2020 suggests the need to maintain pressure on the control of the risk associated with pesticide residues in organic farming practices.

As observed for previous years, the numbers of samples with detected residues, of samples with quantified residues, and of non-compliant samples depends on the sampling programme. A higher number of non-compliant samples is still observed for control on imports but significantly lower than the one observed on the previous years (4.7% in 2021 versus 6.3% in 2020 and 13.3% in 2019).

Considering the origin of the non-compliant samples, the results were in accordance with the previous years' ones: most of the breaches occurred in samples from third countries followed by domestic samples, while the samples originating from EU showed a very low non-compliant rate.

As previously observed, the number of samples containing residues above the LOQ were found among controls on import samples and the lowest rates for MRL exceedance were found for "surveillance" samples.

In 2021, the percentage of samples containing one or more quantifiable residue(s) as well as the percentages of samples with residue contents above MRL and of non-compliant samples were quite similar as the previous year. The number of samples containing at least one residue above the LOQ was for example of 39.4% in 2021 versus 42.2% in 2020. At the same time, the rate of MRL exceedance (before applying analytical uncertainty) slightly decreased from 6.1% in 2020 to 3.9% in 2021. Considering all plans and all type of commodity, 3.2% of non-compliance was observed in 2021, compared to 3.9% in 2020 and 4.9% in 2019. This slight decrease might be due to the targeting of 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. Samples of dried vegetables and spices were the main ones to be non-compliant with MRL(s), and ethylene oxide could be quantified in many organic samples.

A few countries still gave raise to recurrent non-compliant results. A large variety of commodities were found to contain quantifiable residues, under or above the MRL(s), some of them being found from year to year (spices, tea, roots and tuber vegetables contaminated by chlordecone…). All these results, both in terms of origin and products, are taken into account to build the next national control programmes.

12.2.3.2 DGAL

For pesticide residues in primary plant products, the percentages of MRL non-compliance in 2021 were higher to those of 2020, concerning the control and surveillance program.

In animal origin food products, as in 2020, all the samples were compliant.

For chlordecone:

- In the animal sectors, the analysis compliance rate in 2021 in Martinique found was higher to those of 2020: the compliance rate was 95% in 2020, and 97.5% in 2021.

- In the plant sectors, in Guadeloupe, the analysis compliance rates found in 2021 was lower to those of 2019: 97% in 2019 and 96.6% in 2021. In 2020, due to the Covid crisis the number of samples taken was very low for Guadeloupe. In Martinique, the compliance rate found was stable: 99.6% in 2019 and 2020, 99.7% in 2021.

12.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

12.3.1 Possible reasons for non-compliant samples

12.3.1.1 DGCCRF

The possible reasons for MRL non-compliance (with measurement uncertainty taken into account) are shown in Table 61. If multiple reasons are possible, products are listed for the main one.

Table 61: 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]	Pumpkins	Carbendazim	1	FR
	Globe tomato	Chlorpyrifos	1	YT
	Rice	Chlorpyrifos	1	FR
	Oranges	Chlorpyrifos	1	ES
	Oranges	Chlorpyriphos-methyl	1	ES
	Cucumbers		1	GP
	Table grapes	Fenpropimorph	1	IT
	Parsley	Fenpropimorph	1	FR
	Parsley	Linuron	1	FR
	Globe tomato	Myclobutanyl	2	YT
	Yams	Omethoate	1	MQ
		Permethrin		
	Pumpkins	Thiophanate-methyl	1	FR
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Mandarins	Azadirachtine	1	GF
	Welsh onions	Bupirimate	1	GP
	Figs	Deltamethrine	5	FR
	Hazelnuts	Flonicamide	1	FR
	Carrots	Flutolanil	1	FR
	Yams	Metalaxyl	1	GP
	Parsley	Prosulfocarbe	1	FR
	Welsh onions	Pirimicarb	1	GP
	Barley grains	Pirimiphos-methyl	1	FR
	Kidney beans	Spinosad	1	IT
GAP not respected: use of a pesticide	Cumin seeds	Acetamiprid	1	TR
	Tea leaves	Anthraquinone	2	LK, CN

Reasons for MRL non-compliance	Food product	Residue	Frequency[a]	Comments
not authorised in organic production	Cumin seeds	Chlorpyriphos	1	TR
	Cumin seeds	Clothianidin	1	TR
	Figs	Deltamethrin	1	FR
	Carrots	Flutolanil	1	FR
	Ginseng	Ethylene oxide	1	IN
	Chili peppers	Ethylene oxide	1	IN
	Fenugreek seeds	Ethylene oxide	1	IN
	Horseradishes	Ethylene oxide	1	IN
	Peppercorn	Ethylene oxide	1	IN
	Dried herbs	Ethylene oxide	1	IN
	Cumin seeds	Thiamethoxam	1	TR
	Dried vegetables	Thiamethoxam	1	CN
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)	Cucumbers	Aldrin-dieldrin	1	FR
	Sweet potatoes	Chlordecone	1	MQ
	Dasheen taros	Chlordecone	3	GP
	Tannias	Chlordecone	1	GP
Use of a pesticide on food imported from third countries for which no import tolerance was set[c]	Lentils (dry)	2,4-D	3	CA, US
	Okra	Acephate	1	IN
	Granate apples	Acetamipride	2	TR
	Gojiberry	Acetamipride	1	CN
	Tea leaves	Acetamipride	2	CN
	Gojiberry	Amitraze	3	CN
	Tea leaves	Anthraquinone	1	CN
	Rice	Buprofezine	3	IN, PK
	Chili peppers	Carbaryl	1	MG
	Chili peppers	Carbendazim	1	UG
	Pitayas	Carbofuran	1	VN
	Gojiberry	Carbofuran	2	CN
	Oranges	Chlorfenapyr	1	ZA
	Chili peppers	Chlorfenapyr	4	DO, VN
	Globe tomato	Chlorfenapyr	1	CO
	Chives	Chlorfenapyr	1	TH
	Oranges	Chlorpyrifos	2	MA, EG
	Mandarins	Chlorpyrifos	1	EG

Reasons for MRL non-compliance	Food product	Residue	Frequency[a]	Comments
	Table olives	Chlorpyrifos	2	MA
	Chili peppers	Chlorpyrifos	3	MA, DO, UG
	Okra	Chlorpyrifos	1	UG
	Rice	Chlorpyrifos	2	IN
	Tea leaves	Chlorpyrifos	3	CN
	Cumin seeds	Chlorpyrifos	2	XX
	Chili peppers	Clothianidin	3	DO, UG
	Cumin seeds	Clothianidin	1	IN
	Pitayas	Cypermethrin	1	VN
	Passionfruits	Cypermethrin	2	VN
	Yams	Cypermethrin	1	XX
	Lentils (dry)	Dicamba	1	CA
	Sesame seeds	Dichlorvos	1	IN
	Litchis	Diflubenzuron	1	CN
	Globe tomato	Diflubenzuron	1	CO
	Peas	Dimethomorph	1	KE
	Tea leaves	Dinotefuran	3	CN
	Mangoes	Ethephon	2	SN, DO
	Litchis	Fipronil	1	VN
	Chili peppers	Fipronil	3	DO
	Yams	Fipronil	1	DM
	Okra	Fipronil	1	VN
	Okra	Flonicamide	1	IN
	Pumpkin seeds	Haloxyfop	1	CN
	Sesame seeds	Haloxyfop	1	IN
	Dried herbs	Lindane	1	IN
	Pitayas	Hexaconazole	1	VN
	Yams	Imazalil	2	DO
	Pitayas	Iprodione	5	VN
	Chili peppers	Lambda- cyhalothrin	1	DO
	Tea leaves	Lambda- cyhalothrin	4	CN
	Aubergines	Methomyl	1	DO
	Gojiberry	Fenbutatin oxide	1	CN
	Chili peppers	Ethylene oxide	8	UG, IN, DO
	Senna leaves	Ethylene oxide	1	IN
	Horseradishes	Ethylene oxide	1	IN
	Okra	Ethylene oxide	5	IN, DO

Reasons for MRL non-compliance	Food product	Residue	Frequency[a]	Comments
	Celeries	Ethylene oxide	1	IN
	Dried vegetables	Ethylene oxide	6	IN
	Sesame seeds	Ethylene oxide	23	IN, CN, JO, UG, VN, BF, TH
	Linseeds	Ethylene oxide	1	IN
	Sunflower seeds	Ethylene oxide	1	AR
	Rice	Ethylene oxide	9	IN, TH
	Other cereals	Ethylene oxide	3	HK
	Teas leaves	Ethylene oxide	1	IN
	Dried herbs	Ethylene oxide	3	IN, TR
	Turmeric roots	Ethylene oxide	3	IN
	Cumin seeds	Ethylene oxide	2	IN, LB
	Fenugreek seeds	Ethylene oxide	1	IN
	Green pepper	Ethylene oxide	1	IN
	Yams	Pencycuron	2	DO, XX
	Globe tomato	Permethrin	1	CO
	Okra	Profnofos	1	IN
	Gojiberry	Propargite	1	CN
	Oranges	Propiconazole	1	ZA
	Coriander leaves	Pirimiphos-methyl	2	MA, XX
	Granate apples	Sulfoxaflor	1	TR
	Granate apples	Thiabendazole	1	TR
	Sweet potatoes	Thiabendazole	1	SR
	Rice	Thiamethoxam	4	IN
	Cumin seeds	Thiamethoxam	1	IN
	Chili peppers	Triazophos	1	DO
	Rice	Tricyclazole	5	IN, VN

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

12.3.1.2 DGDDI

The possible reasons for MRL non-compliance are shown in Table 62 below.

Table 62: Possible reasons for MRL non-compliance

Reasons for non-compliance	Food product	Residue	Frequency	Comments (origin)
Use of pesticide on food imported from third countries	Tea leaves	Acétamipride	3	CN, ML
	Tea leaves	Chlorpyriphos	3	CN, ML

Reasons for non-compliance	Food product	Residue	Frequency	Comments (origin)
	Sesame leaves	Chlorpyriphos	1	XX
	Tea leaves	Diafenthiuron	3	CN, ML
	Tea leaves	Dinotefurane	3	CN, ML
	Tea leaves	Imidaclopride	2	CN
	Tea leaves	Lambda-cyhalothrine	3	CN, ML
	Tea leaves	Tolfenpyrad	3	CN, ML
	Tea leaves	Triadiménol	3	CN, ML

12.3.1.3 DGAL

The possible reasons for MRL non-compliance are shown in Table 63 and Table 64.

Table 63: Possible reasons for MRL non-compliance – Control programme

Reasons for MRL non-compliance	Pesticide/food product	Frequency
Environmental contamination	1	
	Propamocarb / Celeries	1
Good Agricultural Practice (GAP) not respected: use of a pesticide not approved in the EU	3	
	Carbendazim / Spring onions	1 (the same sample with chlorantraniliprole)
	Chlorpropham / Potatoes	2
Good Agricultural Practice (GAP) not respected: use of an approved pesticide not authorised on the specific crop	3	
	Azadirachtin / Parsley	1
	Chlorantraniliprole / Spring onions	1 (the same sample with carbendazim)
	Cymoxanil / Sweet peppers	1
Good Agricultural Practice (GAP) not respected: unauthorised quantities		3
	Lambda-cyhalothrin / Kales	1
	Lambda-cyhalothrin / Lettuces	2
Natural occurrence	13	
	Dithiocarbamates / Turnips	13 (including one sample with azadirachtin)
Unknown	4	
	Azadirachtin / Turnips	1 (the same sample with ditiocarbamates)
	Chlorpyrifos / Lettuces	1
	Flonicamid / Cauliflowers	2
Use of pesticide according to authorised Good Agricultural Practice (GAP) before expiration approval	1	
	Pencycuron / Potatoes	1
Total general		**26 (**the samples spring onions and turnips are counted once)

Table 64: Possible reasons for MRL non-compliance – Surveillance programme

Reasons for MRL non-compliance	Pesticide/food product	Frequency
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)		2
Heptachlor / Courgettes		1
Dieldrine / Cucumbers		1
Environmental contamination		2
	Prosulfocarb / Coriander leaves	1
	Prosulfocarb / Spearmint	1
Good Agricultural Practice (GAP) not respected: use of an approved pesticide not authorised on the specific crop		1
	Spinosad / Rutabagas	1 (the same sample with dithiocarbamates)
Good Agricultural Practice (GAP) not respected: use of a pesticide not approved in the EU		2
Dimethoate / Cucumbers		2
Good Agricultural Practice (GAP) not respected: unauthorised quantities		1
Azadirachtin / Cucumbers		1
Natural occurence		7
	Dithiocarbamates / Rutabagas	5 (including one sample with spinosad)
	Dithiocarbamates / Black radishes	2
Total		**14** (the sample rutabagas is counted once)

For chlordecone, the reason of the non-compliant samples is the effects of pollution by the chlordecone which was a large use product before 1993 and an overtime persistent molecule.

12.3.2 ARfD exceedances

12.3.2.1 DGCCRF

ARfD exceedances notified following official controls on the market:

- Ethephon in pineapples from Ghana (4 samples): 100% to 708% ARfD children
- Monocrotophos in apples from India: 528% ARfD children,
- Lambda cyhalothrin in oranges from France: 504% ARfD children,
- Dieldrin in cucumbers from France: 127% ARfD children,

12.3.2.2 DGAL

For pesticide residues in primary plant products, reported ARfD exceedances were:

- Dimetoate and omethoate in cucumbers from Mayotte Island (111% ArfD for adults)
- Azadirachtin in cucumbers : 519 % ArfD for children 220 % for adults

- Lambda-cyhalothrin in lettuces from French Guiana : 266% ARfD for children
- Lambda-cyhalothrin in kales from Martinique Island: 502% ARfD for children, 219% ARfD for adults
- Chlorpropham in potatoes (2 samples) : an acute risk cannot be ruled out
- Chlorpyrifos in lettuces, Heptachlor in courgettes, Linuron in celeries and Carbendazim in spring onions: an acute risk cannot be ruled out considering that consumer risk assessment was not finalized and no toxicological reference values were established.

12.3.3 Actions taken

12.3.3.1 DGCCRF

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

An assessment of the risk for consumers is performed on 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 subjected to an enhanced 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 transmitted to the services of the Ministry of Agriculture, responsible for controlling the use of pesticides at the production level. The reason of MRL exceedance or use of a pesticide not approved in the EU or in France is investigated as far as possible in French products.

The Table 65 summarises the actions taken following the detection of non-compliant samples. Some actions remain ongoing.

Table 65: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	36 + 57	RASFF notifications ("ETO"): 2021.273, 2021.284, 2021.849, 2021.852, 2021.1067, 2021.1092, 2021.3610, 2021.3954, 2021.4006, 2021.4037, 2021.4039, 2021.4046, 2021.4055, 2021.4137, 2021.4146, 2021.4169, 2021.4180, 2021.4442, 2021.4456, 2021.4458, 2021.4462, 2021.5142, 2021.5254, 2021.5323, 2021.5500, 2021.5674, 2021.5809, 2021.5810, 2021.5928, 2021.6182, 2021.6420, 2021.6443, 2021.6542, 2021.6844, 2021.6962, 2021.7209. RASFF notifications ("Pesticides"): 2021.481, 2021.993, 2021.1010, 2021.1075, 2021.1193, 2021.1327, 2021.1364, 2021.1643, 2021.1731,

Action taken	Number of non-compliant samples concerned	Comments
		2021.1732, 2021.1733, 2021.1777, 2021.1819, 2021.1894, 2021.2279, 2021.2282, 2021.2712, 2021.2803, 2021.2942, 2021.2981, 2021.3102, 2021.3242, 2021.3423, 2021.3457, 2021.3555, 2021.3591, 2021.3633, 2021.3788, 2021.3850, 2021.3900, 2021.3903, 2021.3926, 2021.4115, 2021.4171, 2021.4335, 2021.4407, 2021.4430, 2021.4592, 2021.4691, 2021.4709, 2021.4753, 2021.4872, 2021.5069, 2021.5179, 2021.5271, 2021.5404, 2021.5507, 2021.5616, 2021.5793, 2021.5856, 2021.5978, 2021.5989, 2021.6123, 2021.6235, 2021.6627, 2021.6754, 2021.6850.
Administrative sanctions (fines)	13	
Administrative warnings	100	
Consignments	14	
Administrative injunction	89	
Rejection / Destruction of a non-compliant lot at the border	39[a]	

a) This total doesn't include controls carried out by French customs.

12.3.3.2 DGDDI

When the analysis of a sample concludes on its non-compliance, the release for free circulation of the batch placed under control is refused (destruction or return).

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 non-compliant control may give rise to a RASFF notification

12.3.3.3 DGAL

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

The following actions were implemented:

- 7 consignment of crop with sample for product release testing, followed by the release of the crop;
- 2 follow-up actions due to a residue of a pesticide detected in a EU sample, which is not approved for use in the EU territory
- 3 batches recalled from the market;
- 11 destruction of products

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

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

12.3.4 Quality assurance

12.3.4.1 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 of 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 the standard NF EN 15662:2009 "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 (EC, 2021).

Table 66: Laboratories 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 (1-0154)	Yes
FR	SCL - Laboratoire de Paris	SCL91	1996	Comité français d'accréditation – COFRAC (1-0527)	Yes
FR	SCL - Laboratoire des Antilles	SCL971	2012	Comité français d'accréditation - COFRAC (1-2463)	Yes
FR	SCL - Laboratoire de La Réunion	SCL974	2022	Comité français d'accréditation - COFRAC (1-7013)	Yes

12.3.4.2 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 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 the standard NF EN 15662:2009 "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 (EC, 2017).

12.3.4.3 DGAL

The samples are analysed by ten laboratories, three of which belong to SCL, Network of Laboratories run by DGCCRF: SCL34, SCL75 and SCL971. The other seven private laboratories 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, organized 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 fruits 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/12682/2019 relating to analytical quality control and method validation procedures for testing pesticide residues in food for humans and animals.

All the laboratories participated in proficiency tests or inter-laboratory tests organised in 2021.

12.4 Processing factors

12.4.1 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	Fruits juice	1
All pesticides	Goji berries	Dried Goji berries	5

a) Processing factor for the enforcement residue definition

13 Germany

13.1 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 inacceptable 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.

To reach both the aim of evaluating consumer exposure and of checking compliance with current legislation, part of the samples is 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 made at random and is based on the conditions of the German market, as regards the origin of samples and their distribution over conventional and ecological farming.

A much larger amount of samples is 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 to integrate the sampling plans separately developed by the Länder 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 Länder' 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 Länder (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 of the public/public perception of pesticide residues
- Type of farming (such as ecological/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 Länder. Analytic results are delivered to the BVL. The BVL compiles the data submitted by the Länder according 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 a "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.[19]

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

In 2021, Germany submitted a total of 20,416 samples tested for pesticide residues to EFSA of which 20,368 samples were relevant for the annual report by EFSA (Table 68), including 19,790 surveillance and 578 follow-up enforcement samples. All these sample data fulfilled the requirements of EFSA's business rules. Of these samples, 13,300 samples came from within the EU, 3,959 samples were produced outside of the EU and 3,109 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	3,210	1,100	34.3%	2,110	65.7%	2,071	64.5%	39	1.2%	12	0.4%
EU	Selective	9,942	4,237	42.6%	5,705	57.4%	5,527	55.6%	178	1.8%	82	0.8%
EU	Suspect	148	72	48.6%	76	51.4%	62	41.9%	14	9.5%	9	6.1%
Third Country	Objective	755	164	21.7%	591	78.3%	547	72.5%	44	5.8%	28	3.7%
Third Country	Selective	2,844	1,029	36.2%	1,815	63.8%	1,476	51.9%	339	11.9%	216	7.6%
Third Country	Suspect	360	178	49.4%	182	50.6%	116	32.2%	66	18.3%	34	9.4%
Unknown	Objective	1,320	321	24.3%	999	75.7%	973	73.7%	26	2.0%	16	1.2%
Unknown	Selective	1,719	868	50.5%	851	49.5%	737	42.9%	114	6.6%	68	4.0%
Unknown	Suspect	70	45	64.3%	25	35.7%	16	22.9%	9	12.9%	5	7.1%
Total		20,368	8,014	39.3%	12,354	60.7%	11,525	56.6%	829	4.1%	470	2.3%

The samples included a total of 7,515,713 analyses, from which 5,776,559 were relevant for data analysis by EFSA.

The samples were analysed for a total of 677 different pesticides (excluding isomers and metabolites) of which 295 were detected at least in one sample. Residues of 186 individual pesticides exceeded MRLs.

In 7,719 (39.0%) surveillance samples no residues of pesticides were quantified (2020: 7,078 (38.4%); 2019: 8.333 (42.3%)). In 11,331 (57.3%) surveillance samples residues of pesticides were quantified at or below MRLs (2020: 10,666 (57.9%); 2019: 10,557 (53.6%)). 740 (3.7%)

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

surveillance samples contained residues of pesticides exceeding MRLs (2020: 678 (3.7%); 2019: 806 (4.1%)). 422 (2.1%) samples had residues non-compliant with the MRL (2020: 280 (1.5%); 2019: 309 (1.6%)).

In 295 (51.0%) follow-up enforcement samples no residues of pesticides were quantified (2020: 196 (47.2%); 2019: 190 (50.4%)). In 194 (33.6%) follow-up enforcement samples residues of pesticides were quantified at or below MRLs (2020: 138 (33.3%); 2019: 155 (41.1%)). 89 (15.4%) follow-up enforcement samples contained residues of pesticides exceeding MRLs (2020: 81 (19.5%); 2019: 32 (8.5%)). 48 (8.3%) samples had residues non-compliant with the MRL (2020: 65 (15.7%); 2019: 24 (6.4%)).

2764 (13.6%) samples of 20,368 were from products produced under the rules of organic farming. In 833 (30.1%) samples residues of pesticides were quantified. 39 (1.4%) of organic samples contained residues of pesticides exceeding MRLs. The sampling strategies for these products varied between the Federal States. Some have special programs others take samples rather by chance.

Multiple residues were found and quantified in 35.2% of all samples (2020: 33.8%; 2019: 34.9%).

13.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

In 2021, 2.3% of the samples (470 samples in total) were found non-compliant with the EU MRL. For 79 samples, RASFF notifications were issued (Table 69).

Table 69: Follow-up actions taken in case of sample non-compliant with the EU MRL (measurement uncertainty taken into consideration)

Action taken	Number of non-compliant samples	Note
Administrative consequences	140	
Destruction of animals and/or products.	3	
Follow-up (suspect) sampling	1	
Follow-up action due to the residue of a pesticide detected in a domestic product, which is not authorized in the country	1	
Follow-up investigation	8	
Lot not released on the market	2	
Lot recalled from the market	11	
Movement restriction	1	
No action	23	
Other	185	
Rapid Alert Notification	79	Samples can be looked up on the RASFF Window using the search function: https://webgate.ec.europa.eu/rasff-window
Missing / Not Reported	20	

Note: For 3 samples, multiple actions taken per sample were reported: Rapid Alert Notification and Administrative consequences (2 samples); Rapid Alert Notification, Administrative consequences and Destruction of animals and/or products (1 sample). This leads to multiple counts of these samples in the table.

The possible reasons for the MRL exceedances were submitted in only 767 from 1005 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 exceedances

Reason for MRL non-compliant	Product	Substance	Frequency
Accidental	Asparagus	Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	2
	Milk (cattle)	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorides with alkyl chain lengths of C8, C10, C12, C14, C16 and C18)	2
		Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	1
Change in the legal limit throughout the year	Grapefruits	Myclobutanil (sum of constituent isomers)	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)	10
		Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	4
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)	Apples	Chlorpropham	1
	Milk (cattle)	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorides with alkyl chain lengths of C8, C10, C12, C14, C16 and C18)	2
		Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	2
Cross contamination: spray drift or other accidental contamination	Kaki/Japanese persimmons	Acetamiprid	1
	Milk (cattle)	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorides with alkyl chain lengths of	1

Reason for MRL non-compliant	Product	Substance	Frequency
		C8, C10, C12, C14, C16 and C18)	
		Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	1
	Onions	1,4-Dimethylnaphthalene	1
Good Agricultural Practice (GAP) not respected: use of a pesticide not approved in the EU	Celeriacs/turnip rooted celeries	Linuron	1
	Celery leaves	Chlorpyrifos	1
	Grape leaves and similar species	Triadimefon	1
	Grapefruits	Dimethoate	1
	Leeks	Phosalone	1
	Lemons	Dichlorvos	1
	Mandarins	Chlorpyrifos-methyl	1
	Peaches	Iprodione	1
	Sesame seeds	Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide)	1
	Sweet peppers/bell peppers	Dimethoate	1
		Omethoate	1
Good Agricultural Practice (GAP) not respected: use of an approved pesticide not authorised on the specific crop	Currants (black, red and white)	Tebufenozide	1
Good Agricultural Practice (GAP) not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Apricots	Dodine	1
	Beans (with pods)	Captan (sum of captan and THPI, expressed as captan)	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	2
	Broccoli	Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)	1
	Cherries (sweet)	Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
	Chili peppers	Cyflumetofen	1
	Cumin seed	Acetamiprid	1
		Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	1

Reason for MRL non-compliant	Product	Substance	Frequency
		Chlorpyrifos	1
		Linuron	2
		Pendimethalin	1
	Granate apples/pomegranates	Acetamiprid	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
	Grape leaves and similar species	Cypermethrin (Cypermethrin including other mixtures of constituent isomers (sum of isomers))	1
		Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb, Mancozeb, Metiram, Propineb, Thiram and Ziram)	2
		Metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers)	2
		Nicotine	1
		Pyrimethanil	1
	Grapefruits	Buprofezin	2
		Chlorpyrifos-methyl	2
	Kales	Acetamiprid	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
		Nicotine	1
	Kiwi fruits (green, red, yellow)	Forchlorfenuron	1
	Passionfruits/maracujas	Chlorfenapyr	1
		Profenofos	1
		Thiacloprid	1
	Pears	Diflubenzuron	1
	Plums	Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
	Quinces	Bifenthrin (sum of isomers)	1
		Novaluron	1
	Roman rocket/rucola	Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb, Mancozeb, Metiram, Propineb, Thiram and Ziram)	1
	Spinaches	Nicotine	1
	Sweet peppers/bell peppers	Acetamiprid	1
		Chlorates	1

Reason for MRL non-compliant	Product	Substance	Frequency
		Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	1
		Chlorpyrifos-methyl	2
		Ethephon	1
		Flonicamid (sum of flonicamid, TNFG and TNFA expressed as flonicamid)	1
		Formetanate: Sum of formetanate and its salts expressed as formetanate(hydrochloride)	1
		Tebufenpyrad	1
	Teas	Trimethyl-sulfonium cation, resulting from the use of glyphosate	1
	Thyme	Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)	2
Illegal treatment	Cucumbers	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	1
	Cumin seed	Chlorpyrifos-methyl	1
	Grape leaves and similar species	Chlorpyrifos	1
		Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil)	1
	Grapefruits	Chlorpyrifos	1
	Kaki/Japanese persimmons	Fludioxonil	1
	Sweet peppers/bell peppers	Chlorpyrifos-methyl	1
	Thyme	Chlorpyrifos	2
Natural occurrence	Algae and prokaryotes organisms	Bromide ion	2
Other	Cucumbers	Chlorates	1
	Cultivated fungi	Nicotine	1
	Kaki/Japanese persimmons	Acetamiprid	1
Residues resulting from other sources than plant protectionproduct (e.g. biocides, veterinary drugs, bio fuel)	Baby foods other than processed cereal-based foods	Chlorates	1
	Eggs (quail)	Chlorates	5
	Grape leaves and similar species	Cyfluthrin (Cyfluthrin including other mixtures of constituent isomers (sum of isomers))	1
	Milk (cattle)	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorides with	6

Reason for MRL non-compliant	Product	Substance	Frequency
		alkyl chain lengths of C8, C10, C12, C14, C16 and C18)	
		Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	1
	Turmeric/curcuma	Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide)	1
Unknown	Algae and prokaryotes organisms	Ametryn	1
		Prometryn	2
	Asparagus	Clothianidin	1
		Fenobucarb	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	3
		Isocarbophos	1
		Isoprocarb	1
		Omethoate	1
		Pyridaben	1
		Thiamethoxam	1
	Aubergines/eggplants	4-CPA	2
	Bananas	Chlorpyrifos	1
		Imazalil (any ratio of constituent isomers)	1
	Basil and edible flowers	Bifenthrin (sum of isomers)	1
		Chlorothalonil	2
		Chlorpyrifos	1
		Iprodione	1
		Quintozene (sum of quintozene and pentachloro-aniline expressed as quintozene)	1
		Triazophos	1
	Beans (with pods)	Oxamyl	1
		Penconazole (sum of constituent isomers)	1
	Blackberries	Cyantraniliprole	1
	Broccoli	Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)	1
	Celeriacs/turnip rooted celeries	Linuron	1
		Propamocarb (Sum of propamocarb and its salt expressed as propamocarb)	1

Reason for MRL non-compliant	Product	Substance	Frequency
	Celery leaves	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	1
		Chlorpyrifos	4
		Linuron	2
		Propiconazole (sum of isomers)	1
		Trimethyl-sulfonium cation, resulting from the use of glyphosate	1
	Cherries (sweet)	Chlorpyrifos	1
		Dimethoate	4
		Omethoate	3
	Chili peppers	Aldrin and Dieldrin (Aldrin and dieldrin combined expressed as dieldrin)	2
		Chlorfenapyr	2
		Propiconazole (sum of isomers)	1
	Cinnamon	Chlorpyrifos	1
	Coriander leaves	Lenacil	1
	Courgettes	4-CPA	1
	Cultivated fungi	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorides with alkyl chain lengths of C8, C10, C12, C14, C16 and C18)	1
		Thiamethoxam	1
	Cumin seed	Chlorpyrifos	1
	Currants (black, red and white)	Tebufenozide	1
	Dill seed	Chlorpyrifos	1
		Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide)	1
		Profenofos	1
		Propiconazole (sum of isomers)	1
		Triazophos	1
	Figs	Chlorpyrifos-methyl	1
	Granate apples/pomegranates	Acetamiprid	5
		Azoxystrobin	1
		Bifenthrin (sum of isomers)	1
		Boscalid	1
		Chlorpyrifos	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	4

Reason for MRL non-compliant	Product	Substance	Frequency
		Imazalil (any ratio of constituent isomers)	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
		Propiconazole (sum of isomers)	1
		Pyridaben	1
		Sulfoxaflor (sum of isomers)	2
		Thiabendazole	2
	Grape leaves and similar species	Acetamiprid	12
		Ametoctradin	6
		Azoxystrobin	19
		Boscalid	27
		Captan (sum of captan and THPI, expressed as captan)	1
		Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	6
		Chlorfenapyr	2
		Chlorpyrifos	9
		Clothianidin	2
		Copper compounds	1
		Cyflufenamid (sum of cyflufenamid (Z-isomer) and its E-isomer, expressed as cyflufenamid)	1
		Cymoxanil	4
		Cypermethrin (Cypermethrin including other mixtures of constituent isomers (sum of isomers))	13
		Cyproconazole	1
		Cyprodinil	4
		Difenoconazole	7
		Diflubenzuron	1
		Dimethomorph (sum of isomers)	15
		Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb, Mancozeb, Metiram, Propineb, Thiram and Ziram)	57
		Dodine	1
		Emamectin benzoate B1a, expressed as emamectin	3

Reason for MRL non-compliant	Product	Substance	Frequency
		Endosulfan (sum of alpha- and beta-isomers and endosulfan-sulphate expressed as endosulfan)	2
		Famoxadone	5
		Fenbuconazole (sum of constituent enantiomers)	1
		Fenhexamid	3
		Fenpropathrin	1
		Fenpyroximate	2
		Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	2
		Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil)	1
		Fludioxonil	2
		Fluopyram	12
		Flusilazole	4
		Flutriafol	2
		Fluxapyroxad	1
		Folpet (sum of folpet and phthalimide, expressed as folpet)	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
		Hexaconazole	2
		Indoxacarb (sum of indoxacarb and its R enantiomer)	6
		Iprodione	5
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	31
		Lufenuron (any ratio of constituent isomers)	11
		Metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers)	9
		Methoxyfenozide	4
		Metrafenone	11
		Myclobutanil (sum of constituent isomers)	2
		Nicotine	1
		Paclobutrazol (sum of constituent isomers)	1
		Penconazole (sum of constituent isomers)	9

Reason for MRL non-compliant	Product	Substance	Frequency
		Propamocarb (Sum of propamocarb and its salt expressed as propamocarb)	2
		Propiconazole (sum of isomers)	8
		Proquinazid	1
		Pyraclostrobin	5
		Pyridaben	1
		Pyrimethanil	10
		Pyriproxyfen	1
		Spirotetramat and its 4 metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330 enol-glucoside, expressed as spirotetramat	2
		Tebuconazole	11
		Teflubenzuron	5
		Tetraconazole	3
		Thiamethoxam	2
		Thiophanate-methyl	11
		Trifloxystrobin	8
		Zoxamide	1
	Grapefruits	Buprofezin	1
		Chlorpyrifos	2
		Chlorpyrifos-methyl	4
		Prochloraz (sum of prochloraz, BTS 44595 (M201-04) and BTS 44596 (M201-03), expressed as prochloraz)	2
	Honey and other apicultural products	Dimoxystrobin	1
	Jasmine flowers	Trimethyl-sulfonium cation, resulting from the use of glyphosate	1
	Lemons	Chlorpyrifos	1
		Chlorpyrifos-methyl	1
		Fenbutatin oxide	1
	Limes	Chlorfenapyr	1
		Profenofos	1
	Litchis/lychees	Acetamiprid	1
		Profenofos	1
	Mandarins	Buprofezin	1
		Fenbutatin oxide	1
		Prochloraz (sum of prochloraz, BTS 44595 (M201-04) and BTS 44596 (M201-03), expressed as prochloraz)	1
		Propiconazole (sum of isomers)	2

Reason for MRL non-compliant	Product	Substance	Frequency
	Mangoes	Acephate	1
	Melons	Ethephon	1
		Fosthiazate	1
		Methomyl	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)	4
	Okra (lady's fingers)	Chlorates	1
		Diflubenzuron	1
	Oranges	Buprofezin	1
		Chlorpyrifos	1
		Fenbutatin oxide	1
		Propiconazole (sum of isomers)	1
	Papayas	Chlorfenapyr	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
		Mandipropamid (any ratio of constituent isomers)	1
	Parsley	Chlorpyrifos	1
		Folpet (sum of folpet and phthalimide, expressed as folpet)	1
		Prosulfocarb	1
	Passionfruits/maracujas	Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb, Mancozeb, Metiram, Propineb, Thiram and Ziram)	1
	Peaches	Clofentezine	1
	Peanuts/groundnuts	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
	Peas (with pods)	Dimethoate	1

Reason for MRL non-compliant	Product	Substance	Frequency
	Peppercorn (black, green and white)	Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide)	1
	Pineapples	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	Chlorpyrifos-methyl	1
	Quinces	Novaluron	2
	Roman rocket/rucola	Metobromuron	1
	Sesame seeds	Chlorpyrifos	4
		Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide)	3
	Spinaches	Flupyradifurone	1
		Nicotine	1
	Strawberries	Chlorates	1
		Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	1
		Procymidone	1
	Swedes/rutabagas	Captan (sum of captan and THPI, expressed as captan)	1
	Sweet peppers/bell peppers	Biphenyl	2
		Chlorpyrifos-methyl	3
		Fluazinam	1
		Nicotine	1
		Tebufenpyrad	1
	Table grapes	Abamectin (sum of avermectin B1a, avermectinB1b and delta-8,9 isomer of avermectin B1a, expressed as avermectin B1a)	1
		Acetamiprid	1
		Chlorpyrifos	1
	Teas	Tolfenpyrad	1
		Trimethyl-sulfonium cation, resulting from the use of glyphosate	5
	Thyme	Cyfluthrin (Cyfluthrin including other mixtures of constituent isomers (sum of isomers))	1
		Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters	3

Reason for MRL non-compliant	Product	Substance	Frequency
		and its conjugates, expressed as fluazifop)	
	Turmeric/curcuma	Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide)	1
		Phosphane and phosphide salts (sum of phosphane and phosphane generators (relevant phosphide salts), determined and expressed as phosphane)	2
Use of a pesticide on food imported from third countries for which no import tolerance was set	Aubergines/eggplants	Captan (sum of captan and THPI, expressed as captan)	1
	Bananas	Chlorothalonil	1
		Imidacloprid	1
	Buckwheat and other pseudo-cereals	Chlorpyrifos	1
	Granate apples/pomegranates	Acetamiprid	1
	Grape leaves and similar species	Acetamiprid	2
		Ametoctradin	1
		Azoxystrobin	2
		Boscalid	2
		Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	3
		Cyfluthrin (Cyfluthrin including other mixtures of constituent isomers (sum of isomers))	1
		Cypermethrin (Cypermethrin including other mixtures of constituent isomers (sum of isomers))	3
		Cyprodinil	1
		Difenoconazole	1
		Dimethomorph (sum of isomers)	2
		Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb, Mancozeb, Metiram, Propineb, Thiram and Ziram)	5
		Fluopyram	1
		Flutriafol	1
		Iprodione	1
		Lambda-cyhalothrin (includes gamma-	6

Reason for MRL non-compliant	Product	Substance	Frequency
		cyhalothrin) (sum of R,S and S,R isomers)	
		Lufenuron (any ratio of constituent isomers)	2
		Metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers)	3
		Metrafenone	2
		Penconazole (sum of constituent isomers)	1
		Propiconazole (sum of isomers)	1
		Pyrimethanil	2
		Spinetoram	1
		Thiamethoxam	1
		Thiophanate-methyl	3
	Grapefruits	Buprofezin	1
		Chlorpyrifos-methyl	1
		Prochloraz (sum of prochloraz, BTS 44595 (M201-04) and BTS 44596 (M201-03), expressed as prochloraz)	1
	Lemons	Buprofezin	1
	Pears	Chlorfenapyr	1
		Diflubenzuron	1
	Rice	Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	1
		Thiamethoxam	1
		Tricyclazole	3
	Sweet peppers/bell peppers	Chlorpyrifos-methyl	1
		Formetanate: Sum of formetanate and its salts expressed as formetanate(hydrochloride)	1

13.4 Quality assurance

18 accredited laboratories (Table 71) took part in the national control programme for 2021.

Table 71: Laboratories

Country code	Laboratory Name	Laboratory Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or interlaboratory tests
DE	Chemisches und Veterinäruntersuchungsamt Freiburg, 79114 Freiburg Bissierstr. 5	082102	07.10.2021	DAkkS	BIPEA 19g Code: 3619 (pesticides in honey) FAPAS 05150 (pesticides in chicken (hens) eggs) FAPAS 05154 (pesticides in animal fat (pork)

Country code	Laboratory Name	Laboratory Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or interlaboratory tests
					PROOF ACS P2109 (polar pesticides in infant formula)
DE	Chemisches und Veterinäruntersuchungsamt Stuttgart 70736 Fellbach Schaflandstr. 3/2	082107	18.11.2020	DAkkS	EUPT 2021: FV23, SC05, SM13
DE	Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit 91058 Erlangen Eggenreuther Weg 43	092821	29.04.2020	DAkkS	EUPT 2021: AO16, FV23, SC05, SM13, SRM16
DE	Landeslabor Berlin-Brandenburg Dienstsitz Berlin 12489 Berlin Rudower Chaussee 39	112001	28.07.2021	DAkkS	EUPT 2021: AO16, CF15, FV23, SC05, SRM16 FAPAS 05155 (pesticides in olive oil)
DE	Landeslabor Berlin-Brandenburg Dienstsitz Frankfurt (Oder) 15236 Frankfurt (Oder) Gerhard-Naumann-Straße 2/3	122104	28.07.2021	DAkkS	EUPT 2021: AO16, CF15, FV23, SC05, SRM16 FAPAS 05155 (pesticides in olive oil)
DE	Landesuntersuchungsamt für Chemie, Hygiene und Veterinärmedizin 28217 Bremen Lloydstraße 4	042101	01.03.2021	DAkks	EUPT 2021: FV23 FAPAS 19327 (pesticides in green tea)
DE	Institut für Hygiene und Umwelt 20539 Hamburg Marckmannstr. 129a	022020	15.12.2020	DAkkS	EUPT 2021: FV23 FAPAS 06103 FAPAS 19116 FAPAS 19317 (pesticides in strawberries) FAPAS 19326 (pesticides in honey) FAPAS 19327 (pesticides in green tea)
DE	Landesbetrieb Hessisches Landeslabor FG I.3 Datenmeldestelle 65203 Wiesbaden Glarusstraße 6	062109	30.03.2022	DAkkS	EUPT 2021: FV23, SRM16 FAPAS 19308 (pesticides in pear)
DE	Landesamt für Landwirtschaft, Lebensmittelsicherheit und Fischerei Mecklenburg-Vorpommern 18059 Rostock	132101	10.08.2020	DAkkS	EUPT 2021: AO16, CF15, FV23, SC05, SRM16

Country code	Laboratory Name	Laboratory Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or interlaboratory tests
	Thierfelderstr. 18				
DE	Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit Lebensmittel- und Veterinärinstitut Oldenburg 26133 Oldenburg Martin-Niemöller-Straße 2	032010	18.12.2020	DAkkS	EUPT 2021: AO16, CF15, FV23, SC05, SM13, SRM16 EURLSRM Ad-hoc PT-EO (Ethylenoxid in Sesame seeds)
DE	Chemisches und Veterinäruntersuchungsamt Rhein-Ruhr-Wupper CVUA-RRW 47798 Krefeld Deutscher Ring 100	052306	19.08.2020	DAkkS	EUPT 2021: CF15, FV23, SRM16, SM13 BIPEA 2021: 19k (pesticides: medicinal and aromatic plants (tea)), 19e (pesticides-fruit vegetables (apple): bromid), 19h (pesticides-fruit and vegetables (apple): dithiocarbamates) DLA 2021: ptRE01 Ethylenoxide/2-Chloroethanol (spices)
DE	Chemisches und Veterinäruntersuchungsamt Münsterland-Emscher-Lippe CVUA-MEL 48147 Münster Joseph-König-Straße 40	052502	19.11.2020	DAkkS	EUPT 2021: AO16, FV23, SRM16 DLA 2021: ptRE01 Ethylenoxide/2-Chloroethanol (spices)
DE	Landesuntersuchungsamt Institut für Lebensmittelchemie 67346 Speyer Nikolaus-von-Weis-Str. 1	072107	02.12.2020	DAkkS	EUPT 2021: AO16, CF16, FV23, SC04, SRM16 FAPAS 05149 (pesticides & PCBs in infant formula) FAPAS 19317 (pesticides in strawberries) FAPAS 19305 (pesticides in curcuma) FAPAS 19326 (pesticides in honey) BIPEA 11-2619 (dithiocarbamates in endives) BIPEA 19d (pesticides-Fats-Production Meat) BIPEA 19e (nitrate and bromide in apple)
DE	Landesamt für Verbraucherschutz	101101	10.03.2022	DAkkS	EUPT 2021: FV23 FAPAS 09143 (glyphosat in wheat flour)

Country code	Laboratory Name	Laboratory Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or interlaboratory tests
	GB 2 – Veterinärmedizinische, mikrobiologische, molekularbiologische und lebensmittelchemische Untersuchungen 66115 Saarbrücken Konrad-Zuse-Straße 11				FAPAS 19309 (pesticides in lime) FAPAS 09140 (pesticides in wheatflour) Progetto Trieste E1702 (fipronil in egg)
DE	Landesuntersuchungsanstalt für das Gesundheits- und Veterinärwesen Sachsen Standort Dresden 01099 Dresden Jägerstraße 8/10	142262	05.05.2021	DAkkS	EUPT 2021: AO16, FV23, SC04, SRM16
DE	Landesamt für Verbraucherschutz Sachsen-Anhalt Fachbereich 3 06009 Halle (Saale) Freiimfelder Str. 68	152200	25.02.2019	DAkkS	EUPT 2021: AO16, FV23, SC05, SRM16 FAPAS 19326 (pesticides in honey)
DE	Landeslabor Schleswig-Holstein (Lebensmittel-, Veterinär- und Umweltuntersuchungsamt) Postfach 2743 24537 Neumünster Max-Eyth-Str. 5	012001	25.11.2020	DAkkS	EUPT 2021: AO16, FV23, SRM16 FAPAS 05149 (pesticides & PCBs in infant formula) FAPAS 09143 (glyphosat in wheat flour)
DE	Thüringer Landesamt für Lebensmittelsicherheit und Verbraucherschutz Standort Bad Langensalza 99947 Bad Langensalza Tennstedter Str. 8/9	162104	28.01.2019	DAkkS	EUPT 2021: AO16, FV 23

14 Greece

14.1 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 the coordination of the official controls for plant origin food. 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 the coordination of the monitoring of processed foods is EFET (Hellenic Food Authority) while the controls of pesticide residues in wine are organised by the General Chemical State (GCS).

The official laboratories which analyzed the samples taken in 2021 were the Laboratory of Pesticides Residues of Benaki Phytopathological Institute (BPI), 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 programs for pesticide residues and the report of results of the national residue monitoring are published on the official web site of the Hellenic Ministry of Rural Development and Food on an annual basis.[20,21]

National control program of 2021 for pesticide residues (monitoring) as part of the Multi Annual Control Program (EU-MACCP) has been established according to terms and conditions of Articles 26-35 of Regulation (EC) No 396/2005.

The program was based on several risk analysis criteria and parameters: number of samples (domestic and imported) for each product, agricultural produce, cultivation area per culture, expected imports, results from previous years' monitoring programs, dietary intake contribution of each product, sampling location, community control program, pesticides used in practice by the farmers, relevant RASFF notifications for pesticide residues, personnel and analytical capacity of the official laboratories, recommendations from EFSA as well as the SANCO 12745/2013 working document in the version applicable. It aims at ensuring compliance with maximum levels and assessing consumer exposure in order to achieve a high level of protection and application of good agricultural practice 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 analyzed and the areas of sampling were defined. The sampling was carried out by the responsible for sampling regional and local authorities.

Sampling strategy was based on "from the farm to the 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 points of collection, storage, packing and trade of products of plant origin.

The official laboratories, analyzing 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 EU law provisions and other adopted technical guidelines.

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

In 2021, 3658 samples were analysed in total by our authorities. 2727 samples were domestic (74,5%), 171 samples originated from EU (4,7%), 726 originated from third countries (19,8%) while the origin of 34 samples was unknown (1%).

[20] http://www.minagric.gr/index.php/el/for-farmer-2/crop-production/fytoprostasiamenu/ypoleimatafyto
[21] http://www.minagric.gr/index.php/en/citizen-menu/foodsafety-menu

52% of samples analysed were free of quantifiable residues, 43% of samples contained quantifiable residues at or below EU Mrl and 5% of samples exceeded the EU Mrl. Considering measurement uncertainty (50%) this percentage is reduced to 3%. Considering previous years' results, the non compliance rate is generally estimated from 3 to 4%.

The total number of pesticides analysed was approximately 555.

Among the domestic samples analysed, spinach was the most frequently non-compliant commodity. From third countries, the most frequently non-compliant products were lemons, tomatoes, beans (dry), apples and courgettes.

The most frequently detected pesticide in non-compliant samples was chlorpyrifos.

Regarding organic samples, 143 out of the 165 samples were below LOQ (86,7%), 19 out of 165 samples were at or below LOQ (11,5%) and 3 out of 165 samples were non-compliant (1,8%).

A targeted sampling on sesame seeds and similar products (tahini) took place due to the emerging risk of ethylene oxide. The total number of samples analysed was 177. 83,6% of samples were below LOQ, 5,7% of samples contained quantifiable residues below or at the Mrl, 10,7% of samples exceeded the MRL and 1,1% were non-compliant.

The non-compliance rate for suspect samples was lower than expected due to the high number of sesame seeds taken and their results as described above.

Table 72: Summary results 2017-2021

Category	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021
Total number of samples	2623	3571	3454	3149	**3658**
Number of samples without detectable residues	1307 (50%)	1701 (48%)	1724 (50%)	1516 (48%)	**1885 (52%)**
Number of samples with detectable residues at or below EU MRL	1160 (44%)	1606 (45%)	1531 (44%)	1429 (45%)	**1575 (43%)**
Number of samples with residues exceeding EU Mrls	156 (6%)	264 (7%)	199 (6%)	204 (7%)	**198 (5%)**
Non compliant samples	90 (3%)	158 (4%)	119 (3%)	123 (4%)	**115 (3%)**

Table 73: Summary results 2021 per origin

Origin of samples	Total No of samples	No of number of samples (%)			
		<LOQ	>LOQ and <MRL	>MRL	
				Compliant and non compliant	Non compliant
EU	2898	1487 (51,3%)	1308 (45,1%)	103 (3,6%)	63 (2%)
TC	726	375 (51,6)	257 (35,4%)	94 (13%)	52 (7%)
unknown	34	23 (67,6%)	10 (29,4%)	1 (3%)	0
Total	3658	1885	1575	198	115

Table 74: Summary results 2021 per type of product and sampling strategy

Commodity	No of samples (%)									
	Total No of samples		<LOQ		>LOQ and <MRL		>Mrl			
							Compliant and Non compliant		Non compliant	
	Random & Selective	Suspect	Random & Selective	Suspect	Random & Selective	Suspect	Random & Selective	Suspect	Random & Selective	Suspect
Animal products	22	0	22	0	0	0	0	0	0	0
Baby food	14	0	14 (100%)	0	0	0	0	0	0	0
Cereals	92	4	69 (75%)	0	22 (24%)	0	1 (1%)	0	0	0
Fruits and nuts	1376	32	445 (32,3%)	11 (34%)	883 (64,2%)	14 (44%)	48 (3,5%)	7 (22%)	28 (2%)	5 16%
Other plant products	331	170	233 (70%)	132 (78%)	69 (21%)	18 (11%)	29 (9%)	20 (12%)	15 (5%)	4 (2%)
Vegetables	1558	63	922 (59%)	37 (59%)	548 (35%)	21 (33%)	88 (5%)	5 (8%)	60 (4%)	3 (5%)
Total	**3393**	**265**	**1705 50%**	**180 68%**	**1522 45%**	**53 20%**	**166 5%**	**32 12%**	**103 3%**	**12 5%**

Table 75: Summary results 2020 per type of product and sampling strategy

Commodity	No of samples (%)									
	Total No of samples		<LOQ		>LOQ and <MRL		>Mrl			
							Compliant and Non compliant		Non compliant	
	Random & Selective	Suspect	Random & Selective	Suspect	Random & Selective	Suspect	Random & Selective	Suspect	Random & Selective	Suspect
Animal products	41	0	41 (100%)	0	0	0	0	0	0	0
Baby food	23	0	23 (100%)	0	0	0	0	0	0	0
Cereals	91	4	67 (74%)	2 (50%)	20 (22%)	2 (50%)	4 (4%)	0	2 (2%)	0
Fruits and nuts	1226	28	361 (30%)	6 (21%)	808 (66%)	15 (54%)	57 (4%)	7 (25%)	29 (2%)	0
Other plant products	239	26	181 (76%)	15 (58%)	51 (21%)	5 (19%)	7 (3%)	6 (23%)	6 (3%)	4 (15%)
Vegetables	1375	96	775 (56,3%)	45 (47%)	496 (36,1%)	32 (33%)	104 (7,6%)	19 (20%)	63 (5)	15 (16%)

Total	**2995**	**154**	**1448 (48,3%)**	**68 (44%)**	**1375 (46%)**	**54 (35%)**	**172 (5,7%)**	**32 (21%)**	**100 (3,3%)**	**23 (15%)**

Table 76: Summary results 2021 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	2563	1324 (51,7%)	1146 (44,7%)	93 (3,6%)	55 (2,1%)
	TC	199	110 (55,3%)	78 (39,2%)	11 (5,5%)	6 (3%)
	Unknown	33	22 (66,7%)	10 (30,3%)	1 (3%)	0 (0%)
Total No of samples		**2795**	**1456 (52,1%)**	**1234 (44,2%)**	**105 (3,8%)**	**61 (2,2%)**
Selective sampling	EU	293	134 (46%)	152 (51,7%)	7 (2,3%)	6 (2%)
	TC	305	114 (37%)	137 (45%)	54 (18%)	36 (12%)
	unknown	0	0	0	0	0
Total No of samples		**598**	**248 (41,5%)**	**289 (48,3%)**	**61 (10,2%)**	**42 (7%)**
Suspect sampling	EU	42	29 (69%)	10 (24%)	3 (7%)	2 (4,8%)
	TC	222	151 (68%)	42 (19%)	29 (13%)	10 (4,5%)
	unknown	1	1 (100%)	0	0	0
Total No of samples		**265**	**181 (68.3%)**	**52 (19,6%)**	**32 (12,1%)**	**12 (4,5%)**

Table 77: Summary results 2021 for sesame seeds/tahini

Commodity	Origin of samples	Total No of samples	<LOQ	>LOQ and <MRL	>MRL	
					Complaint and Non compliant	Non compliant
Sesame seeds/tahini	EU	3	3 (100%)	0	0	
	TC	173	145 (83,8%)	10 (5,8%)	18 (10,4%)	2 (1,15%)
	Unknown	1	0	0	1 (100%)	0
Total No of samples		**177**	**148 (83,6%)**	**10 (5,7%)**	**19 (10,7%)**	**2 (1,12%)**

14.3 Non-compliant samples: possible reasons. ARfD exceedances and actions taken

14.3.1 Possible reasons for non-compliance

Table 78: Reasons for MRL exceedances

Reasons for MRL non-compliance	Pesticide/food product	Frequency	Comments
GAP not respected: use of a pesticide not approved in the EU[(c)]			
	Beans with pods/chlorpyrifos	1	
	Carrot/chlorpyrifos	3	
	Celery leaves/thiamethoxam	1	
	Celery leaves/chlorpyrifos	1	
	Celeries/chlorpyrifos	1	
	Lettuce/dimethoate/omethoate	1	metabolite of dimethoate
	Leek/chlorpyrifos	1	
	Lettuces/chlorpyrifos	3	
	Mandarins/chlorpyrifos	1	
	Nectarin/tetramethrin	1	further investigations are carried out
	Okra/myclobutanil	1	approval of active substance expired 31-05-2021
	Oranges/chlorpyrifos	2	
	Potatoes/chlorpyrifos	2	
	Pears/tetramethrin	1	further investigations are carried out
	Spinach/chlorpyrifos	1	
	Spinach/cyfluthrin	1	
	Spinach/ethirimol	1	
	Table grapes/thiacloprid	1	
	Tomatoes/chlopyrifos	1	
	Tomatoes (cherry)/chlorfenapyr	1	
	Tomatoes (cherry)/diflubenzuron	1	
	Watermelon/fenamiphos	1	
GAP not respected: use of an approved pesticide not authorised on the specific crop[(c)]			
	Apricots/phosmet	2	approval of active substance expires 01-02-2022
	Carrot/dodine	1	
	Celery leaves/flupyradifurone	1	
	Celery leaves/metaflumizone	1	

Reasons for MRL non-compliance	Pesticide/food product	Frequency	Comments
	Celeries/cypermethrin	1	
	Celeries/fluvalinate	1	
	Cherries/propamocarb	1	
	Cucumber/formetanate	3	
	Cucumber/fosthiazate	1	
	Grape leaves/ametoctradin	1	
	Grape leaves/boscalid	1	
	Grape leaves/famoxadone	1	approval of active substance expired 9-9-2021
	Grape leaves/tebuconazole	1	
	Grape leaves/tebufenpyrad	1	
	Lentils/fluxapyroxad	1	
	Lentils/pirimiphos methyl	1	
	Mandarin/dimethomorph	2	
	Oranges/prochloraz	1	
	Olives for oil production/fluopyram	2	
	Parsley leaves/penconazole	1	
	Peach/imazalil	1	
	Pepper (sweet)/formetanate	1	
	Pepper (sweet)/etoxazole	1	
	Spinach/bupirimate	1	
	Tea infusion leaves/cypermethrin	1	
	Tomatoes/spiroxamine	1	(or GAP not authorised on the specific crop)
	Tomatoes (cherries)/buprofezin	1	(or GAP not authorised on the specific crop)
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected			
	Aubergine/flutriafole	1	
	Beetroot/deltamethrin	1	
	Potatoes/fosthiazate	2	
	Spinach/deltamethrin	5	
	Spinach/fluazifop-p	1	
Use of a pesticide on food imported from third countries for which no import tolerance was set/unknown reason[(d)]			
	Apples/propargite	1	(origin MK)
	Apples/azoxystrobin	1	(origin MK)
	Apples/chlorpyrifos	3	(origin MK)

Reasons for MRL non-compliance	Pesticide/food product	Frequency	Comments
	Bananas/imazalil	1	(origin EC)
	Beans dry/flutriafol	1	(origin IN)
	Beans dry/ chlorpyrifos	8	(origin 6 cases MG and 2 cases PE)
	Beans (dry)/thiamethoxam	1	(origin PE)
	Courgettes/metalaxyl	4	(origin TR)
	Courgette/fosthiazate	1	(origin TR)
	Cumin seeds/acetamiprid	1	(origin IN)
	Cumin seeds/carbendazim	1	(origin IN)
	Cumin seeds/tricyclazole	1	(origin IN)
	Cumin seeds/clothianidin	1	(origin IN)
	Cumin seeds/thiamethoxam	1	(origin IN)
	Ginger roots/clothianidin	1	(origin CN)
	Ginger roots/thiamethoxam	1	(origin CN)
	Lemons/ chlorpyrifos	3	(origin TR)
	Lemons /prochloraz	1	(origin TR)
	Lemon/ buprofezin	4	(origin TR)
	Mangoes/tetraconazole	1	(origin BR)
	Grape leaves/indoxacarb	1	(origin TR)
	Grape fruit/chlorpyrifos-methyl	1	(origin TR)
	Grape fruit/buprofezin	1	(origin TR)
	Oregano/chlorpyrifos	1	(origin AL)
	Pear/diflubenuron	1	(origin TR)
	Peppers (sweet)/tebufenpyrad	1	(origin AL)
	Sesame seeds/imidacloprid	1	(origin NG)
	Sesame seeds/chlorpyrifos	1	(origin IN)
	Tomato/buprofezin	4	(origin 1 TR + 3 AL)
	Tomatoes (cherries)/chlorfenapyr	2	(origin 1 CA+1 AL)
	Tomatoes/pirimiphos methyl	3	(origin AL)
	Tomatoes (cherries)/chlorpyrifos	1	(origin AL)
Other (Use of a pesticide on food imported from third country with exceedance of the ARfD)	Lemon /prochloraz	2	(origin TR)

14.3.2 ARfD exceedances

For 6 out of 3658 samples, exceedance of the health based guidance values (HBGV) was noticed (apricot/phosmet, potato/fosthiazate, orange/prochloraz, lemon/prochloraz, cucumber/formetanate, spinach/fluazifop-p). For active substances for which HBGV were needed but no values were established, risk assessment was not finalized.

14.4 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 on non-compliant samples is carried out by the Directorate of Plant Production Protection (Department of Plant Protection Products). RASFF notifications were sent according to EU Regulations taking into account the results of the risk assessment and the instructions of the RASFF WI 2.2. Guidelines[22].

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 in the market of other batches of same origin was not allowed unless, prior to marketing, a second laboratory analysis was conducted and the results showed conformity with the respected MRLs.

Sanctions were imposed to producers of non-compliant samples according to national laws. If the producer (or farmer) of the lot of the product was unknown, the control authority called the distributor/s (traders, wholesaler, retailer etc) to provide elements (evidence) about the origin of the products. If traceability was lost, sanctions were imposed to the traders.

For imported products sanctions were imposed to importers.

For samples taken according to Import Control Regulations (Regulation (EU) 1793/2019), a border rejection decision was taken for non compliant samples. RASFF notifications were issued for samples when a risk to consumers was identified.

14.5 Quality assurance

Table 79: Laboratories participation in the control program

Country	Laboratory		Accreditation	Participation in proficiency tests or inter-laboratory tests
	Name	Date	Body	
Hellas	Benaki Phytopathological Institute, Pesticides Residues Laboratory	09/07/2002	ESYD (Hellenic Accreditation System S.A.)	EUPT-FV23 EUPT-SRM16 EUPT-AO16 EUPT-CF15 COIPT-20
Hellas	Regional Centre of Plant Protection, Quality and Phytosanitary Control of Thessaloniki	08/09/2009	ESYD	EUPT-FV23, EUPT-CF15
Hellas	General Chemical State	ACCREDITED, ISO 17025, 2009-2018	ESYD	EUPT-FV23, EUPT-CF15, EUPT-AO16, EUPT-SRM16, COI-PT21, EUPT-FV-SC05, LGC-FC296
		ACCREDITED, ISO 17025, 1998-2009	UKAS	

[22] https://webgate.ec.europa.eu/rasff-window

14.6 Processing factors

The processing factors applied were those characterized as indicative/reliable at the European database of processing factors for pesticides in food.[23]

15 Hungary

15.1 Objective and design of the national control programme

15.1.1 Objective

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

15.1.2 Design

The National Monitoring Programme for pesticide residues in produce of plant and animal origin 2021 was based on risk assessment. The programme covers all important commodities of fruits 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 on the places of production and the marketplaces, while the import commodities were sampled at the border inspection posts – BIPs - and at the wholesale chains.

The planned number of samples (2007) for the 2021 control programme was set the National Food Chain Safety Office 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 that has been implemented in Hungarian legislation. Samples are analysed in ISO 17025 accredited laboratories by means of multi-residues and single-residue methods which allowed in 2021 the detection of more than 500 pesticide residues.

The four regional Pesticide Residues Analytical Laboratories – Hódmezővásárhely, Miskolc, Szolnok, Velence - belongs to the NFCSO.

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

15.2.1 Key findings

In 2021, 2007 samples were analysed for pesticide residues in Hungary. These samples were included in the national monitoring programme, EU coordinated programme.

Table 80: 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

[23] https://www.efsa.europa.eu/en/supporting/pub/en-1510

Fruits and nuts, vegetables and other plant product	1582	184	1766
Total number of samples	**1671**	**336**	**2007**

15.2.2 Interpretation of the results

Table 81: Origin of samples

Strategy	Origin	Samples	Samples %
Surveillance	Domestic	1124	56.0
	EU countries	527	26.3
	Third countries	356	17.7

Fruits and vegetables (including potato, nuts and other plant products)

A total of 1582 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 82: Summary results for samples from the surveillance programme

Type of samples	Comment
Fruit and vegetable samples with pesticide residues detected	1582 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 (fruits and vegetables)	56.1 % domestic samples 27.2 % were from EU countries 16.7 % from Third 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 1 raisin sample from Turkey and 16 different pesticides were found in 1 raisin sample from Hungary.
MRL breaches	20 samples exceeded the MRL
Labelled organic	48 samples

Cereals

Table 83: 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 35.6 % were from other EU countries and 4 % from Third Countries
Most frequently detected pesticides	Pirimiphos-methyl 20%

Type of samples	Comment
Maximum number of multiple residues	3 different pesticides were found in one Barley sample
MRL breaches	None sample was exceeded the MRL
Processed	63 samples
Labelled organic	5 sample

Animal products

Table 84: 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 Third 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	7 samples
Labelled organic	2 sample

Baby food

Table 85: 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	5 samples

Overview

In 2021, 53.36 % of the samples analysed resulted without pesticide residues. 46.64% of the samples analysed resulted with pesticide residues below the EC-MRL. 1.15 % of the samples exceeded the EC-MRL level (0.99 % non-compliant of all).

15.2.3 Comparability with the previous year results

Table 86 gives an overview of the samples of the last 2 years. The number of the samples is slightly lower (~10%) than the previous year. The number of the samples without pesticide residues has been decreased. The percentage of samples with pesticide residues above MRLs is slightly lower than in the previous year.

Table 86: Number of samples in 2020 and 2021

Year	Number of samples	Without Residues	With residues below MRL	Exceeding MRL	Non-Compliant
2020	2225	60.54%	39.46%	1.21%	1.17%
2021	2007	53.36%	46.64%	1.15%	1.0%

15.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

15.3.1 Possible reasons for non-compliant samples

In total, 1.15% of the samples were found non-compliant with the EU MRLs.

Table 87: 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-compliance with the MRL		

15.3.2 ARfD exceedances and Actions taken

Table 88 gives an overview of what sort of actions that have been taken.

Table 88: Actions taken

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

15.4 Quality assurance

Table 89: Laboratories' participation in the national control program

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
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,

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
					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

15.5 Processing Factors (PF)

This factor based on water content from food composition tables in fresh vs. dried commodities were used for the dried sample where MRL was set on the fresh commodity.

Table 90: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]	Comments
Chlorpyrifos	Grape	raisins	3.8	

16 Iceland

16.1 Objective and design of the national control programme

16.1.1 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 program and are not included in this report.

16.1.2 Design

The Food and Veterinary Authority is the competent authority for designing the pesticide residues monitoring program as well as reporting results to EFSA. The collection of the samples was 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.

This year 137 samples were taken in total.

A multi-annual sampling plan is revised every year. The sampling plan is based on information extracted from customs tariff on import volumes and numbers on domestic production volumes. In addition, the co-ordinated EU programme in Regulation (EC) No 2020/585 is included in the sampling plan.

Strawberries and raspberries are the only fruit/berry commercially grown in Iceland. All other fruits 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.

Cereals are grown in very limited amount in Iceland, and mainly for feed. As over half of all cereals are imported processed in consumer-sized packages, or already malted for brewing, it is difficult to find whole grain cereal for sampling in Iceland. Therefore, there are few samples of whole grain.

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

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

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

16.2.1 Key findings

This year's results show that overall, 96.4 % of samples taken were free of quantifiable residues or contained residues within the legally permitted levels. 3.6 % of samples (5) contained residues exceeding the MRLs. (Table 91).

Table 91: Summary results

Origin of samples	No of samples	% of samples	No of samples exceeding MRL	% Exceedances
EU	79	57.7	1	1.3
Domestic	3	2.2	0	0
Outside EU and EEA	51	37.2	4	7.8
Unknown origin	4	2.9	0	0
Total	137		5	3.6

16.2.2 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 that there are few exceedances. Exceedances are more common in third country products. This implies that the food with these measured levels of pesticide residues is safe to eat. There is a decrease in exceedances compared to 2020. The main factors in this, is the randomness of a small program, and the increasing number of pesticides screened for. It is important to view the results over a longer period than 1 year and also the result of 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

16.2.3 Comparability with the previous year's results

This year the number of exceedances has decreased (Table 92). However, the very small program plays a role in the randomness of the results. A change in the choice of samples, origin and matrix can change the outcome significantly. This year most exceedances are found in grapefruit from Turkey.

Table 92: Comparability with the previous year results

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of exceedances	5	2	4	8	4	3	11	7	5

16.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

16.3.1 Possible reasons for non-compliant samples

Five cases of non-compliances occurred in 2021, none of them a domestic product.

Two cases of grapefruit originated in Turkey, one case of melons from Honduras, one case of dill from Morocco and one case of aubergines from Spain.

In general, there is no verified knowledge of the reasons for non-compliant results. Possible reasons might be the use of a pesticide on food imported from third countries for which no import tolerance was set, and GAP not respected: use of a pesticide not approved in the EU.

16.3.2 Actions taken

None of the MRL exceedances resulted in an ARfD exceedance.

In cases of imported products exceeding the MRL (Table 93), the distribution was stopped and what was left of the lot was withdrawn from market and destroyed. The importer is obliged to notify when the next shipment from the same producer is expected and is not allowed to distribute the product until it has been sampled, and results confirmed to be below MRL. Follow-up sampling was planned but the importers did not receive another shipment from the same producer/country.

No domestic samples exceeded the MRL.

Table 93: Action taken

Action taken	Number of non-compliant samples concerned	Comment
Rapid Alert Notification	0	
Lot withdrawn from the market	5	
Follow up (suspect) sampling of similar products, samples of same producer or country of origin	5	Follow-up sampling of next shipment planned but did not arrive

16.4 Quality assurance

In 2021, two laboratories, analysed the samples (Table 94).

Table 94: Laboratories participating in the national control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
IS	Matís ohf	Matis	17.9.2021	SWEDAC	EUPT FV23, EUPT AO15
DE	Eurofins Specht GmbH	Dr.Efins Express	30.3.2020	DAkkS	N/A

16.5 Additional information

On the list of pesticides to be analysed according to Regulation (EU) No 2020/552 (the coordinated multiannual control programme) there are few pesticides that the laboratory in Iceland cannot analyse yet. New pesticides have been added to every year since 2013 to the analysing method with the aim to fulfil the regulation. Due to malfunctions of analytical equipment in the Icelandic laboratory a part of the samples in the control program were sent to a laboratory abroad this year.

The implementation of new legislation, and changes in MRLs in Iceland are delayed. New legislation needs to be approved in the EEA Joint Committee before implementation, which will cause a delay compared to the EU.

In 2021 Iceland had an audit from the EFTA surveillance authority (ESA) in the field of pesticide monitoring and control of use of PPPs.

17 Ireland

17.1 Objective and design of the national control programme

The 2021 Irish national control programme for pesticide residues in food was carried out by the Pesticide Controls Division (PCD) and the Import Controls Operations Division (ICOD) 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).

17.1.1 Objective

The control programme consisted of two strategies:

- **surveillance** of plant and animal origin randomly sampled for the presence of pesticide residues and
- **enforcement** of the pesticide residue legislation e.g. targeting of samples with a history of non-compliances and commodities listed in Regulation (EC) No. 2019/1793 as amended for pesticide residues.

This involved sampling of produce at 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 2020 RASSF notification and subsequent coordinated action across member states on unauthorised ethylene oxide in sesame seeds] was performed at commercial a laboratory operated by Eurofins in Germany.

17.1.2 Design

The control programme for 2021 took into consideration:

- the coordinated programme (2020/585) required by the European Commission for 2021;
- dietary intake patterns of Irish consumers[24]https://euc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en-gb&rs=en-gb&wopisrc=https://efsa815.sharepoint.com/sites/chemical-monitoring-data-network/_vti_bin/wopi.ashx/files/832c18af6fed487087c4344aefd03cba&wdenableroaming=1&wdfr=1&mscc=1&hid=0a5c7d83-5a9b-ff6f-360c-e0e44cef6fa3-14107&uiembed=1&uih=teams&uihit=files&hhdr=1&dchat=1&sc={"pmo":"https://teams.microsoft.com","pmshare":true,"surl":"","curl":"","vurl":"","eurl":"https://teams.microsoft.com/files/apps/com.microsoft.teams.files/files/83350239/open?agent=postmessage&objectUrl=https%253A%252F%252Fefsa815.sharepoint.com%252Fsites%252Fchemical-monitoring-data-network%252FShared%2520Documents%252FPesticideResidueAnnualReport_2021%252FNationalSummaryReport%252F2021_National_Summary_Report.docx&fileId=832C18AF-6FED-4870-87C4-344AEFD03CBA&fileType=docx&messageId=1657297045679&ctx=chiclet&scenarioId=14107&locale=en-gb&theme=default&version=22072905500&setting=ring.id:general&setting=createdTime:1662734530768"}&wdorigin=TEAMS-WEB.teams.chiclet&wdhostclicktime=1662734530729&jsapi=1&jsapiver=v1&newsessio

[24] Irish University Nutrition Alliance IUNA 2008–2010 and the 2006 Irish Children's Survey.

n=1&corrid=37980a7e-e204-41ae-b107-b939db41f552&usid=37980a7e-e204-41ae-b107-b939db41f552&sftc=1&sams=1&accloop=1&sdr=6&scnd=1&hbcv=1&htv=1&nbmd=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected (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;
- capacity of the laboratory.

The planned number of samples for the 2021 control programme was agreed with the FSAI. 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 Directive 96/23/EC.

For setting out pesticides that should be included in national control programmes, the following aspects were taken into consideration:

- 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.

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

17.2.1 Key findings

Overall, 96.4% of the 1617 samples analysed were free of quantifiable residues or contained residues within the legally permitted levels. No residues were detected in 58.1% of samples. An additional 38.3% of samples had quantified residues below the MRLs, while 3.6% (59 samples) contained residues exceeding the MRLs. When analytical measurement uncertainty is taken into consideration, 1.8% of samples (29 samples) clearly exceeded these legal limits (non-compliance).

Table 95: Summary of samples taken in 2021 by product class

Samples	Total	<LOQ	%<LOQ	>LOQ and <MRL	%>LOQ and <MRL	>MRL	% >MRL
Animal products	446	409	91.7%	37	8.3%	0	0.0%
Cereals	84	56	66.7%	22	26.2%	6	7.1%
Baby food	58	58	100.0%	0	0.0%	0	0.0%
Fruits and vegetables							
Fruits	482	130	27.0%	326	67.6%	26	5.4%
Vegetables	492	246	50.0%	220	44.7%	26	5.3%
Processed products	55	40	72.7%	14	25.5%	1	1.8%

Table 96: Summary results – fruits and seeds including processed and enforcement

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Apples	73	15	56	2	3	38	32	0
Apricots	6	1	5	0	0	4	2	0
Blackberries	3	2	1	0	0	0	3	0
Blueberries	16	10	5	1	0	2	14	0
Canned or jarred pineapple	1	1	0	0	0	0	0	1
Chinese persimmons	2	1	1	0	0	1	1	0
Clementines	18	0	17	1	0	2	16	0
Coconut milk (cocos nucifera) liquid	10	10	0	0	0	2	5	3
Common banana	17	4	13	0	0	0	17	0
Common peaches	9	0	8	1	0	7	2	0
Figs	1	1	0	0	0	0	1	0
Gojiberry	2	2	0	0	0	0	2	0
Granate apples (pomegranate)	18	9	6	3	0	3	15	0
Grapefruits	25	4	15	6	0	4	19	2
Hemp seeds	1	1	0	0	0	0	1	0
Juice, apple	9	4	5	0	0	0	1	8
Juice, black currant	1	1	0	0	0	0	0	1
Juice, cranberry	4	4	0	0	0	0	1	3
Juice, mango	1	0	0	1	0	0	0	1
Juice, pineapple	6	6	0	0	0	0	0	6
Juice, grapefruit	1	0	1	0	0	0	0	1
Juice, orange	12	10	2	0	0	0	0	12
Juice, prune	1	1	0	0	0	0	0	1
Kiwi fruits (green, red, yellow)	27	15	10	2	0	12	15	0
Kumquats	1	1	0	0	0	1	0	0
Lemons	11	1	9	1	0	6	5	0
Limes	10	3	5	2	0	0	10	0
Linseeds	1	1	0	0	0	0	1	0
Mandarins	21	1	20	0	0	2	17	2
Mangoes	14	5	9	0	0	1	13	0
Melons	19	9	10	0	0	6	13	0
Nectarines	8	2	6	0	0	8	0	0
Oranges	31	2	25	4	0	11	20	0
Passionfruits	9	0	8	1	0	0	9	0
Pears	28	3	25	0	0	23	5	0
Pineapples	7	2	5	0	0	0	7	0
Plums	9	3	6	0	0	4	4	1
Pomelos	1	0	0	1	0	0	1	0
Pumpkin seeds	3	3	0	0	0	0	3	0
Pumpkins	1	0	1	0	0	1	0	0
Rape seed oil, edible	2	1	1	0	1	0	0	1
Raspberries and similar-	8	2	6	0	0	4	4	0
Satsumas	10	0	10	0	0	0	10	0
Sesame seeds	9	6	2	1	0	0	9	0

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Strawberries	19	4	15	0	4	8	7	0
Table grapes	27	2	25	0	0	9	18	0
Ugli fruits	1	0	1	0	0	0	1	0
Watermelons	3	3	0	0	0	0	3	0
Wine, white	5	4	1	0	0	1	3	1
Wine, red	5	2	3	0	0	2	3	0
Total	**527**	**162**	**338**	**27**	**8**	**16**	**313**	**44**

Table 97: Summary results – vegetables and fungi including processed and enforcement

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Asparagus	4	4	0	0	0	0	4	0
Aubergines	19	5	14	0	0	19	0	0
Avocados	14	12	2	0	0	2	12	0
Beans (with pods) and similar-	15	8	7	0	0	0	14	1
Beetroots	3	3	0	0	0	3	0	0
Broccoli	28	21	7	0	4	17	7	0
Brussels sprouts	1	1	0	0	1	0	0	0
Carrots	28	15	13	0	12	13	1	2
Cauliflowers	11	11	0	0	6	5	0	0
Celeries	12	2	8	2	4	7	1	0
Chards	2	0	2	0	0	2	0	0
Chickpeas (without pods)	1	1	0	0	0	0	0	1
Chickpea (canned or jarred)	2	2	0	0	0	0	0	2
Chili peppers	23	6	10	7	0	0	23	0
Chinese cabbages	1	1	0	0	0	1	0	0
Chives	2	0	1	1	0	0	2	0
Cinnamon bark	1	1	0	0	0	0	1	0
Common mushrooms	24	6	17	1	24	0	0	0
Coriander leaves	2	0	1	1	0	2	0	0
Courgettes	10	2	8	0	1	9	0	0
Cucumbers	9	4	5	0	3	6	0	0
Curry leaves	1	0	0	1*	0	0	1	0
Florence fennels	2	0	2	0	0	2	0	0
French beans (with pods)	2	2	0	0	0	0	2	0
Garden peas (with pods)	12	3	8	1	0	0	12	0
Garden peas (without pods)	2	2	0	0	1	0	0	1
Garlic	1	0	1	0	0	1	0	0

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Gherkins	1	1	0	0	0	1	0	0
Ginger roots	5	4	1	0	0	1	4	0
Globe artichokes	1	1	0	0	0	1	0	0
Head cabbages	12	5	7	0	8	4	0	0
Juice, tomato	1	1	0	0	0	0	1	0
Kales	8	5	2	1	7	1	0	0
Leeks	7	6	1	0	4	3	0	0
Lentils (dry)	5	2	3	0	0	0	3	2
Lettuces (generic)	41	19	22	0	12	26	3	0
Mints	2	0	2	0	1	0	1	0
Okra	5	4	1	0	0	0	5	0
Olive oil, virgin or extra-virgin	12	10	2	0	1	8	0	3
Onions	8	7	1	0	0	8	0	0
Oyster mushrooms	1	1	0	0	1	0	0	0
Pak-choi	2	1	1	0	2	0	0	0
Parsley	2	0	0	2	0	2	0	0
Parsnips and similar-	8	3	3	2	7	1	0	0
Potatoes	30	17	13	0	22	4	4	0
Radishes	3	2	1	0	0	3	0	0
Roman rocket	4	0	4	0	0	4	0	0
Rosemary	1	1	0	0	0	1	0	0
Sage	1	0	0	1	0	0	1	0
Shallots	3	2	1	0	1	2	0	0
Sorrel	1	1	0	0	0	0	1	0
Soyabeans (without pods)	1	1	0	0	0	0	1	0
Spinaches	3	2	1	0	1	2	0	0
Spring onions	3	1	2	0	1	0	2	0
Swedes	5	3	1	1	5	0	0	0
Sweet corn	6	6	0	0	1	1	3	1
Sweet peppers	26	7	18	1	0	22	4	0
Sweet potatoes	13	8	4	1	0	1	12	0
Tamarillos	1	0	0	1	0	0	1	0
Tarragon	1	0	0	1	0	1	0	0
Teas leaves, dry and/or fermented, and similar	9	7	2	0	1	0	6	2
Thyme	1	1	0	0	0	0	1	0
Tomatoes	30	11	19	0	7	22	1	0
Turnips	3	1	2	0	3	0	0	0
Watercresses	1	0	0	1	0	1	0	0
Winter squashes	3	1	2	0	0	2	1	0
Total	**502**	**254**	**222**	**26**	**141**	**211**	**135**	**15**

*Sample was compliant on application of dehydration processing factor (see Table **106**)

Table 98: Summary results – cereals including processed and enforcement

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Buckwheat	1	1	0	0	0	0	1	0
Barley grains	10	9	1	0	9	0	1	0
Common millet grain	3	3	0	0	0	0	3	0
Common wheat grain	14	10	4	0	4	9	1	0
Oat grain	20	20	0	0	10	0	5	5
Rice grain	15	3	6	6	0	0	15	0
Wheat flour	21	10	11	0	7	2	1	11
Total	**84**	**56**	**22**	**6**	**30**	**11**	**27**	**16**

Table 99: Summary results – food of animal origin including processed and enforcement

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Bovine fat tissue	137	133	4	0	137	0	0	0
Chicken, fresh fat tissue	21	21	0	0	21	0	0	0
Equine fat tissue	2	1	1	0	2	0	0	0
Pig fat tissue	61	60	1	0	61	0	0	0
Sheep fat tissue	84	79	5	0	84	0	0	0
Turkey, fresh fat tissue	5	5	0	0	5	0	0	0
Cow milk	90	65	25	0	90	0	0	0
Goat milk	2	1	1	0	2	0	0	0
Hen eggs	30	30	0	0	30	0	0	0
Honey	14	14	0	0	14	0	0	0
Total	**446**	**409**	**37**	**0**	**446**	**0**	**0**	**0**

Table 100: Summary results – infant food

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Follow-on formulae	21	21	0	0	21	0	0	0
Infant formulae	12	12	0	0	11	0	1	0
Ready-to-eat meal for infants and young children	25	25	0	0	0	16	5	4
Total	**58**	**58**	**0**	**0**	**32**	**16**	**6**	**4**

Table 101: Summary results – enforcement (samples also included in Table 95 to

Table 100)

Commodity	Type	Residues detected			
		Total no. Of samples	<LOQ	>LOQ and <MRL	>MRL
Apples	Targeted	2	0	2	0
Beans (with pod and similar)	BCP	2	0	2	0
Buckwheat	BCP	1	1	0	0
Chili peppers	BCP	23	6	10	7
Cinnamon bark	BCP	1	1	0	0
Curry leaves	BCP	1	0	0	1*
Gojiberry	BCP	2	2	0	0
Granate apples	BCP	7	3	2	2
Grapefruits	Targeted	1	0	0	1
Common banana	BCP	1	1	0	0
Hemp seeds	BCP	1	1	0	0
Lentils (dry)	BCP	1	1	0	0
Linseeds	BCP	1	1	0	0
Okra	BCP	5	4	1	0
Oranges	Targeted	1	0	0	1
Sweet peppers	BCP	3	2	0	1
Pumpkin seeds	BCP	3	3	0	0
Sesame seeds	BCP	9	6	2	1
Soyabeans (without pods)	BCP	1	1	0	0
Swedes	Targeted	1	0	0	1
Teas leaves, dry and/or fermented, and similar	BCP	4	2	2	0
Total		**71**	**35**	**21**	**15**

*Sample was compliant on application of dehydration processing factor (

Table **106**)

BCP – Board Control Point

Table 102: Summary results – MRL exceedance details

Commodity	Residues detected			
	Origin	Compound	Result	MRL
Apples	France	Fenhexamid	0.032	0.010
	Chile	Diphenylamine	0.052	0.050
Blueberries	Peru	Fludioxonil	3.5	2.0
Celeries	Ireland	Linuron	0.065	0.010
		Aclonifen	0.015	0.010
	Ireland	Linuron	0.017	0.010
Chilli peppers	Uganda	Carbendazim	0.17	0.10
		Thiophanate-methyl	1.1	0.10
		Clothianidin	0.10	0.040
	Turkey	Acetamiprid	0.34	0.300
	Turkey	Biphenyl	0.16	0.010
	Turkey	Acrinathrin	0.022	0.020
		Chlorpyrifos-methyl	0.028	0.010
	Uganda	Carbendazim	0.12	0.10
		Clothianidin	0.049	0.040
	Uganda	Acetamiprid	0.42	0.30
	Uganda	Clothianidin	0.086	0.040

Commodity	Residues detected			
	Origin	Compound	Result	MRL
Chives	Tanzania	Chlorpyrifos	0.016	0.010
		Thiamethoxam	0.033	0.020
		Cyfluthrin	2.0	0.020
		3-hydroxy-carbofuran	0.051	0.020
Clementine	Morocco	Propiconazole	0.011	0.010
Common mushrooms	Ireland	Fluazinam	0.011	0.010
Common peaches	Spain	Thiabendazole	0.011	0.010
Corriander leaves	Spain	Chlorbromuron	0.012	0.010
Curry Leaves*	India	Chlorpyrifos	0.21*	0.010
		Methomyl	0.049*	0.020
		Thiodicarb	0.14*	0.020
Garden peas (with pod)	Kenya	Chlorothalonil	0.024	0.010
Granate apples (pomegranate)	Spain	Acetamiprid	0.020	0.010
	Turkey	Acetamiprid	0.011	0.010
	Turkey	Acetamiprid	0.023	0.010
Grapefruits	Turkey	Chlorpyrifos-methyl	0.076	0.010
		Buprofezin	0.056	0.010
	Turkey	Chlorpyrifos-methyl	0.21	0.010
	Turkey	Chlorpyrifos-methyl	0.10	0.010
	Turkey	Chlorpyrifos-methyl	0.083	0.010
		Buprofezin	0.017	0.010
		Chlorpyrifos	0.063	0.010
	Turkey	Chlorpyrifos-methyl	0.12	0.010
	Turkey	Chlorpyrifos-methyl	0.012	0.010
Juice, mango	Unknown	Pyrimethanil	0.012	0.010
Kales	Spain	Spinosad	2.8	2.0
Kiwi fruits (green, red, yellow)	Chile	Thiabendazole	0.011	0.010
	Chile	Thiabendazole	0.012	0.010
Lemons	Argentina	Propiconazole	1.2	0.010
Limes	Brazil	Propargite	0.59	0.010
	Brazil	Chlorothalonil	0.011	0.010
Oranges	Egypt	Chlorpyrifos	0.031	0.010
	Egypt	Chlorpyrifos	0.013	0.010
	Egypt	Buprofezin	0.017	0.010
		Chlorpyrifos	0.044	0.010
	Egypt	Chlorpyrifos	0.041	0.010
Parsley	Spain	1,4-Dimethylnaphthalene	0.041	0.010
	The Netherlands	Fenuron	0.23	0.010
Parsnips and similar-	Ireland	Linuron	0.086	0.010
	Ireland	Linuron	0.050	0.010
Passionfruits	Colombia	Chlorothalonil	0.10	0.010
Pomelos	China	Myclobutanil	0.011	0.010
Rice grain	Unknown	Buprofezin	0.017	0.010
	Unknown	Buprofezin	0.015	0.010
	Unknown	Thiamethoxam	0.012	0.010
	Unknown	Chlorpyrifos	0.013	0.010
	Unknown	Chlorpyrifos-methyl	0.019	0.010
		Chlorpyrifos	0.013	0.010
	Unknown	Buprofezin	0.016	0.010
		Tricyclazole	0.012	0.010

Commodity	Residues detected			
	Origin	Compound	Result	MRL
Sage	Kenya	Chlorothalonil	0.032	0.020
Sesame seeds	India	Chlorpyrifos	0.013	0.010
Swedes	Ireland	Chlorpropham	0.046	0.010
Sweet peppers	Turkey	Chlorpyrifos-methyl	0.031	0.010
Sweet potatoes	Egypt	Chlorpropham	0.025	0.010
Tamarillos	Colombia	Pyrimethanil	0.016	0.010
Tarragon	Spain	Lufenuron	2.3	0.020
Watercresses	Italy	Cyprodinil	0.042	0.020
		Emamectin benzoate	0.020	0.010

*Sample was compliant on application of dehydration processing factor (see

Table **106**)

17.2.2 Interpretation of the results

In 2021, 14.5% of the fruit and vegetable samples analysed were of domestic origin and the rest were imported from the EU and elsewhere. 94.8% of the fruit and vegetable samples contained either no residues or residues within the legally permitted levels (40.4% contained no residues and 54.4% contained residues at levels which were in compliance with the EU legislation). The remaining 5.2% contained residues exceeding the MRLs. When measurement uncertainty (50%) is taken into account this reduces to 2.8%.

In the case of the cereal samples, 35.7% were of domestic origin. No residues were detected in 66.7% of the samples and a further 26.2% had residues in compliance with the EU legislation. The remaining 7.1% contained residues exceeding the MRLs, however, no samples exceeded the legal limits when measurement uncertainty (50%) is taken into account.

All food of animal origin samples were of domestic origin. No residues were detected in 91.7% of the samples, while the remaining 8.3% had residues in compliance with the EU legislation.

No pesticide residues were detected in any of the infant formula or baby food samples.

In 2021, 71 samples were taken under EU Regulations dealing with 2019/1793 covering temporary increase of official controls on food of non-animal origin from certain countries. This is a significant increase on the previous year which can largely be attributed to Britain's exit from the customs union and a normalisation of trade volumes post-pandemic. Additionally, all BCP sesame seeds sampled in 2021 were analysed for ethylene oxide by Eurofins. No residues were detected in 49.3% of the samples and 30.0% of the samples had residues in compliance with the EU legislation. Follow-up enforcement action (destruction of consignments) was conducted by Import Controls Operations Division.

In all cases where non-compliant residues are detected, 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 guide the follow-up action to be taken. In 2021, no consumer health risks were identified for the majority of MRL breaches. However, a number of these non-compliant commodities related to the detection of chlorpyrifos or its metabolite, chlorpyrifos-methyl. These detections occurred in samples of grapefruit, orange, chive and rice. In such instances, a consumer health risk cannot be ruled out.

All breaches 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 enforcement strategy. During 2021 a total of 3 such targeted samples were identified and taken.

17.2.3 Comparability with the previous year results

As part of the 2021 programme, a total of 1029 fruits, vegetables and fungi samples were analysed. When compared to previous years, the number of samples with residues detected above the MRL (5.2%) is higher than 2020 (3.5%) and 2019 (0.8%). The majority of the breaches occur in samples from third 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 are not granted.

The number of fruit and vegetable samples with detectable residues above the LOQ has decreased from 64.2% in 2020 to 59.6% in 2021. The number of pesticides being detected has remained relatively constant.

The most commonly detected pesticide in fruit and vegetable samples in 2021 was fludioxonil. This is a non-systemic fungicide used a post-harvest treatment across a broad range of commodities. In the previous 3 years, imazalil (which is mainly used to prevent decay of citrus during storage and transportation) was the most commonly detected pesticide in fruits and vegetables samples. It was the second most commonly detected pesticide in 2021.

Pesticide residues were found in 33.3% of cereal samples taken and the MRL was exceeded in 6 of the 15 rice samples. This is less than levels reported in 2020 (41.7%) and 2019 (61.3%).

The percentage of food of animal origin samples with detectable residues rose to 8.3% in 2021 compared to the lower levels reported in previous years i.e. 3.5% (2020), 2.0% (2019) and 3.9% (2018). This can be attributed to the analysis and detection of chlorate residues in milk samples. For food of animal origin, there was no MRL breach in 2021 compared with two in 2020 and none in 2019. In line with previous years, there continued to be no residues detected in the infant and follow-on formula samples analysed in 2021.

There were 12 MRL breaches for import control samples in 2021 of which 5 were non-compliant when measurement uncertainty was considered. This compared with no breaches detected in 2020 and one in 2019.

17.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

17.3.1 Possible reasons for non-compliant samples

The PCD Enforcement Officer investigates all MRL breaches in samples of plant origin of domestic origin. For food of animal origin, the Dairy or Veterinary section is informed of the issue and investigates the cause. In 2021, 4 MRL breaches were detected in produce of domestic origin (celery, 2 parsnips and swede). 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 are reported to the Food Safety Authority of Ireland.

Table 103: 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	6		Turkey
Misuse of product	Propiconizole/Lemon	1		Argentina
Misuse of product	Propargite/Lime	1		Brazil
Misuse of product	Chlorpyrifos/Orange	3		Egypt
Misuse of product	Chlorothalonil/Passionfruits	1		Colombia
Misuse of product	Fenhexamid/Apple	1		France
Misuse of product	Granate apple(pomegranate)/Acetamiprid	1		Turkey
Vegetables				
Misuse of product	CyfluthrinWatercresses	1		Tanzania
Misuse of product	1,4-Dimethylnaphthalene/Parsley	1		Spain
Misuse of product	Fenuron/Parsley	1		The Netherlands
Misuse of product	Lufenuron/Tarragon	1		Spain
Misuse of product	Chlorothalonil/Garden pea (with pods)	1		Kenya
Unknown	Linuron/Parsnips and similar -	2		Ireland
Misuse of product	Chloropropham/Sweet potatoes	1		Egypt
Unknown	Linuron/Celeries	1		Ireland
Misuse of product	Clothianidin/Chilli peppers	2		Uganda
Misuse of product	Biphenyl/Chilli peppers	1		Turkey
Misuse of product	Chlorpyrifos-methyl/Chilli peppers	1		Turkey
Misuse of product	Chlorpyrifos-methyl/Sweet peppers	1		Turkey
Unknown	Chlorpropham/Swede	1		Ireland

a) Number of cases

17.3.2 ARfD exceedances

None of the MRL breaches resulted in ARfD exceedance. However, with the detections of chlorpyrifos and chlorpyrifos-methyl that occurred in samples of grapefruit, orange, chive and rice, a consumer health risk cannot be ruled out.

17.3.3 Actions taken

Follow-up enforcement actions are carried out for all Irish MRL breaches. For other MRL breaches, typically the Food Business Operator is informed as well as the CODEX contact point for the country of origin.

Table 104: Actions taken

	Action taken	N. 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		8	
Destruction of non-compliant lot		8	
Follow-up (suspect) sampling of similar products, samples of same producer or country of origin	Targeted Sampling where possible	5 targeted	To date other relevant samples could not be found on the market in 2021
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)			

17.4 Quality assurance

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

Table 105: Laboratory's participation in the National Control Program

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
Ireland	Pesticide Control Laboratory	PCS	1/1/2021-31/12/2021	INAB	7 EUPTs and 1 colaborative study in 2021

Table 106: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]	Comments
	Curry leaves	Curry leaves (dried)	7	Generic dehydration factor for laurel leaves used (no

	specific dehydration available for curry leaves)

a) Processing factor for the enforcement residue definition

18 Italy

18.1 Objective and design of the national control programme

The national control program is defined by Ministerial Decree 23 December 1992 (transposing Directive 90/642/EEC) as integrated by Ministerial Decree 30 July 1993 concerning the programming of official controls for imports coming from Third Countries and documents containing specific indication issued by the General Di-rectorate.

This control program is a part of the national control plan that is available in the web site of the Ministry of Health at the following link[25].

The time of application of the NAP is three years from 2020 and the part of the program related to residues of pesticide have to be amended every year by Office 7 of Directorate General for Hygiene and Food safety and nutrition

The National Program Pesticide Residues foresees a detailed program implementing the checks to be carried out by Regions and Autonomous Provinces of Trento and Bolzano, with indication of 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 foodstuffs in the concerned Region or autonomous Province concerned.

The number of samples to be taken for each Region/Province for the following foodstuffs: vegetables, fruits, cereals, wine, oils is provided by the Decree.

The program also foresees the research of residues of plant protection products in foodstuffs of animal origin: meat, milk, egg, fish

Moreover, the Director General of Directorate-General for the hygiene and safety of food and nutrition - Ministry of Health gives indications to the regions/provinces for sampling of foods reported in the coordinated pro-gram and for national program.

In particular for every region/province there is reported the number of samples that have to be checked for every food that have to be sampled for monitoring program. There is reported the samples irregular in the last year with procedures to sampling for not compliant samples and with information about sampling region and with origin region. There is also indication about baby food and organic samples.

There is also indication that permit to group the type of food in the classification of annex I of regulation 396/2005 and in the regulation UE N 723/2019.

The honey was added to products of animal origin moreover, done to environment regional problem the fish have to be sampled on voluntary basis.

[25] Fitosanitari - Controlli ufficiali sui residui in alimenti - programma nazionale (salute.gov.it)

Specific indications were given about the transmission of data and the processing factor the laboratories have to apply when they evaluate the results. There is also attached the integration form report that inspectors need as checklist necessary for transmission data.

"Uffici di Sanità Marittima, Aerea e di Frontiera" (USMAF) of Ministry of Health today named border post of control perform the sampling on products of vegetable origin imported from Third Countries, in at least 3% of the consignments of imported food.

The national program reports also the pesticides that the Laboratories must search. There are the pesticides that are found as not compliant in the past year and the pesticides that are reported in the SANCO/12745/2013 document. There is also reported the pesticides as indication of the regulation UE 585/2020.

18.2 Key findings, interpretation of the results and comparability with the previous year results

In 2021 we can observe that the total sampling was increased.

Not compliant samples are (0.7%) taking in consideration also not compliant import controls.

Detailed information about import control are collected in particular 153 samples are taken to border place and 9.486 samples are done from local health authorities and Command Carabinieri Health Prevention.

Out of a total of 9639 (Table 107) samples 57.4 % are fruit and vegetable, 16 % cereals, 12.0 % oil and wine, 0.9 % baby food and 13.7 % other type of food (processed different form oil and wine , product of animal origin, fish product, group of plant and seeds for beverage, spice, sugar plant, oilseeds and oil fruits).

62,7% of samples (Table 108) are without residues, while 36.6 % are with residues below the MRL and 0.7% are irregular. All baby food samples are compliant. Irregular samples were found for cereal, fruit, vegetable and other product.

8755 samples have as origin Italy, 325 come from other EU Member states, 456come from Third country and for 103 samples the origin is unknown.

The 4.0 % (388) of samples were organic. 1.3% (122) of samples were enforcement sample.

The total number of product sampled for European program (Table 111) of the regulation (UE) 585/2020 is 1554. All type of food are sampled in quantity above the indication reported in that regulation, fat bovine is compliant for all samples of this type

Table 107: Summary results

Fruit & vegetables	% on total	Cereals	% on total	oil & wine	% on Total	Baby food	% On total	other product	% on total	Total
5.536	57,4	1.544	16,0	1.158	12,0	84	0,9	1.317	13,7	9.639

Table 108: Compliant – not compliant-

Food	Total Samples	Samples without residues	Samples without residues (%)	Samples with residue below or equal LMR	Samples with residue below or equal LMR (%)	Samples with residues above LMR	Samples with residues above LMR (%)
Fruit & vegetables	5.536	2.735	49,4	2.739	49,5	62	1,1
Cereals	1.544	1209	78,3	331	21,4	4	0,3
oil & wine	1.158	748	64,6	410	35,4	0	0,0
Baby food	84	79	94,0	5	6,0	0	0,0
other product	1.317	1.269	96,4	46	3,5	2	0,2
Total	9.639	6.040	62,7	3.531	36,6	68	0,7

Table 109: **National sample**

Food	Total Samples	Samples without residues	Samples without residues (%)	Samples with residue below or equal LMR	Samples with residue below or equal LMR (%)	Samples with residues above LMR	Samples with residues above LMR (%)
Fruit & vegetables	5.431	2.682	49,4	2.695	49,6	54	1,0
Cereals	1543	1209	78,4	330	21,4	4	0,3
oil & wine	1153	743	64,4	410	35,6	0	0,0
Baby food	84	79	94,0	5	6,0	0	0,0
other product	1.275	1.238	97,1	37	2,9	0	0,0
Total	9.486	5.951	62,7	3.477	36,7	58	0,6

Table 110: Import sample

Food	Total Samples	Samples without residues	Samples without residues (%)	Samples with residue below or equal LMR	Samples with residue below or equal LMR (%)	Samples with residues above LMR	Samples with residues above LMR (%)
Fruit & vegetables	105	53	50,5	44	41,9	8	7,6
Cereals	1	0	0,0	1	100,0	0	0,0
oil & wine	5	5		0		0	
other product	42	31	73,8	9	21,4	2	4,8
Total	153	89	58,2	54	35,3	10	6,5

Table 111: Sample for European program

Food	Total Samples	Samples without residues	Samples without residues (%)	Samples with residue below or equal LMR	Samples with residue below or equal LMR (%)	Samples with residues above LMR	Samples with residues above LMR (%)
Aubergines/eggplants	58	31	53,4	27	46,6	0	0,0
Aubergines/eggplants	49	30	61,2	19	38,8	0	0,0
Bananas	3	2	66,7	1	33,3	0	0,0
Bananas	58	2	3,4	55	94,8	1	1,7
Bananas	39	3	7,7	36	92,3	0	0,0
Broccoli	45	28	62,2	17	37,8	0	0,0
Broccoli	2	1	50,0	1	50,0	0	0,0
Broccoli	44	30	68,2	13	29,5	1	2,3
Broccoli	1	1	100,0	0	0,0	0	0,0
Broccoli	1	1	100,0	0	0,0	0	0,0
Cultivated fungi	1	1	100,0	0	0,0	0	0,0
Cultivated fungi	78	45	57,7	33	42,3	0	0,0
Eggs (chicken)	106	106	100,0	0	0,0	0	0,0
Eggs (chicken)	4	3	75,0	1	25,0	0	0,0
Fat (bovine)	70	65	92,9	5	7,1	0	0,0
Grapefruits	64	5	7,8	57	89,1	2	3,1
Grapefruits	31	9	29,0	22	71,0	0	0,0
Melons	43	26	60,5	16	37,2	1	2,3
Melons	1	1	100,0	0	0,0	0	0,0
Melons	47	29	61,7	18	38,3	0	0,0
Melons	1	1	100,0	0	0,0	0	0,0
Olive oil, virgin or extra-virgin	2	2	100,0	0	0,0	0	0,0
Olive oil, virgin or extra-virgin	147	145	98,6	2	1,4	0	0,0
Processed cereal-based foods for infants and young children	7	7	100,0	0	0,0	0	0,0
Processed cereal-based foods for infants and young children	15	15	100,0	0	0,0	0	0,0
Processed cereal-based foods for infants and young children	27	27	100,0	0	0,0	0	0,0
Processed cereal-based foods for infants and young children	3	3	100,0	0	0,0	0	0,0
Processed cereal-based foods for infants and young children	6	6	100,0	0	0,0	0	0,0
Processed cereal-based foods for infants and young children	2	2	100,0	0	0,0	0	0,0
Sweet peppers/bell peppers	119	48	40,3	71	59,7	0	0,0
Sweet peppers/bell peppers	2	2	100,0	0	0,0	0	0,0
Table grapes	2	2	100,0	0	0,0	0	0,0
Table grapes	31	8	25,8	23	74,2	0	0,0
Table grapes	130	12	9,2	118	90,8	0	0,0

Food	Total Samples	Samples without residues	Samples without residues (%)	Samples with residue below or equal LMR	Samples with residue below or equal LMR (%)	Samples with residues above LMR	Samples with residues above LMR (%)
Wheat	97	69	71,1	28	28,9	0	0,0
Wheat	13	13	100,0	0	0,0	0	0,0
Wheat	103	51	49,5	51	49,5	1	1,0
Wheat	17	15	88,2	2	11,8	0	0,0
Wheat	84	75	89,3	9	10,7	0	0,0
Wheat	1	1	100,0	0	0,0	0	0,0

18.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

In 2021, 0.7 % of the samples (68 samples in total) were found not compliant with the EU MRL. The measures adopted for samples not compliant to regulation 396/2005 are reported below.

Table 112: Actions taken

Action taken[a]	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	**6**	
Administrative sanctions (e.g. fines)	**10**	
Movement restriction		
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	**1**	
Follow up (suspect) sampling		
Follow-up investigation	**4**	
No Action	**14**	
Lot recalled from the market	**1**	
Rejection of a non-compliant lot at the border		
Destruction of non-compliant lot	**2**	
Follow-up action due to the residue of a pesticide detected in a domestic product, which is not authorized in the country		
Warnings to responsible food business operator	**1**	
Other follow-up investigations to identify reason of non-compliance or responsible food business operator		
Other actions or not reported	**6**	

a) If other actions were taken, please describe them in the last column.

Table 113: MRL not compliance

Pesticide/Food product	Frequency[a]
Omethoate|Cherries (sweet)	4
Chlorfenapyr|Tomatoes	4
Imazalil|Bananas and similar-	3

Pesticide/Food product	Frequency[a]
Dimethoate|Cherries (sweet)	3
Dimethoate|Common peaches	2
Etofenprox|peaches	2
Propamocarb (Sum of propamocarb and its salt expressed as propamocarb)|Peanuts	2
Clothianidin|Peppers and similar-	2
Chlorpyrifos-methyl|Apples	1
Etofenprox|Aubergines	1
Profenofos|Aubergines	1
Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)|Broccoli	1
Tolclofos-methyl|Carrots	1
Fenazaquin|Carrots	1
Propyzamide|Celeries	1
Chlorpyrifos|Celeries	1
Acetamiprid|Celeries	1
Linuron|Celeries	1
Linuron|Celery leaves and similar-	1
Deltamethrin (cis-deltamethrin)|Chards	1
Metaflumizone (sum of E- and Z- isomers)|Chards	1
Deltamethrin (cis-deltamethrin)|Cherries (sweet)	1
Iprodione|Cherry tomatoes_organic	1
Acrinathrin and its enantiomer|Common peaches	1
Chlorpropham|Common peaches	1
Metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers)|Courgettes	1
Fenazaquin|Cultivated fungi and similar-	1
Dimethoate|Escaroles	1
Omethoate|Escaroles	1
Chlorpyrifos|Grapefruits	1
Chlorpyrifos-methyl|Grapefruits	1
Buprofezin|Grapefruits	1
Buprofezin|Kaki and similar-	1
Phosmet (phosmet and phosmet oxon expressed as phosmet)|Kiwi fruits (green, red, yellow)	1
Propiconazole (sum of isomers)|Lemons	1

Pesticide/Food product	Frequency[a]
Chlorpyrifos|Lemons	1
Chlorpyrifos-methyl|Mandarins	1
Dimethoate|Mandarins and similar-	1
Chlorpyrifos|Mandarins and similar-	1
Omethoate|Mandarins and similar-	1
Oxamyl|Melons and similar-	1
Fluopyram|Okra	1
Metrafenone|Okra	1
Omethoate|Oranges	1
Propiconazole (sum of isomers)|Oranges	1
Chlorpyrifos|Oranges	1
Dimethoate|Oranges	1
Propamocarb (Sum of propamocarb and its salt expressed as propamocarb)|Other Miscellaneous fruits with inedible peel, small	1
Cypermethrin (Cypermethrin including other mixtures of constituent isomers (sum of isomers))|Other Miscellaneous fruits with inedible peel, small	1
Penconazole (sum of constituent isomers)|Parsley	1
Linuron|Parsley	1
Cymoxanil|Parsley	1
Chlorpyrifos-methyl|Pears	1
Phosmet (phosmet and phosmet oxon expressed as phosmet)|Pears	1
Triflumuron|Pears	1
Chlorpyrifos|Peppers and similar-	1
Fipronil|Peppers and similar-	1
Flutolanil|Peppers and similar-	1
Iprodione|Peppers and similar-	1
Oxamyl|Peppers and similar-	1
Phenthoate|Peppers and similar-	1
Dinotefuran|Peppers and similar-	1
Formetanate hydrochloride|Sweet peppers	1
Thiophanate-methyl|Sweet peppers	1
Fluopicolide|Potatoes	1
Spiroxamine (sum of isomers)|Raspberries (red and yellow)	1
Triticonazole|Rye flour	1

Pesticide/Food product	Frequency[a]
Metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers)|Rye flour	1
Formetanate: Sum of formetanate and its salts expressed as formetanate(hydrochloride)|Strawberries	1
Tebuconazole|Strawberries	1
Tetramethrin|Wheat flour white	1
Pirimiphos-methyl|Wheat wholemeal flour	1
Chlorpyrifos|Common wheat grain	1

a) Number of cases

18.4 Quality assurance

All regions participated in the national program and the laboratories listed in Table 114 participated in the following proficiency test.

Our national reference laboratories: Istituto Superiore di Sanità and IZSLPV, participated in the PTs too.

All laboratories are accredited.

Table 114: Laboratories participation in the control program

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
IT	IZS LOMBARDIA E EMILIA	I0200000	03/04/1997	Accredia	EUPT FV23; EUPT-SRM16; EUPT CF 15; EUPT AO16; EUPT FV24
IT	IZS DELLE VENEZIE	I0300000	18/07/1997	Accredia	EUPT AO 16
IT	IZS LAZIO E TOSCANA	I0500000	1998	Accredia	EUPT FV23- EUPT-SRM16; EUPT CF 15; EUPT AO16; EUPT FV24
IT	IZS UMBRIA E MARCHE	I0600000	14/12/1998	Accredia	EUPT FV23; EUPT CF 15-EUPT AO16
IT	IZS ABRUZZO E MOLISE	I0700000	18/12/2003	Accredia	EUPT FV23; EUPT-SRM16; EUPT CF 15; EUPT AO16; EUPT FV24
IT	IZS DELLA SICILIA	I1000000	08/07/1999	Accredia	EUPT FV23- EUPT CF 15; EUPT AO16; EUPT FV24
IT	IZS DELLA SARDEGNA	I0400000	17/05/2011	Accredia	EUPT FV23-; EUPT CF 15; EUPT FV24
IT	IZS DELLA PUGLIA E BASILICATA	I0800000	31/10/2000	Accredia	EUPT FV23; EUPT CF 15; EUPT AO16; EUPT FV24

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
IT	IZS DEL MEZZOGIORNO	I0900000	14/07/2010	Accredia	EUPT FV23- EUPT AO16; EUPT FV24
IT	IZS PIEMONTE - LIGURIA e VALLE D'AOSTA	I0100000		Accredia	EUPT FV23; EUPT CF 15(nrl)- EUPT AO16; EUPT FV24
IT	ARPA AOSTA	P0201010	03/10/2007	Accredia	EUPT FV23; EUPT CF 15; EUPT FV24
IT	ATS BERGAMO	030325	19/06/2009	Accredia	EUPT FV23- EUPT-SRM16; EUPT CF 15; EUPT FV24
IT	APPA BOLZANO	P0411010	05/12/2001	Accredia	EUPT FV23; EUPT-SRM16; EUPT CF 15; EUPT AO16; EUPT FV24
IT	APPA TRENTO	P0421010		Accredia	EUPT FV23; EUPT FV24
IT	ARPAV VENETO	P0501200	09/07/2008	Accredia	EUPT FV23- EUPT-SRM16; EUPT CF 15
IT	ARPA FRIULI VENEZIA GIULIA	P0601040	17/10/2012	Accredia	EUPT-SRM16; EUPT FV24
T	ARPAL LIGURIA	P0701050	25/06/2002	Accredia	EUPT FV23- EUPT FV24
IT	ARPA EMILIA ROMAGNA	P0801090	1998	Accredia	EUPT FV24
IT	ARPAM MACERATA	P1101090	December 1999	Accredia	EUPT FV23; EUPT CF 15; EUPT FV24
IT	ARPA LAZIO	P1201110	18/03/2004	Accredia	EUPT FV23- EUPT-SRM16; EUPT CF 15; EUPT FV24
IT	ARPA PUGLIA	P1601040	25/02/2010	Accredia	EUPT FV23- EUPT-SRM16; EUPT CF 15; EUPT FV24
IT	ARPA CAMPANIA	P1500400	17/02/2011	Accredia	EUPT FV23; EUPT FV24
IT	ATS MILANO	030321	21/12/2010	Accredia	EUPT FV23- EUPT CF 15; EUPT FV24
IT	LABORATORIO DI SANITA PUBBLICA FIRENZE	090201	18/12/2006	Accredia	EUPT FV23- EUPT-SRM16; EUPT CF 15; EUPT FV24

18.5 Processing factors

In the table below the processing factors used by national competent authorities to verify compliance of processed products with EU MRLs. Moreover, when the factor process are not defined the laboratories have to establish it

Table 115: 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.

19 Latvia

19.1 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 the Article 30 Part 1 of Regulation (EC) No. 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.

19.1.1 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.

19.1.2 Design

The pesticide control programmes are drafted taking into account the relevance of food products in national agricultural production, performance of plant protection products in Latvia, metabolism and toxicity of the active substances, RASFF notifications for pesticides, the risk to consumers, as well as cost of analysis and results of previous National control programmes for pesticide residues. The food commodities and pesticide residues which are not included in the EU coordinated programme are submitted in the national control programme. Sampling was carried out at different marketing levels:

- primary production
- wholesalers
- retail
- processing and manufacturing
- border inspection activities,

- by trained inspectors of the Food and Veterinary Service (FVS) according to Commission Directive 2002/63/EC 11 July 2002 drafting Community methods of sampling for the official control of pesticide residues in and on products of plant and animal origin.

Table 116: Summary of samples taken in 2021 by product class and origin of samples

Samples	Total	Domestic	EU[a]	TC[b]
Animal products	23	13	10	0
Cereals	30	26	4	0
Baby food	21	9	12	0
Fruit and nuts	100	23	21	56
Vegetables	104	24	80	0
Olive oil	22	0	21	1
Other plant products	5	3	0	2
Honey	6	6	0	0
Total	**311**	104	148	59

a) European Union.
b) Third countries.

19.2 Key findings, interpretation of the results and comparability with the previous year results

19.2.1 Key findings

Coordinated programme: according to Regulation (EC) No 2020/585 in 201921, a total of 257 samples of fruit: Grapefruits, bananas, grapes, melon; vegetables: broccoli, sweet peppers, aubergines, common mushrooms; cereals: wheat; olive oil; animal products: fat, eggs and baby food. The proportion of organic samples in year 2021 was 7,7 % (20 samples).

National programme: total of 54 samples of vegetables: carrots, cauliflowers, potatoes, head cabbages, onions; cereals: barley, wheat; beans: tea; rape; honey; fruit: blueberries, cranberries, cherries, sea buckthorns, strawberries, all samples of domestic origin. The proportion of organic samples in year 2021 was 3,7 % (2 samples).

Table 117: Summary results

Product	Total samples	Non-compliant samples
Baby food	21	0
Olive oil	22	0
Fat (bovine)	10	0
Hen egg/product	10	0
Honey/ product	6	0
Teas	5	3
Table grapes	20	1
Grapefruits	20	5
Cultivated fungi	23	0
Wheat	24	0
Barley	3	0
Buckwheat	3	0
Rapeseeds	2	0
Bananas	23	0
Apples	7	0
Aubergines	21	0

Strawberries	2	0
Berries	5	0
Cherries	2	0
Head cabbage	2	0
Onions	2	0
Cauliflowers	2	0
Beans	2	0
Potatoes	5	0
Carrots	2	0
Broccoli	23	0
Sweet peppers	24	0
Melons	20	0

19.2.2 Interpretation of the results

In 2021, 9 samples were found non-compliant with the EU MRL – grapefruits (5), table grapes (1), teas (3)

19.2.3 Comparability with the previous year results

The number of non-compliant identified in 2021 is significantly higher.

Table 118: Comparability with previous year's result

	Total	Vegetables	Fruits	Cereals	Animal Products	Baby food	Other products
Year 2016							
Total samples	343	132	125	34	36	10	6
Non-compliant samples	0	0	0	0	0	0	0
Year 2017							
Total samples	343	109	92	58	32	17	35
Non-compliant samples	2	0	0	1	0	0	1
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	100	30	20	21	36
Non-compliant samples	9	0	6	0	0	0	3

19.3 Non-compliant samples: possible reasons and actions taken

No reason possible to determine - all products from third countries.

19.3.1 Action taken

Rapid Alert Notification: 3 sample of grapefruits (chlorpyrifos-Methyl), 1 sample of table grapes (Iprodione).

Withdrawn from the market: 3 sample of teas (Trimethyl-sulfonium cation)

Quality assurance

All laboratory analyses were carried out by Institute of Food Safety, Animal Health and Environment BIOR.

19.4 Quality assurance

All laboratory analyses were carried out by Institute of Food Safety, Animal Health and Environment BIOR.

Table 119: 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	16 November 2021	Latvian National Accreditation Bureau (LATAK)	Yes, institute participated in proficiency tests and interlaboratory tests

19.5 Processing factors (PF)

All samples reported were unprocessed products.

19.6 Note on confidentiality of certain control data submitted by reporting country

All data can be shared to stakeholders and third parties as they are reported.

20 Lithuania

20.1 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 were **595** (550 in 2020) samples and import control programme were **773** (774 in 2020) samples, total amount 1368 samples (1324 in 2020), which are 44 samples more than previous year (in 2020 there were 1324 samples).

Exceedances of MRLs were found in 32 samples non-compliant (measurement uncertainty taken into consideration). The total percentage of non-compliances is 2.3 %. Non-compliant samples are mentioned in Table 120.

Table 120: Non-compliant samples in 2021

Product	Origin country	Programme	Residue	Value (mg/kg)
Lemon	Turkey	Import control	Fenbutatin oxide	0,26 ± 0,13 (mg/kg)
Cumin	Uzbekistan	Import control	Chlorpyrifos; Methamidophos	0,066 ± 0,033 (mg/kg); 0,73 ± 0,37 (mg/kg)
Grapefruit	China	Import control	Prochloraz	0,15 ± 0,08 (mg/kg)
Orange	Egypt	Import control	Chlorpyrifos	0,050 ± 0,025 (mg/kg)
Orange	Egypt	Import control	Chlorpyrifos	0,042 ± 0,021 (mg/kg)
Tomatoes	Lithuania	National control	Buprofezin	0,034 ± 0,017 (mg/kg)
Organic food supplement curcumin	United Kingdom	Import control	Benzalkonium chloride; Carbofuran	0,057 ± 0,029 (mg/kg); 0,34 ± 0,17 (mg/kg)
Orange	Egypt	Import control	Cyfluthrin (sum of diasteroisomers)	0,098 ± 0,049 (mg/kg)
Orange	Egypt	Import control	Chlorpyrifos	0,090 ± 0.045 (mg/kg)
Long-grain parboiled rice	Brazil	National control	Tricyclazole	0,053 ± 0,027 (mg/kg)
Organic buckwheat grains	Latvia	National control	Haloxyfop	0,022 ± 0,011 (mg/kg)
Chili pepper	China	Import control	Chlorfenapyr;	1,6 ± 0,8 (mg/kg)
Green tea Matcha Green Tea 100 g	United Kingdom	Import control	Chlorantraniliprole; Tebuconazole;	0,044 ± 0,022 (mg/kg); 0,18 ± 0,09 (mg/kg)
Banana	Ecuador	National control	Imazalil	0,15 ± 0,08 (mg/kg)
Black tea TEEKANNE English breakfast	Germany	National control	Trimethylsulfonium cation	0,25 ± 0.05 (mg/kg)
DILMAH Black tea Ceylon tea Premium (in packets)	Sri Lanka	National control	Trimethylsulfonium cation	0,12 ± 0.024 (mg/kg)
Black tea with natural flavor LIPTON GOLD TEA	Poland	National control	Trimethylsulfonium cation	0,088 ± 0.0176 (mg/kg)
Black tea TWININGS OF LONDON, English Breakfast	United Kingdom	National control	Trimethylsulfonium cation	0,11 ± 0.022 (mg/kg)
Black tea GREENFIELD GOLDEN CEYLON	Russia	National control	Trimethylsulfonium cation	0,18 ± 0.036 (mg/kg)
Black tea with natural flavor LIPTON YELOOW LABEL	Poland	National control	Trimethylsulfonium cation	0,15 ± 0,03 mg/kg
Organic black Ceylon tea	Sri Lanka	National control	Glyphosate; Trimethylsulfonium cation	0,014 ± 0.0042 (mg/kg); 0,15 ± 0.03 (mg/kg)
Organic food supplement - organic red clover	United Kingdom	Import control	Chlorpyrifos;as; Benzalkonium chloride; DDAC10; Methylcresoxime	0,12 ± 0.06 (mg/kg); 0,053 ± 0.027 (mg/kg); 0,053 ± 0.027 (mg/kg); 0,12 ± 0.06 (mg/kg)
Green tea Sun Tea Hills Citrus cocktail	Russia	Import control	Tolfenpyrade	0,087 ± 0.044 (mg/kg)

Product	Origin country	Programme	Residue	Value (mg/kg)
Dill	Italy	National control	Chlorpyrifos; Dimethoate; Omethoate; Carbendazim	0,11 ± 0.06 (mg/kg); 0,76 ± 0.38 (mg/kg); 1,2 ± 0.6 (mg/kg); 5,7 ± 2.9 (mg/kg)
Quick frozen strawberries	Egypt	National control	Dimethoate	0,055 ± 0,028 (mg/kg)
Rye (raw material), (for further processing)	Ukraine	Import control	Methylpyrimiphos	2,3 ± 1,2 (mg/kg)
Rosemary, fresh	Lithuania	National control	Penconazole	0,18 ± 0,09 (mg/kg)
Organic Bolivian pigeon (quinva) seeds	Peru	Import control	Dimethomorph	0,014 ± 0.007 (mg/kg)
Organic flax seeds	Kazakhstan	Import control	Dimethoate	0,013 ± 0.007 (mg/kg)
Organic flax seeds	Kazakhstan	Import control	Dimethoate	0,019 ± 0.010 (mg/kg)
Organic flax seeds	Kazakhstan	Import control	Dimethoate	0,012 ± 0.006 (mg/kg)
Grapefruit	Turkey	National control	Chlorpyrifos	0,030 ± 0,015 (mg/kg)

20.2 Quality assurance

According to Regulation No 882/2004 the competent authority shall designate laboratories that may carry out the analysis of samples taken during official controls. And designated laboratories are assessed and accredited in accordance with the EN ISO/IEC 17025:2017 on "General requirements for the competence of testing and calibration laboratories".

Table 121: Laboratory participation in the national control program

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	EUPT CF 15, Denmark; EUPT FV-SM 13, Spain; EUPT-FV23, Spain; EUPT AO16, Germany; EURL-SRM16, Germany. EUPT-FV-SC05, Spain

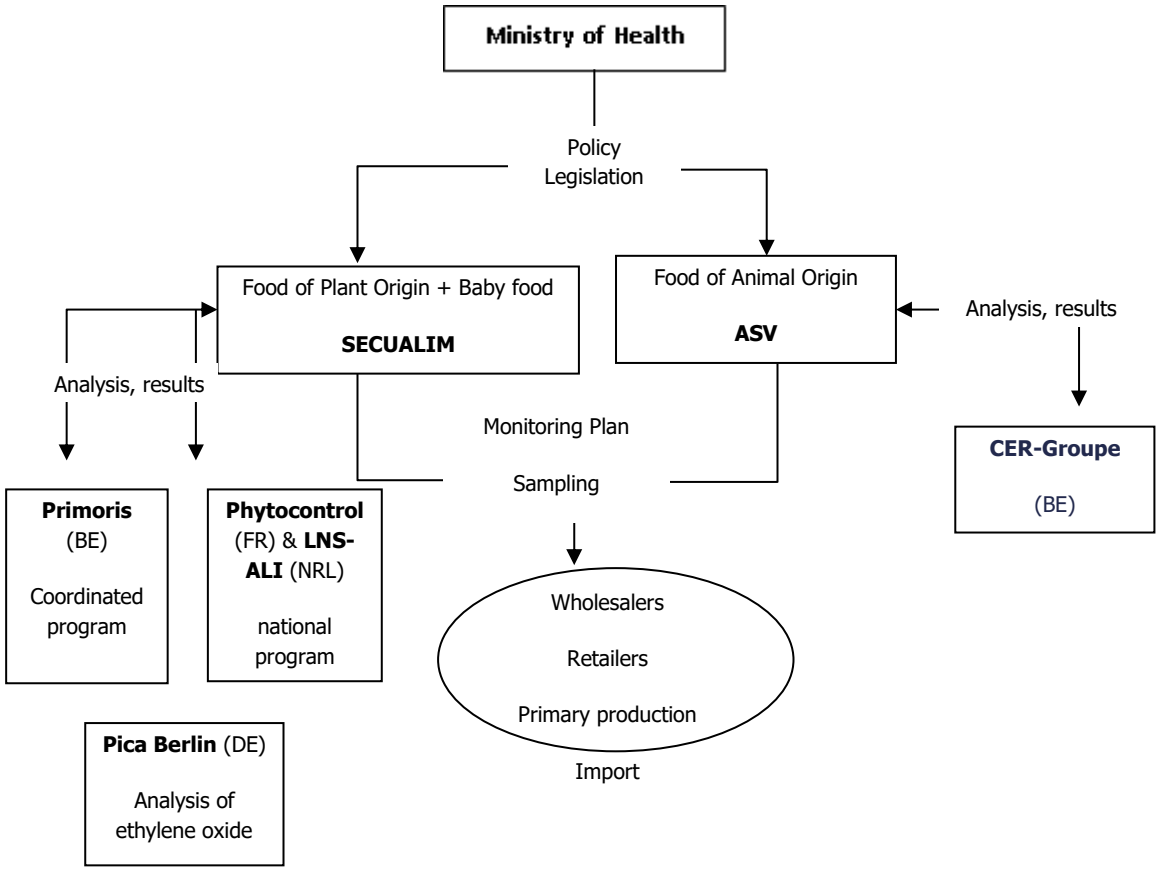
21 Luxembourg

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, laboratory for pesticide and residue analysis. Samples collected for the national program 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 4 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 4: 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 summarized in Table 122.

Table 122: 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 (fruits, 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

21.1 Objective and design of the national control programme

21.1.1 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 the consumers and to check the good use of plant protection products (i.e. the use of authorised products and the application of good agricultural practice), MRLs are set in European legislation. An MRL exceedance, while showing an incorrect use of a plant protection product, does not necessarily involve a risk for the health of consumers.

More information on the authorised pesticide products authorised in Luxembourg can be found via internet[26]

21.1.2 Design

The Division of Food Safety (SECUALIM) is responsible for drafting the sampling plan and for the control of presence of pesticide residues in fruits and nuts, vegetables, cereals, baby food and other plant products.

The control programme included two different programmes:

- the Coordinated Community control programme based on the Commission Regulation (EU) No. 2020/585 of 9th of 27 April 2020 on 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 (rapid alert system for food and feed), toxicological data of residues, national production and available consumption.

Samples for the EU coordinated programme included table grapes, bananas, grapefruits, aubergines, broccoli, melons, cultivated funghi, sweet peppers, wheat, virgin olive oil as well as baby food (Regulation (EC) N°2020/585).

For the national programme, samples collected included cereals, fruits (i.e. apples, apricots, avocados, bananas, blackberries, blueberries, cherries, clementines, daikons, guavas, kaki, lemons, lettuce, limes, mangoes, melons, mirabelles, nectarines, oranges, passionfruits, peaches, pears, plums, raspberries, strawberries, table grapes, wine grapes), dried fruits, legume seeds, aromatic herbs, tea, spices, nuts, vegetables (i.e. artichokes, asparagus,

[26] https://saturn.etat.lu/tapes/tapes_de_mnu_pdt.htm

aubergines, beans, beetroots, broccoli, brussel sprouts, butternut squashes, carrots, cauliflower, celeries, celeriacs, chili ppers, courgettes, cucumbers, garlic, ginger roots, kohlrabis, leeks, mushrooms, onions, potatoes, radishes, rhubarbs, sweet peppers, sweet potatoes, tomatoes, 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 third 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 matrices is based largely on fresh products to conduct the controls at the origin of the food chain and avoid the need of having 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).

21.2 Key findings, interpretation of the results and comparability with the previous year results

21.2.1 Key findings

In 2021, a total of 709 samples were analysed for pesticide residues. 701 samples were collected in the framework of surveillance (153 samples within the coordinated community control programme and 548 samples within the national programme) and 8 samples were collected during enforcement.

Table 123: 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
Eggs and egg products	12	**24**	24	0	0	0
Foods products for young population	2	**10**	10	0	0	0
Fruit	25	**173**	46	118	3	6
Fruit / vegetables / plant drinks	0	**1**	1	0	0	0
Garden vegetables	37	**233**	138	89	4	2
Grains and grain-based products	7	**49**	26	20	2	1
Herbs and spices	15	**75**	47	28	0	0
Ingredients for hot drinks and infusions	6	**26**	11	9	4	2

Matrix	Organic samples	Total samples	< LOQ	Quantified < MRL	Result >MRL but compliant considering uncertainty	Result non-compliant
Legume seeds	13	**32**	25	5	0	2
Mammals and birds meat	0	**12**	12	0	0	0
Nuts	11	**32**	22	9	1	0
Oils	4	**13**	9	4	0	0
Oilseeds and oilfruits	6	**10**	10	0	0	0
Starchy roots and tubers	3	**19**	11	6	1	1
Grand Total	**141 (19.89%)**	**709**	**392 (55.29 %)**	**288 (40.62 %)**	**15 (2.12 %)**	**14 (1.97 %)**

Table 124: Summary of results of non-compliant samples

Product	Origin	Pesticide residue	Level (mg/kg)	MRL (mg/kg)
National multiannual control program				
Potato	Luxembourg	Chlorpropham	1.9	0.4
Banana	Ecuador	Imazalil	0.021	0.01
Banana	Ecuador	Imazalil	0.32	0.01
Chamomile Tea	Unknown	Chlorpyrifos	0.015 (+-0.004)	0.01
Sweet cherry	Germany	Fenoxycarb	0.032 (+-0.006)	0.01
		Tebufenozide	0.014 (+- 0.003)	0.01
Currants	Chile	Folpet	0.063	0.03
Chili Pepper	Morocco	Tetraconazole	0.21	0.1
Dry lentils	Canada	1,4-dimethylnaphtalene	0.044	0.01
Dry beans	Ethiopia	1,4-dimethylnaphtalene	0.022	0.01
Aubergine	Italia	4-CPA	0.025	0.01
Passion fruit	Vietnam	Cypermethrin	0.18	0.05
Pitaya	Ecuador	Dimethoate	0.1	0.01
		Cypermethrin	0.24	0.05
		Thiabendazole	0.03	0.01
Import (2017/625)				
Cinnamon Tea	Unknown	Chlorpyrifos	0.036	0.01
		Imazalil	0.34	0.05
		Pyrimethanil	1.1	0.05
		Naproanilide	0.16	0.01
Rice grain	India	Thiamethoxam	0.025	0.01
		Tricyclazole	0.094	0.01

21.2.2 Interpretation of the results

Results

In 2021, 1.97 % of the samples collected (enforcement and surveillance) were non-compliant (14 samples of fruits, vegetables, grains and tea and herbal infusions from a conventional production) with the MRL set in EU legislation.

12 of the non-compliant samples were sampled as part of the national multiannual control programme and the products were withdrawn from the market. For one of the samples of bananas, a risk to the consumer could not be excluded due to the presence of imazalil.

2 non-compliant sample was taken in the context of border inspection activities according to Regulation (EU) No 2017/625. The goods were removed from the market.

3 of the non-compliant samples were from EU origin. 9 non-compliant samples originated from a third country and 2 samples were of unknown origin.

From the samples collected for enforcement (EU 1793/2019), none of the products were non-compliant.

21.2.3 Comparability with the previous year results

Table 125: Number of samples collected between 2017 and 2021 and non-compliance rates

Year	Total number of samples collected	Coordinated program	National program	Enforcement	Non-compliance (%)
2021	709	153	548	8	1.97
2020	479	136	343	6	4.59 ***
2019	490	156	329	5	1.51
2018	349	156	189	4	2.3
2017	396	134	250	12	2.53

*** 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 %.

21.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

Table 126: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency[(a)]	Comments
* residues likely to result from cross-contamination due to storage of potatoes in facilities treated with chlorpropham in the past	Chlorpropham /Potato (Luxembourg)	1	Reg. 989/2019
GAP not respected: use of a pesticide not authorized on the specific crop / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected	Imazalil / Banana (Ecuador)	2	Reg. 856/2020
GAP not respected: use of a pesticide not authorized in the European Union	Chlorpyrifos / Tea (unknown)	2	Reg. 1107/2009
GAP not respected: use of a pesticide not authorized on the specific crop / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected	Imazalil / Tea (unknown)	1	Reg. 856/2020
GAP not respected: use of a pesticide not authorized on the specific crop / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected	Pyrimethanil / Tea (unknown)	1	Reg 2018/832
GAP not respected: use of a pesticide not authorized in the European Union	Naproanilide / Tea (unknown)	1	Reg. 1107/2009
GAP not respected: use of a pesticide not authorized on the specific crop / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected	Fenoxycarb / Sweet cherries (Germany)	1	Reg. 973/2019

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]	Comments
GAP not respected: use of a pesticide not authorized on the specific crop / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected	Tebufenozide / Sweet cherries (Germany)	1	Reg. 973/2019
GAP not respected: use of a pesticide not authorized on the specific crop / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected	Folpet / Currants (Chile)	1	Reg. 832/2018
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected	Tetraconazole / Chili Peppers (Morocco)	1	Reg. 1015/2019
GAP not respected: use of a pesticide not authorized on the specific crop / natural presence possible	1,4-dimethylnaphtalene / dry lentils (Canada)	1	Reg. 399/2015
GAP not respected: use of a pesticide not authorized on the specific crop / natural presence possible	1,4-dimethylnaphtalene / Dry beans (Ethiopia)	1	Reg. 399/2015
GAP not respected: use of a pesticide not authorized in the European Union	4-CPA / Aubergine (Italia)	1	Reg. 1107/2009
GAP not respected: use of a pesticide not authorized on the specific crop / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected	Cypermethrin / Passion fruit (Vietnam)	1	Reg. 626/2017
GAP not respected: use of a pesticide not authorized on the specific crop	Dimethoate / Pitaya (Ecuador)	1	Reg. 703/2020
GAP not respected: use of a pesticide not authorized on the specific crop / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected	Cypermethrin / Pitaya (Ecuador)	1	Reg. 625/2017
GAP not respected: use of a pesticide not authorized on the specific crop / GAP not respected: use of an approved pesticide, but application rate, number of treatments, application rate or PHI not respected	Thiabendazole / Pitaya (Ecuador)	1	Reg. 1164/2017
GAP not respected: use of a pesticide not authorized on the specific crop	Thiamethoxam / Rice grain (India)	1	Reg. 671/2017
GAP not respected: use of a pesticide not authorized on the specific crop	Tricyclazole / Rice grain (India)	1	Reg. 983/2017

a) Number of cases.

In 2021, one of the samples exceeded the acute reference dose (ARfD (imazalil in bananas from Ecuador). The sample was removed from the market and the consumer was informed about the non-compliance.

21.4 Quality assurance

Table 127: 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)	No participation to EURL PT
BE	Primoris	Primoris	27 July 2012	BELAC (057-TEST)	AO-PT1 COIPT-20 DRRR 210639 EUPT CF15 EUPT FV23 EUPT FV-SC04 EUPT SRM16 EUPT SC05 Fapas 04411 Fapas 04415 Fapas 04430 Fapas 06101 Fapas 07395 Fapas 07405 Fapas 09136 Fapas 1677 Fapas 15154 Fapas 19304 Fapas 19315 Fapas 19322 Fapas 22186 Fapas 2667 Proof ACS 2109-RT Proof ACS 2106-RT Proof ACS 2111-RT Relana comparative test 1_2021 Relana comparative test 2_2021
FR	Phytocontrol	Phytocontrol	2019-09-24	COFRAC	HAMQAP BIPEA n°11-2019 EURL EUPT SRM16 Proof P2114-RT BIPEA 06-5419
LU	Laboratoire national de santé – Laboratoire de surveillance alimentaire	LNS-ALI	22 September 2009	OLAS (1/002)	EUPT-CF15 EUPT-FV23 EUPT-SRM16

21.5 Processing factors (PF)

The processing factors that were used to verify the compliance of the processed products with EU MRL are compiled in the table below.

Table 128: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(b)]	Comments
All	Cereal grains (except rice)	Flour	1	Default processing Factor
All	Olives	Virgin olive oil	1	Default processing factor
All	Sweet pepper	Dried product	10	EFSA processing techniques, 2018
All	Oregano, Parsley	Dried products	6	EFSA processing techniques, 2018
All	Basil, Rosemary, Thyme	Dried products	7	EFSA processing techniques, 2018

21.6 Note on confidentiality of certain control data submitted by reporting country

Luxembourg confirms that reported data on the 2021 pesticide monitoring results do not contain confidential information and can be shared with third parties if required.

22 Malta

22.1 Objective and design of the national control programme

22.1.1 Objective

The National Monitoring Programme for pesticide residues in produce of plant and animal origin for 2021 was based on the EU Coordinated Multiannual Community Control Programme as per Commission Implementing Regulation (EU) 2020/585 of 27 April 2020 concerning a coordinated multiannual control programme of the Union for 2021, 2022 and 2023 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. It also takes into consideration local production/imports of commodities; past findings that may indicate a historical residue problem; organic produce; in light of new risks (e.g. knowledge on use of banned pesticides) or other countries monitoring schemes and national environmental impacts that may have impacted produce; and consumer complaints.

22.1.2 Design

Sampling Programmes

A total of 18 different food commodities (including fruit and vegetables, food of animal origin and baby food) were analysed during 2021.

The commodities and quantities[27] sampled were as follows:

- Table grapes = 12 samples
- Bananas = 12 samples
- Grapefruit = 7 samples
- Aubergines = 4 samples

[27] Samples below the average of n=12 were subject to sample availability, except for processed cereal-based baby food

- Broccoli = 11 samples
- Melons = 8 samples
- Cultivated Fungi = 8 samples
- Sweet Peppers/Bell peppers = 12 samples
- Wheat grain= 7 samples
- Virgin Olive oil = 12 samples
- Bovine Fat = 12 samples
- Chicken eggs = 12 samples
- Processed cereal-based baby food = 10 samples
- Strawberries = 1 sample
- Tomatoes = 1 sample
- Oranges = 2 samples
- Carrots = 2 samples
- Potatoes = 3 samples

Sampling (Personnel, Procedures, sampling points)

The sampling strategy adopted was mainly objective sampling except where 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 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 which is implemented in the internal quality system of the MCCAA.

MCCAA Officials were responsible to implement the sampling procedures and elevate samples as per internal procedures. Samples were mainly taken from producers, wholesalers and importers. Samples of Maltese origin (local produce), as well as samples of EU and non-EU origin were taken.

22.2 Key findings, interpretation of the results and comparability with the previous year results

22.2.1 Key findings

In 2021, a total number of 136 samples of fruits, vegetables, animal products and infant food were taken by the MCCAA and analysed for the presence of pesticide residues. As a minimum depending on the commodity type, in the case of products of animal origin, 430 pesticide residues were tested for, 1,231 pesticide residues were tested for in the fruit and vegetable commodities, while 508 pesticide residues were tested for in the processed cereal-based baby food residues as listed in Commission Implementing Regulation (EU) 2020/585 of 27 April 2020 concerning a coordinated multiannual control programme of the Union for 2021, 2022 and 2023 and also Commission Directive 2006/125/EC of 5 December 2006 on processed cereal-based baby food and baby foods for infants and young children.

The products analysed were of Maltese origin (30.9%) and imported (69.1%). Imported produce consisted of that of EU origin (47.8%) and non-EU origin (21.3%).

96.32% of samples analysed were compliant with the pesticide residue legislation (in 34.4% no residue was found, whilst 65.6% were below the MRL). 3.68% of the samples (five samples) had the residue levels above the MRL.

The below table, Table 129, summarises the type of commodities tested as per Sampling program and the results obtained:

Table 129: Type of commodities tested as per Sampling program and the results obtained

Sampling Program	Types of commodities	No. of samples analysed	% No residue found	% Residue <MRL	% Residue >MRL
EU Coordinated Multi Annual Community Control Program	Table Grapes	12	0%	100%	0%
	Bananas	12	0%	100%	0%
	Grapefruit	7	0%	100%	0%
	Aubergines	4	25%	75%	0%
	Broccoli	11	45.5%	54.5%	0%
	Melons	8	25%	75%	0%
	Cultivated Fungi	8	0%	87.5%	12.5%
	Sweet Peppers/Bell peppers	12	0%	83.3%	16.7%
	Wheat grain	7	0%	100%	0%
	Virgin olive Oil	12	66.7%	33.3%	0%
	Bovine Fat	12	100%	0%	0%
	Chicken eggs	12	91.6%	0%	8.4%
	Processed cereal-based baby Food	10	0%	90%	10%
National Program	Strawberries	1	100%	0%	0%
	Tomatoes	1	0%	100%	0%
	Oranges	2	50%	50%	0%
	Carrots	2	50%	50%	0%
	Potatoes	3	100%	0%	0%

22.2.2 Interpretation of the results

5 samples had pesticide residues exceeding the MRL. These were two samples of bell peppers, one sample of cultivated fungi, one sample of chicken eggs and one sample of processed cereal-based baby food.

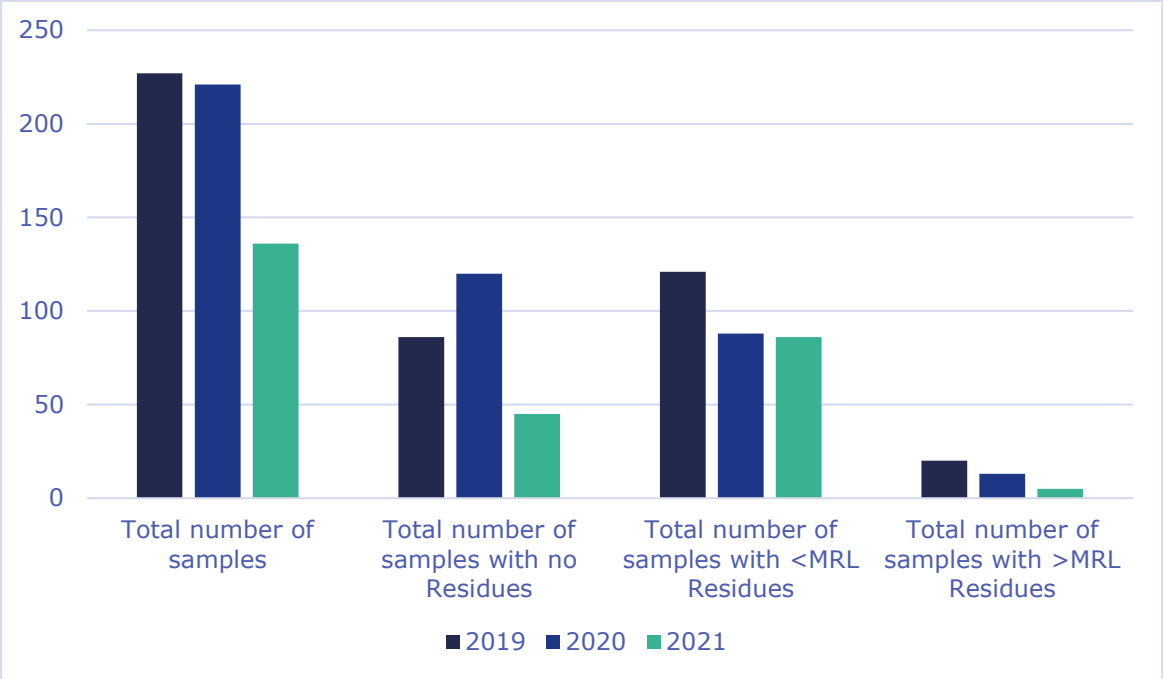


Figure 5: Comparison of sample numbers for 2019, 2020 and 2021

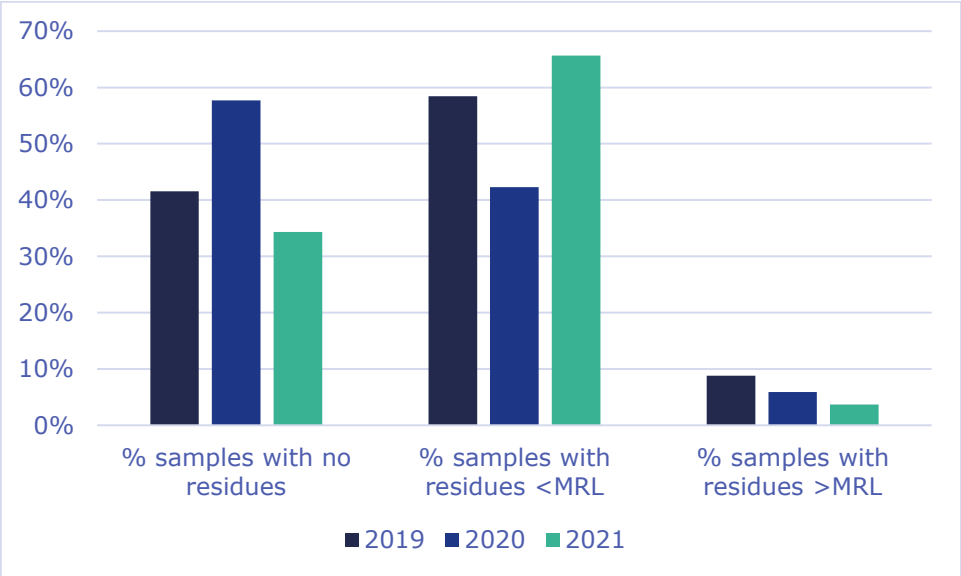


Figure 6: Comparison of the % of samples with residue content for 2019, 2020 and 2021 (values are to the nearest whole)

22.2.3 Comparability with the previous year results

The % of samples with no residues improved from 2019 to 2021 (42% in 2019, 58% in 2020 and 34% in 2021).

2021 data depicts an increase in the number of samples which contained residues below the MRL when compared to the previous years (58% in 2019, 42% in 2020 and 66% in 2021). In furtherance, the percentage of samples which contained residues above MRL decreased over the past three years (from 9% in 2019 to 6% in 2020 and to 4% in 2021). All numbers have been rounded to the nearest whole number.

22.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

Seven different pesticide residues were found in commodities samples which exceeded the EC-MRL value set at the time of sampling. In all the cases found with residues above the MRL value, action(s) as stipulated in the Pesticides Control Act, Chapter 430 of the Laws of Malta, was (were) taken.

The residues found are summarised in Table 130 below:

Table 130: Results of Pesticides Residues which were quantified above the MRL value

Commodity	Origin	Residue above MRL found	Residue Level in mg/Kg	MRL mg/Kg
Cultivated fungi	Italy	Metrafenone	2.4	0.5
Bell peppers	Local	Chlorfenapyr Formetanate Cyflufenamid	0.22 0.49 0.15	0.01 0.01 0.06
Bell peppers	Local	Chlorfenapyr Etofenprox	0.029 0.06	0.01
Processed cereal-based baby food	Spain	Fosetyl - Al	0.24	0.01
Eggs	Local	Fipronil	0.018	0.005

22.3.1 Possible reasons for non-compliant samples

Table 131: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide(a)/food product	Frequency(b)
Good Agricultural Practice not respected, use of an approved pesticide, but application rate, number of treatments, application method or pre-harvest interval not respected; use of non-approved pesticides	Eggs/ Fipronil	1
	Bell Peppers/ Chlorfenapyr	2
	Bell Peppers/ Formetanate	1
	Bell Peppers/ Cyflufenamid	1
	Bell Peppers/ Etofenprox	1

Reasons for MRL non-compliance	Pesticide(a)/food product	Frequency(b)
	Cultivated Fungi/ Metrafenone	1
Contamination may have occurred while the product was being packaged.	Processed cereal-based baby food / Fosetyl -al	1

(a): Report name as specified in the MatrixTool

(b): Number of cases

22.4 Actions taken

Table 132: Actions taken

Number of non-compliant samples concerned	Action taken
5	Actions were taken according to the Pesticides Control Act (Cap 430 of the Laws of Malta) and applicable regulations made thereunder

22.5 Quality assurance

Samples are to be sent for multi-residue analysis to a Laboratory which shall have in place a Quality Assurance system 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 133: Laboratory participation in the national control program

Country	Laboratory Name	Accreditation		Participation in proficiency tests or inter-laboratory tests
		Date/Certification	Body	
DE	Eurofins Dr. Specht Laboratorien GmbH	Issued: 28th August 2018 Expires: 11th December 2021 Re-issued 15th April, 2020	DAkkS	Yes

IT	Water & Life	Issued: 27/10/1994 Expires: 11/12/2022 Re-issued 21/05/2020	ACCREDIA	Yes
FR	Inovalys	1-5755	COFRAC	Yes

23 The Netherlands

23.1 Objective and design of the national control programme

The national control program 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 program choices were made concerning type and number of samples to be taken for analysis as many different pesticides, vegetables and fruits 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 products and country of origin, but take into account results of sampling at individual companies as well
- The occurrence of pesticide/crop combinations that might lead to exceedances of the acute reference dose (ARfD).
- EFSA and EC recommendations.
- Availability of cost-effective analytical methods, preferably multi-residue method (MRM).

The maximum residue limit (MRL) regulation (EC) 396/2005 mentions two main objectives of the official control program: 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 program is a mixture of both strategies. Sampling in the market is in general non-risk based and a select, such data can be used for intake 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 program 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 program of the control regulation EU/2019/533. Considerable capacity is reserved to minor

products with minor consumption but historically with high violation rates. Especially imported products, show historically frequent non-compliances. For 2021 the number of samples from commodities which were imported was 1277 samples of fruits, vegetables, herbs etc within the total number of 3110.

The coordinated control program also implies analysis of products of animal origin. As the veterinary control program (directive 96/23/EU, VMPR) requires pesticide analysis to some extent as well, the samples of that program were analysed with an additional scope in line with the control regulation EU/2020/2041.

The main sampling points are supermarkets, distribution centres, trade housed, importers, warehouses and for both domestic and non-domestic products and the premises of the auction system for Dutch products. At those inspection points, it is clear who is responsible for the product, so that appropriate legal action can be taken in case of non-compliance.

The control program involves both domestically produced products as well as products from EU origin and products from non-EU-origin. The EU-harmonisation of MRLs has resulted in a decrease of exceedance rates and pesticide concentration levels in EU-products.

For Monitoring and Enforcement purposes raw agricultural products are preferred over processed foods, because MRL's are defined on the raw agricultural products. Further, validation of pesticide analysis methods is more complicated in processed and/or composite product compared to 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 NVWA applies as much as possible MRMs 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 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 capacities. Whenever possible LC/MS-MS was applied in negative mode as well. Dry products and baby food have been analysed using the quechers-method, followed by triple-quad GC/MS-MS and LC/MS-MS. Depending choices made, scopes applied to the samples varied from 175 to more than 500. For pesticides outside the scope of MRMs Single Residue Methods (SRMs) must be applied. As these give only information on one or a few analytes, they are much less cost-effective than MRMs, and only applied when the following criteria are met:

For the commodity-pesticide combination an MRL above the LOQ exist, 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 program

23.2 Key findings, interpretation of the results and comparability with the previous year results

During 2021 app 3110 samples were analysed. This is substantially higher compared to 2020 (2020 low number because of Covid19).

Both domestic and non-domestic products, were analysed for pesticide residues.

The national and co-ordinated control plan accounted for about 3110 samples.

In the framework of the import control regulations EU/2019/1793, 829 samples were analysed of which 63 (7.6%) were non-compliant and were rejected at EU-border. Majority of these non-compliances were due to haricots-vert from Kenia (5.1%); peanuts from Brasil (1.6%) and tea from China (1.4%). Please be aware that these official border controls are no part of the National Pesticide Residue program and therefore not in the scope of this summary

Within the national control plan domestic products made up app 40 % of the fresh produce samples, app 20 % of the samples came from other EU countries and 40 % from non-EU countries.

Within the national control program 88 samples were non-compliant due to MRL violations (MRL violation taken MU into account). These account for 2.8% of the total volume.

Domestic (Dutch) produced products were yielding 0.2% MRL violations.

EU produced (excl Netherlands) products were yielding 0.2% MRL violations.

Non-EU produced products were yielding 2.2% MRL violations. These percentages are comparable with the years before.

From the 3110 samples in 2021, there were residues of pesticides found in 1162 samples. In these 1162 samples there were 209 different pesticide active substances found.

23.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

In 2021 MRL violations of European products showed a comparable percentage to 2020. The total number of non-compliances in European products is low. Therefore, a small change in absolute number gives considerable relative spread from year to year.

In 2021 a selection of products was analysed on ethyleenoxide (o.a. babyfood). There were no violations found in these samples.

In 2021 all samples re infant and follow on formula (babyfood) 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. For product/pesticide combinations the Critical Crop/Pesticide Concentration (CCPC) has been evaluated based on EFSA's PRIMO 3.1.

At the CCPC-limit 100 % of the ARfD is reached based on a point-estimate and a product is considered to be unsafe and "injurious to health" in the meaning of the General Food Law

(Regulation EC/178/2002). Dutch authorities also consider carcinogen, reprotoxic or (potential) genotoxic properties of the active substance as unsafe. In such cases the product is recalled and a Rapid Alert is issued. In 4 cases possible ARfD exceedances were encountered with pesticide residues based on official control samples and rapid or information alerts were issued, as indicated in Table 134. In 2020 this number was slightly lower.

Table 134: Non-compliances evaluated as "unsafe (health risk: serious)".

Product	Pesticides	number>MRL	Countries of origin
Oranges	chlorpyriphos	3	Egypt
Grape leaves	chlorpyriphos; cyhalotrin	1	Egypt
Mango	Prochloraz	1	Peru
Nashi Pears	chlorpyriphos	1	China
Yams	prochloraz	1	China
Pear	chlorpyriphos	1	China
Table grapes	carbendazim	1	Moldavia
Raisins	chlorpyriphos	1	unknown
Cocoa mass	chlorpyriphos	1	unknown
Granate apples granate	dimethoate	1	Marocco
lime	chlorpyriphos	1	Brazil
Curcuma	chlorpyriphos	1	India
Cumin	chlorpyriphos	1	unknwon

23.4 Actions taken

Table 135: Actions taken

Action taken	**Number of non-compliant samples concerned**	**Comments**
Financial fine	25	
Administrative sanctions	53	

23.5 Quality assurance

Information about the laboratories.

Table 136: Laboratories participation in the national control program

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

Processing Factors (PF)

23.6 Processing factors used in MRL compliance assessment

In the table below the processing factors are compiled that were used by national competent authorities to verify compliance of processed products with EU MRLs. For risk assessment processing factors were used as compiled by RIVM and EU-EFSA. Further there are several cases where either FBO's or branche organisations supply a relevant processing factor.

Table 137: Processing factors

Pesticide (report name)	Unprocessed product (RAC)	Processed product	Processing factor	Comments
all	Grape	raisin	4,7	
all	Grape	wine	1	
all	Gojiberries	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

24 Norway

24.1 Objective and design of the national control programme

24.1.1 Objective

The Norwegian Food Safety Authority (NFSA) is the competent authority for the enforcement of the pesticide residues 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 have the last year included 1226 samples, including 119 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).

24.1.2 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 for residues, previous RASFF notifications and the national three years plan. The criteria for taking organic 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 also products that are eaten more sporadic are included as well.

The balance of organic and conventional products in the national monitoring programme was lower in 2021 (9,7%) compared to 2020 (13,4%). In 2021, 119 organic samples were analysed. It was fewer samples of organic products than normal in 2021 because of the COVID-pandemic.

Inspectors from the Norwegian Food Safety Authority are taking the monitoring samples mainly at importers and wholesalers' warehouses in different parts of Norway. Some samples were also collected at farmers or retail sale.

Norwegian Institute of Bioeconomy Research (NIBIO) was responsible for all analysis in the monitoring programme.

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

24.2.1 Key findings

In 2021, 1245 samples were analysed for pesticide residues in Norway. 1226 of these samples were from the national monitoring programme and the EU coordinated programme. In addition, 14 samples taken as border control in line with Regulation (EC) No. 2019/1793 (14 samples) and 'follow-up samples' (5 samples).

In 2021, Norway made 15 RASFF notifications. These notifications included 13 samples from the ordinary monitoring program and two from border control (2019/1793). It was one sample of oranges from Egypt, two samples of parsley leaves (Laos), one sample of beans (dried) from Madagascar, one sample of chili pepper (Laos), three samples of wheat flour (United Arab Emirates and India (two samples)), one sample of mandarins from Turkey, one sample of cherries from Turkey, one sample of pomelo from Vietnam, one sample of carambola from Brazil and one sample of organic sesame seed from India (organic).

There were also two RASFF notifications for sesame seeds from India (border rejection notification). All products that were evaluated to represent an acute health risk for consumer originated from countries outside the EU and EEA.

In the ordinary monitoring programme, the surveillance samples included 99 different commodities. 39 samples (64 findings) had residues above the MRLs. It was not residue levels that exceeded the MRLs in domestic samples. 24 samples were considered as non-compliant after the measurement uncertainty was taken into account. 22 of the non-compliant samples was from third countries and two of them from the EU.

In addition to the monitoring programme, 14 samples from the border control were analysed and two of the samples were non-compliant and notified in RASFF because of possible health risk for the consumer.

There were no findings of pesticide residues in samples of baby food. For the samples of animal origin in the EU coordinated control monitoring programme it was found DDT below the MRL for a sample of bovine fat from Norway.

Every sample of plant origin was analysed by two multiresidue methods, which covered 367 different pesticides including some metabolites. Some samples were analysed by single residue methods. In 2021, 13 single residue methods were used, covering 58 substances.

24.2.2 Interpretation of the results

The monitoring programme shows that the level of pesticide residues in food is generally low and that there are few exceedances. This implies that the food with these measured levels of pesticide residues is safe to eat. In the period 2016 to 2021, the total percentage of samples with pesticide residues above the MRLs ranged from 1.4 to 3.7 % (Table 138). Percentage of samples with findings above the MRLs is at the same high level as in 2016 and higher than the years from 2017-2020. The percentage of findings in products from third countries was also at the highest in 2021 and slightly higher in 2021 compared to 2016.

Table 138: Number of samples (%) with pesticide residues above the MRL (2016 – 2021)

	2016	2017	2018	2019	2020	2021
Norwegian	0.5	-	-	-	0.6	-
EU/EEA*	2.3	1.2	1.4	1.4	0.8	1.3
Third countries	8.3	3.3	5.1	4.8	5.7	8.8
Total	3.7	1.4	2.2	2.1	2.4	3.5

*Except Norway

Factors that can influence the number of findings above the MRLs can be the selection of products sampled, changes in the regulation from year to year, the analytical scope, and differences in the limits of quantification for the analytical methods.

The Norwegian Food Safety Authority publishes all exceedances on their website[28].

The results from 2021 show that 39% 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 3.7. This is in accordance with the five previous years (Table 139).

Table 139: Mean number of pesticide residues in surveillance samples, in which more than one pesticide has been detected (2016–2021)

	2016	2017	2018	2019	2020	2021
Mean number of pesticide residues in samples in which more than one pesticide has been detected	3.4	3.6	3.5	3.6	3.6	3.7

The highest number of different pesticides in one sample was detected in raisins from Turkey. Residues of 16 different pesticides were detected originating from 13 different active substances, but none of them was above the MRL.

24.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

Totally, 2,2 % of the surveillance samples (24 samples) in the monitoring programme (chlorate not included) were found 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.

[28] www.mattilsynet.no

14 samples from the border control were analysed for pesticide residues. Two of the samples were found non-compliant with the EU-MRL and rejected at the border.

24.3.1 Possible reasons for non-compliant samples

Table 140: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/Food product[a]
GAP not respected: use of an approved pesticide not authorised on the specific crop[c]	There were seven samples with pesticide not approved in Norway we had to investigate. These were: • Thiacloprid in strawberries, follow up of the local producer concluded that it had been illegal use of a plant protection product that had recently lost its authorization. • Glyphosate in wheat, was followed up, but it was not possible to conclude if the residues came from illegal use of PPPs or not. • Deltamethrin in ruccola, following up of the producer. • Difenoconazole in ruccola (4 samples), following up of the local producer. • Following up of local producers showed that all the cases with findings with possible illegal use of pesticides in ruccola originated from the same producer. It was concluded that plant protection products had been used in cultures where it was not authorized, and the producer needed to improve routines for use of pesticides.
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	The majority of cases involving possible illegal use of pesticides in Norway are findings of pesticide residues of active substances that are approved in plant protection products in Norway, but where the plant protection products are not authorized to be used in the culture where it has been found.
Residues resulting from other sources than plant protection product (e.g. biocides, veterinary drugs, biofuel)	In 2021 there was only detected chlorate in one sample, and it was below the MRL. Chlorate is not authorized as a pesticide in the EU and Norway but can come from other sources than use as a pesticide.

24.3.2 ARfD exceedances

Norway notified 13 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 in cases it was still on the marked. New import of these products was followed up by new samples and it was 5 intensified checks before release for products including a sample of organic sesame seeds.

There were also two RASFF notifications for sesame seeds from India (border rejection notification).

Table 141: RASFF notification from Norway for pesticide residues analysed in the monitoring programme in 2021

Product	Origin	Findings above MRL related to the RASFF notifications	RASFF nr.
Oranges	Egypt	Chlorpyrifos 0,034 mg/kg	2021.3266
Parsley leaves	Laos	Hexaconazole 0,28 mg/kg, Pyridaben 0,22 mg/kg Chlorfenapyr 0,087 mg/kg Chlorpyrifos 0,95 mg/kg	2021.2099
Parsley leaves	Laos	Chlorpyrifos 0,064 mg/kg Fenobucarb 0,079 mg/kg Fipronil 0,025 mg/kg Hexaconazole 0,079 mg/kg Lufenuron 0,15 mg/kg Phentoate 0,016 mg/kg	2021.2728
Beans (dried)	Madagaskar	Chlorpyrifos 0,028 mg/kg	2021.5932
Chilipepper	Laos	Chlorfluazuron 0,036 mg/kg Chlorfenapyr 0,092 mg/kg	2021.2659
Wheat flour	United Arab Emirates)	Chlorpyrifos 0,024 mg/kg	2021.5513
Wheat flour	India	Chlorpyrifos 0,19 mg/kg Fipronil 0,13 mg/kg	2021.5389
Wheat flour	India	Chlorpyrifos 0,023 mg/kg	2021.6625
Mandarins	Turkey	Chlorpyrifosmethyl 0,22 mg/kg	2021.6883
Cherries	Turkey	Dimethoate 0,24 mg/kg Omethoate 0,058 mg/kg	2021.3606
Pomelo	Vietnam	Fenobucarb 0,032 mg/kg Propargite 0,23 mg/kg	2021.4761
Carambola	Brazil	Lambda-cyhalothrin 0,16 mg/kg Methomyl 0,091 mg/kg Pyraclostrobin 0,026 mg/kg Thiametoxam 0,072 mg/kg	2021.3266
Sesame seed (organic)	India	Chlorpyrifos 0,043 mg/kg	2021.2923

24.3.3 Actions taken

Table 142 gives an overview of what sort of actions that have been taken when a non-compliance product was proven.

Table 142: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
A -Administrative consequences	4	
E -Destruction of animals and/or products	3	
F- Follow-up (suspect) sampling	4	
N- No action	1	
O- Other	7	
I- Follow-up investigation	4	
R- Rapid Alert Notification	13	RASFF no 2021.2099 RASFF no 2021.2659 RASFF no 2021.2728 RASFF no 2021.2932 RASFF no 2021.3109 RASFF no 2021.3266 RASFF no 2021.3606 RASFF no 2021.4761 RASFF no 2021.5389 RASFF no 2021.5513 RASFF no 2021.5932 RASFF no 2021.6625 RASFF no 2021.6883
M- Lot recalled from the market	5	
V- Movement restriction	4	
S- Lot recalled from the market	5	

Because all the RASFF notifications were on products from third countries and we do not follow up imported products at the farm or at the food business abroad, we do not have the knowledge to conclude anything regarding 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.

24.4 Quality assurance

An overview of the laboratories involved in the pesticide residues programme is shown in Table 143.

Table 143: 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 9 October 2022	Norwegian accreditation	EUPT-FV-23, EUPT-SRM-16, EUPT-CF-15, EUPT-AO-16, EUPT-FV-SM13, EUPT-SC05

24.5 Processing factors (PF)

An overview of the processing factors used in the pesticide residues programme is shown in Table 144.

Table 144: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]
Imazalil	Oranges	Orange juice	0.1
2-phenylphenol	Oranges	Orange juice	0.04
Pyrimethanil	Oranges	Orange juice	0.01
Thiabendazole	Oranges	Orange juice	0.08
Dodine	Apricot	Apricot, dried	4.9
Acetamiprid	Gojiberries	Gojiberries, dried	14
Amitraz	Gojiberries	Gojiberries, dried	14
Chlorfenapyr	Gojiberries	Gojiberries, dried	14
Clothianidin	Gojiberries	Gojiberries, dried	14
Difenoconazole	Gojiberries	Gojiberries, dried	14
Imidacloprid	Gojiberries	Gojiberries, dried	14
Lambda-cyhalothrin	Gojiberries	Gojiberries, dried	6.3
Pyraclostrobin	Gojiberries	Gojiberries, dried	5, 14
Spirotetramat	Gojiberries	Gojiberries, dried	12
Thiamethoxam	Gojiberries	Gojiberries, dried	14
Chlorpyrifos	Wheat	Wheat, flour	0.35, 0.88
Cypermethrin	Wheat	Wheat, flour	0.47
Deltamethrin	Wheat	Wheat, flour	0.31
Fipronil	Wheat	Wheat, flour	1
Pirimiphos-methyl	Wheat	Wheat, flour	0.19
Chlorpyrifos	Olives for oil production	Olive oil	1
Deltamethrin	Olives for oil production	Olive oil	1.5
Difenoconazole	Olives for oil production	Olive oil	1.5
Dimethoate	Olives for oil production	Olive oil	0.32
Lambda-cyhalothrin	Olives for oil production	Olive oil	1
Phosmet	Olives for oil production	Olive oil	4.8
Acetamiprid	Rice	Rice, polished	0.5
Carbendazim	Rice	Rice, polished	0.5
Deltamethrin	Rice	Rice, polished	0.2
Imidacloprid	Rice	Rice, polished	0.78
Isoprothiolane	Rice	Rice, polished	0.5
Tebuconazole	Rice	Rice, polished	0.57
Triazophos	Rice	Rice, polished	0.5
Acetamiprid	Grapes	Raisins	2.5, 4.7
Azoxystrobin	Grapes	Raisins	2.99
Bifenthrin	Grapes	Raisins	4.7
Boscalid	Grapes	Raisins	2.4
Carbendazim	Grapes	Raisins	4.7
Chlorantraniliprole	Grapes	Raisins	3.4
Clothianidin	Grapes	Raisins	4.7
Cypermethrin	Grapes	Raisins	3.3
Cyprodinil	Grapes	Raisins	2.1
Dimethomorph	Grapes	Raisins	1.8
Fenhexamid	Grapes	Raisins	1.86
Fenvalerate	Grapes	Raisins	4.7
Fluopyram	Grapes	Raisins	2.7
Flutriafol	Grapes	Raisins	4.7
Fluxapyroxad	Grapes	Raisins	4.7
Hexaconazole	Grapes	Raisins	4.7
Imidacloprid	Grapes	Raisins	4.7

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]
Indoxacarb	Grapes	Raisins	2.26
Lambda-cyhalothrin	Grapes	Raisins	4.7
Metalaxyl	Grapes	Raisins	3.03
Methoxyfenozide	Grapes	Raisins	2.5
Metrafenone	Grapes	Raisins	4.7
Myclobutanil	Grapes	Raisins	4.7
Procymidone	Grapes	Raisins	4.7
Pyraclostrobin	Grapes	Raisins	2.7
Pyrimethanil	Grapes	Raisins	4.7
Quinoxyfen	Grapes	Raisins	4.7
Spirodiclofen	Grapes	Raisins	2
Spirotetramat	Grapes	Raisins	2.6
Tebuconazole	Grapes	Raisins	1.2
Triadimenol	Grapes	Raisins	6
Trifloxystrobin	Grapes	Raisins	2.3

a) Processing factor for the enforcement residue draft.

24.6 Additional information

In the national monitoring programme for 2021 mainly the pesticide residue multimethods was applied.

Norway has a delay in the implementation of new legislations/new MRLs. New legislations must be approved in the EEA Joint Committee before implementation, which will cause a delay compared to the EU.

25 Poland

25.1 Objective and design of the national control programme

The Chief Sanitary Inspectorate developed a programme to control pesticide residues in food of plant and animal origin, including processed products and baby food. The Polish agency is also responsible of reporting the results to the EFSA.
The national control plan comprises monitoring and official control, along with an EU-coordinated monitoring programme, which aims to keep control of the food available on the Polish market with regard to the potential presence of pesticide residues. The purpose of the programme is to evaluate the market situation in terms of its compliance with legal regulations, to assess consumer exposure to pesticide residues, and to monitor pesticide residues surpassing admissible/acceptable levels, which would then give the grounds for follow-ups and enforcement actions.
The 2021 National Programme was designed to control 62 different food commodities and 320 pesticide definition. The analytical scope was dependent upon the objective of the study.

The programme was developed based on several factors:

- requirements of the Commission Implementing Regulation (EU) 2020/585,
- high-level residue commodities in which MRLs were exceeded in previous years,
- frequency of findings and frequency of multiple residues in previous years
- origin and regional characteristics (domestic, EU, third countries), with a focus on countries and regions of Poland with high historical non-compliance rate

- results of monitoring and official control by other Member States in the EFSA Annual Report
- RASFF notifications
- costs of analysis and analytical capacities of the official laboratories.

A multi-annual sampling plan is revised every year in line with new requirements. The food samples are collected in accordance with with Directive 2002/63/EC and at different supply chain levels, predominantly from primary production, wholesaling, processing and manufacturing, as well as border inspection activities. The sampling strategy mainly consists of random sampling, considering the seasonality of crops. Samples are analysed in EN ISO/IEC 17025:2005-compliant laboratories by means of multi-residue and single-residue methods.
To define pesticides that should be included in the national control programmes, the following aspects were taken into consideration:

- high RASFF notification rate for the pesticide,
- scope of accreditation of the laboratory and its capacity,
- toxicity of the active substance.

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

25.2.1 Key findings

In 2021, a total of 3754 samples were collected and analysed for the presence of pesticide residues. The samples were collected within the framework of an EU-coordinated programme, national monitoring and official control of food, as well as border controls. Out of those samples, 3514 were collected under objective sampling strategy and 240 samples were taken under suspect sampling strategy. For objective sampling, the percentage of non-compliant samples was 3.4%, whereas for suspect sampling, non-compliant samples accounted for 5.8%.

In 1619 samples, no quantitatively identifiable residues were found (43.1% of all samples). Out of the 3754 samples tested, 1915 (51.0%) contained one or more pesticide residues within the legally permitted levels. In 220 (5.9% of all samples), the permissible levels were exceeded (numerical exceedances). At the expanded measurement uncertainty of 50%, 135 samples (3.6%) were non-compliant.

2174 samples were produced in Poland (57.9%), 756 (20.1%) of the collected samples originated from other EU countries and 805 (21.4%) were from third countries. 19 (0.5%) of the samples had an unknown origin.

The samples included 2697 samples of fruit and vegetables, 236 samples of cereals, 191 samples of animal origin, 270 samples of processed food, 119 samples of baby food and 241 samples of other products (nuts, oilseeds, herbs, and tea). There were 49% more vegetable samples taken than fruit samples.

As in previous years, an increased amount of residues was observed in fruit (77.6% of samples), vegetables (58.8%) as well as cereals and cereal-based products (50.4%). The lowest number of residues was found in the samples of animal origin (5.8%) and in baby food samples (2.5%).

In 2021, 64 organic samples were collected and tested, of which 17 (26.6%) contained quantifiable pesticide residues. The pesticide detected in organically produced samples were bromide ion, dithiocarbamates, boscalid, pyraclostrobin, fluopyram, chlorantraniliprole, tebuconazole, acetamiprid, and fludioxonil.

All statistics below apply only to those products of which more than 8 samples were taken.

Pesticide residues were detected in all 41 (100%) Roman rocket samples, but pesticide levels in all tested samples were below the MRL. Pesticide residues were detected in 30 (90.9%) samples of celeries, 37 (88.1%) of curly kales, 48 (82.8%) of celeriacs, 33 (80.5%) of Brussels sprouts, 99 (79.2%) of tomatoes, 30 (75.0%) of horse mushrooms. Curly kales (38.1%), celeriacs (29.3%), Chinese cabbages (18.9%) and celeries (15.15%) recorded the most MRL exceedances. Pesticides that were the most frequently detected in vegetables were: azoxystrobin, bromide ion, boscalid, dithiocarbamates, fluopyram, difenoconazole, acetamiprid, propamocarb, fludioxonil, tebuconazole, cyprodinil, chlorantraniliprole, TNFG, pyraclostrobin, flonicamid, spirotetramat and its 4 metabolites, chlorates, linuron, carbendazim and benomyl, spinosad, chlorpyrifos, chlormequat, and cypermethrin. The fewest number of pesticide residues was detected in beetroots, head cabbages, and onions.

Pesticide residues were detected in all 61 banana samples, but only 2 (3.3%) samples were non-compliant. Bananas, citrus fruits, peaches, grapes, pome fruits and some berries (strawberries and blueberries) were the groups with the highest frequency of detected pesticides (ranging from 75% to 100% of the samples). Pesticides most often found in fruits were: fludioxonil, THPI, boscalid, cyprodinil, pyrimethanil, fluopyram, acetamiprid, thiabendazole, carbendazim and benomyl, captan, azoxystrobin, imazalil, dithiocarbamates, pyraclostrobin, trifloxystrobin, tebuconazole, pyriproxyfen, fenhexamid. In more than 35% of the samples of grapefruits, table grapes, blueberries, common peaches, there were more than three residues found. Strawberries had up to 19 pesticide residues. Up to 10 compounds were detected in tomatoes. Kiwifruit and avocados contained the fewest multi-residues.

Of 119 baby food samples tested, only one was non-compliant. Sample of a ready-to-eat vegetable-based meal for children contained dithiocarbamates, standing at 0.028 ±0.014 mg/kg.

In products of animal origin, 11 of 50 samples of honey were found to contain some residues – acetamiprid, thiacloprid, carbendazim and thiophanate-methyl, prothioconazole, coumaphos and metabolites of amitraz.

One sample of honey, due to its acetamiprid content, was non-compliant. All other animal products analyzed as part of the monitoring and official control programme did not contain pesticide residues at the LOQ or higher level.

Of 384 cereals and cereal products, 21 samples were found to exceed MRLs, and 11 samples were labelled as non-compliant. 10 non-compliant samples (common wheat grain, buckwheat, buckwheat groats, millet flour, millet groats) came from Poland and one originated from Ukraine. The non-compliant samples contained glyphosate, chlorpyrifos, chlormequat, tebuconazole, and chloropham. In cereals and cereal products originating in Poland, the most common pesticides were: chlormequat, bromide ion, glyphosate, and tebuconazole. In rice, the most common residues were azoxystrobin, cyproconazole, and permethrin.

Of 95 tea samples collected at border controls, 93 contained from 1 up to 16 pesticides. Eight samples contained at least one pesticide above the MRLs, and four samples were non-compliant.

Bifenthrin, thiamethoxam, chlorfenapyr, phthalimide, imidacloprid, thiacloprid, acetamiprid, clothianidin, diphenylamine, dinotefuran were found in fermented and non-fermented tea leaves and stalks more often than any other pesticides. However, the compound that exceeded MRLs most often was dinotefuran.

In 29 products, MRLs were exceeded more than 1,000 times.

The compounds that were most frequently found in the examined products included boscalid, azoxystrobin, fludioxonil, fluopyram, bromide ion, acetamiprid, cyprodinil, dithiocarbamates, THPI, tebuconazole, difenoconazole, carbendazim and benomyl, pyrimethanil, pyraclostrobin, thiabendazole, chlormequat, captan, imazalil, trifloxystrobin, and propamocarb.

The compounds found in non-compliant samples were chlorpyrifos, linuron, dithiocarbamates, glyphosate, ethephon, chlorpyrifos-methyl, acetamiprid, propiconazole (sum of isomers), carbendazim and benomyl, dimethoate, propargite, dinotefuran, chlorates, dodine, and tebuconazole.

The summarised results of the year 2021 are presented in Table 145, Table 146 and Table 147.

Table 145: Overview of the 2021 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*	
			%		%		%
Vegetables	1613	664	41.2	841	52.1	108	6.7
Fruits	1084	243	22.4	775	71.5	66	6.1
Cereals	236	117	49.6	113	47.9	6	2.5
Baby food	119	116	97.5	0	0.0	3	2.5
Processed products	270	209	77.4	46	17.0	15	5.6
Animal products	191	180	94.2	10	5.2	1	0.5
Others	241	90	37.3	130	53.9	21	8.7
Summary	**3754**	**1619**	**43.1**	**1915**	**51.0**	**220**	**5.9**

* - the expanded measurement uncertainty was not taken into account (numerical exceedances)

Table 146. Results for domestic samples by commodity group

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*	
			%		%		%
Vegetables	1104	557	50.5	461	41.8	86	7.8
Fruits	429	122	28.4	296	69.0	11	2.6
Cereals	170	85	50.0	82	48.2	3	1.8
Baby food	105	102	97.1	0	0.0	3	2.9
Processed products	181	139	76.8	28	15.5	14	7.7

Animal products	182	171	94.0	10	5.5	1	0.5
Others	3	2	66.7	0	0.0	1	33.3
Summary	**2174**	**1178**	**54.2**	**877**	**40.3**	**119**	**5.5**

* - the expanded measurement uncertainty was not taken into account (numerical exceedances)

Table 147. Results depending on origin of the 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*	
			%		%		%
PL(Poland)	2174	1178	54.2	877	40.3	119	5.5
EU (Union)	2930	1380	47.1	1409	48.1	141	4.8
TK (Third countries)	805	227	28.2	499	62.0	79	9.8
NN (non-specified)	19	12	63.2	7	36.8	0	0.0

* - the expanded measurement uncertainty was not taken into account (numerical exceedances)

25.2.2 Interpretation of the results

Pesticide residues were found in 57.9% of all tested samples, with 77.2% of fruit samples, 58.8% of vegetable samples and 50.4% of cereal samples containing pesticide residues. Detected residues in those samples were much below the established MRL levels. Overall, 5.9% of all samples contained residues >MRL. More non-compliant samples were observed in vegetables than fruits, however the difference was insignificant (6.7% vs 6.1%).

More MRL exceedances were found in third countries product samples (9.8%) than in domestic and EU samples (5.5% and 4.8% respectively). No residues above the MRL were detected in samples of unknown origin. Of the 3754 samples, 136 (3.6%) were non-compliant, of which 71 were vegetable samples, 41 fruit samples, 11 cereal and cereal products, 5 samples of tea, 1 sample of animal origin and 1 sample of baby product, and 5 other miscellaneous products.

Of 135 non-compliant samples, 41 were from third countries and 93 from the EU. Of 93 non-compliant samples from EU, 83 were Polish. 11 non-compliant cereal and cereal product samples were of Polish origin and one of Ukrainian. 16 non-compliant samples contained more than one compound at levels greater than the MRL including the expanded measurement uncertainty of 50%. 9 of the samples were from third countries and 6 were from the EU. The highest exceedance reported was for buprofezin in curly kale. The MRL in the sample was exceeded 19,000 times. High exceedances were also reported for dithiocarbamates in spinach (13,000 times), tebuconazole in Pak-choi (7,500 times), chlorpyrifos in broccoli (6,600 times), chlorates in hops, propargite in apples (5,400 times) and ethephon in sweet peppers (5,000 times).

In 2021, twenty-eight RASFF notifications from Poland were reported.

25.2.3 Comparability with the previous year results

The total number of samples in 2021 was about 16% higher than in the previous year and about 43% higher as compared to 2019. There was a slight decrease in the percentage of samples with no residues from 45.9% in 2019, 46.5% in 2020 to 43.1% in 2021. The rate of non-compliant samples in 2021, compared to 2020 and 2019, was at a similar level, i.e. 3.6%, 3.5% and 2.5%, respectively.

The number of samples from Poland collected and tested in 2021 was at the same level as in 2020 and was equal to 2174 and 2177, respectively. The percentage of non-compliance in domestic samples in 2021, at 3.8%, was very close to the 2020 (4.0%) and 2019 (3.2%) figures.

The number of border control samples, in which tea accounted for 32.1%, was slightly lower in 2021 than in 2020, 95 and 109 respectively. The number of non-compliant tea samples rose from 3 in 2019 to 6 in 2020 and subsequently decreased to 5 in 2021.

25.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

25.3.1 Possible reasons for non-compliant samples

In 2021, 220 (5.9%) samples had residues exceeding the MRLs provided in EU legislation. At the expanded measurement uncertainty of 50%, 135 samples (3.6%) were found to be non-compliant. The products that presented with the highest number of exceedances leading to non-compliance were celeriacs (11.1%), grapefruits (7.4%), sweet peppers (7.4%), strawberries (6.7%), curly kales (5.2%), cucumbers (4.4%), Chinese cabbages (4.4%), millet groats (3.7%), carrots (3.0%), celeries (3.0%), and parsley roots (3.0%). There was a very high diversification of non-compliant samples. In most cases, information about possible reasons for non-compliance was unavailable.

Table 148 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	1	
	Bromopropylate /Grapefruits	1	
	Chlorate/Hops	2	
	Chlorfenapyr /Tomatoes	1	
	Chlorothalonil/Strawberries	1	
	Chlorpiryfos/Apples	1	
	Chlorpiryfos/Bananas	1	
	Chlorpiryfos/Grapefruits	3	
	Chlorpiryfos/Nigella seed	1	
	Chlorpiryfos/Oranges	1	
	Chlorpiryfos-methyl/Grapefruits	5	
	Chlorpropham/Common wheat grain	1	
	Dimethoate /Cucumbers	1	
	Dimethoate /Mandarins	1	
	Dimethoate /Strawberries	1	
	Dinotefuran /Tea leaves and stalks, fermented	2	
	Ethion/Mandarins	1	
	Imidacloprid /Tea leaves and stalks, fermented	2	
	Iprodione/Plums	1	
	Iprodione/Strawberries	1	
	Methamidophos /Strawberries	1	
	Omethoate /Cucumbers	1	
	Prochloraz/Grapefruits	2	
	Procymidone/Strawberries	1	
	Procymidone/Tea leaves and stalks with fruit/flavours	2	
	Propargite/Apples	4	
	Propargite/Strawberries	1	
	Propiconazole/Grapefruits	3	

	Propiconazole/Oranges	1
	Pymetrozine/Cucumbers	1
	Carbendazim and benomyl/Cucumbers	1
	Carbendazim and benomyl/Redcurrants	1
	Chlorothalonil/Cucumbers	1
	Chlorpiryfos/Broccoli	2
	Chlorpiryfos/Brussels sprouts	1
	Chlorpiryfos/Buckwheat groats	2
	Chlorpiryfos/Carrots	1
	Chlorpiryfos/Cauliflowers	2
	Chlorpiryfos/Celeriacs	1
	Chlorpiryfos/Celeries	3
	Chlorpiryfos/Chinese cabbages	1
	Chlorpiryfos/Cucumbers	1
	Chlorpiryfos/Curly kale	1
	Chlorpiryfos/Nectarines	1
	Chlorpiryfos/Parsley roots	1
	Chlorpiryfos/Potatoes	1
	Chlorpiryfos/Redcurrants	1
	Clothianidin /Cucumbers	1
	Diflubenzuron /Pears	1
	Dimethoate /Chinese cabbages	2
	Dithiocarbamates/Celeries	1
	Dithiocarbamates/Raspberries (red and yellow)	1
	Dithiocarbamates/ Vegetable-based meal for children	1
	Dithiocarbamates/Spinach	1
	Fluazifop-P /Cauliflowers	1
	Fluazifop-P /Chinese cabbages	2
	Flutriafol /Raspberries (red and yellow)	14
	Linuron/Carrots	1
	Linuron/Celeriacs	4
	Linuron/Celeries	2
	Linuron/Parsley roots	1
	Propiconazole/Mandarins	1
	Propiconazole/Oranges	2
	Thiophanate-methyl /Broccoli	1
	Thiophanate-methyl /Head cabbages	
	Thiophanate-methyl /Strawberries	
GAP not respected: use of an approved pesticide not authorised for the specific crop[(c)]	Acetamiprid/Chinese cabbages	1
	Acetamiprid/Honey	1
	Buprofezin/Curly kale	1
	Chlormequat /Millet groats	1
	Cypermethrin/Blackcurrants	1
	Cypermethrin/Celeries	1
	Deltamethrin/Brussels sprouts	1
	Ethephon /Sweet peppers	10
	Fenazaquin/Beans (with pods)	1
	Fluazinam/Horse mushrooms	1
	Glyphosate /Buckwheat	1
	Glyphosate /Buckwheat groats	1
	Glyphosate /Millet flour	1
	Glyphosate /Millet groats	4
	Lambda-cyhalothrin/Curly kale	1
	Propamocarb/Celeries	1
	Tebuconazole/Pak-choi	1

	Tebuconazole/Strawberries	1
	Thiabendazole/Melons	1
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Acetamiprid/Brussels sprouts	1
	Dithiocarbamates/Curly kales	6
	Fluopyram/Pak-choi	1
	Prosulfocarb/Dill leaves	1
	Tebuconazole/Common wheat grain	1
Use of pesticide according to authorised GAP: unexpected slow degradation of residues		
Cross contamination: spray drift or other accidental contamination		
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 a plant protection product (e.g. biocides, veterinary drugs, biofuel)		
Naturally occurrence (e.g. dithiocarbamates in turnips)		
Changes of the MRL		
Use of a pesticide on food imported from third countries for which no import tolerance was set[(d)]	Acetamiprid/Tea leaves and stalks, fermented	1
	Dimethomorph/Raspberries	1
	Fosetyl-Al./Rapeseeds	1
	Imazalil/Bananas	1
	Lambda-cyhalothrin (includes gamma-cyhalothrin)/Tea leaves and stalks, fermented	1
	Propamocarb/Strawberries	1
	Propamocarb/Table grapes	1

Contamination from previous use of a pesticide	
Unknown	

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

25.3.2 ARfD exceedances

Experts from the National Institute of Public Health – National Institute of Hygiene conducted a risk assessment for 46 of the non-compliant samples. In 3 cases, the residue level posed a potential health risk to consumers. Those cases involved tebuconazole residues in Chinese cabbage, cypermethrin in celeries, and dithiocarbamates in celeries. In 15 cases, it was concluded that residues may pose a health risk to consumers. Those cases involved thiophanate-methyl in head cabbages, bromopropylate and propiconazole in grapefruits, propiconazole in oranges, diflubenzuron in pears, chlorothalonil in strawberries, dithiocarbamates in curly kales, dithiocarbamates in spinach, ethephon in sweet peppers, carbendazim and benomyl in cucumbers.

The largest ARfD exceedances were found for cypermethrin in celeries (2918% for children, 1248% for adults), dithiocarbamates in curly kale (1390% for children, 608% for adults) and dithiocarbamates in celeries (1134% for children, 485% for adults), all produced domestically.

25.3.3 Actions taken

Table 149 Actions taken

Actions taken	Number of non-compliant samples
Rapid Alert Notification	28
Administrative sanctions (e.g. fines)	132
Lot recalled from the market	18
Rejection of a non-compliant lot at the border	9
Destruction of a non-compliant lot	11
Follow-up (suspect) sampling of similar products, samples of same producer or same country of origin	18
Warnings to responsible food business operator	4
Other actions	13
Follow up action	1
No action	1

25.4 Quality assurance

The collected samples were analysed in six official laboratories and one laboratory designated by the Ministry of Agriculture and Rural Development. All the laboratories were assessed and accredited in accordance with the EN ISO/IEC 17025 by the Polish Centre for Accreditation. In accordance with Regulation 1793/2019, sesame seed samples tested as part of official controls on pesticide residues in food of plant origin at border controls were analysed by the Eurofins laboratory.

Table 150. Laboratories participation in the national control program

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-FV 23 EUPT-CF 15 EUPT-SRM 16
Poland	Voivodship Sanitary – Epidemiological Station in Łódź	LAB 2	03/01/2006	The Polish Centre for Accreditation	EUPT-FV 23 FAPAS (dithiocarbamates)
Poland	Voivodship Sanitary – Epidemiological Station in Opole	LAB 3	15/11/2004	The Polish Centre for Accreditation	EUPT-FV 23 EUPT-CF 15
Poland	Voivodship Sanitary – Epidemiological Station in Rzeszów	LAB 4	18/06/2004	The Polish Centre for Accreditation	EUPT-AO 16 COIPT-21 FAPAS (09136)
Poland	Voivodship Sanitary – Epidemiological Station in Wrocław	LAB 5	08/12/2005	The Polish Centre for Accreditation	EUPT-FV 23
Poland	Voivodship Sanitary – Epidemiological Station in Bydgoszcz	LAB 6	01/09/2020	The Polish Centre for Accreditation	FAPAS (09136) FAPAS (19307) BIPEA 19e BIPEA 06-5419
Poland	Institute of Horticulture - National Research Institute, Food Safety Laboratory	LAB 7	03/08/2006	The Polish Centre for Accreditation	EUPT-FV 23 EUPT-CF 15 EUPT-SRM 16

25.5 Processing Factors (PF)

Table 151 shows compiled processing factors, which were used by national competent authorities to verify the compliance of the processed products with EU MRLs.

Table 151: Processing factors

Pesticide (report name)[a]	Unprocessed product (RAC)	Processed product	Processing factor[b]
Deltamethrin (cis-deltamethrin) Oxyfluorfen	Olives for oil production	Olive oil	5
Acetamiprid	Goji berries	Dried goji berries	5

Chlorpyrifos Imidacloprid Pyraclostrobin Spirotetramat and its 4 metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330 enol-glucoside, expressed as spirotetramat			
Chlorpyrifos Glyphosate Pirimiphos-methyl Phosphonic acid Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl) Bromide ion Malathion (sum of malathion and malaoxon expressed as malathion) Malathion Diphenylamine Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride) Boscalid Etofenprox Pyraclostrobin Tebuconazole Trinexapac (sum of trinexapac (acid) and its salts, expressed as trinexapac) Deltamethrin (cis-deltamethrin) Fenitrothion	Buckwheat Common millet grain Common wheat grain Barley grains Oat grain Rye grain	Millet flour Oat flour Buckwheat flour Rye flour Wheat wholemeal flour Buckwheat groats Millet groats Wheat groats Barley rolled grains Millet rolled grains Oat rolled grains	1
Cyproconazole 2-phenylphenol Anthraquinone	Rice grain	Rice polished Rice parboiled	0.5

(a) Report name as specified in the MatrixTool2016
(b) Processing factor for the enforcement residue definition

26 Portugal

26.1 Objective and design of the national control programme

The objectives and design of the control programme took into account the following:

- relevance of a food product in diet or in national agricultural production - High
- food products with high non-compliance rate identified in the previous years/high RASFF notification rate - High

- unprocessed - High or processed products - Low
- food relevant for sensitive group of consumers (e.g. baby food) - Low
- organic - Low or conventional products - High
- sampling of products during main marketing season - High; outside of main marketing season (e.g. strawberries during winter) - Low
- sample origin reflecting geographic distribution of food products consumed (e.g. domestic, EU, third countries) – High, or focussing on countries with high non-compliance rate in the past - Low

For defining pesticides that should be included in national control programmes the following aspects were taken into consideration:

- capacity of the labs - High
- those defined in the Regulation 2020/585 from 27th April – High
- non-compliance of samples from previous control programs – High
- food commodities not included in EU coordinated programme - High

26.2 Key findings, interpretation of the results and comparison with the previous year results

26.2.1 Key findings

Table 152: Summary results: **2021** (coordinated and national Program)

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 fruits 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**

*With reference to animal product samples only the samples under the EU coordinated program were considered for the purpose of this report, as was the case in previous reporting years.

26.3 Comparison with previous results

Previous results (2017-2020):

Table 153: Summary results: **2020** (coordinated and national Program)

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 fruits 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**	**46,5**	**344**	**47,6**	**43**	**5,9**	**26**	**3,6**

Table 154: 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 fruits 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**	**41,79**	**493**	**50,62**	**74**	**7,6**	**43**	**4.41**

Table 155: Summary results: **2018** (Coordinated and National Program)

Samples	Total	Non compliant	%
Cereals (including processed products)	69	7	10,00
Processed products	81	0	0
Sum of fruits 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.

Table 156: Please provide the title

Samples	Total	Without residues	%	With residue sbelow 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 157: Summary results: 2017

Samples	Total	Without residues	%	With residues below the MRL	%	Exceeding MRL	%	Non compliant	%
Baby food	17	17	100	0		0		0	
Cereals	58	37	63,79	15	25,86	6	10,34	5	8,62
Processed products	27	14	51,85	11	40,74	2	7,41	1	3,70
Sum of fruits and nuts, vegetables, other plant products	602	279	46,35	282	46,84	41	6,81	28	4,65
Animal products	6	6	100	0		0		0	
Total	**710**	**353**	**49,72**	**308**	**43,38**	**49**	**6,9**	**34**	**4,79**

26.4 Non-compliant samples: possible reasons, ARfD exceedances and actions taken (Coordinated and National Program)

26.4.1 Possible reasons for non-compliant samples

Table 158: Possible reasons for non-compliant MRL

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]	tetramethrin/apples	1	AGQ Labs
	Chlorpyriphos/sweet potatoes	1	LRVSA Madeira
	Chlorfenapyr/papaias	1	LRVSA Madeira
	tetramethrin/grapefruit	1	AGQ Labs
	Diphenylamine/pears	1	AGQ Labs
	dimethoate/parsley	1	AGQ Labs
	omethoate/parsley	1	AGQ Labs
	Bromide ion/eggs	17	LRVSA
	Bromide ion/cattle fresh fat tissue	12	LRVSA
	DDAC/cattle fresh fat tissue	1	LRVSA
	Bromide ion/processed cereal-based food for infants and young children	2	LRVSA
GAP not respected: use of an approved pesticide not authorised on the specific crop[c]	fluazifop-p/Broccoli	1	AGQ Labs
	fosetyl/mangoes	1	LRVSA Madeira
	fosetyl/turnips	1	LRVSA Madeira
	Acrinathrin/bananas	1	LRVSA Madeira
	Dithiocarbamates/common	2	AGQ Labs
	mushrooms	1	AGQ Labs
	Dithiocarbamates/sweet potatoes	1	AGQ Labs
	Folpet/pears	1	LRVSA Madeira
	penconazol/mandarines	1	AGQ Labs
	tebuconazol/cherries	1	LRVSA Madeira
	penconazol/broccoli	1	AGQ Labs
	fosetyl/cherries	1	AGQ Labs
	cypermethin/strawberries	1	AGQ Labs
	tebuconazol/strawberries	1	AGQ Labs
	glyphosate/grapefruits	1	AGQ Labs
	imazalil/pears		
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Deltamethin/oranjes	1	AGQ Labs
Natural occurrence (e.g. dithiocarbamates in turnips)	Dithiocarbamates/Watercress	1	LRVSA Madeira
Use of a pesticide on food imported from third countries for which no import tolerance was set[d] (CONTROL AT IMPORT PROGRAM)	imazalil/banana	1	Labiagro
	Clorpiryphos/pepper	1	Neotron
	chlorfenapyr/pepper	1	Neotron
	thiabendazol/Cassava roots	3	Labiagro
	propiconazol/mandarins	1	Labiagro
	propiconazol/rice	1	Labiagro
	cyromazin/black eyed peas	1	Labiagro
	chlorpyrifos/banana	1	Labiagro
	acetamiprid/papaya	1	Labiagro
	(esfenvalerate + fenvalerate)/okra	1	Labiagro
	(dimethoate + omethoate)/pitaya	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

26.4.2 ARfD exceedances (Coordinated and National Program)

Table 159: Number of samples

Pesticide[a]/food product	Frequency	Lab

tebuconazol/cherries	1	AGQ Labs
folpet/pears	1	AGQ Labs
Chlorpyriphos/sweet potatoes	1	LRVSA Madeira
TOTAL	3	

Table 160: ARfD exceedances non-compliant (Import Controls Program)

Pesticide[(a)]/food product	Frequency	Origin
Chlorpyriphos/bananas	1	Equador
TOTAL	1	

Table 161: Origin of the non-compliant products

Pesticide[(a)]/food product	Frequency	Origin
Acrinathrin/bananas	1	Portugal
Tetramethrin/apples	1	France
Tetramethrin/grapefruit	1	Portugal
Chlorpyriphos/sweet potatoes	1	Portugal
Chlorpyriphos/bananas	1	Equador
Chlorpyriphos/pepper	1	Thailand
Chlorfenapyr/pepper	1	Thailand
Chlorfenapyr/papaias	1	Unknown
Fluazifop-p/broccoli	1	Portugal
Fosetyl/mangoes	1	Brasil
Fosetyl/turnips	1	Unknown
Fosetyl/cherries	1	Chile
Dithiocarbamates/mushrooms	2	Portugal
Dithiocarbamates/sweet potatoes	1	Portugal
Difenilamine/pears	1	Portugal
Folpet/pears	1	Portugal
Imazalil/pears	1	Portugal
Penconazole/tangerines	1	Portugal
Cypermethrin/strawberries	1	Portugal
Glyphosate/grapefruit	1	Spain
Acetamiprid/papaya	1	Brasil
Dithiocarbamates/watercress	1	Unknown
Bromide ion/eggs	17	Portugal
Bromide ion/cattle fresh fat tissue	12	Portugal
Bromide ion/processed cereal-based food for infants and young children	2	Unknown
DDAC/cattle fresh fat tissue	1	Portugal
Cyromazine/black eyed peas	1	Peru
Propiconazole/rice	1	Paraguay
Propiconazole/oranges	1	Unknown
Propiconazole/mandarines	1	Argentina
Thiabendazole/cassava roots	3	Costa Rica
Imazalil/bananas	1	Equador
Esfenvalerate+fenvalerate/okra	1	Uganda
Dimethoate+omethoate/pitaya	1	Equador
Dimethoate+omethoate/parsley	1	Portugal
Tebuconazole/strawberries	1	Portugal
Tebuconazol/cherries	1	Chile

26.4.3 Actions taken

Table 162: Actions taken

Action taken[a]	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	3	-
Administrative sanctions (e.g. fines)	14	-
Rejection of a non-compliant lot at the border	14	All non-compliant lots rejected at the border
Other actions	4 (dithiocarbamates); 30 (bromide ion)	No action considering possible natural occurrence

a) If other actions were taken, please describe them in the last column.

26.5 Quality assurance

Table 163: Laboratories participation in the control program

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
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	

26.6 Additional information

Other cases of non-compliances: MRLs (CS_2) and uses (organic production):

Table 164: Non-compliant uses (organic farming)

Reasons for MRL non-compliance	Pesticide[a]/food product	Frequency[b]	Comments
GAP not respected: use of a pesticide not approved in the organic farming	Fluazifop-p/broccoli	1	Administrative sanctions by CA for Organic Farming certification

27 Romania

27.1 Objective and design of the national control programme

In Romania three Competent Authorities are involved in elaboration and implementation of National Control Programme for pesticides residues: National Sanitary Veterinary and Food Safety Authority (NSVFSA), Ministry of Agriculture and Rural Development (MARD) and Ministry of Health (MH).

Web address where the national annual report is published: www.ansvsa.ro, www.madr.r

National Sanitary Veterinary and Food Safety Authority (the coordinator) has the responsibility for preparing the National Multiannual Control Programme for pesticides residues in cooperation with the other two CAs. NSVFSA also has the responsibility for elaboration and implementation of its own National Programme for Surveillance and Control for food of plant and animal origin.

Implementation of National Programme for Surveillance and Control for food of plant and animal origin is performed by Sanitary Veterinary and Food Safety County Divisions and BIPs.

The Programme sets the samples of food of plant origin from Member States and third countries, the point of sampling, the active substances to be analysed.

Romanian Ministry of Agriculture and Rural Development has the responsibility for national monitoring plan of pesticides residues in fruits, vegetables, cereals from domestic market.

Implementation of monitoring programme is performed by MADR through Laboratory for Pesticides Residues Control in Plants and Vegetable Products and Zonal Laboratory for Pesticides Residues determination in Plants and Vegetables Products – Mures, which analyses the samples taken by Counties and Bucharest Phytosanitary Units.

In the monitoring programme of MARD for 2021, samples from 44 agricultural products were planned 2195 samples and were analysed 1988 samples. The number of active substances analysed were 360.

Ministry of Health is responsible for food for special nutritional purposes.

MH realises monitoring and control of pesticide residues in food for special nutritional purposes within the National Program for monitoring of environmental and work life determinants – Subprogram for public health protection by preventing diseases associated with food and nutrition risks factors.

Ministry of Health analysed 42 samples in 2021. All of them complied with the legislative provisions

27.1.1 Design

The selection of the products that were tested for pesticides residues determination is made taking into consideration the following factors listed below:

- 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 residues 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 2020, in 2021 the number of samples analysed for pesticide residues from EU market has been increased (from 57,5% in 2020 to 62.22% in 2021) and for samples from Third Countries the number of samples has been reduced (from 42,5% in 2020 to 37,17 in 2021) - as presented in the Table 165.

Table 165: Summary results by sample origin

Origin of samples	2019(%)	2020(%)	2021 (%)
EU	56,2	57,5	62,22
Third Countries	43,7	42,5	37,17
Unknown	0,1	0	0,6

- Sampling at different marketing levels: farm gates, wholesaler, import activities, border inspection activities, farming, slaughtering,
- Sampling of products during main marketing season/outside of main marketing season (e.g. citrus fruits during the autumn and winter),
- Rapid Alert System for Food and Feed notifications and all other useful information,
- Food for the sensitive consumer groups, e.g., baby food,
- Importance of the commodity in the country production, the national statistical data presented by National Institute of Statistics (Production of the main agricultural products per inhabitant). Thus, a great number of samples were planned for cereals (wheat), fruits (apples, grapes) and vegetables (potatoes, tomatoes),
- Food commodities not included in the EU coordinated programme

For defining pesticides that are included in national control programmes the following aspects were taken into consideration:

- The pesticides included in the EU coordinated programme,
- Use pattern of pesticides,
- Cost of the analysis: multiple methods,
- capacity of laboratories,
- Toxicity of the active substance.

27.2 Key findings, interpretation of the results and comparability with the previous year results

27.2.1 Key findings

In 2021 a total number of 3941 samples were taken in order to check the MRL's compliance of pesticide residues in different crops. From these, 3713 samples there were sampled under objective sampling strategy, 214 samples were sampled under selective sampling strategy and 24 samples were sampled under suspect sampling strategy.

A number of 1430 samples were fruit and primary derivatives thereof, 1701 samples were garden vegetables and primary derivatives thereof, 221 were grains and grain-based products, 42 samples of baby food and 18 samples of animal products.

From the total number of the 3941 samples that include fruit, vegetables, cereals, processed products (including baby food) and animal products, 2233 were produced in Romania, 2452 samples were produced in EU, and 1465 samples were produced outside of the EU.

Table 166: Summary results

Samples	2019	2020	2021
Total	5166	4289	3941
Without residues (%)	3150 (60,98%)	2916 (67,99%)	2668 (67,70%)
With residues below MRL (%)	1927 (37.30%)	1322 (30,82%)	1177 (29,87)
Exceeding (%)	89 (1,72%)	51 (1,19%)	96 (2,43)
Non-compliant (%)	58 (1,12%)	34 (0,79%)	51 (1,29)

27.2.2 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, 1273 foodstuffs samples had 2 or more foundings. Below there are mentioned some products with different number of pesticide residues:

- oranges – 100 samples with a number of residues from 2 up to 6,
- pears – 21 samples with a number of residues from 2 up to 5,
- apples – 86 samples with a number of residues from 2 up to 6,
- cherries – 47 samples with a number of residues from 2 up to 4,
- grapefruits and similar – 94 samples with a number of residues from 2 up to 6,
- lemons -94 samples with a number of residues from 2 up to 7,
- strawberries – 56 samples with a number of residues from 2 up to 7,
- table grapes – 86 samples with a number of residues from 2 up to 8,
- wine grapes – 49 samples with a number of residues from 2 up to 6,
- green onion – 44 samples with a number of residues from 2 up to 6,
- lettuce – 58 samples with a number of residues from 2 up to 8,
- celery leaves – 45 samples with a number of residues from 2 up to 7,
- sweet peppers – 58 samples with a number of residues from 2 up to 10,
- tomatoes – 180 samples with a number of residues from 2 up to 7.

All the data presented above will be taken into account in amending of the National Control Programme for pesticides residues during the next years.

27.2.3 Comparability with the previous year results

Compared with 2019, in 2020 the number of samples with residues below MRL has been reduced (from 37,3% in 2019 to 30,8% in 2020) and the number of samples with exceeding has been reduced (from 1,72% in 2019 to 1,19% in 2020) – as presented in the Table 166. The number of pesticides reported has been remained the same as 2013 (310). Pesticides were validated according to SANCO 12682/2019.

27.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

27.3.1 Possible reasons for non-compliant samples

From 3941 samples in 2021, 51 samples were found non-compliant with the EU MRL. The following follow-up actions were taken in case of sample non-compliant with the EU MRL (measurement uncertainty taken into consideration):

Table 167: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product[a]	Frequency[b]	Comments	Title
GAP not respected: use of a pesticide not approved in the EU[c]	carbendazim/lettuces	2		Romania
	carbendazim/dill	1		Romania
	chlorothalonil/lettuces	4		Romania
	chlorpyrifos/apple	2		Romania
	chlorpyrifos/celeries	1		Romania
	chlorpyrifos/barley	1		Romania
	dimethoate/lovage	1		Romania
	dimethoate/strawberries	1		Romania
	iprodione/lettuces	1		Romania
	iprodione/tomatoes	1		Romania
	linuron/lovage	1		Romania
	linuron/celeries	2		Romania
	linuron/celeriac	1		Romania

	propiconazole/lovage	1		Romania
	thiamethoxam/spring onions	1		Romania
	thiophanate-methyl/lettuces	2		Romania
	thiophanate-methyl/dill	1		Romania
	Indoxacarb/ quinces	1	RO321ANSVSA-30539-1	Turkey
	Chlorpyrifos/ grapefruits	2	RO321ANSVSA-32411-1 RO321ANSVSA-32807-5	Turkey
	Chlorpyrifos/ tomatoes	1	RO321ANSVSA-32497-3	Albania
	Chlorpyrifos methyl/ grapefruits	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[(c)]	kresoxim-methyl/dill	2		Romania

	formetanate/lettuces	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)/lemon	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 /lemon	1	RO223-LSVSA-24481.1	Turkey
	Propiconazole (sum of isomers)/grapefruit	1	RO223-LSVSA-24214.1	Turkey
	Chlorpyrifos/lemon	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

27.3.2 Actions taken

Table 168: Actions taken

	Action taken	Number of non-compliant samples concerned
Rapid Alert Notification	51	51
Administrative sanctions (e.g. fines)	29	29
Lot recalled from the market	19	19
Follow-up (suspect) sampling of similar products, samples of same producer or country of origin	59	59

Warnings to responsible food business operator	30	30
Other follow-up investigations to identify reason of non-compliance or responsible food business operator	9	9
Other actions (please specify)		

27.4 Quality assurance

Table 169: Laboratories participation in the national control program

Country	**Laboratory**		**Accreditation**		**Participation in proficiency tests or inter-laboratory tests**
	Name	**Code**	**Date**	**Body**	
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- FV 24 EUPT- CF 16 EUPT – SRM 17
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 Vegetables Products – Mures	RO_125_ LZDRPPPV	26/04/2013 Reaccreditation in 18/12/2017	RENAR-Bucharest	EUPT- FV 24 EUPT- CF 16
RO	Environmental hygiene laboratory	MS-RO113-MS	LI 1189/ 04.10.2018	RENAR-Bucharest	-
RO	Institute of Hygiene and	RO321-IISPV	01/04/2002	RENAR-Bucharest	EUPT - CF 15 EUPT – AO 16

	Veterinary Public Health				
RO	Sanitary Veterinary and Food Safety Laboratory Constanta	RO223-LSVSA	RENAR audit for accreditation 16-17.12.2021	RENAR Bucharest	--
RO	Sanitary Veterinary and Food Safety Laboratory Olt	RO41-ANSVSA	LI 1174 05.05.2018	RENAR Bucharest	-

Table 170: Processing factors

Pesticide(report name) [a]	Unprocessed product (RAC)	Processed product	Processing factor
All pesticides	Oranges	Oranges 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

28 Slovakia

28.1 Objective and design of the national control programme

In the year 2021, the pesticide residue control was conducted in compliance with the Multi-annual Control Programme for Pesticide Residues in Food and Baby Food in the SR, issued for the years 2021-2023, (hereinafter referred to as the 'Programme'), in which Commission Implementing Regulation No 2020/585/EU was incorporated. In developing the national plan, we focused on several priorities. For a selection process as regards 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 selection of commodities, we focused on fresh fruits and vegetables. Within the scope of the EU monitoring 2021, the following commodities were sampled: table grapes, bananas, grapefruits, broccoli, aubergines, melons, cultivated fungi, peppers (sweet/bell), wheat grain, virgin olive oil, chicken eggs, bovine fat. Beyond the scope of EU monitoring commodities, it has been collected also other fruits and vegetables. In

compliance with legislative requirements, a total of 12 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 food offer in the Slovak market and herewith also consumption trends in Slovakia: food of domestic origin – 18.0%, EU countries – 52.2%, third countries – 27.7% (unknown origin -10 samples). The extension of the scope of analyses in 2021 was based on the requirements of Regulation No 2020/585/EU. Collected samples were analysed in two official laboratories. Food samples were analysed in the State Veterinary and Food Institute - Veterinary and Food Institute in Bratislava and food for infants and young children's samples were analysed in the Laboratory of the Public Health Authority of the SR. Two multiresidue methods (MRM) and nine "single" residue methods (SRM) were used for food analyses (besides baby food). Three MRM and one SRM were used to analyse samples of food for infants and young children.

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

In 2021, 419 samples were analysed.

Table 171: Summary results

Samples	Total	Non-compliant
Animal products	24	0
Cereals	32	2
Baby food	40	0
Fruits and nuts, vegetables and other plant products	323	16
Total	419	18

No pesticide residues were detected in 131 samples which represent 31,3 % of all analyzed samples. One or more pesticide residues under the MRL were detected in 262 samples which represent 62.5 % of all analyzed samples. Residues exceeding MRL were found in 26 analyzed samples, of which 18 samples were non-compliant.

In compliance with the legislative requirements, a total of 12 samples of organic food were collected. No pesticide residues were detected in any BIO sample.

Table 172: Comparability with the previous year results

Year	Total number of samples	Without residues (%)	With residues below MRL (%)	Exceeding MRL (%)	Non-compliant (%)
2019	472	44.9	50.0	5.1	3.2
2020	468	43.6	51.3	5.1	3.4
2021	419	31.3	62.5	6.2	4.2

28.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

In total, 4.2 % of the samples in the monitoring programme were found non-compliant with the EU MRL.

Table 173: Non-compliant samples

Food	Country of origin	Pesticide	Residue level
Lemons	Turkey	Buprofezin, Prochloraz	0.053 0.89
Lemons	Turkey	Chlorpyrifos Fenbutatin oxide	0.03 0.12
Oranges	Egypt	Chlorpyrifos	0.028
Table grapes	Italy	Chlorpyrifos	0.03
Mandarins	Turkey	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	0.094
Mandarins	Turkey	Chlorpyrifos-methyl	0.276
Mandarins	Turkey	Chlorpyrifos-methyl	0.056
Grapefruits	Turkey	Chlorpyrifos Fenbutatin oxide	0.028 0.035
Grapefruits	Turkey	Chlorpyrifos-methyl	0.022
Grapefruits	Turkey	Chlorpyrifos-methyl Buprofezin	0.135 0.031
Grapefruits	Turkey	Chlorpyrifos-methyl	0.026
Grapefruits	Turkey	Chlorpyrifos-methyl Chlorpyrifos	0.052 0.12
Mandarins	Turkey	Chlorpyrifos-methyl Buprofezin	0.093 0.033
Common wheat grain	Slovakia	Chlorpyrifos -methyl	0.038
Common wheat grain	Slovakia	Chlorpyrifos Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	0.042 7.1
Borlotti or other common beans (dry)	Ethiopia	Malathion	0.089
Baby leaf spinaches	Czechia	Sulfoxaflor (sum of isomers)	0.28
Baby leaf spinaches	Netherlands	Phenmedipham	0.065

Table 174: 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/Common wheat grain Chlorpyrifos/Table grapes Chlorpyrifos-methyl/Common wheat grain	3
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Sulfoxaflor(sum of isomers)/ Baby leaf spinaches Phenmedipham/Baby leaf spinaches Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)/Common wheat grain	3

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]
Use of a pesticide on food imported from third countries for which no import tolerance was set[c]	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)/Mandarins Chlorpyrifos-methyl)/3xMandarins Fenbutatin oxide/Lemons Buprofezin/Mandarins Buprofezin/Lemons Chlorpyrifos/Lemons Prochloraz/Lemons Malathion/Borlotti or other common beans (dry) Chlorpyrifos/2x Grapefruits Chlorpyrifos-methyl/4xGrapefruits Fenbutatin oxide/Grapefruits Buprofezin/Grapefruits Chlorpyrifos/Oranges	19

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

28.3.1 ARfD exceedances

Risk of health assessment in the Slovakia is carried out by the National Agricultural and Food Centre – the Food Research Institute.

Table 175: ARfD exceedances and/or risk of health

Pesticide	Crop	Sample origin	Residue level (mg/kg)	ARfD (mg/kg bw)	ARfD%	RASFF notification
Chlorpyrifos-methyl	Mandarins	Turkey	0.276	Not set	Not set	2022.0299
Chlorpyrifos-methyl	Mandarins	Turkey	0.056	Not set	Not set	2022.0064
Chlorpyrifos	Lemons	Turkey	0.03	Not set	Not set	2022.0254
Chlorpyrifos	Grapefruits	Turkey	0.028	Not set	Not set	2022.0035
Chlorpyrifos-methyl	Grapefruits	Turkey	0.022	Not set	Not set	2021.4210
Chlorpyrifos-methyl	Grapefruits	Turkey	0.026	Not set	Not set	2021.5347
Chlorpyrifos	Table grapes	Italy	0.03	Not set	Not set	2021.5220

28.3.2 Actions taken

Table 176 gives an overview of what sort of actions have been taken when a non-compliant product was proven.

Table 176: Actions taken

Action taken	Number of samples	Reference
Rapid Alert Notification	7	2022.0299 2022.0064 2022.0254

Action taken	Number of samples	Reference
		2022.0035 2021.4210 2021.5347 2021.5220
Lot recalled from the market	1	16 kg
Lot not released on the market	2	11300 kg
Other	2	AAC notification
No action	6	

28.4 Quality assurance

An overview of the laboratories involved in the pesticide residues programme is shown in Table 177.

Table 177: Laboratories participating in the national control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Last audit from SNAS	Body	
Slovakia	State Veterinary and Food Institute	156434	Supervision 5.10.2021-11.10.2021	Slovak National Accreditation Service (SNAS)	EUPT FV 23, EUPT CF 15, EUPT SRM 16, EUPT AO 16
Slovakia	Pesticide Lab of Public Health Authority (PHA) SR - Bratislava	607223	22.3.2021	Slovak National Accreditation Service (SNAS)	EUPT-FV23, AO-16

28.5 Processing factors

An overview of the processing factors used in the pesticide residues programme is shown in Table 178.

Table 178: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
All pesticides	Legume seeds and primary derivatives thereof	Borlotti or other common beans (dry)	1	Drying (dehydration)
All pesticides	Herbs, spices and similar	Paprika powder	7	Drying (dehydration)$Grinding / milling / crushing
All pesticides	Grains and grain-based products	Wheat flour, wholemeal	1	Grain milling - flours production
All pesticides	Oilseeds and oilfruits	Poppy seeds	1	Thermal treatment (heating for preservation),

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
				Grinding / milling / crushing
Fat-soluble pesticides	Vegetable fats and oils (as part-nature)	Olive oil, virgin or extra-virgin	5	Oil production - Virgin oil after cold press
Water-soluble pesticides	Vegetable fats and oils (as part-nature)	Olive oil, virgin or extra-virgin	1	Oil production - Virgin oil after cold press
All pesticides	Grains and grain-based products	Buckwheat	1	Grinding / milling / crushing

29 Slovenia

29.1 Objective and design of the national control programme

The national control program is defined in accordance with Article 30 of Regulation 396/2005/ES. Administration of the Republic of Slovenia for Food Safety, Veterinary Sector and Plant Protection prepare a Multiannual national control program of pesticide residues in food, previously coordinated with representatives of governmental and non-governmental organizations. It constitutes the basis for carrying out official sampling for checking the conformity of foods.

For the implementation of the program and reporting to the European Food Safety Authority in accordance with Article 31 of the Regulation 396/2005/ES are responsible the Administration of the Republic of Slovenia for Food Safety, Veterinary Sector and Plant Protection and the Health Inspectorate of the Republic of Slovenia, each in accordance with their respective competences.

The set of pesticides to be determined in 2021 were selected on the basis of the EU coordinated program defined by Commission Implementing Regulation (EU) 2019/533 on a coordinated multiannual Union program, the SANCO work program, data on the registration and sale of pesticides in Slovenia and national data on the authorization 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 program, 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 European coordinated program,
- rotating part of the program because all foods cannot be included in the annual control program 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 during the three-year cycle. Some foods from the rotating program are also part of the European Coordinated Control Program,
- EU coordinated pesticide residue monitoring program (‘EU’ in the tables), which is fully integrated into the Control Program,
- tracing foods where in past years (2020) the pesticide content exceeded the maximum residue levels or MRLs (from the ‘maximum residue level’) or other relevant information,

- additional controls, which include the inclusion of problematic foods (regular exceeding of MRLs or 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 condition, which means the inclusion of individual foods in order to check the situation.

29.1.1 Objective

When Slovenia defining the food products to be analysed in the national control programmes high or low importance was given to one or several factors listed below:

- relevance of a food product in diet or in national agricultural production,
- food products with high non-compliance rate identified in the 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 main marketing season/outside of main marketing season (e.g. strawberries during winter),
- sample origin reflecting geographic distribution of food products consumed (e.g. domestic, EU, third countries); or focussing on countries with high non-compliance rate in the past,
- food commodities not included in EU coordinated programme.

29.1.2 Design

For defining pesticides that should be included in national control programmes the following aspects were taken into consideration:

- RASFF notifications for a pesticide;
- use pattern of pesticide;
- toxicity of the active substance;
- cost of analysis (single method/ multiple method);
- capacity of the labs.

In 2021 were in national control included 944 food samples, 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 fruits and spices.

In 50 samples (5.3 %), the levels of pesticides found, even taking into account measurement uncertainty, exceeded the limit values. The samples did not comply with the provisions of legislation.

An overview of the results of the national control program for 2021 is shown in Table 179.

Table 179: Summary results of the national control program from Administration of the Republic of Slovenia for Food Safety, Veterinary Sector and Plant Protection for 2021

Samples	number of samples	No MRL exceedance	non-compliant	Percentage non-compliant
Animal products	50	50	0	0
Cereals	63	62	1	0,1
Baby food	10	10	0	0
Processed products	187	150	2	0,2
Fruits, vegetables, other plant products	634	544	47	5,0
total	**944**	**828**	**50**	**5,3**

By origin, there were 250 samples (26,5 %) from Slovenia, 394 samples (41,8 %) from other EU countries and 286 samples (30,3 %) from third countries and 4 samples from EU countries and non-EU countries (0,4 %).

An overview of the summary of samples taken in 2021 by region of origin is shown in Table 180.

Table 180: Summary of samples taken in 2021 by region of origin

Origin	number of samples	Non-compliant samples	%
SLO	250	5	0.53
Other countries EU	394	5	0.53
Outside EU	286	40	4.24
unknown	4	0	0
Total	**944**	**50**	**5.3**

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

In 2021 there were 50 food samples which were not compliant with limit values for pesticide residues set by Regulation 396/2005/ES. It is representing 5,3 % of all tested samples taken for pesticide residue analysis.

In previous year (2020) there were 23 food samples which were not compliant by Regulation 396/2005/ES, which represent 2,7 % of all tested samples.

The share of non-compliant foods has grown compared to previous years. The most important contributors to this were from the imported products. There were 15 samples of oranges from Egypt and 13 samples of grapefruit, lemons or tangerines from Turkey, which were non-compliant. We will continue to monitor these foods more closely also in the coming years.

29.2.1 Key findings

Table 181 summarizes 2021 key findings.

Table 181: Summary of results of non-compliant and not safety samples taken in 2021

Samples	number of samples	non-compliant	not safety
Animal products	50	0	0
Baby food	10	0	0
Cereals	63	1	0
Processed products	187	1	0
Fruits, vegetables, other products	634	48	2
total	944	50	2

29.2.2 Interpretation of the results

In 2021, 944 food samples were tested from Slovenia. There were:

- 634 samples (67,2 %) of vegetables (fresh or frozen), fruit (fresh or frozen), and other products,
- 10 samples (1,0 %) of baby food,
- 63 samples (6,7 %) of cereals,
- 187 samples (19,8 %) of processed foods and
- 50 samples (5,3 %) of food of animal origin.

In 1 sample of strawberries the content of formetanate was determined (origin from Italy). and in 1 sample of green tuber the content of linuron was determined (origin from Slovenia). Both samples were not safe under Article 14 of the Regulation 178/2002 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.

In 49 conventional food samples the levels of pesticides found, even taking into account measurement uncertainty, exceeded the limit values, the samples did not comply with the provisions of Regulation (EC) No. 396/2005.

In 1 sample of organic garlic (origin: Spain), the content of azoxystrobin was determined. The sample did not comply with the provisions laid down for organic products in Commission Regulation (EC) No. 889/2008. An overview of summary of MRL exceedance is shown in Table 182.

Table 182: Summary of MRL exceedance

	Number of samples
Fruit samples	**37**
Oranges	15
Grapefruits	8
Lemons	6
Strawberries	3
Tangerines	2
Pomegranates	1
Persimons	1
Apples	1
Vegetables	**7**
Sweet peppers	2
Celery roof	1
Garlic	1
Parsley leaf	1
Cucumbers	1
Dry beans	1
Cereals	**1**
Spelt flour	1
Other products	**5**
Sesame seeds	1
Pumpkin oil	1
Stevia leaf powder	1
Green tea	1
Ginger	1

29.2.3 Comparability with the previous year results

In 2021 there were 5,3 % of the samples (50 samples in total, from 944 samples taken) were found non-compliant with the EU or national legislation. The following follow-up actions were taken for non-compliant samples.

In 2020, 2,7 % of the samples (23 samples in total, from 862 samples taken) were found non-compliant with the EU or national legislation. It was similar in the year 2019 when 2,8 % of the samples (samples in total, from 865 samples taken) were found non-compliant with the EU or national legislation.

In 2021 were more non-compliant foods than previous years. The most important contributors to this were from the imported products, especially citrus fruits, where the limit value is often exceeded for not approved pesticide residues chlorpyrifos and chlorpyrifos – methyl (MRL for them was changed in august 2020 from Commission Regulation (EU) 2020/1085).

29.3 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

If we identify non-compliant samples according to instructions usually batch is seized and prevented from entering the market.

For all samples which exceedance of the MRLs we introduce the appropriate measures according to the risk for the consumer. We also taken follow-up actions to verify the violation and to identify its cause.

When we identified non-compliant samples we draw up an official report.

Foods sampled at import will normally be rejected at the border in the event of inconsistent results with our legislation.

29.3.1 Possible reasons for non-compliant samples

In 2021 there are six non-compliant samples origin from Slovenia. The reasons 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 other sources than plant protection product (e.g. biocides, veterinary drugs, bio fuel) or use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected.

There are also other non-compliant samples from EU countries and third countries. The main reasons are use of a pesticide on food imported from third countries for which no import tolerance was set. Other reasons for non-compliant mainly remain unknown. As the highest proportion of non-compliant samples occurs in products from third countries.

An overview of possible reasons for MRL non-compliance are shown in Table 183.

Table 183: 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[c]	Linuron - Celery roof	1
GAP not respected: use of a pesticide not approved in the national level[c]	Carbendazim and benomyl - Apples	1

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]
GAP not respected: use of a pesticide not approved in organic food legislation [c]	Azoxystrobin – BIO Garlic	1
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Propamocarb - Strawberries	1
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Flonicamid - Strawberries	1
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Acetamiprid - Parsley leaf	1
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Formetanate - Strawberries	1
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Acetamiprid - Persimmon	1
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)	Glyphosate – Spelt flour	1
Residues resulting from other sources than plant protection product (e.g. biocides, veterinary drugs, bio fuel)	Dimoxystrobin – Pumpkin oil	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[d]	Chlorpyrifos-ethyl - Grapefruit	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[d	Chlorpyrifos-methyl – Grapefruit	3
Use of a pesticide on food imported from third countries for which no import tolerance was set[d]	Clothianidin - Ginger	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[d]	Chlorpyrifos-ethyl - Mandarins	1
Changes of the MRL	Chlorpyrifos-methyl – Mandarins, Grapefruit, 6x Lemons	8
Changes of the MRL	Chlorpyrifos-ethyl – 12x Oranges, 1x Sezam seeds, 1x Cucumbers	14
Use of a pesticide on food imported from third countries for which no import tolerance was set[d]	Propamocarb – Green tea	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[d	Boscalid, Acetamiprid - Pomegranate	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[d	Chlorpyrifos-methyl Chlorpyrifos-ethyl - Pomegranate	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[d	Chlorpyrifos-ethyl , Buprofezin - Grapefruit	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[d	Chlorpyrifos-methyl Chlorpyrifos-ethyl , Buprofezin - Grapefruit	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[d	Profenofos - Oranges	1

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]
Use of a pesticide on food imported from third countries for which no import tolerance was set[d]	Ciflutrin - Oranges	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[d]	Chlorpyrifos-ethyl, Dimethoat - Oranges	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[d]	Ethylene oxide - Stevia leaf powder	1
Unknown	Propoksur – Dry beans	1
Unknown	Chlorpyrifos-ethyl, Propargite – Hot Pappers	1
Unknown	Propargite, Clofentezine, Fipronil (sum) - Sweet Pappers	1

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

29.3.2 ARfD exceedances

Health risk assessment in Slovenia is carried out by the National Laboratory for Health, Environment and Food. As part of the assessment, it determines the risk to the health of adults and children, calculates exposure and ARfD.

In 2021 one sample exceeded ARfD because of Formetanate in Strawberries from Italy.

29.3.3 Actions taken

In Table 184 an overview of what sort of actions that have been taken when a non-compliant product was proven

Table 184: Action taken

	Action taken	Number of non-compliant samples concerned
Rapid Alert Notification	Recalled from the market	25
Rejection of a non-compliant lot at the border		13
Warnings to responsible food business operator		9
Administrative sanctions (e.g. fines)	Recalled from the market	3

29.4 Quality assurance

The laboratories performing analysis for the official controls in the pesticide residues area meet the requirements of the 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 residues program is shown in Table 185.

Table 185: Laboratories participation in the national control program

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
Slovenia	National laboratory of	LP-014	25.3.2019	Slovenian Accreditation	1.) EUPT-FV20 2.) EUPT-SM10

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
	Health, Environment and Food				3.) EUPT-AO13 4.) EUPT-CF12 5.) EUPT-SRM13

29.5 Processing Factors (PF)

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 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 versus dried commodities were used for dried samples where MRL was set on the fresh commodity. Processing factors were mainly applied to cover the dehydration of fruits, oil production using pressing, polishing of rice.

An overview of the processing factors used in the pesticide residues program is shown in Table 186.

Table 186: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
Dimoxystrobin	Pumpkin seeds	Pumpkin oil	1	Treatment: compression
All	Spelt grains	Spelt flour	1	Treatment: grinding

30 Spain

30.1 Objective and design of the national control programme:

The Responsibilities are the elaboration and implementation of the national control programme involves the following units:

- The Sub-Directorate-General for Foreign Health of the Ministry of Health.
- The Sub-Directorate-General for Coordination of Alerts and Programming Official Control of the Spanish Agency for Food Safety and Nutrition (in Spanish AESAN).
- Control Units of the Autonomous Spanish Regions (ASP)

Each unit has assigned its duties about coordination or execution within its scope.

AESAN is an autonomous body under the Ministry of Consumer Affairs and acts as liaison between the Commission and the European Food Safety Authority (EFSA), and the Autonomous Communities (AA CC) which are the Competent Authorities for the execution of programmes at regional level.

For the development and implementation of the risk based 'Annual National Program', a Guidance on programming have been developed and approved in Spain. This document is aimed to support the Autonomous Control Units and the Foreign Health Unit in its duties on programming.

The national programme is made up of two subprogrammes based on the point where the samples are collected:

- market subprogramme, coordinated by AESAN
- imports subprogramme, coordinated by MSCBS.

The National Pesticide Residues Control programme integrates controls carried out by the ASP. AESAN is responsible for the coordination of control programme. The annual plans developed by the ASP and coordinated by AESAN include monitoring of unauthorised products.

30.1.1 Objectives:

To ensure that official controls are carried out in order not to place on the market food products treated by unauthorized pesticides.

To ensure that official controls are carried out in order not to place on the market food products with pesticide residues levels above those established in regulations in force, so they can pose a health risk for consumers.

30.2 Key findings, interpretation of the results and comparability with the previous year results

In order to get a better understanding of the information regarding the number of samples taken by Spain by number of inhabitants, it should be taken into account that the results sent to EFSA from Spain do not include those samples taken in primary production. Due to the Spanish administrative organization, samples taken in primary production are considered to be excluded from the scope of Regulation (EC) No. 396/2005.

The 2020 data collection, has been influenced mainly by two aspects:

- The lockdowns and movement restrictions caused by COVID-19.
- The use of the national application for data collection, GEDA, based on Commission and EFSA's requisites, which improve the quality of the data by reducing the possibility of entering erroneous and false data, only allowing related to the full residue definition and the residues defined in the Commissions legal limits database.

30.2.1 Key findings:

In 2021 a total of 1905 samples were analysed for pesticide residues. 95.64% of the samples were objective samples and 4.36% were suspect sampling.

Regarding results, the analysis of the 1905 samples lead to 273292 results.

The 2.52% of the analysed samples shown pesticide residues levels exceeding the EC-MRL. In particular, there have been 48 non-compliant samples that correspond to 50 non-compliant results, since there are samples that have tested positive for more than one substance (e.g. a sample from Rice, was positive to Acetamiprid and Tricyclazole).

None of the baby food samples were non-compliant, although a sample presented some detection (compliant with LMR). The group of "Fruits and other vegetables" shows the higher number of non-compliant results, but this is the group that comprehends 86.77% of the sample tested. The parameter that has been confirmed in more samples within this group was Imazalil (any ratio of constituent isomers) with 16 positive results, followed by Chlorpyrifos, with 6 positive results. The biggest number of samples and analysed substances belong to this group, and 46 of the 50 pesticides detected, appeared within the group.

Regarding the groups "Products of animal origin", only one sample presented residues: "Honey-comb". The residues detected were Fluvalinate (sum of isomers) and Coumaphos.

The main results are detailed in Table 187 and Table 188.

Table 187: General summary – part 1

Matrix	Total number of samples	Total number of results	Compliant samples	Samples with residues >MRL	% NC
Products of animal origin	118	5762	117	1	0.85%
Baby foods	37	4829	37	0	0%
Cereals	97	14157	96	1	1.03%
Fruits and other vegetables	1653	248544	1607	46	2.78%
Total	**1905**	**273292**	**1857**	**48**	**2.52%**

Table 188: 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	114	4	2	3.39%	96.61%
Baby foods	36	1	0	2.70%	97.30%
Cereals	79	18	0	18.56%	81.44%
Fruits and other vegetables	907	746	27	45.13%	54.87%
Total	**1136**	**769**	**29**	**40.37%**	**59.63%**

30.2.2 Interpretation of the results

Although the number of samples is slightly higher than 2020, it doesn't reach the volume of samples collected in 2018. 2021 had been a year marked by lockdowns and movement restriction due to covid-19; this could be one of the reasons of the amount collected.

The residues have been set according to the Commission definitions, which may have led to a decrease of results, but it has improved the quality of the data reported considerably.

All the laboratories have procedures to estimate analytical uncertainty, which is taken into account to decide any enforcement action. Document SANTE/12682/2019 is also considered.

Some new confirmation methods were implemented in Spanish laboratories in order to increase the number of pesticide residues measured and to bring down detection limits of some of them.

The results are detailed in Table 189.

Table 189: NC results. Summary

Matrix	Samples	Results	Pesticide	Frequency
Animal products	1	2	Coumaphos. Fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate.	1 1
Baby foods	0	0	--	0
Cereals	1	2	Acetamiprid Tricyclazole	1 1
Fruits and other vegetables	46	46	Chlorfenapyr Chlorpyrifos Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb, Mancozeb, Metiram, Propineb, Thiram and Ziram) Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil) Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop) Flutriafol Formetanate: Sum of formetanate and its salts expressed as formetanate(hydrochloride) Hexaconazole Imazalil (any ratio of constituent isomers) Iprodione Methiocarb (sum of methiocarb and methiocarb sulfoxide and sulfone, expressed as methiocarb) Oxamyl Profenofos Propiconazole (sum of isomers) Proquinazid Tetraconazole Triflumizole Triflumizole and metabolite FM-6-1(N-(4-chloro-2-trifluoromethylphenyl)-n-propoxyacetamidine), expressed as Triflumizole	3 6 1 2 1 1 2 1 16 3 1 1 1 4 1 1 1
Total	48	50		50

30.2.3 Comparability with the previous year results:

In 2021, a total of 1905 samples were analysed for pesticide residues compared to a total of 1543 samples analysed in 2020, and the 2314 samples analysed in 2019.
This year, the number of analyses has increased slightly comparing with the amount taken in 2020 (pandemic year).

Table 190: Comparability samples/results by year

Year	Total number of samples	Total number of results
2018	2,711	467,443
2019	2,314	299,811
2020	1,543	206,179
2021	1,905	273,292

The number of samples with **Chlorpyrifos** detected has slightly increased compared with the previous year, as seen in Table 191.

Table 191: Frequency of residue **chlorpyrifos** by year

Year	Residue non-compliant more common	Number of samples analysed	Number of non-compliant	%	Product more common
2019	Chlorpyrifos	1,176	1	0.08	Fruits and other vegetables (1 Artichoke)
2020	Chlorpyrifos	2,006	4	0.2	Fruits and other vegetables (2 Coffe beans/ 2 sweet peppers)
2021	Chlorpyrifos	3,057	6	0.2	Fruits and other vegetables (1 Coffe beans/ 5 oranges)

30.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

30.3.1 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 being high the number of 'unknown'.

Table 192: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency
Environmental contamination	Oranges / **Chlorpyrifos**	1
Natural occurrence	Bananas / **Imazalil (any ratio of constituent isomers)**	1
Cross contamination: spray drift or other accidental contamination	Cauliflower/ **Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)**	1
Good Agricultural Practice (GAP) not respected: use of an approved pesticide not authorised on the specific crop	Apple / **Iprodione**	1
Good Agricultural Practice (GAP) not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Oranges / **Chlorpyrifos**	3
Residues resulting from other sources than plant protection product (e.g. biocides, veterinary drugs, bio fuel)	Honey comb / **Coumaphos** Honey comb / **Fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate**	1 1
Use of a pesticide on food imported from third countries for which no import tolerance was set	Grapefruit / **Tetraconazole**	1

Reasons for MRL non-compliance	Pesticide/food product	Frequency
Other	Bananas / **Imazalil (any ratio of constituent isomers)**	15
	Organic Aubergines / **Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil)**	1
	Melon / **Iprodione**	1
	Sweet Pepper/ **Hexaconazole**	1
	Sweet Pepper/ **Proquinazid**	1
	Table Grapes / **Methiocarb (sum of methiocarb and methiocarb sulfoxide and sulfone, expressed as methiocarb)**	1
Unknown	Organic Rice/ **Tricyclazole**	1
	Organic Rice/ **Acetamiprid**	1
	Chives/ **Formetanate: Sum of formetanate and its salts expressed as formetanate(hydrochloride)**	2
	Coffe beans/ **Chlorpyrifos**	1
	Lemons/ **Propiconazole (sum of isomers)**	3
	Mandarines/ **Propiconazole (sum of isomers)**	1
	Oranges/ **Chlorpyrifos**	1
	Oranges/ **Profenofos**	1
	Potatoes/ **Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil)**	1
	Cucumbers/ **Oxamyl**	1
	Sweet Pepper/ **Chlorfenapyr**	1
	Pitahaya/ **Iprodione**	2
	Tomatoes / **Chlorfenapyr**	1
	Table grapes / **Triflumizole Triflumizole and metabolite FM-6-1(N-(4-chloro-2-trifluoromethylphenyl)-n-propoxyacetamidine), expressed as Triflumizole**	1
	Table grapes / **Flutriafol**	

30.4 Actions taken:

Table 193: Actions taken

Action taken	No. of non-compliant samples concerned	Residue/Product
Administrative consequences	2	Proquinazid**/ Sweet pepper** Triflumizole Triflumizole and metabolite FM-6-1(N-(4-chloro-2-trifluoromethylphenyl)-n-propoxyacetamidine), expressed as Triflumizole / **Table grapes**
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	1	Tetraconazole/ **Pomegrate**
Follow-up (suspect) sampling	1	Methiocarb (sum of methiocarb and methiocarb sulfoxide and sulfone, expressed as methiocarb)/ **Table grapes**
Follow-up investigation	13	Acetamiprid/ **Organic rice**

Action taken	No. of non-compliant samples concerned	Residue/Product
		Fluazifop-P (sum of all the constituent isomers of fluazifop, its esters and its conjugates, expressed as fluazifop)/ **Cauliflowers** Propiconazole (sum of isomers) / **Lemons** Propiconazole (sum of isomers) / **Mandarins** Iprodione / **Apples** Chlorpyrifos / **Oranges** Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil) / **Potatoes** Hexaconazole / **Sweet Peppers** Imazalil (any ratio of constituent isomers) / **Bananas** Flutriafol / **Table grapes**
Lot not released on the market	3	Tricyclazole / **Organic Rice** Chlorpyrifos / **Coffee beans** Profenofos / **Oranges**
Other	18	Imazalil (any ratio of constituent isomers) / **Bananas** Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil) / **Organic Aubergines** Oxamyl / **Cucumbers** Chlorfenapyr / **Tomatoes**
Rapid Alert Notification	6	Chlorpyrifos / **Oranges** Coumaphos / **Honey comb** Fluvalinate (sum of isomers) resulting from the use of tau-fluvalinate / **Honey comb** Chlorfenapyr / **Sweet Peppers** Iprodione / **Pitahaya (dragon fruit)** Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb, Mancozeb, Metiram, Propineb, Thiram and Ziram) / **Cultivated funghi** Chlorfenapyr / **Tomatoes**
Lot recalled from the market	2	Chlorpyrifos / **Oranges**
Movement restriction	2	Formetanate: Sum of formetanate and its salts expressed as formetanate(hydrochloride) / **Spring onions and chives.**
Warnings	1	Iprodione / **Melon**

30.5 Quality assurance

Table 194: Laboratories participation in the national control program

Country	Laboratory			Participation in proficiency tests or inter-laboratory tests
	Name	Accreditation Date	Accreditation Body	
Spain	AINIA. ASOCIACIÓN DE INVESTIGACIÓN DE LA INDUSTRIA AGROALIMENTARIA	20/12/1996	ENAC	FAPAS, EUPT, Test-Qual
Spain	CENTRO NACIONAL DE TECNOLOGÍA Y SEGURIDAD ALIMENTARIA- CNTA	12/06/1997	ENAC	

Country	Laboratory	Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Date	Body	
Spain	LABORATORIO DE SAÚDE PÚBLICA DE GALICIA. Laboratorio de Lugo	10/07/1998	ENAC	FAPAS, EUPT, Test-Qual
Spain	LABORATORIO REGIONAL DEL GOBIERNO DE LA RIOJA	28/05/1999	ENAC	FAPAS, EUPT, Test-Qual
Spain	LABORATORIOS AGROALIMENTARIO Y ENOLÓGICO DE LA GENERALITAT VALENCIANA.	22/10/1999	ENAC	FAPAS, EUPT, Test-Qual
Spain	LABORATORIO DE SALUD PÚBLICA DE BIZKAIA	04/02/2000	ENAC	FAPAS, EUPT, Test-Qual
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	ASOCIACIÓN EMPRESARIAL DE INVESTIGACIÓN. CENTRO TECNOLÓGICO NACIONAL DE LA CONSERVA (C.T.C.)	29/06/2000	ENAC	
Spain	LABORATORIO DE LA AGENCIA DE SALUD PÚBLICA DE BARCELONA	21/07/2000	ENAC	FAPAS, EUPT, Test-Qual
Spain	Laboratorio KUDAM S.L.U.	24/05/2002	ENAC	FAPAS, EUPT, Test-Qual
Spain	FItosoil Laboratorios S.L	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, Test-Qual
Spain	Laboratorio Regional: AGQ LABS: Labs & Technological Services AGQ, S.L. (Sevilla)	19/01/2007	ENAC	FAPAS, EUPT, Test-Qual
Spain	LABORATORIO AGROALIMENTARIO Y DE SANIDAD ANIMAL DE MURCIA	16/10/2009	ENAC	FAPAS, EUPT, Test-Qual
Spain	LABORATORIO AGROAMBIENTAL DE ARAGON	18/12/2009	ENAC	FAPAS, EUPT, Test-Qual
Spain	INSTITUTO TECNOLÓGICO DE CANARIAS	21/10/2011	ENAC	FAPAS, EUPT, Test-Qual
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	28/11/2014	ENAC	FAPAS, EUPT

Country	Laboratory	Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Date	Body	
	AGRICULTURA Y GANADERÍA DE LA JUNTA DE CASTILLA Y LEÓN			
Spain	ANALYTICA ALIMENTARIA GMBH	15.02.2021	DAKKS	FAPAS, EUPT

30.6 Processing Factors (PF)

In the table below the processing factors that were used by national competent authorities to verify compliance of processed products with EU MRLs are compiled.

Table 195: 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	5
All pesticides	Olives for oil organic production	Organic extra virgin olive oil	5

30.6.1 Notified residues vs Accepted residues. Pesticides excluded from the EU report.

AESAN have received the analysis carried out in 1905 samples, and only 1898 samples will be included in the European report.

Table 196: Total number of samples

Pesticides samples reported	1.905
Pesticides samples reported included in report	**1.898**

Those 7 samples not included in the report are related with fish and seafood products, which are not in the scope of this report.

Regarding the residues notified, AESAN have received and forwarded to EFSA 273.292 residues, from which only 270.113 had been included in the European report in the first instance.

Table 197: Total number of results

Pesticide results reported	**273.292**
Pesticides results reported included in report	**270.113**

There are 3179 residues analysed and notified that had been excluded from the report. None of the residues excluded were positive or non-compliant. The analysis of the reason for rejection showed that:

Table 198: Reason for exclusion

Reason for exclusion	Number of residues
Only the components of the Residue Definition are reported	1144

Reason for exclusion	Number of residues
Wrong code selected to report the residue in the national application used to collect samples	1965
Residues related to Fish and seafood products	70
Total	**3179**

Out of the 1965 with the wrong code selected in the application where all the Spanish data providers, record their samples, the residues with the wrong code selected where:

Table 199: Residue wrongly coded

Residue reported	*Total samples*
Boscalid	**1**
Carboxin	**2**
Chlorpyrifos-methyl	**58**
De-ethyl-bupirimate	**375**
Diclofop-Methyl	**138**
Gibberellic acid	**16**
Imazalil	**95**
Metalaxyl and metalaxyl-M (metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers)	**2**
Pencycuron	**1254**
Procymidone	**2**
Propyzamide	**2**
Sum of diclofop-methyl, diclofop acid and its salts, expressed as diclofop-methyl (sum of isomers)	**19**
Thiabendazole	**1**
Total general	**1965**

31 Sweden

31.1 Objective and design of the national control programme

31.1.1 Objective

The Swedish Food Agency (NFA) has developed a scoring model to clarify the criteria that form the basis for the prioritization of the products included in the national monitoring program 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 for the consumer into account, ranking of the products based on their score. The 20 products with highest score are taken as most important products, and they shall be included annually and constitute to about 60 percent of the control program. The rest of the products shall recur on a regular basis, such as every three years. Baby food is exception and it always included in the program.

The following criteria are included in the score model in order to find out which products that belongs to the 20 most important:

- 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 product basis. A minimum of 30 selected samples during the three years is required for the product to be included in this criterion.
- The proportion of samples with residues above MRL over three year's period, expressed in 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 percent of the acute reference dose (ARfD).

31.1.2 Design

In 2021 the sampling distribution between the origins of the food was roughly 25 % domestic, 30 % other EU countries and 45 % from third country.

Fresh fruits 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 domestic 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 in retail shops or department stores.

The number of samples from the organic sector was roughly dependent on its markets share and availability on the market. In total 146 organic samples (16.8 %) was collected 2021.

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 550 analytes which of about a hundred is metabolites or break down products.

31.2 Key findings, interpretation of the results and comparability with the previous year results

31.2.1 Key findings

In 2021, 867 selective samples of fruits, vegetables, baby food, juices, cereal grains, bovine fat and eggs were analysed for residues of about 550 analytes (pesticides, metabolites and break down products). EU harmonized Maximum Residue Limits (EC-MRLs) were exceeded in 36 samples (4.1 %). The history of exceedance has looked as follow; 2016 – 2.1 %, 2017 – 3.3 %, 2018 - 3.3 %, 2019 – 3.0 %, 2020 – 3.4 % and for 2021 it was 4.1 %. Looking over time the exceedance the last seven years is in range of 2.1-4.1 %.

Table 199 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, number of samples with residues located between the LOQ and the limit (MRL), and the samples with residue concentrations over the limit was noted (not taking the measurement uncertainty into account).

Table 200: Summary results from the national monitoring program for pesticide residues 2021

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)	443	106	319	18 (4,0%)
Vegetables (fresh or frozen)	208	103	103	2 (1,0%)
Baby food	46	46	0	--
Cereals	82	46	20	16 (19,5 %)
Products of animal origin	36	0	0	--
Others (e.g. juice, dry products, veg.oils)	52	32	20	--
Total	**867**	**369**	**462**	**36 (4,1%)**

31.2.2 Interpretation of the results

When measurement uncertainty was taking into consideration, only 17 samples, of the 36 samples, were non-compliant.

Table 201: Summary over non-compliant samples 2021

Commodity	Origin	No. of Sample	Pesticides
Banana	Ecuador	1	Chlorpyrifos
Pomegranate	Turkey	1	Sulfoxaflor
Pomegranate	Italy	1	Chlorpyrifos
Mandarin	Italy	1	Chlorpyrifos
Orange	Egypt	2	Profenofos; Chlorpyrifos
Apple	Sweden	1	Prosulfocarb
Sweet pepper	Albania	1	Formetonate
Rice	Vietnam	1	Tricyclazole
Rice	Uruguay	1	Trinexepac
Rice	Pakistan	1	Carbendazim
Rice	India	6	Buprofezin, carbendazim, chlorpyrifos, formetonate, propaconizole, thiametoxam, tricyklazol

The suspect samples were 71 samples according to Regulation (EC) No 2019/1793. Including measurement uncertainty 17 (23.90 %) of the 2019/1793 samples contained residues above the MRL.

31.2.3 Comparability with the previous year results

An overview of exceedance in fresh fruits and vegetables is illustrated in Figure 7. Looking over ten years period the exceedance trend has declined.

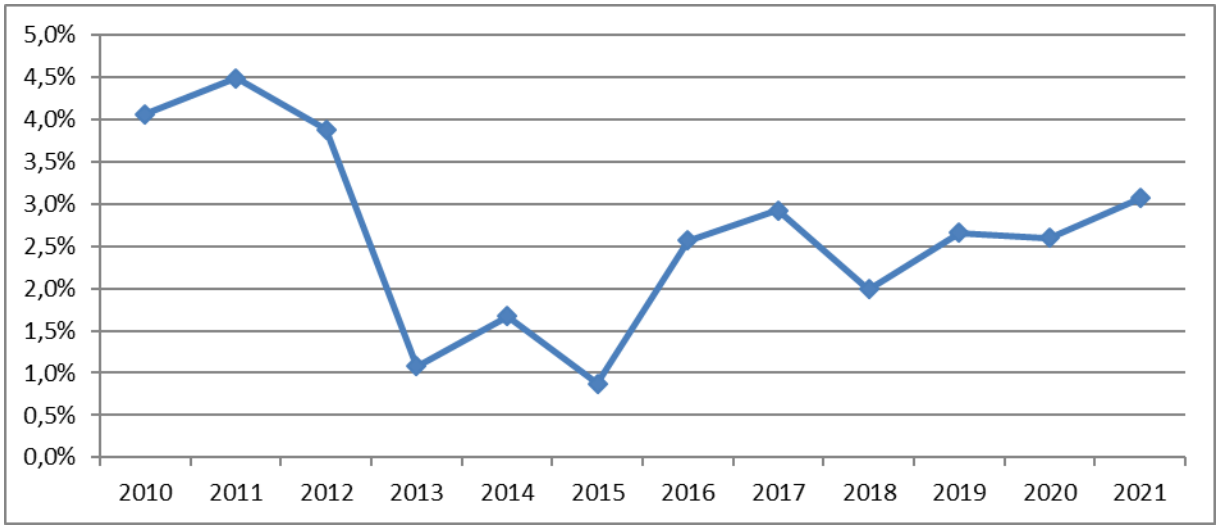


Figure 7:Exceedance rate for fresh fruit and vegetables between 2010-2021.

31.3 Non-compliant samples: possible reasons, ARfD exceedances and actions taken

31.3.1 Possible reasons for non-compliant samples

Table 202: 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/Rice	1
	Thiametoxam/Rice	5
	Propiconazole/Rice	1
	Chlorpyrifos/Manadrin	1
	Chlorpyrifos/Orange	1
	Profenofos/Orange	1
	Formetonate/Sweet pepper	1
	Sulfoxaflor/Pomegranate	1
	Chlorpyrifos/Banana	1
GAP not respected: use of an approved pesticide not authorised on the specific crop[b]		
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Buprofezin/Rice	1
	Trinexepac/Rice	1
	Propamocarb/Pomegranate	1
Use of pesticide according to authorised GAP: unexpected slow degradation of residues		
Cross contamination: spray drift or other accidental contamination	Prosulfocarb/Apple	1
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, bio fuel)		

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]
Naturally occurrence (e.g. dithiocarbamates in turnips)		
Changes of the MRL	Tricyklazol/rice	5
Use of a pesticide on food imported from third countries for which no import tolerance was set[c]		

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

31.3.2 ARfD exceedances

The short-term intake was estimated for all acute toxic pesticides with an acute reference dose (ARfD) set by EU or WHO. The calculation was based on the residue found in a selective (composite) sample and EFSA calculation model PRIMO rev 3 was used. None of the samples exceeded the ARfD during 2021.

31.3.3 Actions taken

A total of 34 follow-ups actions has been taken in 2021.

Table 203: Actions taken

Action taken[a]	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	-	
Administrative sanctions (e.g. fines)	-	
Lot recalled from the market	-	
Rejection of a non-compliant lot at the border	17	Within the frame of Reg. (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 reason of non-compliance or responsible food business operator	17	
Other actions		

31.4 Quality assurance

Laboratories participation in the national control program.

Table 204: Laboratories participation in the national control program.

Country	Laboratory	Accreditation			
	Name	Code	Date	Body	Participation in proficiency tests or inter-laboratory test
SE	Eurofins Food& Feed Sweden AB	Eurofins	02/09/1991	SWEDAC	**EUPT 2021:** EUPT-AO16 EUPT-CF15 EUPT-FV23 EUPT-FV-SC05 EUPT-FV-SM13

Country	Laboratory	Accreditation			
	Name	Code	Date	Body	Participation in proficiency tests or inter-laboratory test
					EUPT-SRM16 **Fapas 2021:** Fapas 05153 Fapas 05155 Fapas 09136 Fapas 09141 Fapas 19135 Fapas 19138 Fapas 19304 Fapas 19308 Fapas 19309 Fapas 19313 Fapas 19316
SE	National Food Agency	SLV/Kem 1	02/26/2007	SWEDAC	**EUPT 2021**: EUPT-AO16 EUPT-CF15 EUPT-FV23 EUPT-SM13

31.5 Processing Factors (PF)

In the table below, the processing factors are compiled that were used by the Swedish Food Agency to verify compliance of processed products with EU MRLs.

Table 205: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor [(a)]	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	
Fluopyram	Table grapes	Raisins	4.5	
Fluzilazole	Table grapes	Raisins	4.5	

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor (a)	Comments
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)Processing factor for the enforcement residue definition

32 Northern Ireland[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 residues 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 are available[29] as well as associated ODS format files containing detailed results[30]. Results for samples in the Northern Ireland programme are differentiated from Great Britain results.

General enquiries about HSE'S work on pesticide residues monitoring should be sent through Defra see https://www.gov.uk/guidance/contact-defra.

Enquiries about PRiF reports can be sent to prif@hse.gov.uk.

32.1 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 2021 were reviewed by the Expert Committee on Pesticide Residues in Food (PRiF - a committee of independent experts) in 2020 before the programme

[29] https://www.gov.uk/government/collections/pesticide-residues-in-food-results-of-monitoring-programme
[30] https://data.gov.uk/dataset/5d5028ef-9918-4ab7-8755-81f3ad06f308/pesticide-residues-in-food

was finalised. Full details of the programme and supporting justification 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 2021 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 whole population or for vulnerable sub-groups in particular infants and children.
- Foods for which RASFF notifications were issued for pesticide residues during 2020 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.
- We continued to incorporate chlorate analysis in the programme, in surveys of aubergine, broccoli, melon and mushroom as it was considered that these foods were more likely than most to contain residues. In addition, certain foods were selected for "rolling reporting", that is sampling with faster turn-around and publication of results. These results are later included in other reports and data compilations.
- 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.

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

32.2.1 Key findings

- 888 samples were tested in total.
- 51.01 % of samples contained no detectable residues, 47.30 % of samples contained residues at or below the MRL or assessed as compliant, and 1.69 % of samples contained residues assessed as over the MRL

Detailed interpretation of results is published in PRiF reports. PRiF quarterly reports for 2021[31] contain additional detailed interpretation of 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 requirements.

- Fresh and Frozen Fruit and Vegetables (including potatoes)

A total of 469 samples were tested. Within this category 2.77% of samples contained residues above the MRL.

- Animal products including fish

A total of 301 samples were tested. Within this category 0.66% of samples contained residues above MRL.

- Starchy foods and grains

[31] Pesticide residues in food: quarterly monitoring results for 2021 - GOV.UK (www.gov.uk)

96 samples were tested. Within this category there were no samples with residues above the MRL. Processing factors were applied to consider compliance in bread.

- Miscellaneous groceries

A total of 12 samples of olive oil were tested. None of the samples had residues above the MRL.

- Infant food

A total of 10 samples of infant food (cereal based) were tested. None of the samples had residues over the MRL.

32.2.2 Summary results

Table 206: Summary results excluding chlorate

	Samples tested	Samples with residues over the MRL
Fruit and vegetable		
Asparagus	12	1
Aubergine	36	1
Banana	36	0
Beans with pods	24	3
Berries and small fruits	36	1
Broccoli	36	1
Grapefruit	37	1
Grapes	36	0
Melon	36	0
Mushrooms	36	1
Peppers	36	1
Potatoes	36	0
Raspberry	36	1
Spring greens and kale	36	2
Starchy foods and grains		
Bread	48	0
Rice	12	0
Wheat	36	0
Animal products (including fish)		
Beef	72	1
Cheese (Soft)	72	0
Eggs	36	1
Fish	73	n/a
Milk	48	0
Miscellaneous groceries		
Olive Oil	12	0
Infant food		
Infant food (Cereal based)	10	0

32.3 Interpretation of the results

- Fresh and Frozen Fruit and Vegetables (including potatoes)

The most frequent non-compliant samples were of beans with pods. This food will be tested again in 2022.

- Animal products including fish

One sample of beef contained a residue of the biocide DDAC over the MRL. It is likely that this residue resulted from the use of biocides as disinfectant on surfaces and tools/machinery in line with product labels during the preparation of the beef for consumer purchases rather from the use as a pesticide on plants.

One sample of eggs contained an isolated residue of cyromazine over the MRL. The farm was visited by Daera officials, and the source identified as a veterinary product authorised for use to keep flies levels down in the litter. No offences were identified. The farm received advice on preventing a recurrence.

- Starchy foods and grains
- None of the samples contained residues above the MRL Miscellaneous other groceries
- None of the samples contained residues above the MRL Infant food

10 samples of infant food were tested. None contained residues above the MRL.

32.4 Comparability with the previous year results

This is the first year in which Northern Ireland samples have been reported separately from other UK samples. The NI programmes 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 to previous years. Results for most foods are broadly consistent with previous and current UK results.

32.5 Non-compliant samples: possible reasons, acute reference dose (ARfD) exceedances and actions taken

32.5.1 Possible reasons for non-compliant samples

Fresh Fruit and Vegetables (including potatoes)

We continued to find a relatively high percentage of samples with residues over the MRL in beans with pods. They will be surveyed again in 2022 as part of the rolling reporting surveys.

Animal products including fish

One sample of beef contained a residue of the biocide DDAC over the MRL. It is likely that this residue resulted from the use of biocides as disinfectant on surfaces and tools/machinery in line with product labels during the preparation of the beef for consumer purchase rather from the use as a pesticide on plants.

One sample of eggs contained an isolated residue of cyromazine over the MRL. The farm was visited by Daera officials, and the source identified as a veterinary product authorised for use to keep fly levels down in the litter. No offences were identified. The farm received advice on preventing a recurrence.

Cereals and grains

None of the samples contained residues above the MRL.

Infant food and other groceries

32.5.2 ARfD exceedances

All individual results were screened against UK consumer intakes

We considered 53 detailed risk assessments across the whole of the UK, Northern Ireland samples were included in this consideration. No samples taken in Northern Ireland were identified as meeting the criteria for RASFF notification. Detailed risk assessments were published in quarterly reports for these and other cases where consideration of the effect of peeling or similar issues considered when setting the MRL was needed to fully consider the risk to consumers.

32.5.3 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.

In general non-compliance was highest for foods from outside the EU. It was considered likely, although representations were not made to this effect, that the food had been grown in accordance with local GAP for local markets that is not to a specification that was compliant with EU requirements.

32.6 Quality assurance

All laboratories analysing 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).

The Expert Committee on Pesticide Residues in Food's Analytical Sub-Group (ASG), which includes representatives from all 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.

During 2021, the use of GB laboratory facilities for NI was re-considered in the light of emerging interpretation of the requirements of the Northern Ireland Protocol. Samples of animal origin are tested by the official Northern Ireland based laboratory. A full procurement process was conducted in 2022 to appoint an EU or EEA official laboratory to test NI samples for plant-based foods collected in Northern Ireland. The new laboratory partner for this work will commence during 2022.

Accreditation of laboratories

All laboratories taking part in the programme are accredited by the UK national accreditation body, UKAS for the necessary tests and analytical services required to deliver the programme of work.

Table 207: Laboratories

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

32.7 Processing Factors (PF)

Processing factors were applied to some results for samples collected during 2021.

Full details are provided in our quarterly reports.[32] Otherwise, a processing factor of 1 was applied to simple processed foods where appropriate as an initial check.

[32] Pesticide residues in food: quarterly monitoring results for 2021 - GOV.UK (www.gov.uk)

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ISO/IEC (International Organization for Standardization and the International Electro-technical Commission), 2010. General requirements for the competence of testing and calibration laboratories. 17025:2005, 28 pp.

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.

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.

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.

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Abbreviations

AA CC	Autonomous Communities
AB	Estonia Agricultural Board
ADI	Acceptable Daily Intake
AESAN	Spanish Agency for Food Safety and Nutrition
AFBI	Agri-food and Biosciences Institute
AGES	Austrian Health and Food Safety Agency
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
AT	Austria
BAC	Benzalkonium chloride
BE	Belgium
BELAC	Belgium Accreditation Council
BfR	Bundesinstitut für Risikobewertung
BFSA	Bulgarian Food Safety Agency
BG	Bulgaria
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
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 of Czechia
CLCTC	Central Laboratory for Chemical Testing and Control of Bulgaria
CLVCE	Central Laboratory of Veterinary Control and Ecology of Bulgaria
COFRAC	French Committee for Accreditation
COIPT	Olive oil proficiency test
CZ	Czechia
CY	Cyprus
DA	Department of Agriculture
DAFM	Department of Agriculture, Food and the Marine of Ireland
DAkkS	German accreditation body
DANAK	Danish accreditation body

DDAC	Didecyl dimethylammonium chloride
DDT	Dichlorodiphenyltrichloroethane
DE	Germany
DGCCRF	French General Directorate of Competition, Consumption and Fraud Repression
DK	Denmark
DPPSCA	Directorate of Plant Protection, Soil Conservation and Agri-environment of Hungary
DVFA	Danish Veterinary and Food Administration
EAK	Estonian Accreditation Centre
EC	European Commission
EEA	European Economic Area
EFSA	European Food Safety Authority
ENAC	Spanish Accreditation Body
ES	Spain
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
FI	Finland
FINAS	Finnish accreditation service
FR	France
FSA	Food Standards Agency
FSAI	Food Safety Authority of Ireland
FVS	Food and Veterinary Service of Latvia
Fytolab	Laboratory for Pesticide and Residue Analysis
GAP	Good agricultural practice
GC	Gas chromatography
GC-ECD	Gas chromatography with electron capture detector
GC-FID	Gas chromatography with flame ionisation detector
GC-FPD	Gas chromatography with flame photometric detector
GC-MS/MS	Gas chromatography with tandem mass/mass spectrometer
GC-(P)FPD	Gas chromatography with pulsed flame photometric detector

GR	Greece
HB	Tartu Laboratory of Estonian Health Board
HBC	Central Chemistry Laboratory of the Health Board of Estonia
HCH	Hexachlorocyclohexane
HPLC	High-performance liquid chromatography
HR	Croatia
HU	Hungary
IE	Ireland
INAB	The Irish National Accreditation Board
IPAC	Portuguese Accreditation Institute
IPH	Institute of Public Health
ISO	International Organization for Standardization
IT	Italy
IUNA	Irish Universities Nutrition Alliance
JMD	Joint ministerial decisions
LATAK	Latvian National Accreditation Bureau
LAYSA	Laboratorio Agroalimentario y de Sanidad Animal
LC	Liquid chromatography
LC-ITMS	Liquid Chromatography with Ion Trap Mass Spectrometry
LC-LR-MS	Liquid Chromatography with Low Resolution Mass Spectrometry
LC-MS	Liquid Chromatography Mass Spectrometry
LC-MS/MS	Liquid chromatography with tandem mass/mass spectrometer
LC-QTOF-MS	Liquid Chromatography Quadrupole-Time-of-Flight Mass Spectrometry
LOQ	Limit of quantification
LRVSA	Veterinary and Food Safety Laboratory of the Regional Directorate of Agriculture and Rural Development of Madeira
LT	Lithuania
LU	Luxembourg
LUA3	Regional Institute for Food Control in Vienna
LV	Latvia
MAFF	Ministry of Agriculture and Food of Bulgaria
MARD	Romanian Ministry of Agriculture and Rural Development
MH	Ministry of Health
MoA	Ministry of Agriculture
MPHS	Department of Medical and Public Health Services of Cyprus
MRL	Maximum residue limits
MRM	Multiresidue method
MSCBS	Spanish Ministry of Health, Consumer Affairs and Social Welfare

NAT	National Accreditation Body of Hungary
NFA	Swedish National Food Agency
NFCSO	National Food Chain Safety Office of Hungary
NFSA	Norwegian Food Safety Authority
NI	Northern Ireland
NIBIO	Norwegian Institute of Bioeconomy Research
NL	The Netherlands
NSVFSA	National Sanitary Veterinary and Food Safety Authority
OSQCA	Organism for the Security and Equality of the Food Chain of Luxembourg
PCD	Pesticide Controls Division of Ireland
PHI	Pre-harvest interval
PL	Poland
PPP	Plant protection products
PR	Pesticide residues
PRiF	Expert Committee on Pesticide Residues in Food
PRIMo	Pesticide residue intake model
PR-SGL	Pesticide Residues of the State General Laboratory
PT	Portugal
QuEChERS	Quick, easy, cheap, effective, rugged and safe method
QuPPe	Quick Polar Pesticides Method
RAC	Raw agricultural commodity
RACFC	Risk Assessment Centre on Food Chain
RASFF	Rapid Alert System for Food and Feed
RENAR	Romanian Accreditation Association
RO	Romania
RvA	Dutch Accreditation Council
SASA	Science and Advice for Scottish Agriculture
SCL	Common Laboratory Network of France
SE	Sweden
Secualim	Food Safety Service of the Direction of Public Health of Luxembourg
SFVS	State Food and Veterinary Service of the Republic of Lithuania
SGL	State General Laboratory of Cyprus
SK	Slovakia
SNAS	Slovak National Accreditation Service
SRM	Single-residue method
SVA	State Veterinary Administration of Czechia
SWEDAC	Swedish Board for Accreditation and Conformity Assessment

TC	Third Country
UV/VIS	Ultra-Violet / Visible Spectroscopy (photometry)
USMAF	Office of the Maritime Health, Air and Border of the Ministry of Health of Italy
VFB	Veterinary and Food Board of Estonia
VWA	Netherlands Food and Consumer Product Safety Authority
WHO	World Health Organization