TECHNICAL REPORT

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National summary reports on pesticide residue analysis performed in 2020

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 EU 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 2020

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Summary

In the framework of the preparation of the EU report on pesticide residues under Regulation (EC) No. 396/2005, the EU Member States[1], Norway and Iceland reported the results of the official controls to the European Commission, EFSA and other Member States using the standardised reporting format (EFSA, 2021).

EFSA prepared a scientific report reflecting the 2020 European Union Annual Report on Pesticide Residues in Food (EFSA, 2022). 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 2020 control year (EFSA, 2022).

[1] As of 31st January 2020, the United Kingdom became a third country. The United Kingdom (UK) data have been included and evaluated in the present report because in accordance with the Agreement on the Withdrawal of the UK from the EU, and in particular with the established transition period (i.e. until 31/12/2020), the EU requirements on data sampling also applied to the UK.

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Introduction

1.1. 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 2020 control year (EFSA, 2022).

1.2. Interpretation of the Terms of Reference

This report is a compilation of the national summary reports as provided by the national competent authorities (see Appendix A in EFSA, 2022).

There might be a discrepancy between the information provided by reporting countries and the information published in the 2020 European Union Report on Pesticide Residues on food (EFSA, 2022), 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

Austria

2.1. 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.

2.1.1. 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]).

2.1.2. Design

The collected data 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

[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.

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 fruits and vegetables from ethno-shops, fresh herbs and tea.

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.

2.1.3. Sampling

The samples were taken by trained officials from the local Food Inspection Service ('Lebensmittelaufsicht') in accordance to 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.

2.1.4. Analytical methods used

The samples were analysed up to a maximum of 660 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.

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

In 2020, 960 samples were examined for pesticide residues. These samples were primarily garden vegetables and primary derivatives thereof (282 samples), fruit and primary derivatives thereof (281 samples), grains and grain-based products (125 samples), legume seeds and primary derivatives thereof (81 samples) and mammals and birds' meat and products thereof (51 samples).

2.2.1. Key findings

All 960 samples were taken as objective sampling (Table 1). 67.1% came from the European market, 30.8% from third countries and the rest (2.1%) were of unknown origin. The percentage of objective sampling with residues above the MRL were 3.4%, 7.1% and 0.0% respectively (without considering the measurement uncertainty).

In 51.4% of the samples no pesticide residues could be quantified; 44.2% of the samples had residues below or at the MRL. Disregarding measurement uncertainties, 4.5% of the samples contained one or more pesticide(s) numerically above the MRL (43 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 25 samples (2.6%). Seven of the 25 samples non-compliant were garden vegetables and primary derivatives thereof (2.5% of 282 samples), seven were fruit and primary derivatives thereof (2.5% of 281 samples) and three were legume seeds and primary derivatives thereof (3.7% of 81 samples). Three samples were ingredients for hot drinks and infusions (10.3% of 29 samples), two were grains and grain-based products (1.6% of 125 samples) and one belonged to oilseeds and oil-fruits (3.1% of 32 samples). One sample belonged to herbs, spices and similar (3.2% of 31 samples) and one belonged to starchy roots and tubers and primary derivatives thereof (7.7% of 13 samples).

In 309 of all samples (32.2%), more than one pesticide was found. The maximum number of different pesticides was analysed in one sample of pears and one sample of sweet peppers (13 compounds).

698 samples were of non-organic production and 262 samples were labelled as organic. In 94.3% of non-organic samples, the MRL was not exceeded, while 98.9% of the organic samples did not exceed the MRL.

Table 1: Summary results

Samples	Total	Quantified	Quantified below MRL	Above MRL	Non complaint
Garden vegetables and primary derivatives thereof	282	130	116	14	7
Fruit and primary derivatives thereof	281	222	213	9	7
Legume seeds and primary derivatives thereof	81	30	25	5	3
Ingredients for hot drinks and infusions	29	25	18	7	3
Grains and grain-based products	125	28	23	5	2
Oilseeds and oilfruits	32	3	2	1	1
Herbs, spices and similar	31	21	20	1	1
Starchy roots and tubers and primary derivatives thereof	13	5	4	1	1
Mammals and bird's meat and products thereof	51	3	3	0	0
Nuts and primary derivatives thereof	22	0	0	0	0
Food products for young population	10	0	0	0	0
Meat and dairy imitate	2	0	0	0	0
Isolated purified ingredients (including mineral or synthetic)	1	0	0	0	0
Total	**960**	**467**	**424**	**43**	**25**

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

2.3.1. Possible reasons for non-compliant samples

In 2020, 25 samples (2.6 %, 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.

2.3.2. Actions taken

The actions taken can be seen in Table 2.

Table 2: Actions taken

	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	9	In addition to administrative sanctions RASFF-Reference 2020.5603; 2020.4997; 2020.5126; 2020.4975; 2020.4564; 2020.4451; 2020.4465; 2020.5601; 2020.3171
Administrative sanctions (e.g. fines)	25	

2.4. 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) SM12 EUPT FV22 EUPT AO15 EUPT SRM15 EUPT CF14 EUPT-FV SC04 Diquat-Paraquat in feed_Wageningen Food Safety Research (WFSR - formerly RIKILT) TestQual_133-Dithiocarbamates-in-apple

Belgium

3.1. Objective and design of the national control programme

The use of plant protection products during the production of fruit, vegetables and cereals 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 a 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 authorized in Belgium is available on the website Fytoweb[4]. Information on MRLs can be found on the website of the European Commission[5].

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 has been drawn up following the general statistical approach developed within the FASFC (Maudoux et al., 2006). Several factors have been 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[6] 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 has been applied for less important commodities. The coordinated control programme[7] of the European Commission and some targeted sampling, mainly targeted sampling at border controls

[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] https://webgate.ec.europa.eu/rasff-window/portal/
[7] Commission Implementing Regulation (EU) 2019/533 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.

according to Regulation 1793/2019[8], have also been included in the national 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[9] 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 2020, allowed the detection of more than 600 pesticide residues.

Table 4: Targeted sampling and EU coordinated control programme included in the control programme 2020

	Targeted sampling at border controls (Reg. 1793/2019)	EU Coordinated programme 2020 (Reg. 2019/533)
Origin	**Products**	**Products**
Cambodia	Yard long beans, Chinese celery	Oranges
China	Tea, goji berries	Pears
Dominican Republic	Yard long beans, aubergines, sweet peppers, chili peppers	Kiwis
Egypt	Sweet peppers, chili peppers	Cauliflower
India	Curry leaves, okra, chili peppers, sesame seeds	Onions
Kenya	Beans	Carrots
Malaysia	Jack fruits	Potatoes
Nigeria	Dried beans	Dried beans
Pakistan	Chili peppers	Rye
Thailand	chili peppers	Rice
Turkey	Lemons, oranges, mandarins, vine leaves, sweet peppers, pomegranates	Bovine liver
Uganda	Chili peppers	Poultry fat
Vietnam	Basilic, mint, pitahayas, coriander leaves, okras, chili peppers, parsley	Babyfood (infant formulae & follow-on formulae)

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

In 2020, a total number of 2901 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 (31.5%), EU origin (23.8%), non-EU origin (36.2%) and non-specified origin (8.6%).

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

[8] 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

[9] 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

3.2.1. Surveillance sample

Out of the total of 2901 samples, 2409 surveillance samples were analysed within the context of the control programme. 98.2% 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 at or below MRL (%)	With residues > MRL[1] (%)	With residues >MRL[2] (Non-compliant) (%)	Compliance rate (%) In bracket comparison with 2019
Surveillance	Fruit, vegetables, cereals & other	1891	35,7%	60%	4,3%	2,2%	97,8% (-0,2%)
	Processed products	197	67,5%	28,9%	3,6%	0%	100% (+0,4%)
	Baby food	146	98,6%	0%	1,4%	0,7%	99,3% (+0,3%)
	Animal products[3]	24	100%	0%	0%	0%	100% (=)
	Feed	151	35,8%	63,6 %	0,7%	0,7%	99,3% (+1,8%)
		2409	**42,8%**	**53,4%**	**3,8%**	**1,8%**	**98,2% (=)**

[1] Measurement uncertainty is not taken into account (numerical MRL exceedances)
[2] Measurement uncertainty is taken into account (non-compliant samples)
[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.

3.2.1.1. Fruit, vegetables, cereals and other

97.8% of the 1891 samples analysed complied with the MRLS (-0,2% in comparison with 2019). Graph 1 gives an overview of the evolution of the results over the last 5 years.

60% of the samples contained one of more residues above the limit of quantification (LOQ). Stone fruits, fresh herbs and citrus fruits are the groups with the highest frequency of detection of pesticide residues (more than 90% of the samples analysed contained one or more residues). Oilseeds and Brassica vegetables are the group with the lowest frequency of detection (more than 60% of the samples analysed were free of residues). Products with the highest rate of non-compliances are fresh herbs (14,8%) and oilseeds (14,3%) mainly imported from third countries.

An overview of the detection frequencies and compliance to MRLs per product group is given in Table 6. Full details on non-compliant samples can be found in section 3.3 of this summary report.

As in previous years, more MRLs violations were proportionally observed in non-EU products (5.7%) than in products grown in the EU (0.8%).

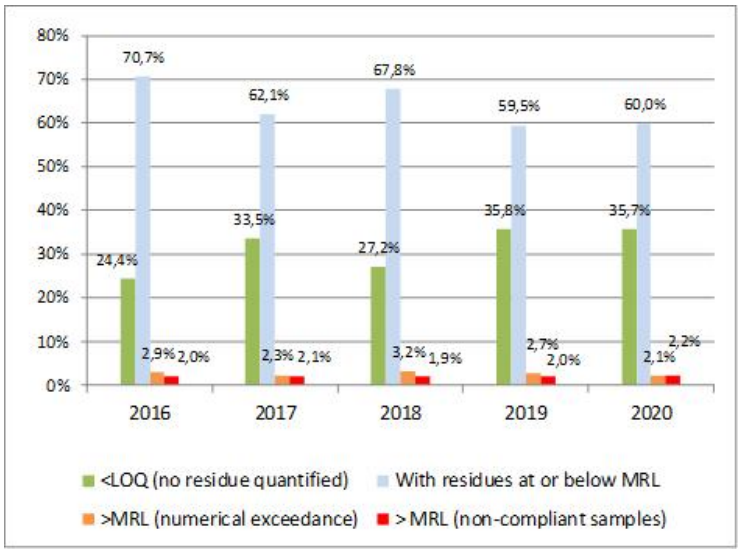

Figure 1: overview of the evolution of the results for fruits, vegetables, cereals & other products of plant origin from 2016 to 2020 (surveillance samples)

Table 6: Overview of the results 2020 per group of products [fruits, vegetables, cereals & others 2020 (surveillance samples)]

	Groups of products	Number of samples analysed	Samples with one of more residues >LOQ (%)	Compliant samples (%)
Fruit	Citrus fruits	96	92.70%	99.00%
	Pome fruits	80	45.00%	100.00%
	Stone fruits	37	97.30%	100.00%
	Berries and small fruits	246	89.40%	98.40%
	Miscellaneous fruits	141	50.40%	95.00%
Vegetables	Root vegetables	197	59.40%	100.00%
	Bulb vegetables	76	73.70%	100.00%
	Brassica vegetables	206	35.40%	99.50%
	Leafy vegetables	76	77.60%	98.70%
	Fresh herbs	61	95.10%	85.20%
	Fruiting vegetables	128	71.10%	96.10%
	Stem vegetables	150	71.30%	99.00%
	Legume vegetables	112	48.20%	99.10%
	Champignons	11	54.50%	100.00%
Cereals	Cereals	112	51.80%	96.40%
Other products	Oilseeds	72	31.90%	85.70%
	Tea and infusions	76	67.10%	91.80%
	Hops	14	78.60%	100%
TOTAL		**1,891**	**64.3%**	**97.8%**

- Processed products: 197 processed products (oil, dried fruits, canned vegetables…) were analysed. All of them were compliant with the legislation.
- Babyfood: 99.6% of the 146 babyfood samples analysed did not contained any quantifiable pesticide residues. One sample did not comply with the MRLs set in the babyfood legislation (residue of a disinfectant)
- Feed: 99.3 % of the 151 feed products analysed was compliant with the legislation. A lot of cereals (wheat) was contaminated with chlorpropham.

3.2.2. Enforcement samples

Beside surveillance samples, 492 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 (products coming from non-EU countries among others from Uganda, Kenya, Dominican Republic and China) and products analysed within the context of following up of violations found previously. 90.4% were compliant with the legislation (+5.2% in comparison with 2019).

Table 7: Enforcement samples - Summary results

Sampling strategy	Types of products	Number of samples analysed	Without quantified residues (%)	With residues at or below MRL (%)	> MRL[1] (%)	>MRL[2] (Non-compliant) (%)	Compliance rate (%) In bracket comparison with 2019
Enforcement (targeted samples)	Fruit, vegetables, cereals & other[3]	479	29.4%	48.9%	21.7%	9.2%	90.8% (+5.8%)
	Feed	1	0.0%	100.0%	0.0%	0.0%	100% (=)
	Processed products	12	58.3%	0.0%	41.7%	25.0%	75% (-25%)
		492	**30.1%**	**47.8%**	**22.2%**	**9.6%**	**90.4% (+5.2%)**

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

3.2.2.1. Fruit, vegetables and cereals

90.8% of the 479 samples analysed complied with the MRLs (+5.8% in comparison with 2019). 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.

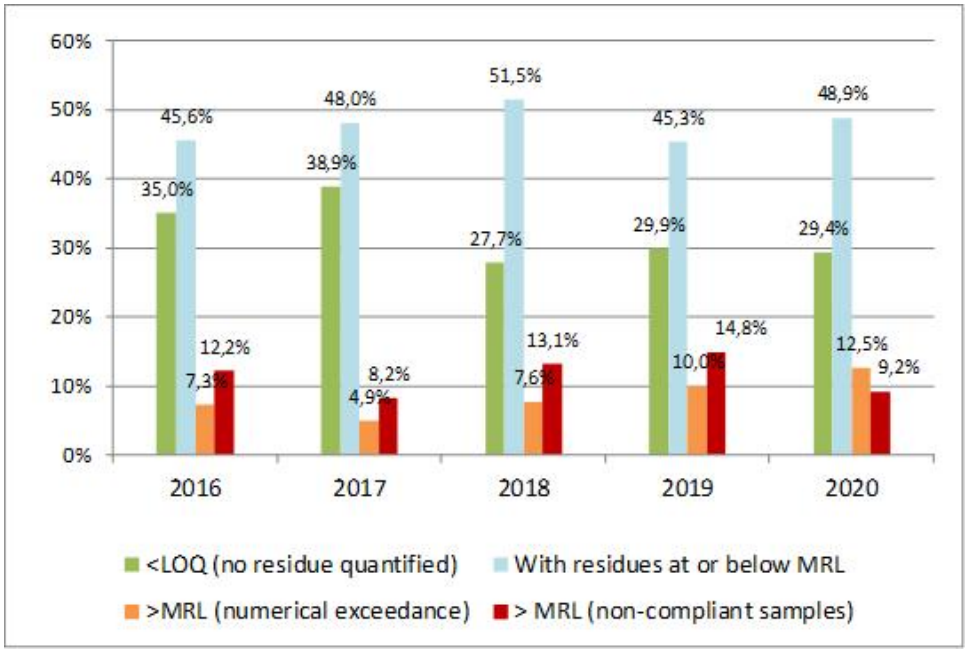

Figure 2: overview of the evolution of the results for fruit, vegetables, cereals & other products of plant origin from 2016 to 2020 (enforcement samples)

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	28	89.3%	Rice (Unknown origin)
Fresh herbs	20	75.0%	Mints (Marocco) Chives (Thailand)
Fruiting vegetables	165	87.9%	Chili-peppers (Uganda, Egypt; Nigeria, India)
Legume vegetables	150	95.3%	Beans (Kenya; Dominican Republic)
Miscellaneous fruits	22	90.9%	Okra (Honduras) Salaks (Thailand) Passion fruits (Uganda)
Pome fruits	13	92.3%	Pears (Belgium)
Oilseeds	28	78.6%	Peanuts (Brazil; United States)
Tea and infusions	48	100.0%	
Others	5	100.0%	
	479	**90.8%**	

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

3.3.1. Possible reasons for non-compliant samples

The reasons of 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 authorized in the EU and for which no import tolerances were set.

Table 9: Possible reasons for MRL non-compliance in products of Belgian origin

Possible reasons for MRL non-compliance	Pesticide/food product	Frequency	Comments
GAP not respected: use of a pesticide not approved in the EU[(c)]	Iprodione, carbendazim, bitertanol/ kales	1	All MRL exceedances observed on the same sample of kales
GAP not respected: use of an approved pesticide not authorised on the specific crop	thiophanate-methyl / kales	1	
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Lambda-cyhalothrin, isofetamid / kales	1	
GAP not respected: use of an approved pesticide not authorised on the specific crop	Kresoxym-methyl / parsley	1	
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Fluazifop-P / spinaches	1	
GAP not respected: use of an approved pesticide not authorised on the specific crop	Haloxyfop (sum) / strawberries	1	
GAP not respected: use of a pesticide not approved in the EU[(c)]	Matrine / pears	1	Use of a fertilizer containing the non-approved active substance matrine
GAP not respected: use of a pesticide not approved in the EU[(c)]	Iprodione / strawberries	2	

Possible reasons for MRL non-compliance	Pesticide/food product	Frequency	Comments
GAP not respected: use of an approved pesticide not authorised on the specific crop	Flutolanil / potatoes	1	Flutolanil only authorized on potato seeds
Cross contamination: spray drift or other accidental contamination	Chlorpropham / oat grains	1	Contamination during the storage suspected
Reason unknown	1,4-dimethylnapthalene / carrots	1	Cross contamination or natural occurrence suspected
Reason unknown	Iprodione / common wheat	1	

3.4. ARfD exceedances

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[10]. A tool to estimate the risk for the consumer in case of MRLs exceeding is available on the website of the FASFC.[11] When a MRL exceeding for a pesticide residue in a product indicates an exceeding of the health-based guidance value applicable (ARfD or ADI), the product is considered as unsafe and has to be withdrawn from the market and/or recalled from the consumers. In this case, a notification is also issued via the European Rapid Alert System for Food and Feed (RASFF)[12].

Fourty-five 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 (Table 10). The majority of the notifications issued in 2020 by Belgium concerned the issue of ethylene oxide in sesame seeds.

Table 10: RASFF issued by Belgium in 2020

Food products	Pesticide residue	Number	Origin	Context
Carrots	Ethoprophos	1	Belgium	Self-checking
Pears	Chlormequat	1	Belgium	Self-checking
Pineapples	Ethephon	1	Cameroon	Official control
Pineapples	Ethephon	1	Togo	Self-checking
Feed (plant extract)	Matrine	1	China	Self-checking
Feed	Matrine	1	The Netherlands	Self-checking
Oranges	Imazalil	1	Spain	Self-checking
Feed (barley)	Cypermethrin (sum)	1	France	Official control
Rambutans	Cypermethrin (sum)	1	Not specified	Official control
Rice	Thiamethoxam	1	Not specified	Official control
Rice	Thiamethoxam, carbendazim & tricyclazole	2	India	Official control
Rice	Carbendazim & tricyclazole	1	Pakistan	Official control
Sesame seeds and processed products	Ethylene oxide (sum)	33	India	Self-checking & Official control
Chili-peppers	Cypermethrin (sum), acephate & methamidophos	1	Nigeria	Official control
Sweet Peppers	Flonicamid (sum)	1	The	Self-checking

[10] https://www.fasfc.be/control-system/compulsory-notification
[11] https://www.favv-afsca.be/productionvegetale/produitsphytopharmaceutiques/#PSTI
[12] https://ec.europa.eu/food/safety/rasff-food-and-feed-safety-alerts/rasff-portal_en

Food products	Pesticide residue	Number	Origin	Context
			Netherlands	
Figs (dried)	Cypermethrin (sum)	1	Turkey	Self-checking
Chili-peppers	Cypermethrin (sum), lambda-cyhalothrin & clothianidin	3	Uganda	Official control
Chives	Cypermethrin (sum) & lufenuron	1	Thailand	Self-checking

3.4.1. Actions taken

When non-compliant samples are identified, the batch is seized, if available, 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 such as recall and RASFF notification are taken[13] according to the risk for the consumer.

Follow-up action is taken to verify the violation and 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 a fine. If the fine is not paid, or in case of repeated offences, the matter is taken to court.

3.5. Quality assurance

Six ISO17025 accredited laboratories (Table 11) analysed pesticide residues in the framework of the national control program 2020 of the FASFC.

Table 11: 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	073-TEST	BELAC	No participation to EURLPT (official analyses on samples of animal origin, while EU AO-15 was on vegetable oil)
BE	Primoris Belgium cvba	PRIMORIS	057-TEST	BELAC	EUPT SRM-15 (Rice); QS Spring 2020 (red oak leaf lettuce); EUPT FV-22 (onion); Relana comp test 1 2020; EUPT CF-14 (Rice); EUPT AO-15 (Rapeseed oil); Relana comp test 2 2020; Fapas 15145 (cabbage purée); BNN competence test A1-B1/B2; Fapas 5145 (Milk Powder); Proof P2004-RT (Sweet peppers); Relana MRT1 (wheat, lettuce); Fapas 19296 (Herb (Parsley) Purée); Fapas 19298 (Salad Leaf Purée); EUPT FV-SC04 (Sultana Raisins); Fapas 19304 (Honey); Fapas 9136 (Basmati Rice); Proof P2109-RT (Infant formula)
BE	Sciensano (Pesticiden)	SC-PEST	081-TEST	BELAC	EUPT AO-15 (Rapeseed oil); EUPT CF-14 (Rice); EUPT FV-22 (onion); EUPT SRM-15 (Rice)
DE	AGROLAB LUFA	LUFA	D-PL-14082-01-	DAkkS	WFSR (soybean meal);

[13] The actions to be taken when an MRL is exceeded are described in a procedure available on the website of the FASFC (http://www.afsca.be/publicationsthematiques/inventaire-actions.asp).

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
	GmbH		00		BIPEA 66i-16 (peppermint oil); EUPT SRM-15 (Rice); EUPT-FV-SM12 (onion); EUPT FV-22 (onion); TestQual 126 (pear); FAPAS 19288 (Tomato purée); EUPT AO-15 (Rapeseed oil); BNN 2020 (tomato passata); Fapas 9131 (Brown Rice); EUPT CF-14 (Rice); FAPAS 19293 (banana purée); QS Spring 2020 (red oak leaf lettuce); Fapas 9133 (Kidney Beans (dried)); FAPAS 19301 (apricot puree)
NL	Groen Agro Control	GROENAGRO	L 335	RvA	EUPT CF-14 (Rice); EUPT FV-22 (onion); EUPT-FV-SM12 (onion); EUPT FV-SC04 (Sultana Raisins); EUPT AO-15 (Rapeseed oil); EUPT SRM-15 (Rice)
NL	Eurofins Lab Zeeuws-Vlaanderen BV	ZEEUWS	L201	RvA	Fapas 19283 (Honey); Fapas 19285 (Carrot Purée); EUPT SRM-15 (Rice); EUPT FV-22 (onion); Fapas 5141 (Chicken eggs); Fapas 19287 (Grapefruit Purée); EUPT AO-15 (Rapeseed oil); Fapas 19290 (cucumber); EUPT CF-14 (Rice); Fapas 9131 (Brown Rice); fapas 19289 (Mushroom); BNN 2020 (tomato passata); QS Spring 2020 (red oak leaf lettuce); Fapas 19292 (wine); Fapas 5145 (Milk Powder); Proof P2004-RT (Sweet peppers); Fapas 19294 (Strawberry Purée); Fapas 19296 (Herb (Parsley) Purée); Fapas 9133 (Kidney Beans (dried)); Fapas 19298 (Salad Leaf Purée); Fapas 5147 (olive oil); Fapas 19300 (Mango Purée); Fapas 9134 (AnimalFeed); Fapas 19302 (Aubergine (Eggplant) Purée); LVU 2020-17a (Strawberry Purée); proof P2019-RT (Citrus fruit); proof P2019-RT (Tomato); Fapas 19303 (Green Tea); Fapas 9135 (Wheat Flour)

3.6. Processing Factors (PF)

Processing factors (Table 12) are applied when necessary to verify compliance of processed products with EU MRLs according to Article 20 of Regulation (EC) No 396/2005. Processing factors were mainly applied to cover the dehydration of fruits or vegetables.

Table 12: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
	Mushrooms	Dried mushrooms	9	General processing factor

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

3.7. Additional Information

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 (EC) No 396/2005. Products containing pesticide residue are notified to the Regions for eventual follow-up according to the legislation applicable to organic farming.

The Scientific Committee of the FASFC publishes regularly 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 en 18-2015). These advice can be consulted on the website of the FASFC[14]

Bulgaria

4.1. Objective and design of the national control programme

4.1.1. Objective

The Bulgarian Food Safety Agency (BFSA) within the Ministry of Agriculture Food and Forestry (MAFF) is the competent authority for the enforcement of pesticide residues monitoring in Bulgaria. BFSA and the Risk Assessment Centre on Food Chain (RACFC) within MAFF are responsible for drawing up the national monitoring programme for pesticide residues in 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. 788/2012 of 31 August 2012 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.

4.1.2. 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. 788/2012 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 2020 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;

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

- 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.

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

4.2.1. Key findings

In 2020, 9,370 samples (Table 13) were analysed: 7145 samples of vegetables and primary derivatives thereof, 2,027 of fruit and primary derivatives thereof, 156 grains and grain-based products, 21 of legume seeds and primary derivatives thereof, 12 of mammals and bird meat and products thereof and 9 starchy roots and tubers and primary derivatives thereof in the national and co-ordinated monitoring programs. In 4,832 samples results for residues are below MRL (51.57%) – 3,007 samples were below LOQ and 1,531 samples were exceeding MRL (15.78%).

Table 13: Summary results

Matrix class	Total samples	Below LOQ	Above MRL
Grains and grain-based products	156	138	7
Garden vegetables and primary derivatives thereof	7 145	2 224	972
Legume seeds and primary derivatives thereof	21	14	2
Fruit and primary derivatives thereof	2 027	611	550
Mammals and birds' meat and products thereof	12	12	0
Starchy roots and tubers and primary derivatives thereof	9	8	0
Total	**9,370**	**3,007**	**1,531**

4.2.2. Interpretation of the results

In total, 9370 samples were analysed, of which 1531 (16.34%) samples contained pesticide residues above the MRL. Of all the samples 17 were of EU origin, 1514 were Third Country (TC) origin.

In 403 samples of all the 528 (142 selective and 90 objective) with EU origin there is no detection of residues. Residues above MRL were detected in 17 of them.

Most of the samples were imported products (8,840) of which 8,484 were suspect samples and 356 objective sampling. The number of samples with residues above the MRL was 1,514.

Two (2) samples were defined as unknown origin. Both results were below LOQ level.

The most analysed products were vegetables – 7145 samples and fruits – 2027. The samples from other groups vary between 9 and 156 per group.

Out of all the vegetable analysed samples, 2224 were below LOQ and at 972 there is higer level of residues above the MRL. The most tested products were sweet peppers (6817) of which 963 are above MRL and in 1966 residues were not found. The total amount of other sampled vegetables (beans, broccoli, carrots, cucumbers, lettuces, onions, spinaches, tomatoes etc.) was 328. In 49 of them the results are over the MRL and in 258 are below LOQ.

Pomegranate apples (1,110) and lemons (306) were the most analysed for residues of all the fruit samples (2,027). Residues were not detected in 16 samples of lemons and in 491 of the analysed pomegranate apples, the results for residues are above MRL in 13 lemon samples and in 423 of pomegranate apples. Of all other 611 tested fruits (apples, apricot, cherries, mandarins, common peaches, oranges, plums, strawberries, table grapes and other), 104 samples are below LOQ and in 114 results are above MRL.

Of the other 198 samples (grains and similar, legumes, starchy roots and tubers and Mammals and birds' meat and products thereof) 172 were below LOQ and in 9 samples (7 of grains and similar and 2 of legumes and similar) are above MRL.

Table 14: Analysed samples

Product	Samples
Apples	14
Rye grain	1
Wheat and similar-	138
Rye flour	8
Broccoli	5
Cauliflowers	7
Onions	8
Sweet peppers	6,817
Cucumbers	53
Courgettes	10
Melons	15
Watermelons	69
Lettuces (generic)	17
Crisp lettuces	5
Roman rocket	5
Spinaches	12
Rice beans (with pods)	11
Beetroots	4
Carrots	18
Alfalfa sprouts	6
Potatoes	9
Beans (dry) and similar-	11
Lentils (dry)	10
Lemons	306
Mandarins and similar-	316
Mandarins	10
Oranges, sweet	82
Apples	79
Pears	7
Table grapes	43
Strawberries	10
Apricots	16
Cherries (sweet)	10
Common peaches	10
Plums	5
Kiwi fruits (green, red, yellow)	10
Common banana	3
Pomegranate apples	1 110
Chicken, fresh fat tissue	3
Duck, fresh fat tissue	2
Bovine liver	7
Barley and similar-	9
Tomatoes	83
Oranges	10
Total products	**9,370**

4.2.3. Comparability with the previous year results

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 has increased in 2020 (51.57 %) as compared to the years 2019 (51.57%), 2017 (52.28%), 2016 (50.42%), 2015 (37.6 %), 2014 (6.1%), 2013 (5.1%), 2012 (6.2 %) and 2011 (5.4%). The percentage has decreased in comparison to 2018 (57.85%).

The percentage of samples exceeding MRL in 20120 (15.78%) increased as compared to years from 2011 to 2019 (vary from 1.9% to 9.31%)

Table 15: Compared to previous year's results

Year	Total	Below LOQ (%)	Above MRL (%)
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

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

4.3.1. Possible reasons for non-compliant samples

In 2020 fifteen (15.78%) percent of total samples were determined as non-complaint with the EU MRL legislation. The main of the non-compliance reason were residues detection in border control activities following of detection of non-approved pesticide residues in EU.

Table 16: Possible reasons for MRL non-compliance

Reasons for MRL non-compliant	Pesticide	Food product	Frequency[(a)]
GAP not respected: use of a pesticide not approved in the EU[(b)]	Thiacloprid	Lentils (dry)	1
	Thiophanate-methyl	Table grapes	1
	Chlorpyrifos	Rye flour	1
	Chlorpyrifos	Alfalfa sprouts	1
	Chlorpyrifos	Wheat and similar-	3
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Propamocarb (Sum of propamocarb and its salt expressed as propamocarb)	Rye flour	1
	Propamocarb (Sum of propamocarb and its salt expressed as propamocarb)	Table grapes	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[(c)]	Emamectin benzoate B1a, expressed as emamectin	Granate apples	1
	Bifenthrin (sum of isomers)	Granate apples	1
	Buprofezin	Cucumbers	1
	Chlorpyrifos	Sweet peppers	1
	Chlorpyrifos	Cucumbers	1
	Chlorpyrifos	Oranges, sweet	1
	Chlorpyrifos-methyl	Oranges, sweet	1
	Deltamethrin (cis-deltamethrin)	Mandarins and similar-	1
	Deltamethrin (cis-deltamethrin)	Granate apples	1
	Difenoconazole	Granate apples	1
	Diflubenzuron	Sweet peppers	1
	Dimethomorph (sum of isomers)	Granate apples	1
	Dodine	Sweet peppers	1
	Dodine	Lemons	1
	Dodine	Granate apples	1
	Ethoprophos	Sweet peppers	1
	Ethoprophos	Granate apples	1
	Fenpropimorph (sum of isomers)	Granate apples	1
	Flutriafol	Mandarins and similar-	1
	Imazalil	Sweet peppers	1
	Imazalil	Lemons	1
	Indoxacarb (sum of indoxacarb and its R enantiomer)	Sweet peppers	1
	Iprodione	Sweet peppers	1
	Kresoxim-methyl	Granate apples	1
	Lufenuron (any ratio of constituent isomers)	Mandarins and similar-	1
	Lufenuron (any ratio of constituent isomers)	Granate apples	1
	Metaflumizone (sum of E- and Z- isomers)	Sweet peppers	1
	Oxamyl	Cucumbers	1
	Penconazole (sum of constituent isomers)	Sweet peppers	1
	Pirimiphos-methyl	Oranges, sweet	1

Reasons for MRL non-compliant	Pesticide	Food product	Frequency[a]
	Propamocarb (Sum of propamocarb and its salt expressed as propamocarb)	Lemons	1
	Propamocarb (Sum of propamocarb and its salt expressed as propamocarb)	Table grapes	1
	Propamocarb (Sum of propamocarb and its salt expressed as propamocarb)	Granate apples	1
	Propiconazole (sum of isomers)	Carrots	1
	Pyridaben	Mandarins and similar-	1
	Spirodiclofen	Sweet peppers	1
	Spirodiclofen	Granate apples	1
	Spiromesifen	Oranges, sweet	1
	Spirotetramat and its 4 metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330 enol-glucoside, expressed as spirotetramat	Mandarins and similar-	1
	Tebufenozide	Granate apples	1
	Tebufenpyrad	Granate apples	1
	Tetraconazole	Sweet peppers	1
	Methomyl	Cucumbers	1
	Methomyl	Granate apples	1
	Thiamethoxam	Mandarins and similar-	1
	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	Mandarins	1
	Fluxapyroxad	Sweet peppers	1
	Fenpyrazamine	Mandarins and similar-	1
	Triadimenol (any ratio of constituent isomers)	Sweet peppers	1
	Famoxadone	Sweet peppers	2
	Fosthiazate	Granate apples	2
	Profenofos	Sweet peppers	2
	Propyzamide	Sweet peppers	2
	Spiromesifen	Sweet peppers	2
	Fluvalinate, tau-	Mandarins and similar-	2
	Methomyl	Sweet peppers	2
	Ametoctradin	Granate apples	2
	Prochloraz (sum of prochloraz, BTS 44595 (M201-04) and BTS 44596 (M201-03), expressed as prochloraz)	Sweet peppers	2
	Tebufenpyrad	Sweet peppers	5
	Thiophanate-methyl	Sweet peppers	3
	Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	Granate apples	3
	Buprofezin	Oranges, sweet	3
	Chlorpyrifos-methyl	Mandarins and similar-	3
	Clofentezine	Sweet peppers	3
	Cyprodinil	Granate apples	3
	Diniconazole (sum of isomers)	Sweet peppers	3
	Etoxazole	Granate apples	3

Reasons for MRL non-compliant	Pesticide	Food product	Frequency[a]
	Pirimiphos-methyl	Granate apples	3
	Pyridaben	Oranges, sweet	3
	Pyrimethanil	Sweet peppers	3
	Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	Sweet peppers	3
	Omethoate	Granate apples	3
	Pirimicarb	Granate apples	3
	Fenpyrazamine	Granate apples	3
	Thiophanate-methyl	Granate apples	4
	Imazalil	Granate apples	4
	Indoxacarb (sum of indoxacarb and its R enantiomer)	Granate apples	4
	Pirimiphos-methyl	Lemons	4
	Dimethoate	Sweet peppers	4
	Fenamiphos (sum of fenamiphos and its sulphoxide and sulphone expressed as fenamiphos)	Sweet peppers	4
	Metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers)	Granate apples	4
	Acrinathrin and its enantiomer	Granate apples	4
	Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	Sweet peppers	5
	Fludioxonil	Sweet peppers	5
	Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	Granate apples	5
	Prochloraz (sum of prochloraz, BTS 44595 (M201-04) and BTS 44596 (M201-03), expressed as prochloraz)	Oranges, sweet	5
	Clothianidin	Granate apples	6
	Flutriafol	Granate apples	6
	Pirimiphos-methyl	Mandarins and similar-	6
	Pymetrozine	Granate apples	6
	Pyridaben	Sweet peppers	6
	Cypermethrin (Cypermethrin including other mixtures of constituent isomers (sum of isomers))	Granate apples	6
	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	Granate apples	6
	Buprofezin	Lemons	7
	Thiacloprid	Granate apples	7
	Malathion (sum of malathion and malaoxon expressed as malathion)	Granate apples	7
	Fluxapyroxad	Granate apples	7
	Emamectin benzoate B1a, expressed as emamectin	Sweet peppers	8
	Metrafenone	Granate apples	8
	Propiconazole (sum of isomers)	Sweet peppers	8
	Tebuconazole	Sweet peppers	8
	Omethoate	Sweet peppers	8
	Triadimenol (any ratio of constituent isomers)	Granate apples	8
	Acrinathrin and its enantiomer	Sweet peppers	8
	Prochloraz (sum of prochloraz, BTS 44595 (M201-04) and BTS 44596 (M201-03), expressed as prochloraz)	Granate apples	8

Reasons for MRL non-compliant	Pesticide	Food product	Frequency[(a)]
	Fenhexamid	Granate apples	10
	Propiconazole (sum of isomers)	Granate apples	10
	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	Granate apples	10
	Malathion (sum of malathion and malaoxon expressed as malathion)	Sweet peppers	11
	Thiamethoxam	Granate apples	11
	Thiabendazole	Granate apples	13
	Chlorpyrifos	Granate apples	14
	Clothianidin	Sweet peppers	14
	Fosthiazate	Sweet peppers	14
	Fluvalinate, tau-	Granate apples	14
	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	Oranges, sweet	14
	Thiabendazole	Sweet peppers	17
	Prochloraz (sum of prochloraz, BTS 44595 (M201-04) and BTS 44596 (M201-03), expressed as prochloraz)	Mandarins and similar-	18
	Pyriproxyfen	Granate apples	19
	Tebuconazole	Granate apples	20
	Chlorpyrifos	Sweet peppers	21
	Buprofezin	Mandarins and similar-	24
	Buprofezin	Granate apples	24
	Tebufenpyrad	Sweet peppers	26
	Spirotetramat and its 4 metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330 enol-glucoside, expressed as spirotetramat	Sweet peppers	43
	Pyraclostrobin	Granate apples	29
	Azoxystrobin	Granate apples	31
	Spiromesifen	Granate apples	33
	Etoxazole	Sweet peppers	35
	Pyridaben	Granate apples	36
	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	Mandarins and similar-	39
	Fluvalinate, tau-	Sweet peppers	46
	Formetanate: Sum of formetanate and its salts expressed as formetanate(hydrochloride)	Sweet peppers	40
	Chlorpyrifos-methyl	Granate apples	50
	Spirotetramat and its 4 metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330 enol-glucoside, expressed as spirotetramat	Granate apples	51
	Pirimiphos-methyl	Sweet peppers	55
	Boscalid	Granate apples	58
	Pyrimethanil	Granate apples	63
	Chlorpyrifos-methyl	Sweet peppers	74
	Acetamiprid	Sweet peppers	90
	Fluopyram	Granate apples	119
	Acetamiprid	Granate apples	174
	Buprofezin	Sweet peppers	238
	Pyridaben	Sweet peppers	486

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

4.3.2. ARfD exceedances

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

4.3.3. Actions taken

Table 17: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	161	Border rejections
Other actions	1,370	Investigations, administrative consequences, Pesticide Residues Intake Model (PRIMo) model analysis

4.4. Quality assurance

The laboratory tests were carried out in four laboratories as detailed in Table 18. All had undergone accreditation procedures from the Executive Agency – 'Bulgarian Accreditation Service'. Eurolab carried out third country control at EU border and national control programme.

Table 18: Laboratories participating in the national control programme

Country	Laboratory		Accreditation		Participation in proficiency tests or interlaboratory tests
	Name	Code	Date	Body	
BG	Central Laboratory for Chemical Testing and Control	CLCTC	31 July 2020	Executive Agency – 'Bulgarian Accreditation Service'	EUPT - FV23 EUPT-CF15 EUPT-SRM16
BG	Primoris	PRIMBG	2 May 2016	BELAC – Belgian Accreditation Council	
BG	EuroLab	EuroLab	30 July 2019	Executive Agency 'Bulgarian Accreditation Service'	
RO	Institutul de Igiena si Sanatate Publica Veterinara.	IISPV			

Croatia

5.1. Objective and design of the national control programme

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 2020 was funded by Ministry of Agriculture.

Products were selected according to 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 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 regarding 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) 2019/533 of – EUCP were: oranges, pears, kiwi fruits, cauliflowers, onions, carrots, potatoes, beans (dried), rye grain, brown rice, poultry fat, bovine liver, infant formulae and follow-on formulae.

Products sampled by national priorities – NP taking into account previous exceeding and importance in the nutrition were: strawberries, peaches, spinaches, apples, grapes, lettuce, cucumbers, oat grain, mandarins.

New products: cherries or sour cherries.

Pesticides to be analysed were chosen according to:

- Part C and D of the Regulation (EU) 2019/533
- PPPs authorised in the country
- Forbidden PPPs (at national/EU level)
- Analytical capacities of national control laboratories.

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: May/June /July/August/ September/October and November/December
- Agricultural inspection (sampling in periods adjusted to the agricultural production, harvest and picking: 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, 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 2020 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, Department of Environmental Protection and Health Ecology.

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

Other official controls for pesticide residues

Beside the results of the National Monitoring Programme for pesticide residues in and on food, for 2020 were reported also the results for other pesticide residues official controls:

- official controls for pesticide residues in food of plant origin at border (surveillance at border including controls according to Regulation (EU) 2019/1793) which conducts sanitary inspection of State Inspectorate,
- official control of proper use of plant protection products which includes sampling and analysis of pesticide residues in food of plant origin in primary production (mostly on farms) which conducts agricultural inspection of State Inspectorate,
- official control for pesticide residues in organic products of plant origin in primary production and on the market, which conducts agricultural inspection of State Inspectorate.

Sampling strategies: objective, selective and suspect sampling.

Laboratories for analysis products of plant origin: Andrija Štampar Teaching Institute of Public Health, Department of Environmental Protection and Health Ecology and Eurofins Croatiakontrola d.o.o.

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.

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.

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

In 2020 were analysed 311 samples within National Monitoring Programme for pesticide residues in and on food and 330 samples within other official controls (at the border, within the scope of proper use controls and control of organic products).

National Monitoring Programme for pesticide residues in and on food

Within National Monitoring Programme for pesticide residues in and on food 3 samples exceeded MRL (of which 1 sample was compliant taking into account measurement uncertainty) and 2 samples non complaint.

Multiple residues in EUCP were found in kiwi fruit, oranges, pears, beans and carrots. There were 11 samples found pesticide residues below MRL within EUCP.

MRL non - compliant was determined in 2 samples: mandarins and strawberries.

Regarding the comparability with the previous year, results showed some changes in the trend (Table **19**)

Table 19: 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 %)

When compared with the previous year, it is evident that the number of analysed samples had firstly increased, then decreased in 2019, and increased in 2020. The percentages of samples without pesticide residues had a decreasing tendency up 2020 that started increasing. The percentage of samples with pesticide residues below the MRLs has increased but started decreasing in 2020. Percentages of the non - compliant samples remains mostly of the same level.

Other official controls

Multiple residues were found in red wine, apricots, blackberries, bananas, lemons, kiwi fruits, plums, quinces, gojiberry, head lettuces, parsnip roots, sweet peppers, tomatoes, black pepper, lemongrass.

There were 26 non-compliant samples within other official controls.

Table 20: Summary results of National Monitoring Programme for pesticide residues in and on food and other official controls (border controls and proper use controls) all together

Matrix detailed	Total samples	Below LOQ	% Below LOQ	Quantified	Quantified	Quantified below MRL	% Quantified below MRL	Above MRL	% Above MRL	Non compliant	% Non compliant
Oat grain	3	3	100	0	0	0	0	0	0	0	0
Rice and similar-	15	14	93.33	1	6.67	1	6.67	0	0	0	0
Rice grain	1	1	100	0	0	0	0	0	0	0	0
Rice grain. long-grain	2	2	100	0	0	0	0	0	0	0	0
Maize flour	1	1	100	0	0	0	0	0	0	0	0
Oat flour	3	2	66.7	1	33.3	1	33.3	0	0	0	0
Rye flour. wholemeal	8	6	75	2	25	2	25	0	0	0	0
Wheat wholemeal flour	1	1	100	0	0	0	0	0	0	0	0
Spelt flour. wholemeal	1	1	100	0	0	0	0	0	0	0	0
Popcorn (maize. popped)	2	1	50	1	50	1	50	0	0	0	0
Head cabbages and similar-	1	1	100	0	0	0	0	0	0	0	0
Head cabbages	5	4	80	1	20	1	20	0	0	0	0
Garlic and similar-	3	3	100	0	0	0	0	0	0	0	0
Garlic	1	1	100	0	0	0	0	0	0	0	0

Matrix detailed	Total samples	Below LOQ	% Below LOQ	Quantified	Quantified	Quantified below MRL	% Quantified below MRL	Above MRL	% Above MRL	Non compliant	% Non compliant
Onions and similar-	20	18	90	2	10	2	10	0	0	0	0
Onions	4	4	100	0	0	0	0	0	0	0	0
Sweet peppers	35	21	60	14	40	8	22.9	6	17.1	3	8.6
Aubergines	3	3	100	0	0	0	0	0	0	0	0
Gojiberry	1	0	0	1	100	1	100	0	0	0	0
Cucumbers	14	7	50	7	50	7	50	0	0	0	0
Courgettes	2	2	100	0	0	0	0	0	0	0	0
Watermelons	4	3	75	1	25	1	25	0	0	0	0
Lettuces (generic)	5	2	40	3	60	3	60	0	0	0	0
Head lettuces	12	6	50	6	50	5	41.7	1	8.3	0	0
Spinaches	5	1	20	4	80	4	80	0	0	0	0
Chards	1	1	100	0	0	0	0	0	0	0	0
Beans (with pods) and similar-	3	3	100	0	0	0	0	0	0	0	0
French beans (with pods)	1	1	100	0	0	0	0	0	0	0	0
Chickpeas (with pods)	1	1	100	0	0	0	0	0	0	0	0
Beetroots	3	3	100	0	0	0	0	0	0	0	0
Carrots	7	6	85.71	1	14.3	1	14.3	0	0	0	0
Celeriacs	5	3	60	2	40	2	40	0	0	0	0
Parsnip roots	3	2	66.67	1	33.3	1	33.3	0	0	0	0
Laurel	1	1	100	0	0	0	0	0	0	0	0
Lemongrass	1	0	0	1	100	1	100	0	0	0	0
Oregano	1	0	0	1	100	1	100	0	0	0	0
Parsley	2	1	50	1	50	1	50	0	0	0	0
Soyabeans (without pods)	3	3	100	0	0	0	0	0	0	0	0
Garden peas (without pods)	2	1	50	1	50	1	50	0	0	0	0
Beans (dry) and similar-	35	31	88.6	4	11.4	3	8.57	1	2.9	0	0
Lentils (dry)	2	2	100	0	0	0	0	0	0	0	0
Almonds	3	2	66. 7	1	33.3	1	33.3	0	0	0	0
Pistachios	2	2	100	0	0	0	0	0	0	0	0
Walnuts	1	1	100	0	0	0	0	0	0	0	0
Sunflower seeds	1	1	100	0	0	0	0	0	0	0	0
Pumpkin seeds	1	1	100	0	0	0	0	0	0	0	0
Black pepper	1	0	0	1	100	1	100	0	0	0	0
Paprika powder	1	1	100	0	0	0	0	0	0	0	0
Cinnamon bark	1	1	100	0	0	0	0	0	0	0	0
Soya proteins	2	2	100	0	0	0	0	0	0	0	0
Table olives	5	3	60	2	40	2	40	0	0	0	0
Lemons	32	1	3.13	31	96.9	10	31.3	21	65.6	20	62.5
Mandarins	15	7	46.67	8	53.3	6	40	2	13.3	2	13.3
Oranges and similar-	19	1	5.26	18	94.7	17	89.5	1	5.3	0	0
Apples	11	4	36.36	7	63.6	7	63.6	0	0	0	0
Pears and similar-	19	5	26.32	14	73.7	14	73.7	0	0	0	0
Quinces	1	0	0	1	100	1	100	0	0	0	0
Berries and small fruits	1	1	100	0	0	0	0	0	0	0	0
Table grapes	11	3	27.27	8	72.7	7	63.6	1	9.1	0	0
Strawberries	9	4	44.4	5	55.6	4	44.4	1	11.1	1	11.1
Blackberries	2	1	50	1	50	1	50	0	0	0	0
Cranberries	3	3	100	0	0	0	0	0	0	0	0
Apricots	3	1	33.33	2	66.	2	66.7	0	0	0	0
Sour cherries	2	1	50	1	50	1	50	0	0	0	0

Matrix detailed	Total samples	Below LOQ	% Below LOQ	Quantified	Quantified	Quantified below MRL	% Quantified below MRL	Above MRL	% Above MRL	Non compliant	% Non compliant
Cherries (sweet)	6	1	16.67	5	83.3	5	83.3	0	0	0	0
Peaches and similar-	1	0	0	1	100	0	0	1	100	1	100
Common peaches	11	6	54.55	5	45.5	5	45.5	0	0	0	0
Nectarines	1	0	0	1	100	1	100	0	0	0	0
Plums and similar-	11	7	63.64	4	36.4	4	36.4	0	0	0	0
Common banana	41	38	92.68	3	7.32	3	7.32	0	0	0	0
Granate apples	3	3	100	0	0	0	0	0	0	0	0
Pineapples	3	3	100	0	0	0	0	0	0	0	0
Dried apricots	1	0	0	1	100	1	100	0	0	0	0
Dried vine fruits (raisins etc.)	5	3	60	2	40	1	20	1	20	0	0
Dried dates	5	5	100	0	0	0	0	0	0	0	0
Canned or jarred pineapple	1	1	100	0	0	0	0	0	0	0	0
Poultry fat tissue	16	16	100	0	0	0	0	0	0	0	0
Bovine liver	15	15	100	0	0	0	0	0	0	0	0
Sunflower seed oil. edible	2	2	100	0	0	0	0	0	0	0	0
Cocoa powder	1	1	100	0	0	0	0	0	0	0	0
Wine. white	3	1	33.33	2	66.7	2	66.7	0	0	0	0
Wine. red	3	1	33.33	2	66.7	2	66.7	0	0	0	0
Ready-to-eat meal for infants and young children	1	1	100	0	0	0	0	0	0	0	0
Coffee beans and similar-	1	1	100	0	0	0	0	0	0	0	0
Rye and similar-	11	11	100	0	0	0	0	0	0	0	0
Cauliflowers and similar-	19	17	89.47	2	10.5	2	10.5	0	0	0	0
Tomatoes	31	11	35.48	20	64.5	18	58.1	2	6.45	1	3.2
Carrots and similar-	19	7	36.84	12	63.2	12	63.2	0	0	0	0
Potatoes and similar-	19	16	84.21	3	15.8	3	15.8	0	0	0	0
Kiwi fruits and similar-	19	10	52.63	9	47.4	9	47.4	0	0	0	0
Oranges	1	1	100	0	0	0	0	0	0	0	0
Follow-on formulae	10	10	100	0	0	0	0	0	0	0	0
Infant formulae	9	9	100	0	0	0	0	0	0	0	0
Chia seeds	3	3	100	0	0	0	0	0	0	0	0
Total	**641**	**413**	**64.4**	**228**	**35.6**	**190**	**29.6**	**38**	**5.93**	**28**	**4.4**

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

5.3.1. Possible reasons for non-compliant samples

National Monitoring Programme for pesticide residues in and on food

2 samples were determined as non-complaint with the EU MRL legislation within National Monitoring Programme for pesticide residues in and on food (one sample of mandarins and strawberries)

Table 21: Number of non-compliant samples within MANCP

Sample origin pesticide	Matrix detailed	Above MRL	Non-compliant
Third Country	Mandarins	1	1
EU	Strawberries	1	1

Other official controls

For other official controls 26 samples were found non-compliant.

Table 22: Number of non-compliant samples with other official control programmes

Sample origin	Matrix detailed	Above MRL	Non-compliant

pesticide			
Third Country	Peaches and similar-	1	1
Third Country	Sweet peppers	4	3
Third Country	Mandarins	1	1
Third Country	Tomatoes	2	1
Third Country	Lemons	21	20
Total		**29**	**26**

Possible reasons for MRL non/compliant within the National Monitoring Programme for pesticide residues in and on food

Table 23: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency	Comments
GAP not respected: use of a non approved pesticide and pesticide which is not approved on mandarins	Chlorpyrifos-methyl and Prochloraz/Mandarins	1	Third Country
GAP not respected: use of an approved pesticide, but not approved on strawberries	Glyphosate /Strawberries	1	Sample of domestic origin
GAP not respected	Buprofezin / Lemons	3	Third Country
GAP not respected	Chlorfenapyr/Tomatoes	1	Third Country
GAP not respected	Chlorpyrifos/ Sweet peppers	1	Third Country
GAP not respected	Chlorpyrifos-methyl/ Lemons	5	Third Country
GAP not respected	Fenbutatin oxide/Lemons	3	Third Country
GAP not respected	Fenvalerate/ Mandarins	1	Third Country
GAP not respected	Formetanate/ Sweet peppers	1	Third Country
GAP not respected	Lufenuron/Lemons	1	Third Country
GAP not respected	Malathion/ Peaches	1	Third Country
GAP not respected	Methomyl/ Sweet peppers	1	Third Country
GAP not respected	Pirimiphos-methyl/ Lemons	1	Third Country
GAP not respected	Prochloraz, Chlorpyrifos-methyl /Lemons	1	Third Country
GAP not respected	Buprofezin and fenbutatin/Lemons	1	Third Country
GAP not respected	Buprofezin Pirimiphos-methyl/Lemons	1	Third Country
GAP not respected	Buprofezin, Lufenuron/Lemon	3	Third Country
GAP not respected	Buprofezin, Fenbutatin oxide, Lufenuron/Lemon	1	Third Country

5.3.2. ARfD exceedances

For both non-compliant samples within National Monitoring Programme for pesticide residues in and on food no risk assessment was done. For one sample the non-compliance was not recognised (strawberries) and for other sample the product was not on the market and sanitary inspection decided not to send for risk assessment.

From non-compliant samples from other official controls, 6 initial risk assessments were made.

In 1 sample of peppers, the risk cannot be ruled out (chlorpyrifos). In 1 sample of mandarins the risk cannot be ruled out (chlorpyrifos-methyl).

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 24: Actions taken

Pesticide/food product	Action taken	Number of non-compliant samples concerned	Comments

Pesticide/food product	Action taken	Number of non-compliant samples concerned	Comments
Glyphosate /Strawberries	No measures taken	1	In analytical results there was wrong MRL value, and sample marked as compliant by mistake
Chlorpyrifos-methyl and Prochloraz/ Mandarins Buprofezin/ Lemons	Destruction Destruction	1 1	Product was in the storage, not yet placed on the market
Buprofezin/ Lemons	Import ban / return to supplier	2	
Chlorfenapyr/Tomatoes	Destruction and import ban	1	Not found on the market after receiving results, not found at the primary producer
Chlorpyrifos/ Sweet peppers	Destruction and import ban	1	
Chlorpyrifos-methyl/ Lemons	Destruction	2	
Chlorpyrifos-methyl/ Lemons	Destruction and import ban	3	
Buprofezin and Fenbutatin oxide/Lemons	Return to supplier	1	
Fenvalerate/Mandarins	Destruction and import ban	1	
Formetanate/Sweet peppers	No measures taken	1	
Lufenuron/Lemons	Import ban / return to supplier	1	
Malathion/Peaches	Destruction and import ban	1	
Methomyl/Sweet peppers	Import ban / return to supplier	1	
Pirimiphos-methyl/ Lemons	Destruction	1	
Prochloraz, Chlorpyrifos-methyl /Lemons	No measures taken	1	The second sample was compliant
Buprofezin and lufenuron/lemon	Destruction and import ban	2	
Buprofezin and lufenuron/lemon	Import ban / return to supplier	1	
Buprofezin and Pirimiphos-methyl/lemon	Import ban / return to supplier	1	
Fenbutatin oxide/Lemon	Import ban / return to supplier	2	
Fenbutatin oxide/Lemon	Destruction and import ban	1	
Buprofezin, Fenbutatin oxide, Lufenuron/Lemon	Import ban / return to supplier	1	

5.4. 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).

For other official controls there were 2 laboratories conducting analyses in products of plant origin: Andrija Štampar Teaching Institute of Public Health and Eurofins Croatiakontrola d.o.o.

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.

The analyses of products of plant origin Eurofins Croatiakontrola d.o.o.in were performed by the GC-MS/MS technique (gas chromatography - tandem mass spectrometry) and LC-MS-MS technique (liquid chromatography - tandem mass spectrometry method according to HRN EN 15662:2018.

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

Table 25: 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: April 27, 2020	Croatian Accreditation Agency	2019: Pesticides in milk powder infant formula, organisation: FAPAS, UK 2019: Pesticides in bovine liver, organisation: EURL-AO Freiburg, Germany 2019: Pesticides in rye kernels, organisation: EURL-CF, Lyngby, 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
Croatia	Eurofins Croatiakontrola d.o.o.	Croariakontrola	27.02.2004. Flexibile acreditation	Croatia Accreditation Agency	2019: EUPT-FV21; EUPT-FV-SC02; EUPT-CF13 2020: EUPT-FV22; EUPT-FV-SC03; EUPT-CF14; EUPT-AO15; EUPT-SRM15; FAPAS 09131; FAPAS 09135; FAPAS 19285; FAPAS 19287; FAPAS 19298; FAPAS 19302; FAPAS 19303; FAPAS 19296

Cyprus

6.1. Objective and design of the national control programme

The Ministry of Health is the competent authority for the enforcement of the Pesticide Residues (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 on 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 with 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.

It is noted that, due to the pandemic COVID-19, the 2020 monitoring plan has not been fully implemented. Two product categories of the Community control plan (cauliflowers and pears) and 102 samples of the national monitoring plan have not been analysed, as sampling could not be carried out due to other pandemic-related activities.

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.

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

In 2020 a total of 499 food samples of plant and animal origin were analyzed in the framework of the official controls. Sampling rate was 56,2 samples /100 000 inhabitants.

- Plant Origin samples

The number of plant origin samples analyzed in 2020 was 351. The number of fruits tested was 100, vegetables 135, cereals 48 and pulses 35. Processed foods such as dry fruits, teas and dry herbs were also analyzed. A total of 13 rye samples were analyzed according to the requirements of the EU coordinated plan, but due to the limited number of rye grains found in the market, rye flour and rye flakes were also analyzed. For the import controls, 105 samples were analyzed. The main imported products were vegetables, fruits, cereals and spices.

The 51 % of the plant origin samples were found to be positive with pesticide residues while residues of more than one pesticide were found in the 32,2 % of the samples.

The most frequently found pesticides within 2020 were Cypermethrin in 7.8%, Fludioxonil in 6.6%, Pyrimethanil and Tebuconazole in 5.8 %, Acetamiprid, Azoxystrobin, Boscalid, Carbendazim, Chlorpyrifos and Imazalil in 5.0 % of the samples analyzed for.

For statistical purposes, the violation rate of the MRLs is calculated taking into account only the samples of plant origin. For the year 2020, the 5.1% of the 351 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 analyzed was 61 out of which the 45 samples were analysed in the framework of the national monitoring program of organic products. Four samples were found to be positive with pesticide residues. A sample of dry black eye beans contained chlorpyrifos at concentrations higher than the MRL of the Regulation 396/2005. All the results, which are presented in Table 26, were reported to the competent authority of the organic products so that the appropriate measures to be taken.

Comparing the results of 2020 with that of 2019, the violation rate was found to show a decrease from 7.3% to 5.1% and the frequency of multiple residues in 2020 was lower (32.2%) compared to 2019 (39.2%).

Table 26: Results of organic farming samples

Product	Pesticide	Found value (mg/kg)
Black eye beans dry	Acetamiprid	0.011
	Carbaryl	0.097
	Chlorpyrifos	0.034
Red wine	Carbendazim	0.039
	Metalaxyl	0.011
	Pyrimethanil	0.013
	Thiophanate methyl	0.025
	Triadimenol	0.012
Grapes	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.010
Plums	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.009

- Animal Origin Samples

Within 2020, 148 samples of animal origin have been analysed for pesticide residues, of which 11 samples were milk-based baby food. The samples of bovine liver, chicken fat and baby food were analysed in the framework of the Community control plan. 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 7 samples of animal origin products found to contain pesticides at quantifiable levels: A calf meat sample was positive with DDT at very low levels, much lower than the MRL. The 50% of the honey samples found to be positive with Amitraz at concentrations ranged between 0.013 - 0.42 mg/kg and one sample contained Coumaphos at concentration of 0.033 mg/kg. The concentrations of Amitraz determined in two honey samples were higher than the MRL but only for the one sample the concentration was still higher than the MRL after subtracting the measurement uncertainty.

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

In 2020, 10% of the samples of plant origin (35 samples in total out of 351 samples of plant origin were found non-compliant with the EU MRLs, whereas the 5.1% of the samples (18 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 rev. 3.1 has been performed for all legal violations, with exception of two cases (tricyclazole in rice) for which no toxicological data were available. All calculated exposures showed no risk for the consumers.

The following follow-up actions (Table 27) were taken in the cases of non-compliant samples.

Table 27: Possible reasons for MRL non-compliance and actions taken

Reason for MRL non-compliance	Pesticide/food product	Frequency	Action taken
GAP not respected: application rate, number of treatments, application method or PHI not respected	Dimethoate / Oranges	1	Administrative consequences
Use of a pesticide on food imported from third countries which no import tolerance was set	Profenofos / Lemons	1	Administrative consequences
GAP not respected: use of a pesticide not approved in the EU	Chlorpyrifos / Parsley	1	Administrative consequences
GAP not respected: use of an approved pesticide not authorized on the specific crop	Triadimenol /Grape leaves	1	Administrative consequences / Lot recalled from the

Reason for MRL non-compliance	Pesticide/food product	Frequency	Action taken
			market / Destruction of product
Use of a pesticide on food imported from third countries which no import tolerance was sets	L-Cyhalothrin /Pomegranates	1	Administrative consequences/ Lot recalled from the market/ Destruction of product
Use of a pesticide on food imported from third countries which no import tolerance was set	Iprodione / Carrots	1	Administrative consequences
GAP not respected: use of a pesticide not approved in the EU	Linuron / Carrots	1	
GAP not respected: use of an approved pesticide not authorized on the specific crop	Cypermethrin / Celery	1	Administrative consequences
GAP not respected: application rate, number of treatments, application method or PHI not respected	Fluopicolide / Celery		
	Propamocarb / Celery		
GAP not respected: use of an approved pesticide not authorized on the specific crop	L-Cyhalothrin / Pomegranate	1	Administrative consequences
	Fluopyram / Pomegranate	1	
	Tebuconazole / Pomegranate		
GAP not respected: use of an approved pesticide not authorized on the specific crop	Cypermethrin / Spinach	1	Administrative consequences
	Deltamethrin / Spinach	1	
GAP not respected: application rate, number of treatments, application method or PHI not respected	Fluazifop / Spinach	1	
GAP not respected: use of a pesticide not approved in the EU	Linuron / Spinach	1	
Use of a pesticide on food imported from third countries which no import tolerance was sets	Acetamiprid/Rice	1	Lot not released on the market/ Destruction of product
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
Use of a pesticide on food imported from third countries which no import tolerance was set	Thiamethoxam/ Rice	1	Lot not released on the market /Destruction of product
	Tricyclazole/Rice	2	
Use of a pesticide on food imported from third countries which no import tolerance was set	Lufenuron / Thyme dry	1	Lot not released on the market /Destruction of product
GAP not respected, organic product / Use of a pesticide on food imported from third countries which no import tolerance was set	Chlorpyrifos / Black eye beans dry	1	Lot recalled from the market

6.4. Quality assurance

The PR Lab of the SGL is accredited since 2002 according to EN ISO/IEC 17025:2005. 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 28

Table 28: 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 Ministry of Health	SGL_CYPRUS_FP	2002	Cyprus Accreditation Body (CYS-CYSAB)	PTs 2020: EUPT-SRM-15(rice) EUPT-AO-15(rape seed oil) EUPT-FV-22(onions) EUPT-CF-14(rice) EUPT-SC-14(sultana raisins)

6.5. Processing Factors (PF)

Processing factors were applied to verify the compliance with EU MRLs of the processed food. Table **29** presents the PFs applied for different food.

Table 29: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor (PF)	Source of PF
Boscalid	Table grapes	Raisins	2.4	EFSA (EU) database
Chlorantraniliprole			3.5	EFSA (EU) database
Cyprodinil			1	Default
Fenhexamid			1.75	BfR
Fludioxonil			1.1	EFSA (EU) database
Fluopyram			2.9	EFSA (EU) database
Pyraclostrobin			1	Default
Pyrimethanil			1.6	BfR
Tebuconazole			1.2	RIVM
Carbendazim	Wine grapes	Wine	1	Default
Metalaxyl				
Pyrimethanil				
Triadimenol				
Thiophanate methyl				
Cypermethrin	Thyme fresh	Thyme Dried	6.7	Drying factor
Lufenuron				
Pirimiphos methyl				

Czech Republic

7.1. Objective and design of the national control programme

7.1.1. Objective

Pesticide residues monitoring in foodstuffs in the Czech Republic (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.

7.1.2. Design

Multiannual control plan for pesticide residues refers mainly to foodstuffs and feeding-stuffs in the whole food chain. The control plan stems from the Regulation (EU) No 2019/533. The number of selected commodities, number of samples and scope of analysed pesticide residues must be considered as minimum numbers which have to be fulfilled. The official authorities might increase these numbers if necessary and appropriate.

Selection of commodities

The following criteria have been used for the selection of commodities being listed in the national programme on pesticide residues control:

- the overall food consumption in the Czech Republic in 2016 (https://www.czso.cz/csu/czso/spotreba-potravin-2016)
- the consumption food basket (http://czvp.szu.cz/spotrebapotravin.htm);
- results of official controls and monitoring of pesticide residues in previous years (http://www.svscr.cz; http://www.szpi.gov.cz/; http://www.ukzuz.cz)
- foodstuffs intended for risk groups of population (namely infant formula and foods for young children);
- products having specific stricter rules on the use of pesticides (organic products);
- reports in RASFF system – annual EC reports (http://ec.europa.eu/food/food/rapidalert/index_en.htm);
- 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 (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0533&rid=8)
- the annual report of the EC on pesticide residues monitoring (http://ec.europa.eu/food/fvo/specialreports/pesticides_index_en.htm)
- EU reports on pesticide residues in food published on EFSA websites (http://www.efsa.europa.eu/en/efsajournal/pub/3694.htm - 2011, http://www.efsa.europa.eu/en/efsajournal/pub/3942.htm - 2012, http://www.efsa.europa.eu/en/efsajournal/pub/4038.htm - 2013, https://www.efsa.europa.eu/en/efsajournal/pub/4611 - 2014, https://www.efsa.europa.eu/en/efsajournal/pub/4791 - 2015, https://www.efsa.europa.eu/en/efsajournal/pub/5348 - 2016 https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2019.5743 - 2017 https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/sp.efsa.2020.EN-1814 - 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) 2019/533.

The number of samples in the Regulation (EU) No 2019/533 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.

Pesticide residues to be analysed

- 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. Table 2 lists the sixteen most commonly used active substances contained in plant protection products authorized in the Czech Republic, including a summary of major crops for which the products containing these active substances are applied;

- 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) 2019/533 of 28 March 2019 on a coordinated, multi-annual 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;
- 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[9]. 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[9]. 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.

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

The Czech Agriculture and Food Inspection Authority together with the State Veterinary Administration and Central Institute for Supervising and Testing in Agriculture sampled the total of 1029 samples in 2020. 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 (836 samples). Foodstuffs of animal origin include 120 samples and feeding stuffs consist of 73 samples were further sampled.

7.2.1. Key findings

Out of the total number of the samples taken, 700 samples (68.0%) contained positive finding of any of the analysed active substances. MRL was exceeded in 45 samples (4.4%). 21 samples (2.0%) 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 (47.4% analysed samples) followed by samples from the Czech Republic (25.0%), and by samples from third countries (19.3%). In 8.3% 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 (836 samples). Presence of pesticide residues was not detected in 27.4% analysed plant origin samples. In 67,9% samples, the detected residues were under MRL value. Regardless uncertainty measurement, 39 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 19 (2.3 %).

As regards foodstuffs of animal origin, out of the total number of the samples taken (120), 105 samples comprised non-processed foodstuffs: hen eggs, bovine, poultry, pig and sheep fat, liver (veal, pigs and foie gras), poultry and bovine fresh meat, milk, honey and 15 samples comprised processed products: butter, milk products (quark, yoghurt) produced within organic farming.

116 analysed samples of foodstuffs of animal origin came from the CR, one sample (eggs) from EU, one sample (honey) from TC and two samples (honey) unknown origin. Pesticide residues were not found in 64.2% of foodstuffs of animal origin. As regards 31.6% of samples with residues, the detected residues were found under the MRL. Exceeding of the MRL was detected in 5 samples of animal origin, one of them was non-compliant.

As regards non-organic feedingstuffs, the total of 49 samples of non-processed raw materials has been taken. Out of the total number of the analysed samples of feedingstuffs, 79 % originated in the CR, 13 % in the EU countries, 6,5% in third countries and 1 sample was of unknown origin. Positive detections of pesticide residues were found in 75,4 % feed. None of the samples was above the MRL.

Organic products of plant and animal origin comprised 7.8% (75 samples) of the total amount of the samples taken compared to 92.2% (881 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 % (631 samples) of samples compared to 25.3% (19 samples) of positive cases of samples taken from organic foodstuffs.

Out of the total number of 12 samples of feed from organic farming, in 3 cases pesticide residue under MRL value was detected and in one sample of complete organic feed for goats, originated in the CR, pesticide residue was above the MRL and was assessed as non-compliant.

In 487 samples of plant origin (58.1%) more than one active substance was detected. The maximum number various pesticide substances and their metabolites was found in green tea from Vietnam (18 compounds).

7.2.2. Comparability with the previous year results

In connection with the measures taken during the COVID-19 pandemic, the control activities of the supervisory authorities were reduced during 2020, 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.

Pesticide residues were in 2020 analysed in a total of 1029 samples (Table 30) compared to the total number of 1,520 of samples analysed in 2017, 1,390 analysed samples in 2018 and 1,478 samples in 2019. Positive findings of pesticide residues (with residues below MRL) were in 2020 detected in 64.0% samples compared to 56.2% in 2017, 73.8% in 2018 and 64.9% in 2019.

MRL value was in 2020 exceeded in 4.4% of samples (4.5% in 2016, 3.1% in 2017, 3.5% in 2018, 3.9 % in 2019), 2.0% samples were assessed as non-compliant (2.4% in 2016, 1.8% in 2017, 1.8.% in 2018, 2.3% in 2019). The results found in 2020 are comparable with data from previous years.

Table 30: Summary results of samples taken in 2020 by product class

Samples	Total	Without residues	With residues below MRL	Exceeding MRL	Non-compliant
Animal products	120	77	38	5	1
Baby food	18	18	0	0	0
Cereals and cereal products	66	36	28	2	1
Feeding stuffs	73	23	49	1	1
Fruits	282	42	230	10	5
Legumes	19	13	5	1	0
Oil seeds	33	8	22	3	2
Other plant products	35	10	20	5	3
Potatoes	24	7	17	0	0
Processed products	23	11	11	1	0

Vegetables inl. herbs	336	84	235	17	8
Sum	1029	329	655	45	21

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

Out of the total number of samples taken in 2020, 45 samples exceeded the MRL (4.4%). Out of this number, 21 samples (2.0%) were assessed as non-compliant even after uncertainty in measurement was taken into account. 3 non-compliant samples originated in the CR, 7 non-compliant samples originated in the EU and 11 non-compliant samples originated from third countries.

Following commodities were concerned: non fermented tea – 3 non-compliant samples, mandarins – 2 non-compliant samples, parsley – 2 non-compliant samples, sweet peppers – 2 non-compliant samples, 1 non-compliant sample of poppy seeds, celery, cauliflower, broccoli, cucumber, grapefruit, lemon, plums, pumpkin seeds, brown rice, poultry fat and complete organic feed for goats was registred.

Based on the risk of health assessment none of the non-compliant samples were notified into the RASFF.

Within the increased official controls, the MRL for active substances tolfenpyrad and chlorpyrifos were exceeded for 2 consignments of tea from China, however after taking into account the measurement uncertainty the consignments of tea were assessed as compliant

7.3.1. Possible reasons for non-compliant samples

Table 31: 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)]	Linuron/Parsley roots	2	Poland
	Linuron/Celeriac	1	Poland
	Quizalofop/Pumpkin seeds	1	Slovakia
GAP not respected: use of an approved pesticide not authorised on the specific crop[(c)]	Prosulfocarb/Celeriac	1	Poland
	Flonicamid/Broccoli	1	Poland
	Flonicamid/Cauliflower	1	Poland
	Acetamiprid/Plums	1	Poland
	Kresoxym-methyl/Poppy seeds	1	Czech Republic
Use of a pesticide on food imported from third countries for which no import tolerance was set[(c)]	Formetanate/Cucumber	1	Albania
	Captan/Sweet pepper	1	Albania
	Buprofezin/Brown rice	1	India
	Tricyclazole/Brown rice	1	India
	Fenbutatin oxide/Mandarins	2	Turkey
	Fenbutatin oxide/Lemon	1	Turkey
	Buprofezin/Grapefruit	1	Turkey
	Pyridaben/Sweet peppers	1	Turkey
	Acetamiprid/Tea	1	Vietnam
	Imidacloprid/Tea	2	Vietnam
	Tolfenpyrad/Tea	2	Vietnam
	Lambda-cyhalothrin/Tea	1	Vietnam
	Dinotefuran/Tea	1	Vietnam
	Permethrin/Tea	1	Vietnam
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)	HCB/Poultry fat	1	Czech Republic
Cross contamination: spray drift or other accidental contamination	Chlormequat-chloride/Feed	1	Czech Republic

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

7.3.2. ARfD exceedances

Based on the risk of health assessment performed by the National Institute of Public Health, none 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.

7.3.3. 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 32: Actions taken

Action taken	Commodity/ pesticide	Number of non-compliant samples concerned	Comments
Administrative sanctions (e.g. fines)		21	
Lot recalled from the market		3	
Follow-up (suspect) sampling of similar products, samples of same producer or country of origin		1	Follow-up action due to the residue of a pesticide detected in a domestic product, which is not authorized in the country

7.4. 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 33: 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. 122/2020 (26.2.2020)	Czech Accreditation Institute (CAI), Prague, Czech Republic	EUPT-CF14, EUPT-FV22, EUPT-SM12, EUPT-SRM15, EUPT-AO15
Czechia	State Veterinary	V01	EN ISO/IEC 17025,	Czech Accreditation	EUPT-AO15

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
	Institute Prague		Certificate No. 137/2020 (5.3.2020)	Institute (CAI), Prague, Czech Republic	FAPAS 09129
Czechia	Metrological and Testing laboratory, University of chemistry and technology	O01	EN ISO/IEC 17025, Certificate No. 568/2020 (15.9.2020), previous Certificate No. 192/2019 (29.4.2019)	Czech Accreditation Institute (CAI), Prague, Czech Republic	EUPT-FV22, EUPT-SM12, EUPT-SRM15, EUPT-AO15, CF14
Czechia	Central Institute for Supervising and Testing in Agriculture	U01	Certificate of accreditation No. 247/2020	Czech Accreditation Institute (CAI), Prague, Czech Republic	EUPT-FV22, EUPT-CF14, EUPT-SRM15

7.5. 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 applied to cover the dehydration of fruits, basil, goji, herbal tea, polishing and parboiled rice, oil production using pressing.

Table 34: 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, bifenthrin (sum of isomers), carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim), clofentezin, clothianidin, difenoconazol dinotefuran, fenvalerate (any ratio of constituent isomers (RR, SS, RS & SR) including esfenvalerate), flonicamid (sum of flonicamide, TFNG a TFNA expressed as flonicamid) chlorpyrifos, imidacloprid lambda cyhalothrin inl. gama cyhalothrin (sum of R,S and S,R isomers), propargite, 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
Chlorpyrifos, dimethomorph, metalaxyl and metalaxyl-M	Basil - fresh herb	Dried basil	7	Processing factor was taken over from website European

Pesticide[(a)]	Unprocessed product (RAC)	Processed product	Processing factor[(b)]	Comments
				Spice Association
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, prosulfocarb, chlorpyrifos	Olives	Olive oil	5	Processing factor was applied according to Commission Implementing Regulation (EU) No. 2017/660
Clopyralid	Thyme	Herbal tea	7.0	Processing factor was taken over from website European Spice Association
Acetamiprid, imidacloprid, tebuconazole,tricyclazole	Rice	Polishing rice	0.5	Processing factor was applied according to Commission Implementing Regulation (EU) No. 2017/660
Azoxystrobin, difenoconazol, flutriafol	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))

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

7.6. Additional Information

Total of 75 organic foodstuffs of plant and animal origin and 12 samples of organic feed were sampled in 2020. Pesticide residues were detected in 19 samples (25,3%). Out of the total number of the analysed samples of organic fruit (13), in 3 samples positive detection of pesticide residues was found. Positive findings of pesticide residues were also proved in 6 samples out of 19 samples of organic vegetables, then in 2 samples out of 15 organic cereals samples and one sample out of 3 organic potatoes. In organic foodstuffs of animal origin, pesticide residues were detected in 3 samples of cattle fresh fat tissue, 1 sample of beef meat, 2 samples of cheese curd and 1 sample of butter. Out of the total number of 12 samples of feed from organic farming, in one case 3 cases pesticide residue under MRL value was detected and in one sample of complete organic feed for goats, originated in the CR, pesticide residue was above the MRL.

Table 35: Organic production

Commodity	Total samples	Below LOQ	% Below LOQ	Quantified	% Quantified	Quantified below MRL	% Quantified below MRL	Above MRL	% Above MRL	Non-compliant	% Non-compliant
Animal products	13	6	46.15	7	53.85	7	53.85	0	0.00	0	0.00
Baby food	4	4	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Cereals and cereal products	15	13	86.67	2	13.33	2	13.33	0	0.00	0	0.00
Feedingstuffs	12	8	66.67	4	33.33	3	25.00	1	8.33	1	8.33
Fruits	13	10	76.92	3	23.08	3	23.08	0	0.00	0	0.00
Leugumes	1	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Oil seeds	5	5	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Potatoes	3	2	100.00	1	0.00	1	0.00	0	0.00	0	0.00
Tea	2	2	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Vegetables	19	13	68.42	6	31.58	6	31.58	0	0.00	0	0.00

Denmark

8.1. Objective and design of the national control programme

8.1.1. Objective

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

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

8.1.2. Design

The National Food Institute, Technical University of Denmark, designed the monitoring programme in cooperation with the 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[15,16,17], 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

[15] 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

[16] 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

[17] Jensen, B.H., Petersen, A., Pernille, B.P., Poulsen, M.E,. Nielsen, E.E., Christensen, T., Fagt, S., Trolle, E., Andersen, J.H . . 2019, ISBN 978-87-7120-067-6. www.food.dtu.dk

of imported organic foods from Ukraine, Kazakhstan and Russia. Sampling strategy for these projects is listed as suspect sampling.

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 (64 samples) were analysed for dithiocarbamates, bromide ion (12 samples), chlormequat and mepiquat (28 samples) and glyphosate (85 samples). Due to the methodology applied, it was not possible to distinguish between the specific dithiocarbamates included in the residue definition for enforcement.

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

8.2.1. Key findings

In 2020 1534 surveillance samples of fruit, vegetables, cereals, processed products, baby food and animal products were analysed. Furthermore, 82 samples were taken from direct import from third countries at the Copenhagen Airport, 98 samples were taken with focus on pesticide residues in a campaign project, 11 samples were taken according to Regulation 2019/1793 and 26 samples were taken to control import of products imported from Ukraine, Kazakhstan and Russia. Samples from these four projects are listed as suspect sampling. Results from these projects are reported separately and are not included in the following general statistics.

Of the 1534 samples, 523 samples were produced in Denmark and 1011 samples were produced in other EU countries and outside EU. The samples included 1166 samples of fruit, vegetables and cereals, 286 samples of animal origin, 79 samples of processed vegetable foods and 3 samples of baby foods.

100 (10%) of the fruit and vegetable samples and 40 (24%) of the cereal samples were organically produced.

Pesticide residues were found in 81% of the conventionally grown fruit, 47% of the conventionally grown vegetables and in 37% of the conventionally grown cereal samples. Residues exceeding the MRL were found in 2.3% of the conventionally grown fruit and vegetables samples (21 samples). Of these, 13 samples (1.4%) had non-compliant (measurement uncertainty taken into consideration) residues. Two cereal samples (1.6%) had residues exceeding the MRL. Both samples were non-compliant residues. 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 86% and 75% of the samples produced in EU and outside EU, respectively, whereas pesticide residues were found in 78% of the samples from Denmark. For vegetables, residues were found in 60% and 50% of the samples produced in EU and outside EU, respectively, while residues were found in 25% of the samples from Denmark.

The frequency of conventionally grown samples exceeding the MRLs was 0.5 % and 4.0% for fruit produced in EU and outside the EU, respectively. For vegetables, the frequency of samples exceeding the MRL was 0.5% and 12% for vegetables originating from EU and outside the EU, respectively. The frequency of residues exceeding the MRL in Danish grown fruit was zero while the frequency of Danish grown vegetables exceeding the MRLs was 0.7%.

A total of 179 samples (conventionally grown crops; fruit, vegetables and cereals) were taken using sampling strategy "Suspect". Residues exceeding the MRL were found in 29 samples (16%). Of these 20 samples (11%) had non-compliant residues.

Residues were found in seven organically produced surveillance sample. Spinosad was found in five of the samples; in a grape sample from Egypt, two samples of parsley from Italy, one sample of lettuce from Italy, one sample of tomato from Spain. One of the samples of lettuce from Italy also contained azadirachtin. Two samples of oat from Germany contained chlormequat.

All samples were found to be produced in accordance with the rules for organic production.

8.2.2. Interpretation of the results

Generally, the results from the monitoring programme in 2020 are comparable with the results from previous years.

- For conventionally grown fruit, pesticides residues were found in 82% of the samples.
- For conventionally grown vegetables pesticides residues were found in 47% of the samples.
- For conventionally grown fruit and vegetables exceedances of the MRL were found in 1.8% and 2.9% of the samples, respectively.
- Generally, more exceedances of the MRL are seen in fruit and vegetables produced in other EU countries and third countries compared to fruit and vegetables produced in Denmark.
- In cereals, pesticide residues were found in 45% of the conventionally grown samples. Exceedance of the MRL were found in 1.6% 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 three samples of honey (1%). The content was below the MRL.
- In organically grown samples, pesticide residues were found in 4.7% of the samples. All seven samples were found to be produced in accordance with the rules for organic production.
- 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 25 samples, were found not to result in any health concern. Furthermore, five samples that had a content of chlorpyrifos or chlorpyrifos-methyl higher than the detection limit but below the MRL were assessed with the conclusion that a health risk could not be excluded.
- All other samples with multiple residues were found not to result in any health risk

8.2.3. Comparability with the previous year results

In 2020 1751 samples were analysed for pesticide residues compared to a total of 2055 samples analysed in 2019. The reduction in number of samples is due to Covid-19.

In 2020, residues were found to exceed the MRL in 1.5% of the conventionally grown samples of non-animal origin (23 samples) taken by objective or selective sample strategy, compared to 1.6 % in 2019. Of these, 1.0% (15 samples) was found to be non-compliant with the MRL compared to 0.9 % in 2019.

For conventional grown samples taken as suspect sampling strategy in 2020 residues were found to exceed the MRL in 16% of the samples compared to 23% in 2019. Of these, 11% were found non-compliant with the MRL compared to 17% in 2019.

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

8.3.1. Possible reasons for non-compliant samples

In 2020, residues were found to exceed the MRL in 1.5 % of the conventionally grown samples of non-animal origin (23 samples) taken by objective or selective sample strategy. Of these, 1.0 % (15 samples) was found to be non-compliant with the MRL.

For samples taken by suspect sampling strategy, residues in 16% (29 samples) were found to exceed the MRL. Of these, 11% (20 samples) 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 36.

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 above.

8.3.2. ARfD exceedances

No samples exceeded the ARfD. However, it was concluded for 25 samples, that either there was a health concern, or a health concern could not be excluded. Seven of these samples were taken as objective sampling and 18 samples were taken as suspect sampling.

The samples taken as objective sampling were rice from outside EU (tricyclazole, buprofezin), chili from Turkey (buprofezin), sweet pepper from Turkey, grapes from Egypt (chlorpyrifos), dried beans from Madagaskar (chlorpyrifos), peas with pods from Peru (carbendazim/benomyl), rice from Pakistan (carbendazim/benomyl).

The 18 samples taken as suspect sampling were: Basil from Thailand (triazophos, carbendazim and benomyl), basil from Thailand (chlorpyrifos), holy basil from Thailand (chlorpyrifos), mushrooms from Vietnam (dimethoate and chlorpyrifos), aubergine from Thailand (omethoate), Coriander from Thailand (chlorpyrifos), celery leaves from Thailand (omethoate, chlorpyrifos), aubergine from Turkey (omethoate), aubergine from EU (dimethoate and omethoate), date from Egypt (carbendazim and benomyl), pear from Turkey (diflubenzuron), rice from India (tricyclazole), rice from India (buprofezin, tricyclazole), rice from Pakistan (carbendazim, tricyclazole), rice from Pakistan (carbendazim and benomyl) and fenugreek from India (chlorpyrifos and tricyclazole).

Besides that, it was concluded for five samples taken as objective sampling of orange, mandarin, lemon and banana with content of either chlorpyrifos or chlorpyrifos-methyl that a health risk could not be excluded.

All samples were due to health risk concern withdrawn from the market and 18 of them were notified to RASFF.

Table 36 gives an overview of actions taken in response to non-compliant products.

Table 36: Action Taken

Action taken	Number of non-compliant samples concerned
Follow up action	1
Rapid Alert Notification	18
Lot recalled from the market	27
Follow-up action due to a pesticide residue detected in organic samples, violating the provisions laid down in the organic farming legislation	2
Warnings to responsible food business operator	31
Other actions	15
No action	8

8.4. Quality assurance

Table 37: 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-FV16, EUPT-SM06, EUPT-AO09, EUPT- SRM9, FAPAS 0991. Organiser of EUPT-CF8
DK	Danish Veterinary and Food Administration	FVST	30. September 2008 (DANAK #405)	DANAK, Denmark	EUPT-CF14, EUPT-FV22, EUPT-AO15, EUPT-SRM15, FAPAS 19284, FAPAS 19288, FAPAS 19289, FAPAS 19292, FAPAS 19296, FAPAS 19299, FAPAS 19302 FAPAS 09128, FAPAS 09132, FAPAS 09134, FAPAS 05140, FAPAS 05146, FAPAS 05147

8.5. Processing Factors (PF)

Table 38 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 38: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor
Azoxystrobin	Grape	Raisin	5.6
Bifenthrin	Grape	Raisin	5.6
Boscalid	Grape for wine production	Wine	1.3
Buprofezin	Rice	Polished rice	0.5
Dimethomorph	Grape for wine production	wine	1.3
Fenhexamid	Grape for wine production	wine	1.3
Fenpyroximat	Grape	Raisin	5.6
Fluopicolide	Grape for wine production	wine	1.3
Fluopyram	Grape for wine production	wine	1.3
Iprovalicarb	Grape for wine production	wine	1.3
Isoprothiolan	Rice	Polished rice	0.5
Mandipropamid	Grape for wine production	wine	1.3
Metalaxyl	Grape for wine production	wine	1.3
Tebuconazol	Rice	Polished rice	0.5
Tebufenozid	Grape for wine production	wine	1.3
Trifloxystrobin	Grape	Raisin	5.6
Tricyclazol	Rice	Polished rice	0.5

8.6. Additional Information

The analytical methods have been developed and/or validated by the National Food Institute, Technical University of Denmark and the laboratory of the 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 25 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 2020 with multiple residues besides the samples, which constituted a health risk or where a health risk could not be excluded, it was concluded that the residues were not expected to result in any risk for the consumer.

In 2020, 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 2020 EUCP.

Table 39: The Danish summary table for the EUCP commodities

EUCP Commodity	Number
Beans (dry) and similar	2
Beef liver	23
Bovine liver	4
Broad beans (dry)	1
Carrots	46
Cauliflowers	14
Chicken, fresh fat tissue	27
Kidney Bean (dry seeds)	3
Kiwi fruits (green, red, yellow)	34
Mung beans (dry)	2
Navy beans (dry seeds)	3
New potatoes	10
Onions	4
Oranges	49
Pears	44
Potatoes	46
Rice grain, brown	1
Rice grain, polished	24
Rye flour, wholemeal	1
Rye grain	24
Total number of samples	362

Furthermore, a total of 188 samples were analysed for copper and mercury. The samples included 144 samples of animal products, four samples of durum wheat, three samples of wheat bran, 36 samples of chocolate/cocoa powder and one samples of edamame bean.

Estonia

9.1. Objective and design of the national control programme

Veterinary and Food Board (VFB) 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 2019/533 that gives the list of commodities and pesticide residues to be analysed and the number of samples to take for year 2020. 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 also commodities reported in EFSA report as problematic products, commodities stated to be organic (to control if they are free of residues). Due to reduction of financial resources it is not always possible to include these commodities into sampling plan every year.

In 2020 VFB took 246 samples. 34 different food commodities were analysed.

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

In 2020 there were 8 cases of MRL exceedance. The matrixes, where the exceedance was detected are kiwi, beans (dried) and tea. Additionally, there was pesticide residue detected in two case of organic products (goji berryes, pumpkin seeds). During previous years there have been infringements with broccoli, apricots, sweet peppers, peaches, table grapes, beans, spinach, strawberries, apples, rice, tea, tomato, pomelo, kiwi, cultivated fungi, pomegranate, grapefruit and oranges.

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 is significantly higher.

Table 40: Estonian non-compliant samples

Year	non-compliant samples	% of all samples
2014	4	1.4
2015	6	1.8
2016	1	0.3
2017	3	0.9
2018	4	2
2019	2	0.8
2020	***10***	***4.1***

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

Table 41: Summary results

Sampling year			
2014	280	168	38.6%
2015*	327	223	30.1%
2016*	337	227	32.3%
2017*	334	202	38.6%
2018	195	91	51%
2019	249	114	53.2%
2020	246	110	44,7%

* The increase of the samples with no residues detected was caused by a larger amount of organic food samples in 2015-2017 taken by Agricultural Board (AB) in the national control program.

Since 2018 Estonia does not report data taken by AB. For AB taking samples is part of the supervision of compliance of using plant protection products at primary production level mostly before harvesting (they are taking samples from field) and contains the most cultivated crops. AB is also taking samples to control the cultivated crops compliance of organic production. Comparing to VFB, who is taking samples from food and the sampling points cover different food handling steps from the primary production after harvesting to the wholesale and retail. VFB is taking samples that are defined in coordinated multiannual control programme of the Union, national sampling programme and samples taken during the import controls at the EU border.

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

Table 42: Actions taken

Actions taken	Frequency	No of samples
Rapid Alert Notification	5	2 samples (lot) of beans, 1 sample (lot) of kiwi, 2 samples (lot) of teas
Rejection of a non-compliant lot at the border	1	1 sample (lot) of teas
OFIS notifications	1	1 sample (lot) organic goji berrys
Lot withdrawn from the market	2	1 sample (lot) of beans, 1 sample (lot) of kiwi.
Relabelling	1	1 sample (lot) organic pumpkin seeds;

Table 43: 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)]	Imidacloprid/ tea Tolfenpyrad/ tea Hexaflumuron/ tea Triazophos/ tea Dithiocarbamates (as CS2)/tea	1 2 1 1 1
GAP not respected: use of an approved pesticide not authorised in organic production	2,4-D / goji berryes Trifluralin/ pumpkin seeds	1 1
The product was not intended for food (dried bean seed)	Triadimenol/ beans Fluoxastrobin (sum of fluoxastrobin and its Z –isomer/ beans	2 1
Reason unknown	Malathion (sum of malathion and malaoxon expressed as malathion)/ beans Dodine/ kiwi Pyrimethanil /kiwi Acetamiprid/ tea Lambda-cyhalothrin (includes gamma-cyhalothrin (sum of R,S and S,R isomers)/ tea Abamectin (sum of avermectinB1a, avermectin B1b and delta-8,9 isomer of avermectin B1a, expressed as avermectin B1a)/ tea	1 1 1 1 1 1 1

9.4. 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 Veterinary 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 Saku (ARC).

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

In 2020 HB and ARC was participating in the pesticide residues control program. They analyse the pesticide residues in the food samples that was taken by Veterinary and Food Board.

Table 44: 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	2020: EURL EUPT-FV-SC03 EURL EUPT-CF14 EURL EUPT-FV22 EURL EUPT-SRM15 EURL EUPT-AO15
Estonia	Tartu Laboratory of Estonian Health Board	L019	Since 28.12.1999	EAC – Estonian Accreditation Centre	2019: EUPT-FV21 EURL PT AO14 EU PT SRM 14

Finland

10.1. 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)

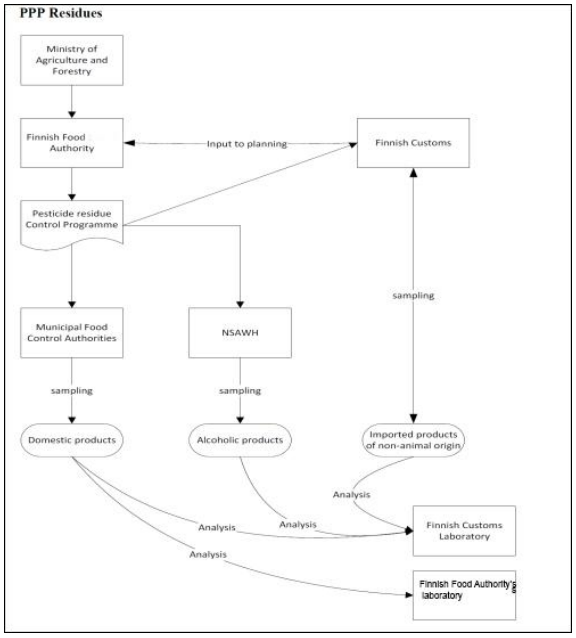

Figure 3: Control system of pesticide residues in Finland

10.1.1. Objective

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

10.1.2. Design

The control 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. 2019/533) 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 2019/533);
- 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.

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

10.2.1. Key findings

The sampling for pesticide residue control program was carried out in accordance with the plan of 2020. The summary of samples and their results are presented in (Table 45 - Table 51). 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 45: Summary of samples taken in 2020 by product class

Samples	Total	Without Residues	%	With Residues below MRL	%	Exceeding MRL	%	Non-Compliant	%
Cereals	108	86	79.6	15	13.9	7	6.5	7	6.5
Baby food	49	49	100	0	0	0	0	0	0
Vegetables	556	346	62.2	200	36.0	10	1.8	9	1.6
Fruits, nuts and other plant products	682	279	40.9	369	54.1	34	5.0	20	2.9
Animal products[(a)]	21	21	100	0	0	0	0	0	0
Processed products [(b)]	232	133	57.3	85	36.6	14	6.0	11	4.7
Total*	**1,648**	**914**	**55.4**	**669**	**40.6**	**65**	**3.9**	**47**	**2.9**

(a): Poultry fat and bovine liver as regulated in (EU) 2019/533

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

*Percentages calculated from sum of classified samples, total 1,648

Additionally, 185 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 46: Summary of the number of samples taken, MRL exceedances and non-compliances in 2020 by region of origin

Origin	Samples	%	Exceeding MRL	%	Non-compliant	%
Domestic	150	9,1	0	0	0	0
EU	702	42,6	13	20	7	14,9
Third countries	774	47,0	52	80	40	85,1
Unknown	22	1,3	0	0	0	0
Total	**1,648**	**100**	**65**	**100**	**47**	**100**

Table 47:: Summary of organic samples taken in 2020 by product class and results

Samples	Total	Without residues	%	With Residues below MRL	%	Exceeding MRL	%	Non-compliant	%
Fruits and nuts, and other plant products	76	76	100	0	0	0	0	0	0
Vegetables	90	86	95.6	4	4.4	0	0	0	0

Cereals	15	14	93.3	1	6.7	0	0	0	0
Baby food	38	38	0	0	0	0	0	0	0
Animal products	0	0	100	0	0	0	0	0	0
Other plant products	77	77	100	0	0	0	0	0	0
Total	**296**	**291**	**98.3**	**5**	**1.7**	**0**	**0**	**0**	**0**

10.2.2. Interpretation of the results

The total number of samples analysed under the EU coordinated and national programmes was 1,648, which is about 6 % less than previous year. The distribution of all the samples by origin was domestic 9 %, EU 43 % and third countries 47 %. Actually, the percentage of the samples 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.

45 % of all samples had residues of one or more pesticide active ingredients. Exceedances of MRLs were found in 65 samples, of which 47 were non-compliant (measurement uncertainty taken into consideration; number including surveillance and enforcement samples). The total percentage of non-compliances (2,9 %) is more than previous year (1,5 %).

The non-compliant lots originated from 16 different countries. Highest number of non-compliances were in products from China (10 samples) and Israel (8 samples), followed by Pakistan (4 samples) and Thailand (4 samples).

The persentage of samples above MRL was highest in the food group cereals (6,5 %, 7 samples) followed by processed products (6 %, 14 samples) and fruits, nuts and other plant products (5.0 %, 34 samples).

The product with highest number of MRL-exceedances was oranges (9 samples) followed by rice (7 samples) and ginger root (5 samples).

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

Total of 296 samples from organic production were analysed. Five of them had residues above reporting level. Residue levels didn't exceed MRLs set for conventional farming. One of the lots (beer) was put on the market as a conventional product.

10.2.3. Comparability with the previous year results

Table 48: 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
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

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

10.3.1. 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.

10.3.2. ARfD exceedances

The acute reference dose (ARfD) calculated according the pesticide residue intake model (PRIMo 3.1) of the European Food Safety Authority EFSA was exceeded in 12 of the samples of which 4 lots were oranges from Israel. All lots were recalled from the market. In addition, 45 lots with ethylene oxide residues were detected, and since there's no toxicological data available, recalls were made.

10.3.3. Actions taken

In 2020, 2.9 % of the samples (47 samples in total) were found to be non-compliant with the EU MRLs. For 13 samples RASFF notifications and for 4 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 49).

Table 49: Actions taken for samples non-compliant with the EU MRLs

Action taken	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	13	Number of RASFFs notified by Finland for pesticide residues
OFIS notifications	4	
Lot recalled from the market	57	45 lots of foodstuffs with ethylene oxide residues included
Lot withdrawn from the market	24	
Rejection of a non-compliant lot at the border	20	
Warnings to responsible food business operator	52	
Marketing as organic prohibited	1	

10.4. 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 50).

Table 50: 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-FV22, EUPT-CF14, EUPT-FV-SM12, EUPT-FV-SC04, EUPT-AO15, EUPT-SRM15, Bipea 22-0619
FI	Finnish Food Authority	FI03	4 March 2021	FINAS-Espoo, Finland	EUPT-SRM15, EUPT-AO15, EUPT-CF14, EUPT-FV22, FAPAS 19283, FAPAS 09133

10.5. Processing factors

The processing factors used by national competent authorities to verify the compliance of processed products with EU MRLs are presented in Table 51.

Processing factors for processed products were mainly acquired from the database of Bundesinstitut fur Risikobewertung (BfR). In the cases were processing factors were not available in the database, the crude estimate based on Table 51 was used.

Table 51: 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.

10.6. 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.

10.7. 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.

France

11.1. Objective and design of the national control programme

11.1.1. Objective

- DGCCRF

The General Directorate for Competition Policy, Consumer Affairs and Fraud Control (DGCCRF), within the Ministry of Economics and Finance, is the competent authority for the enforcement of pesticide residues monitoring on marketed food from non-animal origin. The DGCCRF draws up the annual national monitoring programme for pesticide residues in and on 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.

- 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.

11.1.2. Design

- 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 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[4].

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 (part of sums included) 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.

- DGAL

Control of primary plant products (Table 52 and Table 67)

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 September 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 2020 "surveillance" programme was aimed at late harvest apples, watercress, leafy vegetables, minor oilseeds, beetroots, tree nuts and table grapes.

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 52: Distribution of samples by culture (detail by plant product) – 2020 national "control" programme

Plant product	Number of samples	Plant product	Number of samples
Aromatic herbs	6	Miscellaneous fruits	10
Basil	2	Dessert banana	10
Chives	2	**Oilseeds**	**47**
Coriander leaves	1	Rapeseeds/canola seeds	47
Spearmint	1	**Peas and beans**	**58**
Berries and small fruits	**55**	Beans (fresh seeds without pods)	12
Blackcurrants	5	Beans (with pods)	31
Blueberries	2	Peas (without pods)	15
Raspberries	7	**Root and tuber vegetables**	**64**
Strawberries	41	Carrots	2
Cereals	**72**	Parsnip_roots	4
Barley	4	Potatoes	35
Maize/corn	36	Radishes	20
Oat	2	Salsifies	3
Triticale	1	**Solanacea**	**108**
Wheat	29	Aubergines/eggplants	29
Citrus fruits	**15**	Sweet peppers/bell peppers	28

Plant product	Number of samples	Plant product	Number of samples
Grapefruits	2	Tomatoes	51
Lemons	5	**Stems/stalks eaten as vegetables**	**12**
Mandarins	5	Florence fennels	1
Oranges	3	Globe artichokes	10
Cucurbits fruiting vegetables	**4**	Leeks	1
Butternut squashes	1	**Stone fruits**	**89**
Courgettes	1	Cherries (sweet)	19
Cucumbers	1	Nectarines	4
Melons	1	Peaches	31
Cultivated fungi	**1**	Plums	35
Cultivated_fungi	1	**Sugar plants**	**7**
Leafy vegetables	**61**	Sugar beet roots	1
Baby leaf crops	1	Sugar canes	6
Chinese cabbages/pe-tsai	2		
Escaroles	1		
Kales	1	**Total**	**609**
Lamb's lettuces/corn salads	1		
Lettuces	30		
Spinaches	25		

Table 53: Distribution of samples by culture (detail by plant product) – 2020 national "surveillance" programme

Product group	Plant product	Number of samples
Berries and small fruits		**22**
	Table grapes	22
Head cabbages and similar		**2**
	Head cabbages	1
	Red cabbages	1
Leafy vegetables		**49**
	Baby leaf crops	1
	Escaroles	1
	Lamb's lettuces/corn salads	2
	Lettuces	11
	Spinaches	8
	Watercresses	26
Oilseeds		**30**
	Gold of pleasure seeds	4
	Linseeds	23
	Mustard seeds	1
	Poppy seeds	2
Pome fruits		**35**
	Apples	35
Root and tuber vegetables		**26**
	Beetroots	26
Tree nuts		**36**
	Almonds sweet	1
	Hazelnuts	6

	Sweet Chestnut	8
	Walnuts	21
Total	**200**	

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]", 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 and fipronil in bovine's liver,
- fipronil in poultry's muscle and skin,
- fipronil 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 2020, as part of DGAL's control programme for food of animal origin, 1,518 samples (not counting samples analysed for chlordecone specifically) were taken and analysed out of 1,645 samples planned (Table 54).

Table 54: Distribution of samples by animal species or type of products

Animal species or type of products	Matrice	Number of samples planned in 2020	Number of samples taken in 2020
Bovine	Kidney fat	350 for organochlorine (OC), organophosphorus (OP) pesticides and pyrethroids (Pyr)	322 for organochlorine (OC), organophosphorus (OP) pesticides and pyrethroids (Pyr)
	Liver	75 for fipronil and 75 for glyphosate	64 for fipronil and 64 for glyphosate
	Muscle	50 for carbamates	46 for carbamates
	Cow milk	60 for OC, OP & Pyr	58 for OC, OP & Pyr
Porcine	Kidney fat	300 for OC, OP & Pyr	288 for OC, OP & Pyr
	Muscle	50 for carbamates	43 for carbamates
Ovine and caprine	Kidney fat	80 for OC, OP & Pyr	72 for OC, OP & Pyr
	Muscle	10 for carbamates	8 for carbamates
	Goat milk	10 for OC, OP & Pyr	10 for OC, OP & Pyr
Equine	Kidney fat	7 for OC, OP & Pyr	6 for OC, OP & Pyr
	Muscle	3 for carbamates	3 for carbamates
Poultry	Muscle and skin	235 for OC, OP & Pyr	223 for OC, OP & Pyr
	Muscle and skin	72 for fipronil	56 for fipronil
	Muscle and skin	20 for carbamates	18 for carbamates
Rabbit	Muscle	5 for OC & Pyr	6 for OC & Pyr
	Muscle	3 for carbamates	2 for carbamates
Farmed game	Muscle	5 for OC & Pyr	3 for OC & Pyr
Aquaculture	Muscle	40 for OC, OP & Pyr	37 for OC, OP & Pyr
Hens eggs	Eggs	70 for OC, OP & Pyr et 70 for fipronil	71 for OC, OP & Pyr et 68 for fipronil
Quail eggs	Eggs	5 for OC, OP & Pyr	4 for OC, OP & Pyr
Honey	Honey	50 (pesticides listed above)	46 (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);
- equine (perirenal 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 four laboratories of the laboratory network. These four laboratories are approved by the Ministry of Agriculture as official laboratories.

NB: In Guadeloupe, because of the Covid crisis and logistical issues (samples transmission to laboratory issues), both the control programme for food of animal origin and primary plant products and soil could not entirely be carried out in 2020, they are carried forward to 2021.

In 2020, as part of, 2,114 samples were taken and analysed (Table 55).

Table 55: Distribution of samples by animal species or type of products

2020	Guadeloupe	Martinique
Animal species or type of product	**Number of samples taken in 2020**	**Number of samples taken in 2020**
Bovine	650	926
Fish product	1	12
Ovine-Caprine	2	90
Swine	112	40
Equine	1	-
Poultry	30	102
Egg	58	90
TOTAL	854	1260

In 2020, as part of DGAL's control programme for primary plant products and soil, 463 samples were taken and analysed (Table 56).

Table 56: Distribution of samples by products

2020	Guadeloupe	Martinique
	Number of samples taken in 2020	**Number of samples taken in 2020**
Plants	15	278
Soils	-	156
TOTAL	15	448

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

11.2.1. Key findings

- **DGCCRF**

In 2020, 4,490 samples of marketed food from plant origin have been analysed. This represents 7 samples per 100,000 inhabitants**.**

Half of the 4,490 samples were of French origin. Among them, 26.5% have been taken in overseas France, 39% were originated from Third Countries and 11% were products from the European Union.

For import control, the samples came from 10 countries: Kenya (187 samples), China (156), Dominican Republic (66), Viet Nam (39), India (19), Uganda (14), Turkey (7), Egypt (3), Thailand (3), Japan (1) and Malaysia (1). The main contributors for vegetables were Kenya (185 samples), Dominican Republic (66), and India (19), while Vietnam was the main contributor for fruits (30 samples).

The 4,490 samples were distributed as follows:

- - 50.3% vegetables and vegetable products [36.2% of them in the control programme; vegetables represent 62.3% of the controls on imports],

- - 24.7% fruits and fruit products [68.6% of them in the "surveillance" programme; fruits represent 7.1% of the controls on imports],
- - 10% cereals and cereal products,
- - 5.8% teas, coffee, herbal infusions, cocoa and carobs, [30.2% of the controls on imports],
- - 2.9% pulses,
- - 1.8% oilseeds and oil fruits,
- - 1.5% wines,
- - 1.1% spices,
- - 0.8% other products,
- - 0.5% suger plants,
- - 0.3% honey,
- - 0,2% babyfood,
- - 0.1% hop.

More than 90 distinct types of products were analysed among vegetables and vegetable products and more than 60 among fruits and tree nuts.

Organic samples (922 samplings) were taken in every programme, from all origins and all types of products (raw and processed).

The main results are detailed in Table 57. The highest percentages of samples containing residues above the quantification limit, of 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 almost three-quarters of the analysed samples from imports contained at least one residue above the limit of quantification (LOQ) and reaching a non-compliance rate of 6.3%.

At least one residue could be quantified in 42.2% of all the samples, with an exceedance of MRLs for 6.1% 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 3.9%.

Table 57: Summary results

Control programme	Number of samplings	% > LOQ[(a)]	% > MRL (before uncertainty)	% of non-compliance to MRL
"Surveillance"	2455	45.9	3.1	1.7
Control	1539	26.9	9.7	6.7
Control on imports	496	71.8	10.3	6.3
Total	4490	42.2	6.1	3.9

[(a)]LOQ: limit of quantification

- **DGAL**

Control programme in primary plant products

As part of DGAL's control programme for pesticide residues in primary plant products, 658 samples were analysed, including 609 at harvest, the results of which are presented in this report. 10 were non-MRL compliant, after taking account of analytical uncertainty (i.e., 1.6 % of samples taken nation-wide, all cultures).

Table 58: Control programme 2020 – Main results

MRL Compliant/Non-compliant	Number of samples
Compliant	599

MRL Compliant/Non-compliant	Number of samples
Non-compliant	10
Total	609
Percentage of Non-compliance	**1.6%**

Surveillance programme in primary plant products

As part of DGAL's surveillance programme for pesticide residues in primary plant products, 210 samples were analysed, including 200 at harvest, the results of which are presented in this report. 17 were non-MRL compliant, after taking account of analytical uncertainty (i.e., 8.5 % of samples taken nation-wide, all cultures).

Table 59: Surveillance programme 2020 – Main results

MRL Compliant/Non-compliant	Number of samples
Compliant	183
Non-compliant	17
Total	200
Percentage of Non-compliance	**8.5%**

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

Out of 1,518 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, 2114 samples were taken, analysed and 80 were non-MRL compliant (Table 60).

Table 60: Programme 2020 on food of animal origin – Main results

2020	Guadeloupe		Martinique	
Animal species or type of product	**Number of samples taken in 2020**	**Number of non-MRL compliant samples**	**Number of samples taken in 2020**	**Number of non-MRL compliant samples**
Bovine	650	12	926	57
Fish product	1	0	12	1
Ovine-Caprine	2	0	90	1
Swine	112	0	40	0
Equine	1	0	-	-
Poultry	30	0	102	0
Egg	58	0	90	9
TOTAL	854	12	1260	68

As part of DGAL's control and surveillance programme for primary plant products and soil, 463 samples were taken and analysed. Five plant samples intended for human consumption were non MRL compliant (Table 61).

Table 61: programme 2020 on primary plant products and soil – Main results

	Guadeloupe		Martinique	
2020	**Number of samples taken in 2020**	**Number of non-MRL compliant samples**	**Number of samples taken in 2020**	**Number of non-MRL compliant samples**
Plants	Cancelled	-	278	5
Soils	Cancelled	-	170	(Beware: there is no MRL for chlordecone in soil, it represents a level of contamination)
TOTAL	-		411	

11.2.2. Interpretation of the results

- **DGCCRF**

Half of all samples (2,227 samples, representing 50.6% of all the samples) contained detectable residues. They were distributed as follows: 53.6% of the "surveillance" samples, 33.6% of the control samples, and 79.6% of the control on imports. More specifically, 48.8% of the sampled vegetables contained detectable residues, 61% of fruits, 36% of cereals and cereal products, 58.3% of the analysed teas, coffee, herbal infusions, cocoa and carobs, 24.6% of wines, and 38.3% of oilseeds and oil fruits. In positive samples a mean of 3 detectable residues per sample was found, with a maximum number of 30 residues found in dried vine fruits from Turkey (no residue exceeded the MRL), followed by 26 residues in a green tea sample from China (7 of the detected residues exceeding the MRL, mostly while taking into account the measurement uncertainty), and 26 residues in chili peppers from Vietnam (with 10 levels being above the MRL after taking into account the measurement uncertainty). 0.7% of all the analysed samples contained at least 10 detectable residues, and 9.5% contained 5 or more detectable residues.

Quantifiable residues were found in 1,929 samples (43%): the highest contribution came from the import controls (71.8% of all the samples).

In accordance with the sample distribution, the highest proportion of quantifiable residue-containing products were fruits (55% of all these samples), teas, coffee, herbal infusions, cocoa and carobs (52.1%), vegetables (41.5%), cereals and cereal-based processed food (30%), oilseeds and oil fruits (29.6%), wines (23.1%) and spices (18%).

21 samples (0.7% of the analysed samples) contained at least 10 residues exceeding the LOQ, with a maximum of 25 residues quantified in in chili peppers from Vietnam (among 26 detected residues, see above). 255 samples (13.2% of all the samples exceeding the LOQ) contained at least 5 quantifiable residues.

The "surveillance" samples showed, in 2020, the lowest percentages of MRL exceedance (3.1%) and non-compliance with the R396/2005 (1.7%).

The highest figures were obtained for import control, both in terms of samples containing residues above the LOQ (71.8% of the control on import samples) and samples exceeding the MRLs (10.3%), leading to a non-compliance rate of 6.3% 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. 62.7% of the control on imports samples were vegetables, 30.2% tea, 6.9% fruits. A high rate of 79.6% of the controlled products on imports, originating from all the targeted countries, exhibited detectable residues. On average, these import samples contained 2.8 residues, and 44% of the samples contained 3 or more than 3 residues, with 10 samples containing between 10 and 26 residues. More than 25% of the non-compliant samples originated from Dominican Republic. The main non-compliant products were chili peppers (from several countries, 29.4% of the non-compliant samples), beans with pods (from Kenya, 17.6%), and tea from China (14.7%).

2,260 samples of vegetables, covering more than 100 distinct products or group of products, were analysed. Beans (10% of the vegetable samples), potatoes (6.5%), carrots (6.1%), cucumbers (6%), dasheen taros (5.9%), yams (5.4%), sweet potatoes (4.5%), courgettes (4%), chili peppers (3.6%), celeriacs (3.2%) and mushrooms (3%) were the main sampled products. Half oh the analysed vegetable were taken in the "surveillance" programme, 36.2% in the control programme and 13.7% controlled on imports.

1,110 samples contained at least one detectable residue, representing an average of 1.2 residues on analysed vegetables. 123 samples showed 5 and more residues with a maximum of 26 residues found in a sample of chili peppers from Vietnam (8 residues being above the MRLs).

949 samples contained at least one quantifiable residue (42% of the analysed vegetables).

166 samples exceeded the MRLs without taking into account the measurement uncertainty, leading to 104 cases of non-compliance after taking into account the measurement uncertainty, for 25 distinct

products. The highest rates of non-compliance were found for dasheen tarots (29.8% of the non-compliant samples of vegetable), chilli peppers (12.5%), tannias (11.5%), beans with pods (6.7%) and yams (6.7%). 65.4% of the non-compliant samples were taken within the control programme, 22.1% controlled on imports and 12.5% within the "surveillance" programme.

1,110 samples were reported as fruits, covering 62 distinct products and including 79 fruit-based products such as dried fruits, purees or cider. The main analysed products were apples (7.7% of the analysed fruits), pears (6.9%), oranges (6%), clementines (5.7%), kiwis (5.4%), and pomelos (5.1%).

68.6% of the fruit samples were taken within the "surveillance" programme, 28.4% within the control programme, and 3 % as control on imports.

61% of fruits contained detectable residues, 55% at least one quantifiable residue, and 5.3% of all the sampled fruits were above the MRLs without measurement uncertainty.

In positive samples, a mean of 3.7 residues were detected, half of the samples containing 2 or less than 2 residues. 15 samples contained at least 10 detectable residues. The highest numbers of residues per sample were 30 and 18 residues in dries vine fruits from Turkey (none of these residues being above the MRLs), 14 for pears from Italy (none of these residues being above the MRLs), and 13 for cherries from France (none of these residues being above the MRLs). Samples with quantifiable residues contained on average 3.2 residues, more than half of the samples (54.3%) containing at least 3 quantified residues.

Only 33 samples (3%) of fruits were non-compliant with MRLs: 8 of them were passionfruits (24.2%), 6 were pitayas (18.2%) and 3 were pomegranates (9.1%). 45.5% were taken within the "surveillance" programme, 39.4% within the control programme and 15.1% as import control.

Cereals and cereal products represented 10% of all samples. 80% were sampled within the "surveillance" programme. 36% of cereal and processed food samples contained at least one detectable residue, and 30% quantifiable residues. 44.2% of rice, one third of barley, 38.4% of wheat samples contained detectable residues, as well as 29.3% of the processed wheat flours. More than 5 residues were detected in 2.9% of the samples (from 5 to 9 residues) and quantified in 2% (9 samples out of 450). 75.2% of the residue-containing samples were compliant with the MRLs due to measurement uncertainty. 12 samples including 8 samples of rice were non-compliant with R396/2005 (2.7% of the sampled cereals). Piperonyl butoxide is included in the list of searched residue and compliance is evaluated as regard to national MRLs. 102 samples contained piperonyl butoxide, above the LOQ for 90.2% of them.

129 pulses were sampled in 2020 (2.9% of all the samples). 42.6% of the samples contained detectable residues and 33.3% quantified residues. In 9 samples (7% of the sampled pulses) including 3 borlotti, 2 peas, 2 lentils, 1 beans and 1 broad beans, residues have been quantified above the LMR. Only 3 samples were non-compliant with the MRL set for chlorpropham on borlotti, profenophos on peas and glyphosate on beans, all the other residues levels being under the corresponding MRLs.

Among the 81 oilseeds, oil fruits and processed products from oilseeds and oil fruits sampled in 2020 (1.8% of all the samples), 31 exhibited detectable residues, including 7 oils and 24 seeds. 11 distinct residues were detected in these products. Ethylene oxyde was the main residue detected; it was found in 19 samples, followed by chlorpyriphos found in 4 samples. 79% of these samples were collected within the "surveillance" programme. 11 samples were non-compliant with the EU MRLs including 9 samples of sesame seeds containing ethylene oxide.

Honey and sugar plants from organic and non-organic productions were targeted and represented 0.8% of the samples. All samples were compliant with the EU MRLs.

65 wines were sampled: residues were detected for 16 of them and above the quantification limit in 15 cases with an average of 1.9 quantified residues. Dimethormorph was found in 7 samples, pyrimethanil in 5 samples, fenhexamid in 4 samples, boscalid and metalaxyl in 2 samples. No sample was non-compliant with R396/2005.

Detectable residues were found in 9 samples of spices (37.5% of the sampled spices), 3 of them originating from organic production and containing residues of unauthorised pesticides. Only one of these organic samples was non-compliant with MRLs.

9 samples of baby food (0.2% of the total samplings) were analysed. All samplings were compliant with the 0.010 mg/kg limit set for baby food products (one sample contained dithiocarbamates under LOQ).

Only 3 samples of hops were analysed in 2020. Residues were quantified in all of them. One sample was non-compliant with MRL for promocarb.

More than half of the samples of tea, coffee, herbal infusions, cocoa and carobs were sampled for control on imports, and 35.1% were sampled within the control programme. 58.3% of the sampled products contained detectable residues, and 52.1% quantifiable residues. 8 samples were non-compliant with the R396/2005 (3.1%). Up to 26 residues could be detected by sample, and up to 21 could be quantified. One-third of all the analysed tea, coffee, herbal infusions, cocoa and carobs contained up to 3 detectable or quantifiable residues.

Organic products of all types (raw or processed food) represented 20.5% of all the samplings. For the majority of them, no residue could be detected. Residues were detected in 140 samplings (15.2% of the organic samplings), above LOQ for 87 of them (9.4% of the organic samples). More than 2 residues were detected only in 1.8% of the organic samplings (one samplings containing 11 residues, and 3 containing between 6 and 9 residues). 4.2% of the organic samplings (teas, spices, fruits, cereals, pulses) were non-compliant with the 0.01 mg/kg limit, which represents less than 0.1% of all the samplings.

11.2.3. Comparability with the previous year results

- **DGCCRF**

In 2020, the control pressure was maintained to meet consumer expectations for a better protection, despite a reduction of a quarter of the samples taken compared to 2019, due to the degraded conditions of the health crisis (4490 samples in 2020 versus 6039 in 2019).

The proportion of samplings by control programme was almost constant between 2019 and 2020, with one third of the samples taken in the control programme and 11% for controls on import. The scope of residues analysed was the same as in 2019. Only the type of analysed products differs between years.

As in 2019, half of the samples originated from France while the proportion of those from Third countries increased from 36% to 39%. The part of samples taken in overseas France has increased to raise 26.5% in 2020 compared to 19% in 2019 due to an evolution in overseas sampling capability and to the targeting of tropical commodities associated with a significant risk of exposure.

Fruits and vegetables remained the main products analysed in all programmes (75% in 2020 and 73% in 2019).

The proportion of organic samples continues to increase in control programmes (20.5% in 2020 compared to 18.6% in 2019), in relation to a larger availability of these products on the market. However, the rate of 4.9% of non-compliance is significantly higher than the rate calculated for previous years (1.9% in 2018 and 1% in 2019), suggesting 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. The specific pattern observed for control on imports (high number of non-compliant samples) was significantly lower than the one observed on the previous year (6.3% in 2020 versus 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 2020, 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 slightly different from the percentages obtained in the previous years. The number of samples containing at least one residue above the LOQ was for example significantly increased (42.2% in 2020 vs. 34.4% in 2019). At the same time, the rate of MRL exceedance decreased by 4.4% and by 1% before and after taking into account the measurement uncertainty, respectively. Considering all plans and all type of commodity, 3.9% of non-compliance was observed in 2020, compared to 4.9% in 2018 and 3.5% in 2017 and 2016. This decrease might be due to the targeting of products associated with the decrease of samples taken.

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. While in 2018 and 2019, samples of vegetables and spices were the main ones to be non-compliant with MRL(s), in 2020 the non-compliances do not give a trend by type a food.

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.

- **DGAL**

For pesticide residues in primary plant products, the percentages of MRL non-compliance in 2020 were lower to those of 2019, concerning the control and the surveillance program.

In animal origin food products, as in 2019 and 2020, all the samples were compliant.

For chlordecone:

- Between 2019 and 2020, in the animal sectors, the analysis compliance rates found remained stable: the compliance rate was 97% in 2018 and 99% 2019 in Guadeloupe, and 95% in 2019 and 2020 in Martinique.
- In the plant sectors, between 2019 and 2020, due to the Covid crisis the number of samples taken is very low for Guadeloupe. In Martinique, the compliance rate found was stable: 99.6% in 2019 and 2020.

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

11.3.1. Possible reasons for non-compliant samples

- **DGCCRF**

The possible reasons for MRL non-compliance (with measurement uncertainty taken into account) are shown in Table 62. If multiple reasons are possible, products are listed for the main one.

Table 62: 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)]	Parsnip roots	Linuron	2	FR
	Celeriacs	Linuron	6	FR
	Wheat grain	Chlorpyrifos-methyl	2	FR
	Rice	Chlorpyrifos-methyl	1	FR
	Cassava roots	Tetradifon	1	GP
	Cucumbers	DDT	1	FR

Reasons for MRL non-compliance	Food product	Residue	Frequency[a]	Comments
	Qunices	Parathion/Ethion	1	FR
GAP not respected: use of a pesticide not authorised in organic production	Herbal tea	Tebuconazole	1	TR
	Mallow leaves	Acetamiprid	1	AL
	Common bananas	Cypermethrin	1	CI
	Basil	Metalaxyl	1	EG
	Common wheat grain	Pirimiphos-methyl	1	FR
	Black pepper	Chlorpyrifos	1	MG
	Tea leaves	Chlorpyrifos	4	CN
	Seed oils	Cypermethrin	1	MA
	Radishes	Propamocarb	1	FR
	Herbal tea	Thiamethoxam	1	IN
	Tea leaves	Anthraquinone	2	NP
	Other plant oils	Metalaxyl	1	LK
	Other plant oils	Chlorpyrifos	1	LK
	Food supplements	Cypermethrin	1	IN
	Strawberries	Azoxystrobin	1	TR
	Processed oat-based flakes	Piperonyl butoxyde*	1	FR
	Hops	Chlorantraniliprole	1	US
	Apricots	Carbendazim	1	TR
	Candied fruits	Piperonyl butoxyde	1	TR
	Dried fruit	Azoxystrobin	1	CL
	Sunflower seed oil	Piperonyl butoxyde*	1	FR
	Dried herbs	Linuron	1	TR
	Wheat flour white	Piperonyl butoxyde*	2	FR
	Herbal tea	Chlorpyrifos	2	IN
	Saffron	Tebuconazole	1	IR
	Almonds	2,4-D	1	CA
	Herbal tea	Ametoctradin	1	FR
	Chili peppers	Chlorpyrifos	1	MG
	Almonds	Thiophanate-methyl	1	TN
	Rapeseeds	Lambda- cyhalothrine	1	UA
	Tea leaves	Piperonyl butoxyde	1	CN
	Powdered extract	Propamocarb	1	CN
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)	Dasheen taros	Chlordecone	6	FR
	Tannias	chlordecone	4	FR
	Cucumbers	Aldrin-dieldrin	1	FR
	Butternut	Aldrin-dieldrin	*1***	FR
	Sweet potatoes	Chlordecone	2	FR
Use of a pesticide on food imported from third countries for which no import tolerance was set[c]	Variety of fruits and vegetables	Acephate	6	VN, KE, CO or EC
	Tea leaves	Acetamiprid	2	CN
	Rice or tea	Buprofezin	4	IN or CN
	Longans, passion fruits and tannias	Carbendazim	3	TH, CO and CR
	Chili peppers or tomatos	Chlorfenapyr	4	DO, LA, VN

Reasons for MRL non-compliance	Food product	Residue	Frequency[(a)]	Comments
				and EG
	Variety of fruits and vegetables	Chlorpyrifos	13	Different origins
	Passion fruits and Pitayas	Cypermethrin	2	CO and VN
	Chili peppers and passion fruits	Dimethoate	2	UG and CO
	Pineapples	Ethephon	2	GH
	Sesame seeds, spices or buckwheat	Ethylene oxyde	12	IN or CN
	Chili peppers or Tannias	Fipronil	3	DO or CR
	Beans or passion fruits	Flutriafol	3	PE, KE and CO
	Chili peppers, pitayas or rice	Hexaconazole	4	VN or LA
	Tea and passion fruits	Imidacloprid	2	CN and CO
	Tea, passion fruits and chili peppers	Lambda-Cyhalothrin	5	VN, CN or UG
	Dasheen taros or beans	Metalaxyl	15	DM, KE or CR
	Beans, pitayas, and passionfruits	Methamidophos	3	KE, EC and CO
	Aubergines and passion fruits	Methomyl	2	DO and CO
	Chili peppers and guavas	Omethoate	2	UG and BR
	Granate apples, passion fruits and yams	OPP	3	TN, CO and CR
	Chili peppers and passion fruits	Permethrin	3	VN
	Variety of fruits	Prochloraz	4	PE, GH, TR and MY
	Chiili peppers, aubergines or peas	Profenofos	5	VN, UG, LA, DO and EG
	Beans and pitatyas	Propamocarb	2	MA and VN
	Gojiberry and passion fruits	Propargite	2	CN and VN
	Okra and pitayas	Tebuconazole	2	IN and EC
	Tannias or different tropical fruit	Thiabendazole	9	DO, DM, CR, CO, MX or TR
	Rice	Thiamethoxam	3	IN
	Chili peppers or tea	Tolfenpyrad	4	LA, VN or CN
	Rice or chili peppers	Tricyclazole	6	IN, VN or LA

a) Number of cases.
b) Applicable only for food products produced in the EU.
c) Highest frequency observed / For imported food only.
*: not allowed in France.
**organic products

- **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
Contamination during handling, storage or transport of food item/crop		3
	Chlorpropham / Beans (with pods)	1

Reasons for MRL non-compliance	Pesticide/food product	Frequency
	(contamination possibly during storage of the sample)	
	Chlorpropham / Wheat	1
	Mesotrione/Maize-corn	1 (the same sample with prosulfocarbe)
Environmental contamination		1
	Prosulfocarb/Maize-corn	1 (the same sample with mesotrione)
Good Agricultural Practice (GAP) not respected: use of a pesticide not approved in the EU		1
	Dimethoate-Omethoate/Tomatoes	1
	Linuron-Tetradifon / Coriander leaves	1
Good Agricultural Practice (GAP) not respected: use of an approved pesticide not authorised on the specific crop		2
	Cyazofamid / Sweet peppers-bell peppers	1
Natural occurrence		1
	Dithiocarbamates / Radishes	1
Unknown		1
	Fluazifop-P / Beans (fresh seeds without pods)	1
Use of pesticide according to authorised Good Agricultural Practice (GAP): a corresponding routine MRL application (EFSA-Q-2018-00328) is on clock-stop, meanwhile, earlier applications on rape seed are recommended		2
	Propyzamide / Rapeseeds-canola seeds	2
Total general		**10** (the sample maize is counted once)

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

Reasons for MRL non-compliance	Pesticide/food product	Frequency
Contamination during handling, storage or transport of food item/crop		1
	Imazalil / Beetroots	1
Environmental contamination		14
	Prosulfocarb / Apples	5
	Prosulfocarb / Watercresses	9
Good Agricultural Practice (GAP) not respected: use of an approved pesticide not authorised on the specific crop		1
	Aclonifen / Lettuces	1
Unknown		3
	Flonicamid / Hazelnuts	1
	Lambda-cyhalothrin / Watercresses (possibly use of an approved pesticide not authorised on the specific crop not demonstrated)	2 (the same samples with prosulfocarbe)
Total		**17** (the 2 samples of watercresses are 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.

11.3.2. ARfD exceedances

- **DGCCRF**

ARfD exceedances notified following official controls on the market:

- Ethephon in pineapples from Ghana (3 samples) and Benin (1 sample): 114 to 708% of ARfD children, 33 to 207% of ARfD adults,
- Omethoate in peppers from Uganda: 173 ARfD children,
- Dieldrin in cucumbers from France: 205% ARfD children,
- Fosthiazate in potatoes from France: 280% ARfD children,
- Flonicamid in cucumbers from France: 114% ARfD children,
- Methiocarb in sweet peppers from Morocco: 2737% ARfD children, 750% ARfD adult.
- DGAL

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

- Dimethoate and Omethoate in tomatoes from Mayotte Island (informal trade): 504% ARfD children, 137% ARfD adult;
- Linuron in lettuces and coriander leaves: an acute risk cannot be ruled considering that consumer risk assessment was not finalized and no toxicological reference values were established.

11.3.3. Actions taken

- **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	18	RASFF notifications: 2020.0054, 2020.0625, 2020.1111, 2020.1311, 2020.2892, 2020.4201, 2020.4777, 2020.4858, 2020.4883, 2020.4923, 2020.5051, 2020.5054, 2020.5111, 2020.5185, 2020.5439, 2020.5443, 2020.5466, 2020.5497.
Administrative sanctions (fines)	17	
Administrative warnings	71	

Action taken	Number of non-compliant samples concerned	Comments
Consignments	1	
Rejection / Destruction of a non-compliant lot at the border	31	

- **DGAL**

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

The following actions were implemented:

- 36 administrative warning;
- 1 consignment of crop with sample for product release testing, followed by the release of the crop;
- 2 batches recalled from the market;
- 4 minutes sent to magistrate courts;
- 8 formal compliance warnings;
- 17 second checks scheduled in 2020.

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.

11.4. Quality assurance

- **DGCCRF**

Both mainland France's laboratories are accredited by the French Committee of Accreditation (COTAIL COAT). One overseas laboratory has been accredited at the end of 2012 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, 2017).

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 -	SCL974	-	-	Yes

Country	Laboratory		Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Code	Date	Body	
	Laboratoire de La Réunion				

- **DGAL**

The samples are analysed by six laboratories, two of which belong to SCL, Network of Laboratories run by DGCCRF, SCL34 and SCL75. The other four are private laboratories approved by the Ministry of Agriculture as official laboratories: CAMP, CAPINOV, CERECO and GIRPA. 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 six 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. 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 2020.

11.5. Processing factors

- **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

Germany

12.1. Objective and design of the national control programme

Germany's multi-annual national programme for control of pesticide residues in and on foodstuffs serves the planning of official controls to make sure that residues in food of animal or plant origin do not lead to 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.[18]

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

In 2020, Germany submitted a total of 18,901 samples (Table 68) tested for pesticide residues to EFSA of which 18,837 samples were relevant for the annual report by EFSA (18,422 surveillance and 415 follow-up enforcement samples). All these sample data fulfilled the requirements of EFSA's

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

business rules. Of these samples, 13,138 samples came from within the EU, 3,185 samples were produced outside of the EU and 2,514 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 %	Quan-tified	Quan-tified %	Quan-tified <MRL	Qua-tified <MRL %	>MRL	>MRL %	Non com-pliant	Non com-pliant %
EU	Objective	4,573	1,438	31.4%	3.135	68.6%	2,992	65.4%	143	3.1%	44	1.0%
EU	Selective	8,435	3,618	42.9%	4.817	57.1%	4,644	55.1%	173	2.1%	53	0.6%
EU	Suspect	130	56	43.1%	74	56.9%	53	40.8%	21	16.2%	20	15.4%
Third Country	Objective	908	225	24.8%	683	75.2%	638	70.3%	45	5.0%	21	2.3%
Third Country	Selective	2,044	784	38.4%	1.260	61.6%	1,068	52.3%	192	9.4%	115	5.6%
Third Country	Suspect	233	113	48.5%	120	51.5%	65	27.9%	55	23.6%	42	18.0%
Unknown	Objective	1,112	247	22.2%	865	77.8%	804	72.3%	61	5.5%	15	1.3%
Unknown	Selective	1,350	766	56.7%	584	43.3%	520	38.5%	64	4.7%	32	2.4%
Unknown	Suspect	52	27	51.9%	25	48.1%	20	38.5%	5	9.6%	3	5.8%
Total		18,837	7,274	38.6%	11,563	61.4%	10,804	57.4%	759	4.0%	345	1.8%

The samples included a total of 6,809,023 analyses, from which 5,265,048 were relevant for data analysis by EFSA.

The samples were analysed for a total of 655 different pesticides (excluding isomers and metabolites) of which 284 were detected at least in one sample. Residues of 170 individual pesticides exceeded MRLs.

In 7,078 (38,4%) surveillance samples no residues of pesticides were quantified (2019: 8.333 (42,3%); 2018: 7,633 (40,1%)). In 10,666 (57,9%) surveillance samples residues of pesticides were quantified at or below MRLs (2019: 10,557 (53,6%); 2018: 10,396 (54,6%)). 678 (3,7%) surveillance samples contained residues of pesticides exceeding MRLs (2019: 806 (4,1%); 2018: 1.006 (5,3%)). 280 (1,5%) samples had residues non-compliant with the MRL (2019: 309 (1,6%); 2018: 403 (2,1%)).

In 196 (47,2%) follow-up enforcement samples no residues of pesticides were quantified (2019: 190 (50,4%); 2018: 127 (46,5%)). In 138 (33,3%) follow-up enforcement samples residues of pesticides were quantified at or below MRLs (2019: 155 (41,1%); 2018: 113 (41,4%)). 81 (19,5%) follow-up enforcement samples contained residues of pesticides exceeding MRLs (2019: 32 (8,5%); 2018: 33 (12,1%)). 65 (15,7%) samples had residues non-compliant with the MRL (2019: 24 (6,4%); 2018: 19 (7%)).

2.623 (13,9%) samples of 18.837 were from products produced under the rules of organic farming. In 884 (33,7%) samples residues of pesticides were quantified. 51 (1,9%) 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 33,8% of all samples (2019: 34,9%; 2018: 39,4%, 2017: 37,7%).

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

In 2020, 1.8% of the samples (345 samples in total) were found non-compliant with the EU MRL. For 48 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)

Number of non-compliant samples	Action taken	Note
70	Administrative sanctions (e.g. fines)	
35	Follow-up (suspect) sampling	
1	Follow-up action due to a pesticide residue detected in an organic sample, violating the provisions laid down in the organic farming legislation	
4	Follow-up investigation	
2	Intensified checks before release	
5	Lot not released on the market	
16	Lot recalled from the market	
1	Movement restriction	
24	No action	
136	Other	
48	Rapid Alert Notification	Samples can be looked up on the RASFF Window using the search function: https://webgate.ec.europa.eu/rasff-window
3	Warnings	

The possible reasons for the MRL exceedances were submitted in only 304 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	Lamb`s lettuce	Nicotine	3
	Sesame seed	Nicotine	2
Administrative consequences	Vine leaves (grape leaves), ready to eat	Lufenuron (any ratio of constituent isomers)	1
Change in the legal limit throughout the year	Beans (with pods)	Iprodione	1
Contamination during handling, storage or transport of food item/crop	Bovine Liver	Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	1
	Peppers spices	Chlorates	1
Contamination from previous use of a pesticide: uptake of residues from the soil (e.g. persistent pesticides used in the past)	Honey	Glyphosate	3
	Kiwi	Glyphosate	1
	Kohlrabi	Flonicamid (sum of flonicamid, TNFG and TNFA)	1
	Pumpkins	Aldrin and Dieldrin (Aldrin and dieldrin combined expressed as dieldrin)	1
Cross contamination: spray drift or other accidental contamination	Currants (red, black and white)	Fluopicolide	1
Cross contamination: spray drift or other accidental contamination	Blueberries	Isofetamid	2
	Honey	Acetamiprid	1
Environmental contamination	Other terrestrial animal products	Hexachlorocyclohexane (HCH), alpha-isomer	1
		Hexachlorocyclohexane (HCH), beta-isomer	1
		Lindane (Gamma-isomer of hexachlorocyclohexane (HCH))	1
Good Agricultural Practice (GAP) not respected: use of a pesticide not approved in the EU	Kiwi	Iprodione	1
Good Agricultural Practice (GAP) not respected: use of	Cauliflower	Flonicamid (sum of flonicamid, TNFG and TNFA)	1

Reason for MRL non-compliant	Product	Substance	Frequency
Accidental an approved pesticide not authorised on the specific crop	Lamb`s lettuce	Nicotine	3
	Currants (red, black and white)	Flonicamid (sum of flonicamid, TNFG and TNFA)	1
	Kohlrabi leaves	Etofenprox	1
	Pomegranate	Acetamiprid	1
	Rice	Thiamethoxam	1
Good Agricultural Practice (GAP) not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Aubergines (egg plants)	Flonicamid (sum of flonicamid, TNFG and TNFA)	1
	Avocados	Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	1
	Beans (with pods)	Acequinocyl	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
		Phosphonic acid	1
	Cucumbers	Oxamyl	1
	Cumin fruit spice	Linuron	1
	Currants (red, black and white)	Tebufenozide	1
	Dill leaves, dry	Chlorpyrifos	1
	Kale	Cyantraniliprole	1
		Tebuconazole	1
	Kohlrabi leaves	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)	3
	Papaya	Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
		Phosphonic acid	1
	Pears	Chlorpyrifos	1
	Peas (with pods)	Dimethomorph (sum of isomers)	1
		Propineb (expressed as propilendiamine)	1
	Peppers	Acetamiprid	1
		Ethoprophos	1
		Flonicamid (sum of flonicamid, TNFG and TNFA)	2
		Fluvalinate, tau-	1
		Formetanate	1
		Formetanate hydrochloride	1
		Pirimiphos-methyl	1
		Pyridaben	3
	Peppers spices	Chlormequat (sum of chlormequat and ist salts, expressed as chlormequat-chloride)	1
	Pomegranate	Acetamiprid	1
		Prochloraz (sum of prochloraz and ist metabolites containing the 2,4,6-Trichlorophenol moiety expressed as prochloraz)	1
		Thiabendazole	1
	Poppy seed	Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1

Reason for MRL non-compliant	Product	Substance	Frequency
Accidental	Lamb`s lettuce	Nicotine	3
		Phosphonic acid	1
	Raisins	Iprodione	1
	Raspberries	Acequinocyl	1
	Rice	Buprofezin	1
	Sesame seed	Chlorethanol, 2-	2
		Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide)	2
	Spinach	Deltamethrin	1
		Flupyradifurone	1
	Table grapes	Bromuconazole (sum of diasteroisomers)	1
	Tea	Trimethyl-sulfonium cation, resulting from the use of glyphosate	2
	Tomatoes	Flonicamid (sum of flonicamid, TNFG and TNFA)	1
	Vine leaves (grape leaves), ready to eat	Acetamiprid	1
		Azoxystrobin	1
		Boscalid	1
		Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	1
		Carbofuran (sum of carbofuran and 3-hydroxy-carbofuran expressed as carbofuran)	1
		Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb, Mancozeb, Metiram, Propineb, Thiram and Ziram)	1
		Fenpropathrin	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	2
		Metalaxyl including other mixtures of constituent isomers including metalaxyl-M (sum of isomers)	1
		Pyraclostrobin	1
		Thiophanate-methyl	1
Illegal treatment	Peppers spices	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	2
		Mepiquat (sum of mepiquat and its salts, expressed as mepiquat chloride)	1
	Spinach	Iprodione	1
Natural occurrence	Brazil nuts	Bromides	1
Other	Apricots	Dodine	1
	Courgettes	Glyphosate	1
	Currants (red, black and white)	Dodine	1
	Vine leaves (grape leaves), ready to eat	Nicotine	1
Other (MRL not yet effective; MRL for radish set not regarding consumption of the leaves)	Radish leaves (including radish tops)	Cyantraniliprole	5
		Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb, Mancozeb, Metiram, Propineb, Thiram and Ziram)	2
		Fluvalinate, tau-	1

Reason for MRL non-compliant	Product	Substance	Frequency
Accidental	Lamb`s lettuce	Nicotine	3
		Folpet (sum of folpet and phthalimide, expressed as folpet)	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	4
		Metobromuron	1
Residues resulting from other sources than plant protection product (e.g. biocides, veterinary drugs, biofuel)	Cherries	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	1
	Dairy products Cattle	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorideswith alkyl chain lengths of C8, C10, C12, C14 and C16)	3
		Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	4
Use of a pesticide on food imported from third countries for which no import tolerance was set	Beans (dry)	Chlorpyrifos	1
	Cherries	Iprodione	1
	Guava	Cyfluthrin (Cyfluthrin including other mixtures of constituent isomers (sum of isomers))	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
		Methamidophos	1
		Methomyl	1
	Mandarins	Buprofezin	1
		Fenbutatin oxide	1
		Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	1
	Passion fruit	Thiacloprid	1
	Pears	Chlorpyrifos	1
	Plums	Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
	Pomegranate	Sulfoxaflor (sum of isomers)	1
	Rice	Acephat	1
		Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	1
		Thiamethoxam	2
		Tricyclazole	2
Use of pesticide according to authorised Good Agricultural Practice (GAP): unexpected slow degradation of residues	Kohlrabi leaves	Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
	Radish leaves (including radish tops)	Cyantraniliprole	3
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	3
	Radishes	Aclonifen	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
Unknown	Beans (dry)	Fenitrothion	1

Reason for MRL non-compliant	Product	Substance	Frequency
Accidental	Lamb`s lettuce	Nicotine	3
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
		Nicotine	1
	Beans (with pods)	Iprodione	1
	Blackberries	Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb,Mancozeb, Metiram, Propineb, Thiram and Ziram)	2
		Dodine	1
		Iprodione	1
	Blueberries	Iprodione	1
	Bovine Liver	Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	1
	Buckwheat and other pseudocereals	Chlorates	2
	Carrots	Clomazone	1
	Cherries	Dimethoate	1
		Iprodione	1
		Tebufenpyrad	1
	Chilli pepper spice	Chlormequat (sum of chlormequat and ist salts, expressed as chlormequat-chloride)	1
	Chinese cabbage	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	1
	Coriander seed	Acetamiprid	1
		Carbendazim	1
		Chlorpyrifos	2
		Clothianidin	1
		Hexaconazole	1
		Propiconazole (sum of isomers)	1
		Thiamethoxam	1
		Tricyclazole	1
	Cucumbers	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	1
		Formetanate	1
	Cumin fruit spice	Acetamiprid	1
		Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	2
		Chlorpyrifos	2
		Clothianidin	3
		Fipronil	1
		Hexaconazole	1
		Linuron	1
		Propiconazole (sum of isomers)	1
		Thiamethoxam	3
		Tricyclazole	1

Reason for MRL non-compliant	Product	Substance	Frequency
Accidental	Lamb`s lettuce	Nicotine	3
	Dairy products Cattle	Benzalkonium chloride (mixture of alkylbenzyldimethylammonium chlorideswith alkyl chain lengths of C8, C10, C12, C14 and C16)	1
		Didecyldimethylammonium chloride (mixture of alkyl-quaternary ammonium salts with alkyl chain lengths of C8, C10 and C12)	1
	Dill leaves, dry	Pendimethalin	1
	Grapefruits,Pomelos,Sweeties	Buprofezin	1
	Head cabbage	Propyzamide	1
	Herbal infusions, dried	Anthraquinone	3
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
	Kale	Flonicamid (sum of flonicamid, TNFG and TNFA)	2
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
	Kohlrabi leaves	Acetamiprid	1
		Propyzamide	1
	Lemons	Buprofezin	1
	Lychee (Litchi)	Fludioxonil	1
	Mandarins	Nicotine	1
	Oranges	Buprofezin	1
		Fenbutatin oxide	1
		Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	1
		Pirimiphos-methyl	1
	Passion fruit	Fenbuconazole (sum of constituent enantiomers)	1
		Fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	1
		Phosphonic acid	1
	Peaches	Diflubenzuron	1
	Peppers	Buprofezin	1
		Pyridaben	1
	Peppers spices	Chlormequat (sum of chlormequat and ist salts, expressed as chlormequat-chloride)	1
	Pitayas/dragon fruits	Azadirachtin	1
	Plums	Methomyl	1
	Pomegranate	Acetamiprid	5
		Sulfoxaflor (sum of isomers)	2
	Raspberries	Iprodione	1
	Rhubarb	Mandipropamid (any ratio of constituent isomers)	1
	Sesame seed	Chlorates	1
	Strawberries	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	1
	Tea	Acephat	1
		Acetamiprid	2

Reason for MRL non-compliant	Product	Substance	Frequency
Accidental	Lamb`s lettuce	Nicotine	3
		Difenoconazole	1
		Dinotefuran	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
		Propiconazole (sum of isomers)	1
		Pyridaben	1
		Tolfenpyrad	1
		Trimethyl-sulfonium cation, resulting from the use of glyphosate	3
	Tomatoes	Chlorates	1
		Iprodione	1
	Vine leaves (grape leaves), canned	Azoxystrobin	1
		Boscalid	1
		Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	1
		Chlorpyrifos	1
		Cyflufenamid	1
		Difenoconazole	1
		Dimethomorph (sum of isomers)	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	1
		Lufenuron (any ratio of constituent isomers)	1
		Propiconazole (sum of isomers)	1
		Tebuconazole	1
		Thiophanate-methyl	1
	Vine leaves (grape leaves), ready to eat	Acetamiprid	3
		Azoxystrobin	3
		Boscalid	3
		Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	4
		Chlorpyrifos	1
		Cypermethrin (Cypermethrin including other mixtures of constituent isomers (sum of isomers))	2
		Dimethomorph (sum of isomers)	1
		Dithiocarbamates (Dithiocarbamates expressed as CS2, including Maneb,Mancozeb, Metiram, Propineb, Thiram and Ziram)	3
		Fenhexamid	1
		Fludioxonil	1
		Indoxacarb (sum of indoxacarb and its R enantiomer)	1
		Iprodione	1
		Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	2
		Lufenuron (any ratio of constituent isomers)	3

Reason for MRL non-compliant	Product	Substance	Frequency
Accidental	Lamb`s lettuce	Nicotine	3
		Myclobutanil	2
		Penconazole (sum of constituent isomers)	2
		Profenofos	1
		Propamocarb (Sum of propamocarb and its salt expressed as propamocarb)	1
		Propiconazole (sum of isomers)	1
		Pyraclostrobin	1
		Teflubenzuron	1
		Thiamethoxam	1
		Thiophanate-methyl	4

12.4. Quality assurance

20 accredited laboratories (Table 71) took part in the national control programme for 2020.

Table 71: Laboratories

Country code	Laboratory Name	Laboratory Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or interlaboratory tests
DE	Chemisches und Veterinäruntersuchung samt Freiburg, 79114 Freiburg Bissierstr. 5	082102	21.07.2020	DAkkS	BIPEA 6419 (pesticides in fish fillet) BIPEA 3619 (pesticides in honey) EURL POPs 2001 FAPAS 0687 (pesticide in fish)
DE	Chemisches und Veterinäruntersuchung samt Stuttgart 70736 Fellbach Schaflandstr. 3/2	082107	02.04.2019	DAkkS	EUPT 2020: AO15, FV-SM12, SC04
DE	Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit 91058 Erlangen Eggenreuther Weg 43	092821	18.12.2019	DAkkS	EUPT 2020: AO15, CF14, FV22, SC04, FV-SM12, SRM15
DE	Landeslabor Berlin-Brandenburg Dienstsitz Berlin 12489 Berlin Rudower Chaussee 39	112001	15.09.2020	DAkkS	EUPT 2020: AO15, CF14, FV22, SRM15 FAPAS 05143 (pesticide in oily fish)
DE	Landeslabor Berlin-Brandenburg Dienstsitz Frankfurt (Oder) 15236 Frankfurt (Oder) Gerhard-Naumann-Straße 2/3	122104	15.09.2020	DAkkS	EUPT 2020: AO15, CF14, FV22, SRM15 FAPAS 05143 (pesticide in oily fish)
DE	Landesuntersuchungsamt für Chemie, Hygiene und Veterinärmedizin 28217 Bremen Lloydstraße 4	042101	01.03.2021	DAkks	EUPT 2020: AO15, FV22 FAPAS: 05145 (pesticide in milkpowder)

Country code	Laboratory Name	Laboratory Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or interlaboratory tests
DE	Institut für Hygiene und Umwelt 20539 Hamburg Marckmannstr. 129a	022020	15.12.2020	DAkkS	EUPT 2020: FV22
DE	Landesbetrieb Hessisches Landeslabor FG I.3 Datenmeldestelle 65203 Wiesbaden Glarusstraße 6	062109	05.06.2020	DAkkS	EUPT 2020: SRM15
DE	Landesamt für Landwirtschaft, Lebensmittelsicherheit und Fischerei Mecklenburg-Vorpommern 18059 Rostock Thierfelderstr. 18	132101	10.08.2020	DAkkS	EUPT 2020: AO15, CF14, FV22, FV-SM12, SRM15, NRL-PSM Reis 2019
DE	Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit - Lebensmittelinstitut Braunschweig 38124 Braunschweig Dresdenstr. 2 und 6	032001	23.11.2020	DAkkS	JRC 108611 - JRC Technical Report "Determination oft he Fipronil content in eggs"
DE	Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit Lebensmittel- und Veterinärinstitut Oldenburg 26133 Oldenburg Martin-Niemöller-Straße 2	032010	18.12.2020	DAkkS	EUPT 2020: CF14, FV22, FV-SM12, SRM15 NRL Italian: COIPT-20 (pesticides in olive oil)
DE	Chemisches und Veterinäruntersuchung samt Ostwestfalen-Lippe CVUA-OWL 32758 Detmold Westerfeldstr. 1	052203	27.04.2020	DAkkS	AQS BW 4/2020 TW 05 (pesticides in drinking water) LANUV NRW RV 4/2020 04 (acidic pesticides in drinking water)

Country code	Laboratory Name	Laboratory Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or interlaboratory tests
DE	Chemisches und Veterinäruntersuchungsamt Rhein-Ruhr-Wupper CVUA-RRW 47798 Krefeld Deutscher Ring 100	052306	19.08.2020	DAkkS	EUPT 2020: AO15, CF14, FV22, SC04, FV-SM12, SRM15 Bipea PT 19e (pesticides - vegetables: nitrates and bromides) Bipea PT 19h (pesticides - fruits and vegetables: dithiocarbamates) Bipea PT 19k (pesticides - medicinal and aromatic plants)
DE	Chemisches und Veterinäruntersuchungsamt Münsterland-Emscher-Lippe CVUA-MEL 48147 Münster Joseph-König-Straße 40	052502	19.11.2020	DAkkS	EUPT 2020: AO15, FV22, SC04, EURL-SRM-PT (ad-hoc, Ethylenoxid in Sesam)
DE	Landesuntersuchungsamt Institut für Lebensmittelchemie 67346 Speyer Nikolaus-von-Weis-Str. 1	072107	02.12.2020	DAkkS	EUPT 2020: AO15, FV22, SC04, SRM15 FAPAS 05140 (pesticide residues & perchlorate (fat soluble, inc. EU 'red list' -low levels) FAPAS 05145 (pesticides in milk powder) FAPAS 05146 (pesticides in pork fat) FAPAS 19292 (pesticides in wine) BIPEA PT 19h (pesticides - fruits and vegetables: dithiocarbamates) BIPEA PT 19e (pesticides - vegetables: nitrates and bromides)

Country code	Laboratory Name	Laboratory Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or interlaboratory tests
DE	Landesamt für Verbraucherschutz GB 2 – Veterinärmedizinische, mikrobiologische, molekularbiologische und lebensmittelchemische Untersuchungen 66115 Saarbrücken Konrad-Zuse-Straße 11	101101	17.04.2020	DAkkS	EUPT 2020: CF14, FV22 FAPAS 09135 (Chlormequat and Mepiquat in wheat flour) FAPAS 19289 (pesticides incl. Chlormequat and Mepiquat in mushroom) FAPAS 19287 (pesticides in grapefruit) Progetto Trieste E2072 (fipronil in egg)
DE	Landesuntersuchungsanstalt für das Gesundheits- und Veterinärwesen Sachsen Standort Dresden 01099 Dresden Jägerstraße 8/10	142262	05.05.2021	DAkkS	EUPT 2020: AO15, CF14, FV22, FV-SM12 SRM15 NRL MN 0320 (elements; horse meat) NRL MN 0620 (elements; baby food, rice) DLA-NRL MN 0120 (elements; liver)
DE	Landesamt für Verbraucherschutz Sachsen-Anhalt Fachbereich 3 06009 Halle (Saale) Freiimfelder Str. 68	152200	25.02.2019	DAkkS	EUPT 2020: AO15, CF14, FV22, SRM15 FAPAS 19296 ((dithiocarbamte in parsley)) FAPAS 19303 (pesticides in green tea)
DE	Landeslabor Schleswig-Holstein (Lebensmittel-, Veterinär- und Umweltuntersuchungsamt) Postfach 2743 24537 Neumünster Max-Eyth-Str. 5	012001	25.11.2020	DAkkS	EUPT 2020: AO15, CV14, FV22, SRM15 FAPAS 05144 (pesticides in infant formula) --> pesticide residues (specified residues) [fat soluble]
DE	Thüringer Landesamt für Lebensmittelsicherheit und Verbraucherschutz Standort Bad Langensalza 99947 Bad Langensalza Tennstedter Str. 8/9	162104	28.01.2019	DAkkS	EUPT 2020: AO15, FV 22

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 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 analysed the samples taken in 2020 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[19,20]

National control program of 2020 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. 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 analysed 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.

Furthermore, a significant number of selective samples was taken by the competent authorities responsible of the sampling.

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

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

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

3,149 samples were analysed in total. 2429 samples were domestic (77.14%), 214 samples originated from EU (6.80%), 474 originated from third countries (15.05%) while the origin of 32 samples was unknown (1.02%).

48.14% of samples were free of quantifiable residues, 51.86% of samples contained quantifiable residues at or below MRL, 6.48% of samples contained residues exceeding EU MRLs and 3.91% of samples were non-compliant (contained residues exceeding EU MRLs taking into account the measurement uncertainty). The percentages of samples containing residues are comparable with the corresponding ones of 2019.

For random sampling, the percentage of non-compliant samples was 2.60%. For selective sampling the percentage of non-compliant samples was 6.79% and for suspect sampling, the percentage of non-compliant samples was 14.94%.

The percentage of samples which exceeded numerically the MRLs was 4.86% for the domestic samples, 5.61% for EU samples and 15.40% for third countries while the percentage of non-compliant samples was 2.96% for domestic samples, 3.27% for EU samples and 8.86% for third countries' samples.

Among the domestic samples analysed, potatoes and grape leaves were the most frequently non-compliant products. From third countries the most frequently non-compliant products were tomatoes (mostly containing chlorfenapyr) and apples (mostly containing chlorpyrifos).

Chlorpyrifos was the most frequently found pesticide in non-compliant samples for another year because of incorrect GAP application taking into account that grace period for the use of plant protection products containing this active substance was the 16th of April 2020.

154 samples were organic, out of which 15 samples were cereals, 3 samples were baby food, 100 samples were fruits, vegetables and nuts, 23 samples were other products, and 3 samples were processed commodities. 87.66% of the organic samples contained no detectable residues, 10.39% of organic samples contained residues below MRLs and 1.95% of the organic samples were non-compliant.

Table 72: Summary results 2016-2020

Category	Year 2016	%	Year 2017	%	Year 2018	%	Year 2019	%	Year 2020	%
Total number of samples	2,287	100	2,623	100	3,571	100	3,454	100	3,149	100
Number of samples without detectable residues	1180	51.6	1307	49.83	1701	47.63	1724	49.91	1516	48.14
Number of samples with detectable residues at or below EU MRL	1016	44.4	1160	44.22	1606	44.97	1531	44.33	1429	45.38
Number of samples with residues exceeding EU MRLs	91	3.98	156	5.95	264	7.39	199	5.76	204	6.48
Non-compliant samples	53	2.32	90	3.43	158	4.42	119	3.45	123	3.91

Table 73: Summary results 2020 per type of product (surveillance and enforcement)

Products	Samples	Residues below LOQ	%	Residues between LOQ and MRL	%	Exceeding MRL	%	Non-Compliant	%
Animal products	41	41	100.00	0	0	0	0	0	0
Baby food	23	23	100.00	0	0	0	0	0	0
Cereals (including processed products)	95	69	72.63	22	23.16	4	4.21	2	2.1
Other products (including processed products)	265	196	73.96	56	21.13	13	4.91	10	3.8
Sum of fruits and nuts, vegetables, other plant products	2,725	1,187	43.56	1356	49.58	187	6.86	111	4.1
Total	**3,149**	**1,516**	**48.14**	**1429**	**45.38**	**204**	**6.48**	**123**	**3.9**

Table 74: Summary results 2019 per type of product (surveillance and enforcement)

Products	Samples	Residues below LOQ	%	Residues between LOQ and MRL	%	Exceeding MRL	%	Non-Compliant	%
Animal products	37	37	100.0	0	0.0	0	0.0	0	0
Baby food	10	10	100.0	0	0.0	0	0.0	0	0
Cereals (including processed products)	139	100	71.94	37	26.62	2	1.44	1	0.72
Other products (including processed products)	235	174	81.69	29	13.62	10	4.69	3	1.41
Sum of fruits and nuts, vegetables , other plant products	3033	1381	45.53	1465	48.30	187	6.17	115	3.79
Total	**3,454**	**1,724**	**49.91**	**1,531**	**44.33**	**199**	**5.76**	**119**	**3.45**

Table 75: Summary results 2020 for random and selective sampling

Products	Samples	Residues below LOQ	%	Residues between LOQ and MRL	%	Exceeding MRL	%	Non-Compliant	%
Animal products	41	41	100	0	0	0	0	0	0
Baby food	23	23	100	0	0	0	0	0	0
Cereals	91	67	73.63	20	21.98	4	4.40	2	2.19
Fruits and nuts	1,226	361	29.45	808	65.91	57	4.65	29	2.37
Other plant products	239	181	75.73	51	21.34	7	2.93	6	2.51

Products	Samples	Residues below LOQ	%	Residues between LOQ and MRL	%	Exceeding MRL	%	Non-Compliant	%
Vegetables	1,375	775	56.36	600	43.64	104	7.56	63	4.58
Total	**2,995**	**1,448**	**48.35**	**1,461**	**48.78**	**172**	**5.74**	**100**	**3.34**

Table 76: Summary results 2019 for random and selective sampling

Products	Samples	Residues below LOQ	%	Residues between LOQ and MRL	%	Exceeding MRL	%	Non-Compliant	%
Animal products	37	37	100	0	0	0	0	0	0
Baby food	10	10	100	0	0	0	0.0	0	0
Cereals	136	99	72.79	36	26.47	1	0.74	0	0
Fruits and nuts	1178	392	33.27	733	62.22	53	4.50	26	2.0
Other plant products	229	193	84.28	26	11.35	10	4.37	3	0.6
Vegetables	1755	946	53.90	693	39.49	116	6.61	79	5.1
Total	**3,345**	**1,677**	**50.13**	**1,488**	**44.48**	**180**	**5.21**	**108**	**3.8**

Table 77: Summary results 2020 for enforcement samples (suspect samples)

Products	Samples	Residues below LOQ	%	Residues between LOQ and MRL	%	Exceeding MRL	%	Non-Compliant	%
Animal products	0	0	0	0	0	0	0	0	0
Baby food	0	0	0	0	0	0	0	0	0
Cereals	4	2	50.00	2	50.00	0	0	0	0
Fruits and nuts	28	6	21.43	15	53.57	7	25.00	4	14.29
Other plant products	26	15	57.69	5	19.23	6	23.08	4	15.38
Vegetables	96	45	46.87	32	33.33	19	19.79	15	15.62
Total	**154**	**68**	**44.2**	**54**	**35.06**	**32**	**20.8**	**23**	**14.9**

Table 78: Summary results 2019 for enforcement samples (suspect samples)

Products	Samples	Residues below LOQ	%	Residues between LOQ and MRL	%	Exceeding MRL	%	Non-Compliant	%
Animal products	0	0	0	0	0	0	0	0	0
Baby food	0	0	0	0	0	0	0	0	0
Cereals	3	1	33.33	1	33.33	1	33.33	1	33.33
Fruits and nuts	28	2	7.14	16	57,14	10	35,71	7	25.0
Other plant products	6	3	50.0	3	50.0	0	0	0	0
Vegetables	72	41	56.95	23	31.94	8	11.11	3	4.17
Total	**109**	**47**	**43.12**	**43**	**39.45**	**19**	**17.43**	**11**	**10.10**

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

14.3.1. Possible reasons for non-compliance

Table 79: Reasons for MRL exceedances

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]			
	methamidophos / eggplants	1	
	chlorpyrifos / courgettes	2	Use after the grace period
	chlorpyrifos / olives for oil production	1	Use after the grace period
	chlorfenapyr / tomatoes	3	
	chlorfenapyr / cherry tomatoes	1	origin: Italy
	cyfluthrin / tomatoes	1	
	chlorfenapyr / tomatoes	3	origin: Italy
	buprofezin / tomatoes	2	origin: Italy
GAP not respected: use of an approved pesticide not authorised on the specific crop[c]			
	phosmet / apricots	1	
	dimethomorph / beans with pods	1	
	indoxacarb / beetroots	1	
	dimethomorph / carrots	1	
	indoxacarb / celeriacs/turnip rooted celeries	1	
	metalaxyl / celeriacs/turnip rooted celeries	2	
	fluopyram / celeriacs/turnip rooted celeries	1	
	flupyradifurone / cherries	1	
	diflubenzuron / mushrooms	2	
	formetanate / courgettes	1	
	formetanate / cucumbers	4	
	dimethomorph / grape leaves	4	
	penconazole / grape leaves	2	
	cyflufenamid / grape leaves	1	
	spiroxamine / grape leaves	2	
	tau-fluvalinate / grape leaves	1	
	cypermethrin / grape leaves	1	
	cyprodinil / grape leaves	1	
	acetamiprid / kiwi fruits	3	
	fluopyram / kiwi fruits	1	
	tebuconazole / kiwi fruits	1	
	carbendazim / olives for oil production	1	metabolite of thiophanate methyl
	captan / parsley	1	
	etofenprox / rice grain, brown	1	
	dodine / spinaches	2	
	famoxadone / spinaches	1	frozen (processed)
	tebuconazole / spinaches	1	frozen (processed)
	famoxadone / sweet peppers/bell peppers	1	

Reasons for MRL (non-compliance)	Pesticide/food product[a]	Frequency[b]	Comments
	cypermethrin / teas	2	
	pyriproxyfen / thyme	1	
	phosmet / tomatoes	1	
	propamocarb / wine grapes	1	
	thiacloprid / pistachios	1	
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected			
	carbendazim / apples	1	metabolite of thiophanate methyl
	chlorpyrifos / apples	1	
	tau-fluvalinate / beetroots	1	
	azoxystrobin / celeriacs	1	
	boscalid / pomegranates	1	
	forchlorfenuron / kiwis	3	
	chlorpyrifos / mandarins	1	
	omethoate / mandarins	1	metabolite of dimethoate
	pyraclostrobin / olives for oil production	1	
	chlorpyrifos / oranges	1	
	chlorpyrifos / potatoes	10	
	chlorantraniliprole / potatoes	2	
	fosthiazate / potatoes	1	
	tefluthrin / potatoes	1	
	deltamethrin / spinaches	1	
	omethoate / table grapes	1	metabolite of dimethoate
	thiacloprid / oranges	1	
	spiroxamine / tomatoes	1	origin: Italy – not authorised on the specific crop *or* authorised but application rate, number of treatments, application method or PHI not respected
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)			

Reasons for MRL (non-compliance)	Pesticide/food product[a]	Frequency[b]	Comments
Residues resulting from other sources than plant protection product (e.g. biocides. veterinary, drugs, bio fuel)			
Natural 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]			
Unknown			
	diphenylamine / apples	4	Chile
	chlorpyrifos / apples	2	Albania
	chlorpyrifos / apples	2	Republic of North Macedonia
	chlorpyrifos / beans dry	1	Madagascar
	hexaconazole / grape leaves	1	China
	isoprothiolane / grape leaves	1	China
	profenofos / grape leaves	1	China
	chlorpropham / grape leaves	1	Turkey
	propargite / lemons	1	Egypt
	thiametoxam / rice grain brown	1	India
	tricyclazole / rice grain brown	1	India
	imazalil / bananas	1	Ecuador
	imazalil / pomegranates	1	Turkey
	acetamiprid / pomegranates	1	Turkey
	azoxystrobin / grape leaves	1	China
	buprofezin / grape leaves	1	China
	fluopyram / grape leaves	1	Turkey
	buprofezin / lemons	2	Turkey
	metalaxyl / courgettes	2	Turkey
	deltamethrin / spinaches	1	Turkey
	formetanate / sweet peppers/bell peppers	1	Albania
	tebufenpyrad / sweet peppers/bell peppers	2	Albania
	chlorfenapyr / sweet peppers/bell peppers	1	Albania
	chlorpyrifos / sweet peppers/bell peppers	1	Albania
	buprofezin / sweet peppers/bell peppers	1	Turkey
	lambda-cyhalothrin / teas	1	Unknown
	chlorfenapyr / tomatoes	8	Albania
	diflubenzuron / tomatoes	1	Albania
	buprofezin / tomatoes	1	Albania
	chlorpyrifos / tomatoes	2	Albania
Other (Use of a pesticide on food imported from third country with exceedance of the ARfD)			
	ethylene oxide / 2-chlorethanol	3	India

Reasons for MRL (non-compliance)	Pesticide/food product[(a)]	Frequency[(b)]	Comments
	sesame seeds RASFF: 2021.0032		

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

14.3.2. ARfD exceedances

Table 80: RASFF issued in 2020 for food products showing a risk for consumers

Food products	Pesticide residue	Number	Origin	Context
sesame seeds	ethylene oxide / 2-chlorethanol	1 RASFF (3 samples)	India	RASFF2021.0032

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.

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 notification was issued for samples when a risk to consumers was identified.

14.5. Quality assurance

Table 81: 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-FV-22 EUPT-AO-15 EUPT-SRM-15 EUPT-CF-14 EUPT-SC-04 COI-PT20 Test Qual 133 (Dithiocarbamates)
Hellas	Regional Centre of	08/09/2009	ESYD	EUPT-FV 22, EUPT-CF

	Plant Protection, Quality and Phytosanitary Control of Thessaloniki			14
Hellas	General Chemical State	ACCREDITED, ISO 17025, 2009-2018	ESYD	EUPT-FV-22, EUPT-AO-15, EUPT-CF-14, EUPT-SRM-15, COI-PT20, EUPT-FV-SC04, LGC-FC296
		ACCREDITED, ISO 17025, 1998-2009	UKAS	

14.6. Processing factors

The processing factors applied were based on the former EU multiannual control programme for pesticide residues.

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 2020 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 (2,225) for the 2020 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 (129) 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 2020 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 2020, 2225 samples were analysed for pesticide residues in Hungary. These samples were included in the national monitoring programme, EU coordinated programme.

Table 82: Total number of samples

Type of products (surveillance samples only)	Raw samples	Processed samples	Total number of samples in category
Animal products	114	15	129
Cereals	48	60	108
Baby food	90	15	105
Other products	2	90	92
Fruits and nuts, vegetables and other plant product	1683	108	1791
Total number of samples	**1937**	**288**	**2225**

15.2.2. Interpretation of the results

Table 83: Origin of samples

Strategy	Origin	Samples	Samples %
Surveillance	Domestic	1333	59.91
	EU countries	570	25.62
	Third countries	322	14.47

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

A total of 1791 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 84: Summary results for samples from the surveillance programme

Type of samples	Comment
Fruit and vegetable samples with pesticide residues detected	1791 surveillance samples were analysed 52.6% without residues (no residues detected above the LOQ) 47.2% had residues detected above the LOQ and below the MRL 1.2 % had residues detected above the MRL
Origin of samples (fruits and vegetables)	59 % domestic samples 39 % were from EU countries 12 % from Third countries
Most frequently detected pesticides	Detection rates in all fruit and vegetables Boscalid 15.4%; Fludioxonil 9.1%; Acetamiprid 7.4%; Imazalil 7.4%; Pyraclostrobin 5.7%
Maximum number of multiple residues	15 different pesticides were found in 1 pepper (spice) and 11 different pesticides were found in 1 table grape sample from Italy.
MRL breaches	22 samples exceeded the MRL
Processed	108 samples
Labelled organic	58 samples

Cereals

Table 85: Summary results for cereal with the surveillance programme

Type of samples	Comment
Cereal samples with pesticide residues detected	108 cereal samples were analysed

Type of samples	Comment
	94.4 % had no residue detected above the LOQ 5.6 % had residues detected above the LOQ and below the MRL No residue was detected above the MRL
Origin of samples	72 % of cereal samples were domestic samples 14 % were from other EU countries and 14 % from Third Countries
Most frequently detected pesticides	Detection rates in all cereal samples Mepiquat 22%; Propiconazole 11%; Isoprothiolane 11%; Imidacloprid 11%
Maximum number of multiple residues	3 different pesticides were found in 1 muesli (cereal)
MRL breaches	None sample was exceeded the MRL
Processed	60 samples
Labelled organic	1 sample

Animal products

Table 86: Summary results for food of animal origin with the surveillance programme

Type of samples	Comment
Food of animal origin samples with pesticide residues detected	129 food of animal origin samples were analysed 98 % had residue detected above the LOQ 2 % had residues detected above the LOQ and below the MRL No residue was detected above the MRL
Origin of samples	91 % of the food of animal origin samples were of Hungarian origin 7.5 % were from other EU countries 1.5 % were from Third Countries
Most frequently detected pesticides	Detection rates in all animal products samples none above LOQ except three samples of honey where Acetamiprid; Thiacloprid were detected
Maximum number of multiple residues	No multiple residues detected
MRL breaches	There was no MRL exceedance
Processed	15 samples
Labelled organic	2 sample

Baby food

Table 87: Summary results for baby food samples

Type of samples	Comment
Baby food samples with pesticide residues detected	105 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	43.8 % domestic samples 21 % were from EU countries 35.2% were from Third Countries
Most frequently detected pesticides	No pesticides detected
Maximum number of multiple residues	No pesticides detected
MRL breaches	There was no MRL exceedance
Processed	15 samples were processed
Labelled organic	46 samples

Overview

In 2020, 60.54 % of the samples analysed resulted without pesticide residues. 39.46% of the samples analysed resulted with pesticide residues below the EC-MRL. 1.21 % of the samples exceeded the EC-MRL level (1.17 % non-compliant of all).

15.2.3. Comparability with the previous year results

Table 88 gives an overview of the samples of the last 2 years. The number of the samples is slightly lower (~2%) 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 88: Number of samples in 2019 and 2020

Year	Number of samples	Without Residues	With residues below MRL	Exceeding MRL	Non-Compliant
2019	2266	52.21%	46.51%	1.28%	0.57%
2020	2225	60.54%	39.46%	1.21%	1.17%

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

15.3.1. Possible reasons for non-compliant samples

In total, 1.17% of the samples were found non-compliant with the EU MRLs.

Table 89: 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 90 gives an overview of what sort of actions that have been taken.

Table 90: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	1	
Administrative sanctions (e.g. fines)	19	Most of the non-compliant lots had been "eaten"
Lot recalled from the market	2	

15.4. Quality assurance

Table 91: 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, 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 92: Processing factors

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

a) Processing factor for the enforcement residue definition

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 health authority around the country. Enforcement actions, when necessary, were also the responsibility of the relevant municipal health authority.

This year 144 samples were taken in total. Thereof, suspect samples, as a follow up on non-compliance were 3 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 2019/533 is part of 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, 95.1 % of samples taken were free of quantifiable residues or contained residues within the legally permitted levels. 4.9 % of samples (7) contained residues exceeding the MRLs. Of these, three were enforcement sample taken to confirm residues above MRL (Table 93).

Table 93: Summary results

Origin of samples	No of samples	% of samples	No of samples exceeding MRL	% Exceedances
EU	70	48.6	1	1.4
Domestic	9	6.25	0	0
Outside EU and EEA	48	33.3	6	12.5
Unknown origin	17	11.8	0	0
Total	144		7	4.9

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. This implies that the food with these measured levels of pesticide residues is safe to eat. There is a decrease in exceedances compared to a significantly higher number of exceedances in 2019 after a decrease in 2017 and 2018. 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 94). 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, same as last year, most exceedances are of products imported from US, lettuces and spinaches.

Table 94: Comparability with the previous year results

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of exceedances	3	5	2	4	8	4	3	11	7

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

16.3.1. Possible reasons for non-compliant samples

Seven cases of non-compliances occurred in 2020, none of them a domestic product.

One case of fresh spinach and one of lettuce imported directly from the USA, and in addition two samples of spinach and one of lettuce taken as a follow up from the next shipment at the same importers. In the past years this has repeatedly happened with spinach from the USA, where permethrin and other pesticides are found well above the MRL. The importers have stated that they will choose to import these products from countries within the EU.

For these cases as well as one case of chives imported from Kenya (Table 95) the reason for non-compliance is most likely that the produce was not grown to be exported to the EU. For a sample produced in EU-country a misuse of PPP product is the most likely reason for the MRL non-compliance.

Table 95: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency[a]	Comments
Use of a pesticide on food imported from third countries for which no import tolerance was set[b]	Permethrin / Spinaches	3	Spinach grown for USA market
Use of a pesticide on food imported from third countries for which no import tolerance was set[b]	Permethrin / lettuces	2	Lettuce grown for USA market
Use of a pesticide on food imported from third countries for which no import tolerance was set[b]	Flonicamid / Spinaches	1	Spinach grown for USA market
Use of a pesticide on food imported from third countries for which no import tolerance was set[b]	Flonicamid / Lettuces	1	Lettuce grown for USA market
Use of a pesticide on food imported from third countries for which no import tolerance was set[b]	Clothiamid / Spinaces	2	Spinach grown for USA market
Use of a pesticide on food imported from third countries for which no import tolerance was set[b]	Clothianidin / Spinach	1	Spinach grown for USA market
Use of a pesticide on food imported from third countries for which no import tolerance was set[b]	Myclobutanil / Lettuces	1	Lettuce grown for USA market
Use of a pesticide on food imported from third countries for which no import tolerance was set[b]	Deltamethrin / Chives	1	Imported from Kenya
Misuse of product	Spinosad / Strawberries	1	Netherlands,

a) Number of cases.
b) Applicable only for food products produced 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 96), 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.

In a case of fresh spinach and of lettuce which was imported directly from the USA, the distribution was stopped, and what was left of the lot was destroyed. In three cases of a shipment that was detained on the border while a follow-up sample was analysed, the whole lot was destroyed when results showed levels above MRL, and nothing went on the market.

The other 2 cases were single shipments. The distribution was stopped and what was left of the lot was destroyed. Follow-up sampling was planned but the importers did not receive another shipment from the same producer/country.

Table 96: Action taken

	Action taken	Number of non-compliant samples	Comments
Rapid Alert Notification	None	0	
Lot recalled from the market			
Spinaches, lettuces, strawberries, chives.	Stop Distribution	4	
Rejection of a non-compliant lot at			

	Action taken	Number of non-compliant samples	Comments
the border			
Spinaches / Lettuces	Lot destroyed	3	Follow-up of non-compliant
Destruction of non-compliant lot			
Spinach es, lettuces, strawberries, chives	What was left of a lot was destroyed after confirmation of a non-compliance	4	
Follow-up (suspect) sampling of similar products, samples of same producer or country of origin			
Spinaches, lettuces	Follow-up sampling at the border of a shipment from the same producer as non-compliant sample. Resulted in shipment not released to the market. Destroyed.	3	Above MRL
Warnings to responsible food business operator			
Importers	Import from the same producer will be detained at the border until a new sample proves the shipment is compliant	4	In all cases. Some cases involved more than one sample

16.4. Quality assurance

In 2020, one laboratory, analysed all the samples (Table 97).

Table 97: 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	2. March 2020	SWEDAC	EUPT FV22, EUPT CF14

16.5. Additional information

On the list of pesticides to be analysed according to Regulation (EU) No 2019/533 (the coordinated multiannual control programme) there are few pesticides that the laboratory in Iceland cannot analyse yet. New pesticides have been added every year since 2013 to the analysing method with the aim to fulfil the regulation.

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.

Ireland

17.1. Objective and design of the national control programme

The 2020 Irish national control programme for pesticide residues in food was carried out by the Pesticide Controls Division (PCD) of the Department of Agriculture, Food and the Marine 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 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.

17.1.2. Design

The control programme for 2020 took into consideration:

- the coordinated programme required by the European Commission for 2020;
- dietary intake patterns of Irish consumers[21] (adult 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 2020 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 (DAFM), 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, 97.8% of the 1,336 samples analysed were free of quantifiable residues or contained residues within the legally permitted levels. No residues were detected in 64.0% of the samples, another 33.8% of samples contained quantified residues below the MRLs and 2.2% (30 samples) contained residues exceeding the MRLs. Considering the analytical measurement uncertainty, 1.0% of the samples (13 samples) clearly exceeded these legal limits (non-compliance).

Table 98: Summary of samples taken in 2020 by product class

Samples	Total	<LOQ	%<LOQ	>LOQ and <MRL	%>LOQ and <MRL	>MRL	% >MRL
Animal products	457	446	97.6	11	2.4	0	0
Cereals	72	51	70.8	18	25.0	3	4.0
Baby food	69	69	100	0	0	0	0
Fruits and vegetables	704	260	36.9	417	59.2	27	3.8
Processed products	34	29	85.3	5	14.7	0	0

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

Table 99: Summary results – fruit including processed and enforcement

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Apples	61	8	52	1	3	30	28	0
Apricots	1	0	1	0	0	1	0	0
Blackberries	1	0	1	0	0	0	1	0
Blueberries	5	4	1	0	0	2	3	0
Cherries (sweet)	3	0	3	0	0	1	2	0
Clementines	20	0	19	1	0	6	14	0
Common banana	11	2	9	0	0	0	11	0
Common peaches	12	2	10	0	0	12	0	0
Daikon	1	1	0	0	0	1	0	0
Dates	1	1	0	0	0	0	1	0
Granate apples	8	3	4	1	0	1	7	0
Grapefruits	15	0	11	4	0	0	15	0
Grape Leaves	2	0	0	2	0	0	2	0
Jackfruit	1	0	1	0	0	0	1	0
Juice, apple	4	4	0	0	0	0	2	2
Juice, Blueberry	1	1	0	0	0	0	0	1
Juice, cranberry	1	1	0	0	0	0	0	1
Juice, grapefruit	1	1	0	0	0	0	0	1
Juice, pomegranate	1	1	0	0	0	0	0	1
Juice, orange	11	9	2	0	0	0	3	8
Kiwi fruits	19	6	11	2	0	9	10	0
Lemons	8	0	8	0	0	4	4	0
Limes	3	0	3	0	0	0	3	0
Mandarins	22	0	20	2	0	3	19	0
Mangoes	6	2	4	0	0	0	6	0
Melons	4	0	4	0	0	1	3	0
Minneolas	2	0	0	2	0	0	2	0
Nectarines	6	0	6	0	0	6	0	0
Oranges	30	1	27	2	0	6	24	0
Papaya	2	0	2	0	0	0	2	0
Passionfruits	3	0	2	1	0	0	3	0
Pears	22	2	20	0	0	20	2	0
Persimmon	1	1	0	0	0	0	1	0
Pineapples	5	0	5	0	0	0	5	0
Plums	10	3	7	0	0	6	4	0
Pomelo	1	0	1	0	0	0	1	0
Pumpkin seeds	1	1	0	0	0	0	1	0
Raisins	1	1	0	0	0	0	1	0
Rapeseed oil	2	1	1	0	1	1	0	0
Raspberries	5	4	1	0	1	2	2	0
Satsumas	8	0	8	0	0	1	7	0
Sesame seed	1	1	0	0	0	0	1	0
Sharon fruit	1	1	0	0	0	1	0	0
Strawberries	23	3	20	0	9	10	4	0
Sunflower oil	2	2	0	0	0	1	0	1
Table grapes	20	2	18	0	0	8	12	0
Wine, red	5	3	2	0	0	1	4	0
Wine, white	3	2	1	0	0	2	1	0
Total	**377**	**74**	**285**	**18**	**14**	**136**	**212**	**15**

Table 100: Summary results – vegetable and fungi including processed and enforcement

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Asparagus	2	2	0	0	0	1	1	0
Aubergines	10	2	8	0	0	9	1	0
Avocados	7	5	2	0	0	0	7	0
Basil	1	0	1	0	0	0	1	0
Beans (without pods)	8	6	2	0	0	0	7	1
Beans (with pods)	7	1	5	1	0	0	7	0
Beans (pulses)	2	1	1	0	0	1	1	0
Broccoli	15	9	6	0	3	10	2	0
Brussels sprouts	1	1	0	0	0	0	0	1
Carrots	19	7	9	3	10	7	1	1
Cauliflowers	17	14	2	1	11	5	1	0
Celeriac	2	0	2	0	0	2	0	0
Celeries	4	1	2	1	1	3	0	0
Chards	2	0	2	0	0	1	1	0
Chickpeas	2	2	0	0	0	0	2	0
Chili peppers	2	0	2	0	0	2	0	0
Chives	1	0	1	0	0	0	1	0
Common mushrooms	6	1	5	0	6	0	0	0
Courgettes	14	8	6	0	1	12	1	0
Cucumbers	11	4	7	0	0	11	0	0
kales	7	3	4	0	6	1	0	0
Florence fennels	2	1	1	0	0	2	0	0
Garden peas (with pods)	7	1	6	0	0	0	7	0
Garden peas (without pods)	7	6	1	0	0	0	0	7
Garlic	1	1	0	0	0	0	1	0
Ginger	2	2	0	0	0	0	2	0
Head cabbages	12	7	5	0	6	5	1	0
Juice, Tomato	1	1	0	0	0	0	1	0
Leeks	3	3	0	0	2	1	0	0
Lentils	4	3	1	0	0	0	1	3
Lettuces (generic)	22	6	16	0	8	13	1	0
Olive oil	4	3	1	0	0	1	2	1
Onions	18	18	0	0	0	17	1	0
Pak-choi	1	1	0	0	1	0	0	0
Parsley	1	1	0	0	1	0	0	0
Parsnip roots	3	2	1	0	3	0	0	0
Potatoes	35	18	17	0	28	5	2	0
Roman rocket and similar-	4	0	4	0	0	4	0	0
Sage	1	0	1	0	0	0	1	0
Shi-take mushrooms	1	1	0	0	1	0	0	0
Spinaches	3	0	3	0	0	2	1	0
Spring onions	3	1	2	0	1	0	2	0
Swedes	3	1	0	2	3	0	0	0
Sweet corn	1	1	0	0	0	0	1	0
Sweet peppers	23	8	15	0	1	21	1	0
Sweet potatoes	8	4	4	0	0	1	7	0
Tea	6	6	0	0	0	0	2	4
Tomatoes	30	12	18	0	10	17	3	0

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Turnips	1	1	0	0	1	0	0	0
Water Cress	1	1	0	0	1	0	0	0
Winter squashes	1	1	0	0	0	1	0	0
Total	**349**	**178**	**163**	**8**	**105**	**155**	**71**	**18**

Table 101: Summary results – cereals including processed and enforcement

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Barley grains	10	9	1	0	10	0	0	0
wheat grain	1	0	1	0	0	0	0	1
Oat grain	14	14	0	0	0	0	1	13
Rice grain	15	5	7	3	0	0	0	15
Rye flour	12	9	3	0	0	5	1	6
Wheat flour	20	5	15	0	0	0	3	17
Total	**72**	**42**	**27**	**3**	**10**	**5**	**5**	**52**

Table 102: Summary results – other plant products including processed and enforcement

Commodity	Residues Detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Brazil nuts	1	1	0	0	0	0	1	0
Cashew nuts	2	2	0	0	0	0	0	2
Coconuts	2	2	0	0	0	0	2	0
Hazelnuts	1	1	0	0	1	0	0	1
Walnuts	2	2	0	0	0	0	0	2
Total	**18**	**17**	**1**	**0**	**1**	**5**	**9**	**3**

Table 103: 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	140	138	2	0	140	0	0	0
Bovine liver	12	12	0	0	12	0	0	0
Chicken, fresh fat tissue	19	16	3	0	19	0	0	0
Equine fat tissue	2	2	0	0	2	0	0	0
Pig fat tissue	60	59	1	0	60	0	0	0
Sheep fat tissue	81	72	9	0	81	0	0	0
Turkey, fresh fat tissue	6	6	0	0	6	0	0	0
Cow milk, whole	94	94	0	0	94	0	0	0
Goat milk, whole	3	3	0	0	3	0	0	0
Hen eggs	29	29	0	0	29	0	0	0
Honey	11	11	1	0	11	0	0	0
Total	**457**	**441**	**16**	**0**	**457**	**0**	**0**	**0**

Table 104: Summary results – infant food

Commodity	Residues detected				Origin of samples			
	Total	<LOQ	>LOQ and <MRL	>MRL	Ireland	EU	TC	Unknown
Follow-on formulae	14	14	0	0	14	0	0	0

Infant formulae	25	25	0	0	25	0	0	0
Processed cereal-based food for infants and young children	9	9	0	0	0	0	1	8
Ready-to-eat meal for infants and young children	21	21	0	0	0	0	0	21
Total	**69**	**69**	**0**	**0**	**39**	**0**	**1**	**29**

Table 105: Summary results – enforcement (samples also included in Table 99 to Table 104)

Commodity	**Type**	**Residues detected**			
		Total no. of samples	**<LOQ**	**>LOQ and <MRL**	**>MRL**
Banana	B I P	1	1	0	0
Raisin	B I P	1	1	0	0
Green tea	B I P	2	2	0	0
Jackfruit	B I P	1	0	1	0
Pepper	B I P	1	0	1	0
Apple	Targeted	2	0	2	0
Carrots	Targeted	2	1	1	0
Lettuce	Targeted	1	0	1	0
Grape leaves	Statutory	2	0	0	2
Seasame seeds	Statutory	1	1	0	0
Potatoes	Investigation	9	0	9	0
Total		**23**	**6**	**15**	**2**

Table 106: Summary results – MRL exceedance details

Commodity	**Residues detected**			
	Origin	**compound**	**Result**	**MRL**
Mandarin	Turkey	flutriafol	0.015	0.01
Grapefruit	Turkey	buprofezin	0.042	0.01
Minneola	Turkey	esfenvalerate	0.064	0.02
Grapefruit	Turkey	buprofezin	0.011	0.01
Grapefruit	Turkey	buprofezin	0.027	0.01
Grapefruit	South Africa	imazalil	4.7	4
Clementine	South Africa	bromopropylate	0.011	0.01
Orange	Morocco	imazalil	4.8	4
		thiabendazole	10	7
Minneola	Peru	buprofezin	0.014	0.01
Orange	South Africa	imazalil	4.8	4
Mandarin	Peru	buprofezin	0.025	0.01
Apple	Brazil	chlorpyrifos	0.08	0.01
		fenitrothion	0.011	0.01
Kiwi	Chile	ortho-phenylphenol	0.014	0.01
Kiwi	Chile	ortho-phenylphenol	0.014	0.01
Passion fruit	Colombia	thiabendazole	0.013	0.01
Granate apple	Egypt	deltamethrin	0.018	0.01
Grape leaves	Egypt	acetamiprid	0.072	0.01
		azoxystrobin	0.32	0.01
		boscalid	1.1	0.01
		chlorpyrifos	0.59	0.01
		difenoconazole	0.3	0.05
		lufenuron	0.38	0.01
		pyraclostrobin	0.064	0.02

Commodity	Residues detected			
	Origin	compound	Result	MRL
		fipronildesulfinyl	0.048	0.01
		lambda-cyhalothrin	0.28	0.01
		cypermethrin	0.053	0.05
		fenpropathrin	0.21	0.01
		propargite	0.29	0.01
		propiconazole	0.06	0.01
		carbendazim	0.98	0.1
Grape leaves	Egypt	acetamiprid	0.035	0.01
		azoxystrobin	0.61	0.01
		boscalid	0.38	0.01
		carbendazim	2.6	0.1
		chlorpyrifos	0.26	0.01
		difenoconazole	0.6	0.05
		fenpyroximate	0.068	0.01
		imidacloprid	3.2	2
		lufenuron	0.72	0.01
		metalaxyl	0.1	0.01
		spirodiclofen	0.078	0.02
		trifloxystrobin	0.11	0.01
		lambda-cyhalothrin	0.073	0.01
		cypermethrin	0.19	0.05
		fenpropathrin	0.023	0.01
		iprodione	0.036	0.01
		propiconazole	0.1	0.01
Carrots	Spain	linuron	0.011	0.01
Carrots	Ireland	dieldrin	0.024	0.01
Carrots	Israel	iprodione	0.024	0.01
Cauliflower	Germany	thiabendazole	0.012	0.01
Swedes	Ireland	chlorthal dimethyl	0.014	0.01
Swedes	Ireland	chlorpropham	0.52	0.01
Celery	Spain	linuron	0.043	0.01
Beans with pods	Kenya	acephate	0.014	0.01
Rice	Unknown	buprofezin	0.013	0.01
Rice, brown	Unknown	buprofezin	0.033	0.01
Rice	Unknown	thiamethoxam	0.011	0.01
		tricyclazole	0.011	0.01
		buprofezin	0.013	0.01
Chicken fat	Ireland	ortho-phenylphenol	0.03	0.01
Chicken fat	Ireland	ortho-phenylphenol	0.024	0.01

17.2.2. Interpretation of the results

In 2020 16.1% of the fruit and vegetable samples analysed were of domestic origin and the rest were imported from the EU and elsewhere. 96.5% of the fruit and vegetables samples either contained no residues or contained residues within the legally permitted levels (35.8% contained no residues and 60.7% of samples contained residues at levels which were in compliance with the EU legislation). The remaining 3.5% contained residues exceeding the MRLs. When measurement uncertainty (50%) is taken into account this reduces to 1.9%.

In the case of the cereal samples, 13.9% were of domestic origin. No residues were detected in 58.3% of the samples and 37.5% of the cereal samples had residues in compliance with the EU legislation. The remaining 4.2% contained residues exceeding the MRLs this dropped to 1.4% when measurement uncertainty (50%) is taken into account.

All the food of animal origin samples originated domestically. No residues were detected in 96.5% of the samples, 3.5% of the samples had residues in compliance with the EU legislation.

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

In 2020 six samples were taken under EU Regulations dealing with increased inspection of targeted food commodities from certain countries. No residues were detected in 66.7% of the samples and 33.3% of the samples had residues in compliance with the EU legislation.

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 2020 one breach was found to present a possible issue, chlorpyrifos in apples.

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 2020 a total of 5 such targeted samples were identified and taken.

17.2.3. Comparability with the previous year results

In the 2020 programme a total of 738 fruit, vegetable and fungi samples were analysed. When compared to previous years, the number of samples with residues detected above the MRL (3.5%) is higher than 2019 (0.8%) and 2018 (3.0%). 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 67.5% in 2019 to 64.2% in 2020. The number of pesticides being detected has remained relatively constant.

As 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 the fruit and vegetables samples during 2020 using the multi residue methods.

Pesticide residues were found in 41.7% of the cereal samples taken and there were 3 rice samples where the MRL was exceeded. This is less than that found in 2019 (61.3%) and 2018 (44.4%).

The percentage of food of animal origin samples with detectable residues remained relatively low over the past three years: 3.5% in 2020, 2.0% in 2019 and 3.9% in 2018. There was no MRL breach in 2020 compared with none in 2019 or 2018 for food of animal origin. In line with previous years there continued to be no residues detected in the infant and follow-on formula samples analysed in 2020.

There were no MRL breaches for import control samples in 2020 compared with none in 2019 and one in 2018.

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 2020, 5 MRL breaches were detected in produce of domestic origin (carrot, 2 swedes and 2 chicken fat). 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 FSAI.

In one case, an issue for apples containing chlorpyrifos could not be ruled out.

Table 107: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product	Frequency[(a)]	Origin country
Misuse of product	chlorpyrifos / apples	1	Brazil
Misuse of product	buprofezin / grapefruit	3	Turkey
Misuse of product	esfenvalerate / minneola	1	Turkey

Reasons for MRL non-compliance	Pesticide/food product	Frequency[(a)]	Origin country
Misuse of product	buprofezin / mandarin	1	
Misuse of product	Chlorpyrifos / grape leaves	1	Egypt
Misuse of product	buprofezin / rice	3	
Unknown	dieldrin / carrot	1	Ireland
Misuse of product	iprodione / carrot	1	Israel
Misuse of product	chlorpropham / swede	1	Ireland
Misuse of product	celery / linuron	1	Spain

(a): Number of cases

17.3.2. ARfD exceedances

There was one possible issue identified for chlorpyrifos in apples from Brazil.

17.3.3. Actions taken

Inspections are carried for all Irish MRL breaches. For other MRL breaches the Food Business Operator is informed as well as the CODEX contact point for the country of origin.

For the ARfD exceedance the importer was informed of the issue and a follow up sample was taken of the next consignment, which was compliant.

Table 108: Actions taken

	Action taken	No. of non-compliant samples concerned	Comments
Follow-up (suspect) sampling of similar products, samples of same producer or country of origin	Targeted Sampling where possible	5 targeted 2 statutory	To date other relevant samples could not be found on the market in 2020
Warnings to responsible food business operator	Letter sent informing the FBO of the issue	9	All MRL breaches followed up in this way at a minimum
Other follow-up investigations to identify reason of non-compliance or responsible food business operator	Grower contacted by a PCD enforcement officer	3	For Irish MRL breaches

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 109: Laboratories 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	1/1/2020-31/12/2020	INAB	5 EUPTs in 2020

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 Directorate.

This control program is a part of the national control plan that is available in the web site of the Ministry of Health[22]

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 and 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 (EC) No 396/2005

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

Specific indications were given about the transmission of data and the processing factor the laboratories must 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 also reports 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 (EU) No 533/2019.

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

In 2020, Italy was in situation of emergency due coronavirus and the competent Authorities in charge of the controls of residues of pesticides were mainly involved in activities to prevent the disease or take care of the patient. Therefore, the controls have been carried out, but a decrease on the number of controls is observed.

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https://www.salute.gov.it/pianoNazionaleIntegrato2020/homePianoNazionaleIntegrato2020.jsp#:~:text=Il%20Piano%20di%20Controllo%20Nazionale%20Pluriennale%20%28PCNP%29%20descrive,di%20verificare%20la%20corretta%20applicazione%20della%20legislazione%20comunitaria

Non-compliant samples were (1.0%) taking in consideration also non-compliant import controls.

Detailed information about import control were collected. In particular, 210 samples were taken at border places and 8,200 samples were taken from local health authorities, Command Carabinieri Health Prevention and other Authorities.

Out of a total of 8,410 (Table 110) samples 56.6 % are fruit and vegetable: 14.3% cereals, 12.1% oil and wine, 1.1% baby food and 15.9% other type of food (processed different form oil and wine, product of animal origin, fish product, tea, spice, sugar plant, oilseeds and oil fruits).

67.3% of samples (Table 111) are without residues, while 31.7 % are with residues below the MRL and 1.0% are irregular. All baby food samples are without residues and compliant. Irregular samples were found on cereal, fruit and vegetable.

7,474 samples had as origin Italy, 320 came from other EU Member states, 459 came from third countries and for 157 samples the origin was unknown.

The 4.6 % (388) of samples were organic. 4.5 % (375) of the samples were enforcement sample.

The total number of products sampled for European program (Table 114) of the Regulation (EU) No 533/2019 was 1,228. All type of food were sampled in quantity above the indication reported in that regulation.

Table 110: Summary results

Fruit & vegetables	%	Cereals	%	oil & wine	%	Baby food	%	other product	%	Total
4,759	56.6	1,202	14.3	1,017	12.1	96	1.1	1,338	15.9	8,412

Table 111: Compliant – non-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	4,759	2,600	54.6	2,087	43.9	72	1.5
Cereals	1,202	974	81.0	219	18.2	9	0.7
Oil & wine	1,017	711	69.9	306	30.1	0	0.0
Baby food	96	96	100	0	0.,0	0	0.0
Other product	1,338	1,283	95.9	55	4.1	0	0.0
Total	8,412	5,664	67.3	2,667	31.7	81	1.0

Table 112: 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	4.530	2.435	53,8	2.027	44,7	68	1,5
Cereals	1172	960	81,9	205	17,5	7	0,6
oil & wine	1015	710	70,0	305	30,0	0	0,0
Baby food	96	96	100,0	0	0,0	0	0,0
other product	1.387	1.332	96,0	54	3,9	1	0,1
Total	8.200	5.533	67,5	2.591	31,6	76	0,9

Table 113: 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	137	84	61.3	50	36.5	3	2.2
Cereals	30	14	46.7	14	46.7	2	6.7
other product	43	32	74.4	11	25.6	0	0.0
Total	210	130	61.9	75	35.7	5	2.4

Table 114: EUCP samples

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 (%)
Infant formulae. powder	1	1	100.0	0	0.0	0	0.0
Infant formula, milk based powder	9	9	100.0	0	0.0	0	0.0
Infant formulae. liquid	6	6	100.0	0	0.0	0	0.0
Infant formula, milk-based. liquid	7	7	100.0	0	0.0	0	0.0
Infant formulae	7	7	100.0	0	0.0	0	0.0
Infant formulae organic	2	2	100.0	0	0.0	0	0.0
Follow-on formulae powder	1	1	100.0	0	0.0	0	0.0
Follow-on formula, milk-based powder	5	5	100.0	0	0.0	0	0.0
Follow-on formula, milk-based liquid	4	4	100.0	0	0.0	0	0.0
Follow-on formulae	11	11	100.0	0	0.0	0	0.0
Follow-on formulae organic	1	1	100.0	0	0.0	0	0.0
Poultry fat tissue	21	21	100.0	0	0.0	0	0.0
Chicken. fresh fat tissue	28	28	100.0	0	0.0	0	0.0
Chicken. fresh fat tissue-organic	7	7	100.0	0	0.0	0	0.0
Turkey. fresh fat tissue	1	1	100.0	0	0.0	0	0.0
Bovine liver	67	64	95.5	3	4.5	0	0.0
Bovine liver organic	7	7	100.0	0	0.0	0	0.0
Rice and similar-	35	25	71.4	10	28.6	0	0.0
Rice and similar-	5	5	100.0		0.0	0	0.0
Rice grain	68	50	73.5	16	23.5	2	2.9
Rice grain	10	10	100.0	0	0.0	0	0.0
Rice grain. brown	1	1	100.0	0	0.0	0	0.0
Rye grain	17	14	82.4	3	17.6	0	0.0
Rye grain organic	5	5	100.0	0	0.0	0	0.0
Rye flour. wholemeal	8	5	62.5	3	37.5	0	0.0
Rye flour. wholemeal organic	8	8	100.0	0	0.0	0	0.0
Rye and similar-	4	1	25.0	3	75.0	0	0.0
Rye flour	14	10	71.4	4	28.6	0	0.0
Rye flour	2	2	100.0	0	0.0	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 (%)
Oranges and similar-	19	9	47.4	9	47.4	1	5.3
Oranges and similar-organic	2	1	50.0	1	50.0	0	0.0
Oranges	101	44	43.6	54	53.5	3	3.0
Oranges-organic	5	4	80.0	1	20.0	0	0.0
Pears and similar-	12	2	16.7	9	75.0	1	8.3
Pears and similar-organic	1		0.0	1	100.0	0	0.0
Pears	124	10	8.1	114	91.9	0	0.0
Pears-organic	4	3	75.0	1	25.0	0	0.0
Kiwi fruits (green, red, yellow)	69	45	65.2	23	33.3	1	1.4
Kiwi fruits (green. red. yellow)-organic	6	6	100.0	0	0.0	0	0.0
Kiwi fruits and similar-	24	21	87.5	3	12.5	0	0.0
Kiwi fruits and similar-organic	2	2	100.0	0	0.0	0	0.0
Cauliflowers	56	54	96.4	2	3.6	0	0.0
Cauliflowers organic	2	2	100.0	0	0.0	0	0.0
Cauliflowers and similar-	14	12	85.7	1	7.1	1	7.1
Onions and similar-	8	7	87.5	1	12.5	0	0.0
Onions	102	94	92.2	8	7.8	0	0.0
Onions organic	8	8	100.0	0	0.0	0	0.0
Carrots	94	59	62.8	34	36.2	1	1.1
Carrots organic	9	8	88.9	1	11.1	0	0.0
Carrots and similar-	10	7	70.0	3	30.0	0	0.0
Carrots and similar-organic	1	1	100.0	0	0.0	0	0.0
Potatoes	101	76	75.2	24	23.8	1	1.0
Potatoes-organic	4	4	100.0	0	0.0	0	0.0
Potatoes and similar-	9	7	77.8	2	22.2	0	0.0
Beans (dry) and similar-	69	62	89.9	7	10.1	0	0.0
Beans (dry) and similar-organic	4	4	100.0	0	0.0	0	0.0
Borlotti or other common beans (dry)	6	2	33.3	4	66.7	0	0.0

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

In 2020, 1.0 % of the samples (81 samples in total) were found not compliant with the EU MRL. The measures adopted for samples not compliant with Regulation (EC) No 396/2005 are reported in Table 115.

Table 115: Actions taken

Action taken	Number of non-compliant samples concerned
Rapid Alert Notification	6
Administrative sanctions (e.g. fines)	22
Movement restriction	1
Follow-up action due to a residue of a pesticide detected in	0

Action taken	Number of non-compliant samples concerned
an EU sample, which is not approved for use in the EU territory	
Follow up (suspect) sampling	0
Follow-up investigation	1
No Action	7
Lot recalled from the market	0
Rejection of a non-compliant lot at the border	0
Destruction of non-compliant lot	0
Follow-up action due to the residue of a pesticide detected in a domestic product, which is not authorized in the country	0
Warnings to responsible food business operator	1
Other follow-up investigations to identify reason of non-compliance or responsible food business operator	0
Other actions or not reported	43

Table 116: MRL non-compliant

Pesticide/Food product	Frequency
2-Phenylphenol (RD)/Cultivated fungi and similar-/1	1
Acrinathrin (RD)/Sweet peppers/1	1
Acrinathrin (RD)/Lemons/1	1
Acrinathrin (RD)/Common peaches/1	1
Ametoctradin/Apricots/1	1
Amitraz (RD)/Rice grain/1	1
Azinphos-methyl/Kiwi fruits (green, red, yellow)/1	1
Azoxystrobin/Broccoli/1	1
Benzalkonium chloride (RD)/Cultivated fungi and similar-/1	1
Buprofezin/ Sweet peppers/2	2
Buprofezin/ Celery leaves/1	1
Buprofezin/ Rice grain/1	1
Carbendazim and benomyl (RD)// Rice grain/2	2
Carbofuran (RD)/Tomatoes and similar-/1	1
Chlorfenapyr/Cherry tomatoes/1	1
Chlorfenapyr/Tomatoes/2	2
Chlorpropham/Apples/1	1
Chlorpropham/Carrots/1	1
Chlorpyrifos/Spinaches/1	1
Chlorpyrifos/Pears and similar-/1	1
Chlorpyrifos/Parsley and similar-/1	1
Chlorpyrifos/Rice grain/1	1
Chlorpyrifos/Beans (dry) and similar-/1	1
Chlorpyrifos/Potatoes/1	1
Chlorpyrifos/Lettuces (generic)/1	1
Chlorpyrifos/Florence fennels/1	1
Cymoxanil/Lettuces (generic)/1	1
Cypermethrin (RD)/Celeries/1	1
Deltamethrin (RD)/Common peaches/1	1
Deltamethrin (RD)/Globe tomato/1	1
Deltamethrin (RD)/Plums and similar-/1	1
Difenoconazole/Broccoli/1	1
Dimethoate/Spinaches/1	1
Dimethoate/Strawberries/1	1
Dimethoate/Mandarins/1	1
Dimethoate/Oranges and similar-/2	2
Dimethoate/Oranges/4	4
Dimethoate/Flat peaches/1	1
Dimethoate/Common peaches/3	3
Dimethoate/Peaches and similar-/2	2
Dimethoate/Potatoes/1	1

Pesticide/Food product	Frequency
Dimethoate/Kiwi fruits (green, red, yellow)/1	1
Dimethoate/Plums and similar-/1	1
Dimethoate/Plums/1	1
Etofenprox/Blueberries/1	1
Etofenprox/Plums/3	3
Famoxadone/Sweet peppers/1	1
Fenazaquin/Cultivated fungi and similar-/1	1
Fenhexamid/Pears/1	1
Fenvalerate (RD)/Celery leaves/1	1
Fludioxonil/Common banana/1	1
Flutriafol/Lentils (dry) and similar-/1	1
Formetanate hydrochloride/Cauliflowers and similar-/1	1
Glyphosate/Beans (with pods) and similar-/1	1
Imazalil (RD)/Bananas and similar-/1	1
Imazalil (RD)/Common banana/1	1
Imidacloprid/Spinaches and similar-/1	1
Iprodione/Strawberries/1	1
Linuron/Parsley/1	1
Metalaxyl (RD)/Courgettes/1	1
Methamidophos/Rice grain/1	1
Methomyl/Wheat and similar-/1	1
Omethoate/American persimmons and similar-/1	1
Omethoate/Chards and similar-/1	1
Omethoate/Spinaches/1	1
Omethoate/Peaches and similar-/1	1
Omethoate/Common peaches/3	3
Omethoate/Mandarins/1	1
Omethoate/Plums/1	1
Omethoate/Plums and similar-/1	1
Phosmet (RD)/Apricots/1	1
Pirimiphos-methyl/Sweet peppers/1	1
Pirimiphos-methyl/Rice grain/1	1
Procymidone/strawberries organic/1	1
Propyzamide/Carrots/1	1
Pyridaben/Sweet peppers/1	1
Spinosad (RD)/Cherries (sweet)/1	1
Spiroxamine (RD)/Common peaches -organic/1	1
Spiroxamine (RD)/Common peaches/1	1
Tebuconazole/Apples and similar-/1	1
Tetraconazole/Escaroles/1	1
Tetramethrin/Rice grain/2	2
Tetramethrin/Wheat and similar-/2	2
Thiamethoxam/Rice grain/1	1
Triadimenol (RD)/Beans (dry) and similar-/1	1
Tricyclazole/Rice grain/3	3

18.4. Quality assurance

All regions participated in national program and the corresponding laboratories are listed in Table 117.

Moreover, 10 laboratories, not reported because the final EUPT report is not available, attended the proficiency test EUPT SRM15.

The Italian laboratories attended also to the COIPT 20 Proficiency test organized by the Italian National laboratory of reference.

All laboratories are accredited

Table 117: Laboratories participating in the control programme

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 AO-15; EUPT-CF14; EUPT FV22; COIPT-20
IT	IZS DELLE VENEZIE	I0300000	18/07/1997	Accredia	EUPT-CF14
IT	IZS LAZIO E TOSCANA	I0500000	1998	Accredia	EUPT AO-15; EUPT-CF14; EUPT FV22; COIPT-20
IT	IZS UMBRIA E MARCHE	I0600000	14/12/1998	Accredia	EUPT-CF14; EUPT FV22
IT	IZS ABRUZZO E MOLISE	I0700000	18/12/2003	Accredia	EUPT AO-15; EUPT-CF14; EUPT FV22
IT	IZS DELLA SICILIA	I1000000	08/07/1999	Accredia	EUPT AO-15; EUPT-CF14; EUPT FV22
IT	IZS DELLA SARDEGNA	I0400000	17/05/2011	Accredia	EUPT AO-15; EUPT-CF14; EUPT FV22
IT	IZS DELLA PUGLIA E BASILICATA	I0800000	31/10/2000	Accredia	EUPT-CF14; EUPT FV22
IT	IZS DEL MEZZOGIORNO	I0900000	14/07/2010	Accredia	EUPT AO-15
IT	IZS PIEMONTE - LIGURIA e VALLE D'AOSTA	I0100000		Accredia	EUPT-CF14; EUPT FV22; COIPT-20
IT	ARPA AOSTA	P0201010	03/10/2007	Accredia	EUPT-CF14; EUPT FV22
IT	ATS BERGAMO	030325	19/06/2009	Accredia	EUPT AO-15; EUPT-CF14; EUPT FV22; COIPT-20
IT	APPA BOLZANO	P0411010	05/12/2001	Accredia	EUPT AO-15; EUPT-CF14; EUPT FV22; COIPT-20
IT	APPA TRENTO	P0421010		Accredia	EUPT-CF14; EUPT FV22
IT	ARPAV VENETO	P0501200	09/07/2008	Accredia	EUPT AO-15; EUPT-CF14; EUPT FV22
IT	ARPA FRIULI VENEZIA GIULIA	P0601040	17/10/2012	Accredia	EUPT AO-15; EUPT-CF14; EUPT FV22; COIPT-20
T	ARPAL LIGURIA	P0701050	25/06/2002	Accredia	EUPT AO-15 EUPT-CF14; EUPT FV22; COIPT-20
IT	ARPA EMILIA ROMAGNA	P0801090	1998	Accredia	EUPT-CF14; EUPT FV22; COIPT-20
IT	ARPAM MACERATA	P1101090	December 1999	Accredia	EUPT-CF14; EUPT FV22
IT	ARPA LAZIO	P1201110	18/03/2004	Accredia	EUPT AO-15 EUPT-CF14; EUPT FV22
IT	ARPA PUGLIA	P1601040	25/02/2010	Accredia	EUPT AO-15- EUPT-CF14; EUPT FV22; COIPT-20
IT	ARPA CAMPANIA	P1500400	17/02/2011	Accredia	EUPT FV22
IT	ATS MILANO	030321	21/12/2010	Accredia	EUPT AO-15; EUPT-CF14; EUPT FV22; COIPT-20
IT	LABORATORIO DI SANITA PUBBLICA FIRENZE	090201	18/12/2006	Accredia	EUPT AO-15; EUPT-CF14; EUPT FV22; COIPT-20

18.5. Processing factors

In Table 118, the processing factors used by national competent authorities to verify compliance of processed products with EU MRLs are presented.

Table 118: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor [(a)]
All	Pepper	Dried pepper	10
Nicotine	Fungi	Dried fungi	30
Other different from nicotine	Fungi	Dried fungi	10
All	Oregano	Dried oregano	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 draft.

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**Error! Bookmark not defined.** 11 July 2002 drafting Community methods of ampling for the official control of pesticide residues in and on products of plant and animal origin.

Table 119: Summary of samples taken in 2020 by product class and origin of samples

Samples	Total	Domestic	EU[(a)]	TC[(b)]
Animal products	27	14	11	2
Cereals	62	32	9	21
Baby food	18	10	8	0

Samples	Total	Domestic	EU[(a)]	TC[(b)]
Fruit and nuts	87	26	39	22
Vegetables	113	67	43	3
Other plant products	25	14	1	10
Wine	0	0	0	0
Honey	7	5	0	2
Total	**339**	168	111	60

(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 2018/555 in 2019, a total of 286 samples of fruit: apples, strawberries, peaches, nectarines, grapes; vegetables: cabbages, tomatoes, spinaches, lettuces; cereals: barley, oat, wine; animal products: fat, milk and baby food. The proportion of organic samples in year 2019 was 8 % (23 samples).

National programme: total of 62 samples of vegetables: carrots, cauliflowers, potatoes, head cabbages, onions; cereals: barley, wheat; rape; honey; fruit: blueberries, cranberries, cherries, sea buckthorns, strawberries, all samples of domestic origin. The proportion of organic samples in year 2019 was 40 % (25 samples).

Pesticides residues control on border posts: total of 44 samples from third countries: wine, honey, citrus fruits, strawberries, head cabbages, teas, eggs, peas, buckwheat, onions, linseeds. The proportion of organic samples in year 2019 was 56 % (25 samples).

Table 120: Summary results

Product	Total samples	Non-compliant samples
Baby food	18	0
Liver	12	0
Poultry meat, fat	13	0
Hen egg/product	2	0
Honey	7	0
Rice	24	0
Rye grain	24	0
Wheat	4	0
Barley	3	0
Buckwheat	4	0
Rapeseeds	2	0
Oranges	24	0
Apples	6	0
Pears	26	0
Strawberries	2	0
Berries	6	0
Cherries	2	0
Cabbage	4	0
Onions	28	0
Cauliflowers	24	0
Beans	22	0
Potatoes	29	0
Carrots	27	0
Seeds	2	0
Kiwi	24	0

19.2.2. Interpretation of the results

In 2020, non-compliant results were found.

19.2.3. Comparability with the previous year results

Comparison of the results (Table 121) for 2016, 2017, 2018, 2019 and 2020 shows that they do not differ significantly.

Table 121: 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

19.3. Non-compliant samples: possible reasons and actions taken

No exceedance reported.

As no non-compliant samples were found, no follow up actions were performed.

19.4. Quality assurance

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

Table 122: 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	09 December 2020	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.

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 550 (629 in 2019) samples and import control programme were 774 (625 in 2019) samples, total amount 1324 samples (1254 in 2019), which are 70 samples more than previous year (in 2019 there were 1254 samples).

Exceedances of MRLs were found in 30 samples non-compliant (measurement uncertainty taken into consideration). The total percentage of non-compliances is 2.3 %.

Non-compliant samples are mentioned in Table 123.

Table 123: Non-compliant samples in 2020

Product	Origin country	Programme	Residue	Value (mg/kg)	MRLs, (mg/kg)
Organic flaxseed	Turkey	Import control	Chlorpyrifos	0.016 ± 0.008	-
Organic mulberry syrup	Turkey	Import control	Azoxystrobin; Metalaxyl and M-metalaxyl; Pyrimethanil;	0.010 ± 0.005; 0.020 ± 0.010; 0.013 ± 0.006	-
Red Oolong Tea	Kinija	Import control	Lambda-cyhalothrin; Acetamiprid; Tolfenpiradas;	0.16 ± 0.08; 0.119 ± 0.059; 0.082 ± 0.041	0.01 0.05 0.01
Grapefruit	Turkey	Import control	Fenbutatin oxide	0.056 ± 0.028	0.01
Organic oilseed rape	Russia	Import control	Cimiazoles Tokios analites nera EFSA'os klasyne	0.044 ± 0.022	-
Organic oilseed rape	Russia	Import control	Cimiazoles Tokios analites nera EFSA'os klasyne	0.049 ± 0.024	-
Organic pumpkin seed kernels	China	Import control	Cimiazoles Tokios analites nera EFSA'os klasyne	0.029 ± 0.015	-
Oranges	Egypt	Import control	Cyfluthrin (sum of diasteroisomers) Tokios analites nera EFSA'os klasyne	0.086 ± 0.043	0.02
Tangerines	Turkey	Import control	Fenbutatin oxide	0.83 ± 0.41	0.01
Grapefruit Red	Turkey	Import control	Fenbutatin oxide	0.078 ± 0.039	0.01
Grapefruit Red	Turkey	Import control	Fenbutatin oxide	0.32 ± 0.16	0.01
Lemon	Egypt	Import control	Chlorfenapyr, Cyfluthrin, Profenophos	0.086 ± 0.043 0.12 ± 0.06 0.037 ± 0.0.018	0.01 0.02 0.01
Grapefruit Red	Turkey	Import control	Fenbutatin oxide	0.21 ± 0.11	0.01
Organic White Bolivian Pigeon	Peru	Import control	Chlorpyrifos; Acetamiprid;	0.018 ± 0.009; 0.014 ± 0.007;	-
Buckwheat	Poland	National control	Glyphosate	0.73 ± 0.37	0.1
Organic oilseed rape	Russia	Import control	Thiamethoxam Tokios analites nera	1.19 ± 0.60	-

Product	Origin country	Programme	Residue	Value (mg/kg)	MRLs, (mg/kg)
			EFSA'os klasyne		
Organic oilseed rape	Russia	Import control	Thiamethoxam Tokios analites nera EFSA'os klasyne	1.55 ± 0.78	-
Organic pumpkin seed kernels	China	Import control	Procymidone	0.012 ± 0.006	0
Organic blueberries, frozen	Belarus	Import control	N, N-diethyl-m-toluamide (DEET) Tokios analites nera EFSA'os klasyne	0.065 ± 0.033	-
Buckwheat	Poland	National control	Glyphosate	1.1 ± 0.6	0.1
Tangerines	South Africa Republic	National control	Fenbutatin oxide	0.048 ± 0.024	0.01
Organic pumpkin seed kernels	China	Import control	Trifluralin	0.012 ± 0.006	
Deer fat	Lithuania	Residues monitoring	Hexachlorobenzene	0.049 ± 0.025	0.01
Radishes black	Lithuania	National control	Chlorpyrifos	0.10 ± 0.05	0.01
Buckwheat	Lithuania	National control	Glyphosate	0.37 ± 0.19	0.1
Grapes	Turkey	Import control	Acetamiprid	2.3 ± 1.2	0.5
Persimmons	Spain	National control	Acetamiprid	0.05 ± 0.025	0.01
Sunflower seeds with black shell	Moldova	Import control	Chlorpyrifos	0.046 ± 0.023	0.01
Buckwheat	Poland	National control	Glyphosate	1.01 ± 0.51	0.1
Long grain rice	Brazil	Import control	Tricyclazole	0.04 ± 0.02	0.01

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.

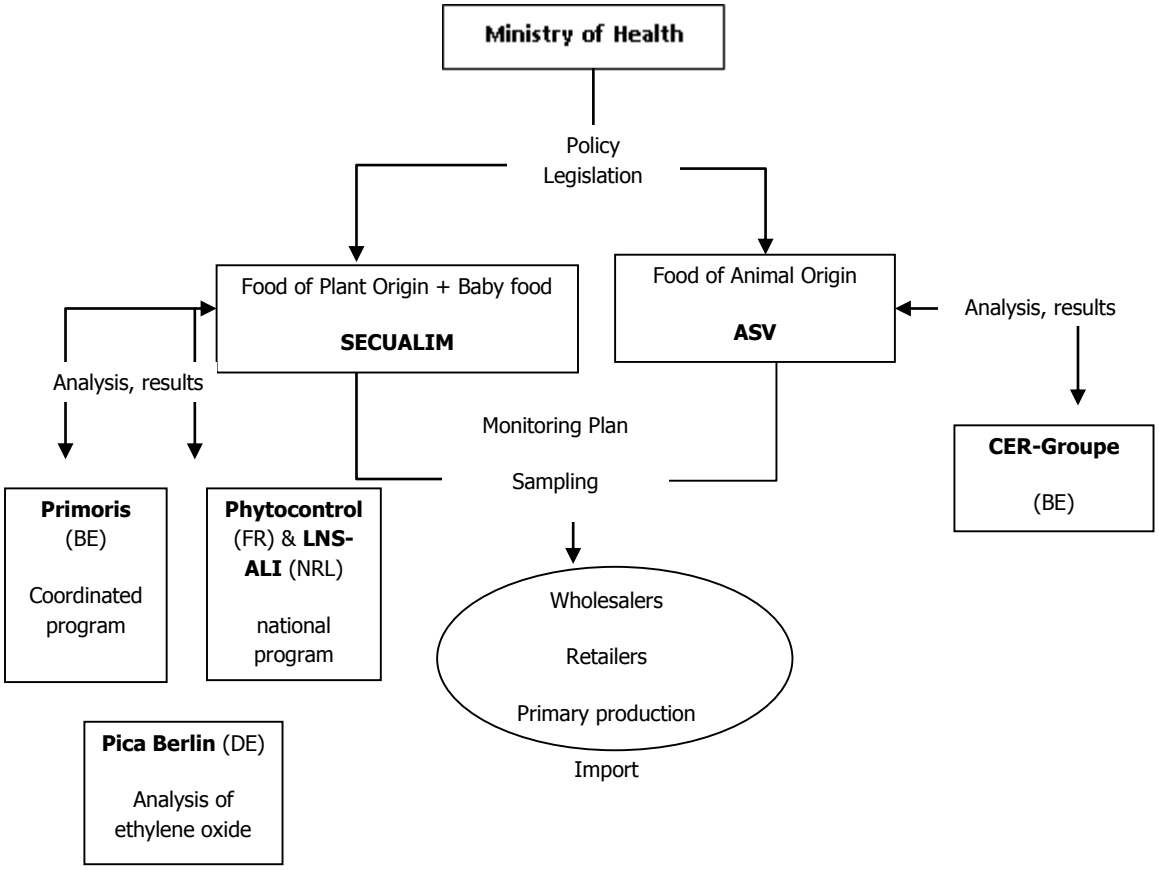
Table 124: Laboratory participation in the national control program

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 14, Denmark; EUPT FV-SM 12, Spain; EUPT-FV22, Spain; EUPT AO15, Germany; EURL-SRM15, Germany. EUPT-FV-SC04, Spain

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. SECUALIM is 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 role and 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: Role of the various departments involved in the control plan

As regards the control of pesticide residues in food of animal origin, the executive competent authority is the Administration of Veterinary Services (ASV). The various roles of these two authorities for the control of pesticide residues in food, both operating under the Ministry of Health, are illustrated in Table 125.

Table 125: 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

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).

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[23]

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 (EC) No. 533/2019 of 9th of 28 March 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 oranges, pears, kiwi fruits, cauliflowers, onions, carrots, potatoes, beans (dried), rye grains, brown rice (husked rice), bovine liver as well as baby food (Regulation (EC) N°533/2019).

For the national programme, samples collected included cereals, fruits (i.e. apples, avocados, blackberries, blackcurrants, blueberries, guavas, carambolas, cherimoyas, cherries, dates, figs, granadillas, granate apples, grapefruits, jackfruits, lemons, limes, longans, mangos, mangosteens, mirabelles, nectarines, papayas, passion fruits, pears, pineapples, pitayas, plums, pomelos, prickly pears, rambutans, raspberries, redcurrants, strawberries, table grapes, table olives, tamarillos, wine grapes), dried fruits, legume seeds, aromatic herbs, tea, coffee grains, spices, nuts, vegetables (i.e. aubergines, beans, beetroots, cabbages, carrots, cauliflowers, celeriacs, chayote fruits, chili peppers, courgettes, lettuces, cucumbers, eddos, garlic, horseradish roots, kohlrabis, leeks, melons, mushrooms, okra, onions, pak-choi, peas, potatoes, pumpkins, radishes, rhubarbs, spring onions, sweet corn, sweet peppers, sweet potatoes, tomatoes, witloofs).

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

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

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 2020, a total of 479 samples were analysed for pesticide residues. 473 samples were collected in the framework of surveillance (142 samples within the coordinated community control programme and 331 samples within the national programme) and 6 samples were collected during enforcement.

Table 126: 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
Cereals	15 (31.9%)	**47**	37 (78.7%)	10 (21.3%)	0 (0 %)	0 (0 %)
Coffee	1 (100 %)	**1**	1 (100 %)	0 (0%)	0 (0%)	0 (0%)
Dried fruits	5 (26.3 %)	**19**	11 (57.9 %)	6 (31.6 %)	1 (5.25 %)	1 (5.25 %)
Dry beans	3 (25 %)	**12**	7 (58.3 %)	5 (41.7 %)	0 (0 %)	0 (0 %)
Foods for infants and young children	2 (20 %)	**10**	10 (100 %)	0 (0 %)	0 (0 %)	0 (0 %)
Fruits	6 (3.8%)	**158**	45 (28.5 %)	102 (64.5 %)	5 (3.2 %)	6 (3.8%)
Herbs and spices	2 (6.3%)	**32**	10 (31.3%)	20 (62.5%)	0 (0 %)	2 (6.2%)
Legume seeds	1 (12.5%)	**8**	5 (62.5%)	3 (37.5%)	0 (0%)	0 (0%)
Nuts	0 (0%)	**1**	0 (0%)	1 (100%)	0 (0%)	0 (0%)
Products of animal origin	0 (0%)	**12**	12 (100%)	0 (0%)	0 (0%)	0 (0%)
Tea and herbal infusions	6 (16.2%)	**37**	19 (51.4%)	15 (40.5%)	2 (5.4%)	1 (2.7%)
Vegetables	8 (6.5%)	**124**	89 (71.8%)	28 (22.6%)	3 (2.4%)	4 (3.2%)
Sesame seeds	*3 (16.7%)*	***18***	*8 (44.4%)*	*2 (11.2%)*	*0 (0%)*	*8 (44.4%)*
Grand Total	**52 (10.8 %)**	**479**	**254 (53.0 %)**	**192 (40.0%)**	**11 (2.4%)**	**22 (4.6%)*** **

*** 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 %.

Table 127: Summary of results of non-compliant samples

Product	Origin	Pesticide residue	Level (mg/kg)	MRL (mg/kg)
National multiannual control program				
Guavas	Brazil	Bifenthrin	0.05	0.01

Product	Origin	Pesticide residue	Level (mg/kg)	MRL (mg/kg)
		Imidacloprid	0.1	0.05
		Tebuconazole	0.15	0.02
Sweet cherries	Germany	Tebufenozide	0.024	0.01
Chili peppers	Uganda	Chlorpyrifos	0.14	0.01
Dried vine fruits	Chile	Profenofos	0.88	0.06
Eddoes	Costa Rica	Fludioxonil	5.04	0.01
Granadillas	Colombie	Acephate	0.03	0.01
Onions	Luxembourg	1,4-dimethylnaphthalène	0.33	0.01
Passion fruit	Vietnam	Permethrin	0.81	0.05
Passion fruit	Colombie	Thiabendazole	0.03	0.01
Tea	Pologne	Diuron	0.14	0.05
Watercress	Belgium	Dithiocarbamates	0.93	0.3
Watercress	Belgium	Dithiocarbamates	1.8	0.3
Yardlong beans	India	Fenproprathrin	0.89	0.01
Sesame seeds	India	Ethylene oxide	27.6	0.05
	Unknown	Ethylene oxide	22.5	0.05
	Unknown	Ethylene oxide	3	0.05
	India	Ethylene oxide	0.39	0.05
	India	Ethylene oxide	1.2	0.05
	India	Ethylene oxide	0.56	0.05
	India	Ethylene oxide	0.14	0.05
	Unknown	Ethylene oxide	2.8	0.05
Import (882/2004)				
Table olives	Morocco	Chlorpyrifos	0.053	0.01

21.2.2. Interpretation of the results

Results – Excluding the sampling of sesame seeds

In 2020, 2.9% of the samples collected (enforcement and surveillance) were non-compliant (14 samples of fruits, vegetables and tea and herbal infusions from a conventional production) with the MRL set in EU legislation.

13 of the non-compliant samples were sampled as part of the national multiannual control programme and the products were withdrawn from the market. To note that there was no health concern with regards to these samples and no rapid alert (RASFF) has been issued.

1 non-compliant sample was taken in the context of border inspection activities according to Regulation (EC) No 882/2004. The goods were not yet placed on the market and were destroyed by the food business operator.

5 of the non-compliant samples were from EU origin. The other 9 non-compliant samples originated from a third country.

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

Results - Sesame seeds

8 samples of sesame seeds (44%) were non-compliant, both from conventional and organic production.

To note that also 5 samples of products made with sesame seeds (sauces, breads and chocolate) were analysed – with 2 samples being non-compliant (these samples are not shown in table 124 of overall compliances and are hence not taken into account for the overall compliance rate)

21.2.3. Comparability with the previous year results

Table 128: Number of samples collected between 2016 and 201 and non-compliance rates

Year	Total number of samples collected	Coordinated program	National program	Enforcement	Non-compliance (%)
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
2016	411	182	222	7	2.92

*** 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 129: Possible reasons for MRL non-compliance (excluding the 8 samples of sesame seeds contaminated with ethylene oxide)

Reasons for MRL non-compliance	Pesticide/food product	Frequency[(a)]	Comments
GAP not respected: use of a pesticide not authorized in the European Union	Bifenthrin / Brazilian Guava (Brazil)	1	Reg. 1107/2009
GAP not respected: use of a pesticide not authorized in the European Union	Imidacloprid / Brazilian Guava (Brazil)	1	Reg. 1107/2009
GAP not respected: use of a pesticide not authorized on the specific crop	Tebuconazole / Brazilian Guava (Brazil)	1	Ref. 1514/2018
GAP not respected: use of a pesticide not authorized on the specific crop	Tebufenozide / Sweet cherries (Germany)	1	Reg. 973/2019
GAP not respected: use of a pesticide not authorized in the European Union	Chlorpyrifos / Chili peppers (Uganda)	1	Reg. 1107/2009
GAP not respected: use of a pesticide not authorized in the European Union	Profenofos / Dried vine fruits (Chile)	1	Reg. 1107/2009
GAP not respected: use of a pesticide not authorized on the specific crop	Fludioxonil / Eddoes (Costa Rica)	1	Reg. 1633/2020
GAP not respected: use of a pesticide not authorized on the specific crop	Acephate / Granadillas (Colombia)	1	Reg. 899/2012
GAP not respected: use of a pesticide not authorized on the specific crop	1,4-dimethylnapthalène / Onions (Luxembourg)	1	Reg. 399/2015
GAP not respected: use of a pesticide not authorized in the European Union	Permethrin / Passion fruit (Vietnam)	1	Reg. 1107/2009
GAP not respected: use of a pesticide not authorized on the specific crop	Thiabendazole / Passion fruit (Colombia)	1	Reg. 1164/2017
GAP not respected: use of a pesticide not authorized in the European Union	Diuron / Tea (Poland)	1	Reg. 1107/2009
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Dithiocarbamates / Watercress (Belgium)	2	Reg. 171/2017
GAP not respected: use of a pesticide not authorized in the European Union	Chlorpyrifos / Table olives	1	Reg. 1107/2009
GAP not respected: use of a pesticide not authorized in the European Union	Fenpropathrin / Long beans (India)	1	Reg. 1107/2009

(a): Number of cases.

In 2020, none of the samples exceeded the acute reference dose (ARfD).

21.4. Quality assurance

Table 130: 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)	EUPT SRM-15 EUPT FV-22 EUPT CF-14 EUPT FV-SC04 Fapas 15145 Fapas 5145 Fapas 19296 Fapas 19304 Fapas 9136 Relana Comp Test 1 2020 Relana Comp Test 2 2020 Relana MRT1 BNN competence test A1-B1/B2 Proof P2004-RT Proof P2109-RT
FR	Phytocontrol	Phytocontrol	2019-09-24	COFRAC	
LU	Laboratoire national de santé – Laboratoire de surveillance alimentaire	LNS-ALI	22 September 2009	OLAS (1/002)	EUPT-CF14 EUPT-FV22 EUPT-SRM15

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 131: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(b)]	Comments
All	Cereal grains (except rice)	Flour	1	Default processing factor

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

Luxembourg confirms that reported data on the 2020 pesticide monitoring results do not contain confidential information and can be shared with third parties if required.

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 2020 was based on the EU Coordinated Multiannual Community Control Programme as per Implementing Regulation (EU) 2019/533 of 28th 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. 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 19 different food commodities (including fruit and vegetables, food of animal origin and baby food) were analysed during 2020.

The commodities and quantities[24] sampled were as follows:

- Beans = 14 samples
- Infant and follow-on formulae = 10 samples
- Brown Rice = 12 samples
- Bovine Liver = 13 samples
- Head Cabbages = 13 samples
- Cauliflowers = 12 samples
- Carrots = 13 samples
- Grapes = 12 samples
- Kiwi Fruits= 12 samples
- Melons = 12 samples
- Onions = 12 samples
- Oranges = 12 samples
- Pears = 12 samples
- Potatoes = 12 samples
- Poultry Fat = 9 samples
- Rye Grain/Flour = 5 samples
- Spinach = 12 samples
- Strawberries = 12 samples
- Tomatoes = 12 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.

[24] Samples below the average of n=12 were subject to sample availability, except for 'infant and follow-on formulae'

Officials from the Technical Regulations Division within MCCAA 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 2020, a total number of 221 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, 211 pesticide residues were tested for, 723 pesticide residues were tested for in the fruit and vegetable commodities, while 665 pesticide residues were tested for in the infant and follow on formulae residues as listed in Commission Implementing Regulation (EU)) 2019/533 of 28th March 2019 concerning a coordinated multiannual control programme of the Union for 2020, 2021 and 2022 and also Directive 2006/125/EC on processed cereal-based foods and baby foods for infants and young children in the case of the infant food.

The products analysed were of Maltese origin (52.0%) and imported (48.0%). Imported produce consisted of that of EU origin (37.1%) and non-EU origin (10.9%).

94.1% of samples analysed were compliant with the pesticide residue legislation (in 54.3% no residue was found, whilst 39.8% were below the MRL). 5.9% of the samples (thirteen samples) had the residue levels above the MRL.

Table 132, summarises the type of commodities tested as per sampling program and the results obtained:

Table 132: 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	Beans	14	57.1	42.9	0.0
	Brown Rice	12	16.7	83.3	0.0
	Bovine Liver	13	100.0	0.0	0.0
	Cauliflowers	12	91.7	8.3	0.0
	Carrots	13	76.9	15.4	7.7
	Infant and follow-on Formulae	10	100.0	0.0	0.0
	Kiwi Fruits	12	58.3	41.7	0.0
	Onions	12	83.3	16.7	0.0
	Oranges	12	58.3	33.3	8.3
	Pears	12	0.0	100.0	0.0
	Potatoes	12	75.0	16.7	8.3
	Poultry Fat	9	100.0	0.0	0.0
	Rye Grain/Flour	5	60.0	40.0	0.0
National Program	Head Cabbages	13	69.2	15.4	15.4
	Grapes	12	8.3	83.3	8.3
	Melons	12	41.7	50.0	8.3
	Spinach	12	33.3	58.3	8.3
	Strawberries	12	16.7	66.7	16.7
	Tomatoes	12	0.0	75.0	25.0

22.2.2. Interpretation of the results

Nine commodities had pesticide residues exceeding the MRL i.e. cabbages, spinaches, grapes, strawberries, tomatoes, melons, oranges, carrots, and potatoes. There were three samples of

tomatoes, two samples each of strawberries and head cabbages, one sample each of spinach, melons, grapes, carrots, oranges and potatoes which exceeded the MRL.

All the samples with residues above MRL were of local origin apart from the sample of melons which was imported.

22.2.3. Comparability with the previous year results

The comparison of sample numbers for 2018, 2019 and 2020 can be seen in Figure 5.

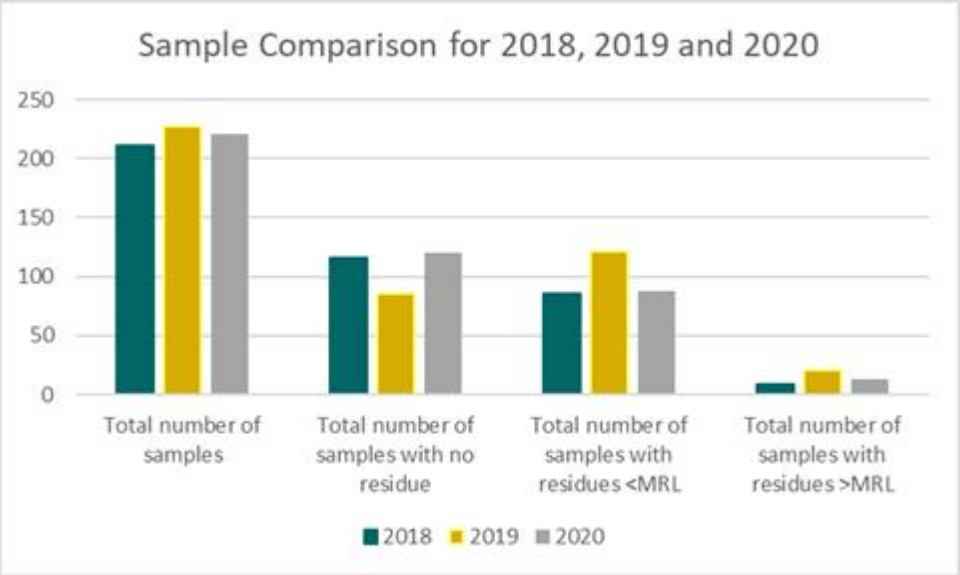


Figure 5: Comparison of sample numbers for 2018, 2019 and 2020

The Comparison of the % of samples with residue content for 2017,2018 and 2019 can be seen in Figure 6.

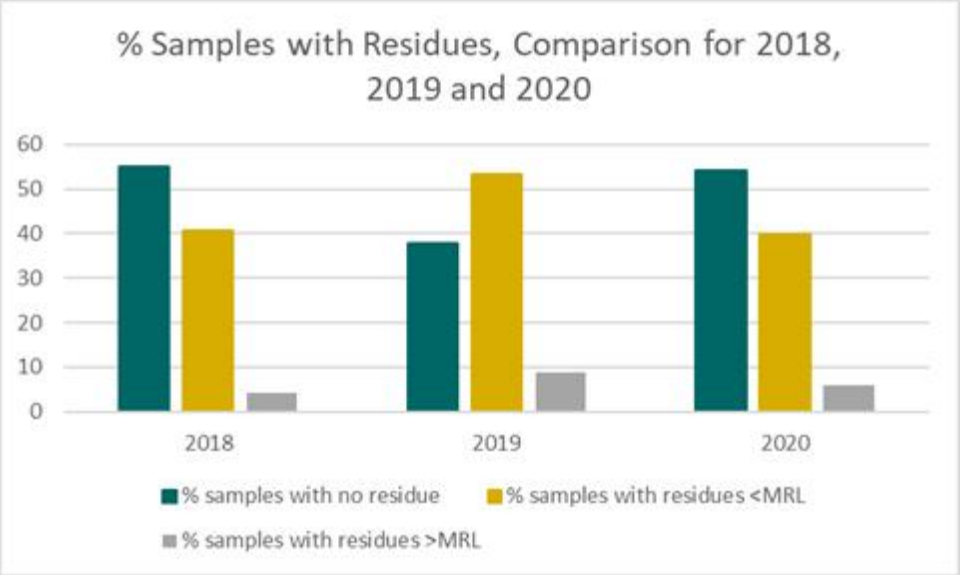


Figure 6: Comparison of the % of samples with residue content for 2018, 2019 and 2020

Compared with the date of the past years, 2020 data depicts an overall increase in the number of samples with no residues as compared to 2019 (55.0% in 2018, 37.9% in 2019, and 54.3% in 2020).

2020 data also depicts a decrease in the number of samples which contained residues below the MRL when compared to the previous years (40.8% in 2018, 53.3% in 2019, 39.8% in 2020). In furtherance, in 2020, the percentage of samples which contained residues above MRL is lower (5.9% in 2020, 8.8% in 2019 and 4.3% in 2018).

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

22.3.1. Residues found

Eleven 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, a legal action as stipulated in the Pesticides Control Act, Chapter 430 of the Laws of Malta, is initiated. The residues found are summarised in Table 133.

Table 133: Residues of Pesticides Residues which were quantified above the MRL value

Commodity	Origin	Residue above MRL found	Residue level (mg/Kg)	MRL (mg/Kg)
Cabbages	Local	Fluazifop	0.03	0.01
Cabbages	Local	Fluazifop	0.08	0.01
Carrots	Local	Iprodione	0.066	0.01
Grapes	Local	Propamocarb	7.3	0.01
Melons	Netherlands	Chlorpropham	0.063	0.01
Oranges	Local	Dimethoate Linuron	0.11 0.022	0.01 0.01
Potatoes	Local	Metobromuron	0.048	0.01
Spinach	Local	Chlorpyrifos-ethyl	0.74	0.01
Strawberries	Local	Cyazofamid	0.052	0.01
Strawberries	Local	Benalaxyl Zoxamide	0.60 0.48	0.05 0.02
Tomatoes	Local	Iprodione	1.1	0.01
Tomatoes	Local	Iprodione	0.13	0.01
Tomatoes	Local	Procymidone	0.44	0.01

22.3.2. Possible reasons for non-compliant samples

Table 134: Possible reasons for MRL non-compliant

Reasons for MRL non-compliance	Pesticide/food product	Frequency
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	Fluazifop/Cabbages	2
	Iprodione/Carrots	1
	Propamocarb/Grapes	1
	Chlorpropham/Melons	1
	Dimethoate and Linuron/Oranges	1
	Metobromuron/Potatoes	1
	Chlorpyrifos-ethyl/Spinach	1
	Cyazofamid/Strawberries	1
	Benalaxyl and Zoxamide/Strawberries	1
	Iprodione/Tomatoes	2
	Procymidone/Tomatoes	1

21.4. Actions taken

Table 135: Actions taken

Number of non-compliant samples concerned	Action taken
13	Legal action has been taken against the farmers whose produce exceeded the EU-MRL of one or more pesticide residues.

21.5. 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 (EC) 882/2004 and accredited by the relevant Accreditation Body.

As specified in Regulation (EC) 396/2005 the Laboratory analysing samples for the official control on pesticide residues shall be participating in the Community proficiency tests for pesticide residues organized by the Commission and be actively co-ordinating with the Maltese National Reference Laboratory.

Table 136: Laboratories participation in the national control program

Country	Laboratory Name	Accreditation		Participation in proficiency tests or inter-laboratory tests
		Date	Body	
DE	Eurofins Dr. Specht Laboratorien GmbH	Issued: 28th August 2018 Expiries: 11th December 2021 Re-issued: 15th April, 2020	DAkkS	Yes

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, several 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).
- The degree of sampling and analysis, performed by the producer/importer.
- 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 objective representative sampling is a prerequisite, whereas the first objective is optimised by searching for high-risk products. The Dutch program is a mixture of both strategies. Sampling in the market is in general representative for the product present in the market at that time and can be used for intake calculations. The choice of products to be sampled, however, is risk based. Products sampled at border control and importers of high-risk products are typically non-representative 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 especially from import products because they show frequent non-compliances. In 2020, this number was 626 samples of fruits and vegetables within the total number of 2,569.

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/2019/533.

The main sampling points are distribution centres of retail chains, 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 Dutch and foreign production. The EU-harmonisation of MRs has resulted in such a lowering of exceedance rates of EU-products that less attention is needed for that market segment and can be redistributed to more risky imports from non-EU countries. Although the main consumption patterns come from products from EU-origin come from the European market, their sampling has been reduced, unless a reasonable high violation rate exists.

In general, control based on the primary product is preferred over that of processed food, because MRL's are defined on primary products. It is 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. The extract is analysed with GC/MS-MS and LC/MS-MS. Depending on the laboratory capacity these apparatuses are run in different modes. For the LC/MS-MS a choice had to be made between a short run narrow scope and a long run extensive scope, depending on capacities. Whenever possible LC/MS-MS was applied in negative mode as well. Dry products and baby food 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 2020, about 2,569 samples were analysed. This is substantially lower compared to previous years and is a direct consequence of Covid19.

Both domestic and non-domestic products, were analysed for pesticide residues. The national and co-ordinated control plan accounted for about 1,766 samples. In the framework of the import control Regulations (EU) No 2019/1793, 626 samples were analysed.

Within the national control plan domestic products made up app 30 % of the fresh produce samples, 17 % of the samples came from other EU countries and 53 % from non-EU countries. Dutch products show residues above the reporting limit in about 77 % of the samples, whereas non-domestic products contain residues in 71 % (EU) and 79 % (non-EU) of the cases, respectively. These

percentages are comparable with the years before. Non-EU products sampled in the framework of the regulation EU/2019/1793 contained residues in 69 % of the cases. This percentage is comparable with previous years.

In approximate 2,500 samples, 5,559 residues of 243 different pesticides were found. The percentage of the residues found within the scope of the EU-program was comparable with last year, 91%.

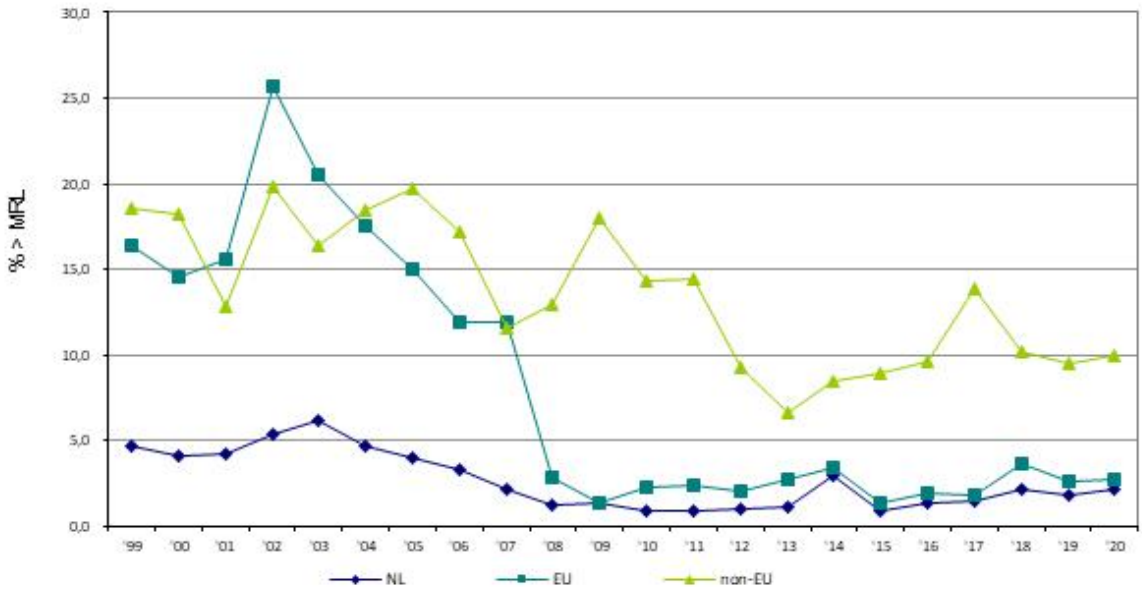


Figure 7: Percentage of MRL violations

23.3. Actions taken

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. 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). In such cases the product is recalled when possible, 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 2. In 2019 the number was slightly higher.

Table 137: Main products with high percentages of non-compliances.

Product	Pesticides	%>MRL	Countries
Beef liver	bromide	80	Netherlands
Beans	predominant: acephate, methamidofos.	30	predominantly: Kenia
Chili pepper	carbofuran, propiconazole, chlorfenapyr, etc	18	Vietnam, India
Grape leaves	various	10	predominant: Turkey

Table 138: Potential ARfD exceedings and notifications to the RASFF system issued by Netherlands

Product	Pesticide	Country	Action taken
Beans	Methamidofos (0.34)	Kenya	RASFF, destroyed at EU-border
Beans	Methamidofos (0.25)	Kenya	RASFF, destroyed at EU-border
Sweet Potato	Carbendazim (1.1 mg/kg)	China	RASFF, destroyed at EU-border
Seedless grapes	Acetamiprid (2.5)	Turkey	RASFF, destroyed at EU-border

Table 139: Actions taken

Action taken	Number of non-compliant samples concerned	Comments

Action taken	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	4	AAC as product was not distributed within EU
Administrative sanctions (e.g. fines)	79	

23.4. Quality assurance

Information about the laboratories.

Table 140: Laboratories participation in the national control program

Country	Laboratory		Accreditation		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

23.5. Processing factors (PF)

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 branch organisations supply a relevant processing factor.

Table 141: Processing factors used in MRL compliance assessment

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]	Comments
all	Grape	raisin	4,7	
all	Grape	wine	1	
all	Gojiberries	dried berries	5	
fat soluble	oil seeds	crude oil	oil percentage	Agreement on oil content with oil producing industry

a. Processing factor for the enforcement residue definition

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 1,288 samples, including 165 organic samples. In addition to the monitoring programme, this report also includes official controls on imports of certain feed and food 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 more sporadic are included as well.

The balance of organic and conventional products in the national monitoring programme was almost like earlier years in Norway. In 2020, 165 organic samples were analysed.

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 2020, 1,274 samples were analysed for pesticide residues in Norway. These samples were from the national monitoring programme and the EU coordinated programme. In addition, 14 samples were enforcement samples – border control in line with Regulation (EC) No. 2019/1793 (10 samples) and 'following up samples' (4 samples).

In 2020, Norway gave three RASFF notifications. These were one sample of dried beans from Madagascar, one sample of beans with pods from India and one sample of pears from the Netherlands. There were no RASFF alerts from the border control.

In the ordinary monitoring programme, the surveillance samples included 106 different commodities. 27 samples had residues above the MRLs. Five of them came from EU and 22 outside EU/EEA. 17 samples were considered as non-compliant after the measurement uncertainty was taken into account. Two domestic samples had residue levels that exceeded the MRLs.

In addition to the monitoring programme, ten samples from the border control were analysed. None of them had residues above the MRL.

There were no findings of pesticide residues in samples of baby food and in samples of animal origin in the national monitoring programme.

Every sample of plant origin was analysed by two multiresidue methods, which covered 353 different pesticides including some metabolites. Some samples were analysed by single residue methods. In 2020, 14 single residue methods were used, covering 59 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 2015 to 2020, the number of samples with pesticide residues above the MRLs ranged from 1.4 to 3.7 % (Table 142). Percentage of samples with findings above the MRLs is at the same level as in 2018 and 2019 and slightly higher than in 2017.

Table 142: Number of samples (%) with pesticide residues above the MRL (2015 – 2020)

	2015	2016	2017	2018	2019	2020
Norwegian	0.2	0.5	-	-	-	0.6
EU/EEA*	0.3	2.3	1.2	1.4	1.4	0.8
Third countries	3.7	8.3	3.3	5.1	4.8	5.7
Total	1.4	3.7	1.4	2.2	2.1	2.4

*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[25].

The results from 2020 show that 32 % of the samples in the ordinary monitoring programme (surveillance) had two or more pesticide residues in the same sample. This is in accordance with the five previous years (Table 143).

Table 143: Mean number of pesticide residues in surveillance samples, in which more than one pesticide has been detected (2015–2020)

	2015	2016	2017	2018	2019	2020
Mean number of pesticide residues in samples in which more than one pesticide has been detected	3.4	3.4	3.6	3.5	3.6	3.6

The highest number of different pesticides in one sample was detected in raisins from Turkey. Residues of 16 different pesticides were detected, but none of them was above the MRL.

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

Totally, 2.4 % of the surveillance samples (17 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

Ten samples from the border control were analysed for pesticide residues. None of the samples were found non-compliant with the EU-MRL.

24.3.1. Possible reasons for non-compliant samples

Table 144: 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 five samples with pesticide not approved in Norway we had to investigate. These were: • fenhexamid in salad, following up of local producers. Could not conclude if it was the use or if the product was wrongly labelled as Norwegian. • cypermethrin in ruccola, following up not able to conclude • indoxacarb in cherry, following up of the local producer • azoxystrobin in cucumber, nor able to conclude and • penconazole in curled parsley, following up of local producers. Could not conclude if it was the use or if the product was wrongly labelled as Norwegian. Following up of local producers. However, could not find the reason for the finding of these pesticides.
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Most of the exceedance are samples where the pesticide is approved, but it has in or the other way managed to be too much.
Residues resulting from other sources than plant protection product (e.g. biocides, veterinary drugs, biofuel)	Chlorate above MRL was found in cocos milk.

[25] www.mattilsynet.no

24.3.2. ARfD exceedances

Norway notified three samples due to health risk, which were dried beans from Madagascar (carbaryl 0.7 mg/kg, chlorpyrifos 0.1 mg/kg and lambda-cyhalothrin 0.22 mg/kg), beans with pods from India (dimethoate 0.12 mg/kg and omethoate 0.19 mg/kg) and pears from the Netherlands (dodine 4.7 mg/kg). These consignments were withdrawn as soon as possible from the market, and new import of these products were followed up by new samples.

24.3.3. Actions taken

Table 145 gives an overview of what sort of actions that have been taken when a non-compliance product was proven.

Table 145: Actions taken

Action taken	Number of non-compliant samples concerned	Comments
A -Administrative consequences	10	
C -Follow-up action	3	
F- Follow-up (suspect) sampling	1	
G- 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	4	
N- No action	9	
O- Other	3	
I- Follow-up investigation	2	
R- Rapid Alert Notification	3	RASFF no AA20.1630, RASFF no 2020.5802, RASFF no 2020.5929
M- Lot recalled from the market	1	
V- Movement restriction	2	
S- Lot recalled from the market	6	
W- Warnings	3	

Since 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.

24.4. Quality assurance

An overview of the laboratories involved in the pesticide residues programme is shown in Table 146.

Table 146: 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-22, EUPT-SRM-15, EUPT-CF-14, EUPT-AO-15, EUPT-FV-SM12, EUPT-SC04

24.5. Processing factors (PF)

An overview of the processing factors used in the pesticide residues programme is shown in Table **147**.

Table 147: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]
Carbendazim	Rice	Rice, polished	0.5

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor[(a)]
Profenofos	Rice	Rice, polished	0.5
Triazophos	Rice	Rice, polished	0.5
Biphenyl	Rice	Rice, polished	0.5
Imidacloprid	Rice	Rice, polished	0.75
Tebuconazole	Rice	Rice, polished	0.75
Azoxystrobin	Grapes	Raisins	2.99
Boscalid	Grapes	Raisins	2.4
Carbendazim	Grapes	Raisins	4.7
Clothianidin	Grapes	Raisins	4.7
Cyflufenamid	Grapes	Raisins	4.7
Cyprodinil	Grapes	Raisins	2.1
Difenoconazole	Grapes	Raisins	1.2
Etoxazole	Grapes	Raisins	4.7
Famoxadone	Grapes	Raisins	4.7
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	1.05, 4.7, 2.5
Indoxacarb	Grapes	Raisins	2.26
Iprodione	Grapes	Raisins	4.7
Kresoxim-methyl	Grapes	Raisins	4.7
Lambda-cyhalothrin	Grapes	Raisins	3, 4.7
Metalaxyl	Grapes	Raisins	3.03
Methoxyfenozide	Grapes	Raisins	2.5
Metrafenone	Grapes	Raisins	1.7
Myclobutanyl	Grapes	Raisins	4.7
Penconazole	Grapes	Raisins	4.5
Permethrin	Grapes	Raisins	4.7
Pyraclostrobin	Grapes	Raisins	2.7
Pyrimethanil	Grapes	Raisins	4.7
Spirodiclofen	Grapes	Raisins	1.67
Spirotetramat	Grapes	Raisins	4.7, 2.6
Tebuconazole	Grapes	Raisins	1.2
Tetraconazole	Grapes	Raisins	4.7
Triadimenol	Grapes	Raisins	6
Chlormequat	Rye grain	Rye flour	1, 0.3
Mepiquat	Rye grain	Rye flour	0.94, 0.17
Abamectin	Gojiberries	Gojiberries (dried)	14
Acetamiprid	Gojiberries	Gojiberries (dried)	14
Amitraz	Gojiberries	Gojiberries (dried)	14
Bifenthrin	Gojiberries	Gojiberries (dried)	14
Difenoconazole	Gojiberries	Gojiberries (dried)	14
Imidacloprid	Gojiberries	Gojiberries (dried)	14
Lambda-cyhalothrin	Gojiberries	Gojiberries (dried)	5
Spirodiclofen	Gojiberries	Gojiberries (dried)	14
Sulfoxaflor	Gojiberries	Gojiberries (dried)	14
Thiophanate-methyl	Gojiberries	Gojiberries (dried)	14

(a) Processing factor for the enforcement residue draft.

24.6. Additional information

In the national monitoring programme only the pesticide residue multimethods are applied.

Norway has a delay in the implementation of new legislations/new MRLs. New legislations have to be approved in the EEA Joint Committee before implementation, which will cause a delay compared to the rest of the EU.

Poland

25.1. Objective and design of the national control programme

The Chief Sanitary Inspectorate designed a programme to control pesticide residues in food of plant and animal origin. The national control plan includes monitoring and official control, along with an EU-coordinated monitoring programme. The plan also covers all major pesticide/commodity combinations, including processed products, baby food and organically grown products.

The programme aims to keep control of the food available on the Polish market in terms of a potential presence of pesticide residues. The purpose of it is to evaluate the market situation with respect to its compliance with MRLs, to assess consumer exposure to pesticide residues, and to monitor pesticide residues surpassing admissible/acceptable levels, which would constitute the basis for follow-up and enforcement actions.

The 2020 National Programme was designed to control 57 different food commodities and 329 pesticides, including metabolites and breakdown products. The analytical scope was dependent upon the objective of the study.

The National Programme for 2020 was developed based on several factors:

- consumer preferences, relevance of a food product in a diet,
- food consumed by infants and children,
- high-level residue commodities, in which MRLs were exceeded in previous years,
- origin of food (domestic, EU, third countries), with a focus on countries with high non-compliance rate in the past,
- cost of analysis and analytical capacity of the official laboratories.

The food samples were collected in accordance with the annual sampling plan, which is prepared every year in line with the new requirements. The samples were collected at different supply chain levels, predominantly at the central distribution and wholesale levels. The sampling strategy mainly consisted in random sampling, taking into account the seasonality of crops. When it was suspected that the product does not meet the requirements, the sampling was selective. Such a strategy provides more efficient residue monitoring and a higher degree of consumer protection.

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

- high RASFF notification rate for the pesticide,
- 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 2020, a total of 3246 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 and import.

The samples were collected depending on their availability on the market, and they involved mainly fresh food. 2177 (67.1%) of the collected samples were of domestic origin, 555 (17.1%) originated from EU countries and 451 (13.9%) were produced in third countries. For 63 (1.9%) of the samples the product origin was not specified.

In 1509 samples, no quantitatively identified residues were found (46.5% of all samples). Out of the 3246 samples tested, 1553 (47.8%) contained one or more pesticide residues within the legally permitted levels. In 184 (5.7%) of all the samples, the permissible levels were exceeded (numerical exceedances). At the expanded measurement uncertainty of 50%, 112 samples were non-compliant.

As in previous years, more residues were observed for fruit (75.2% of samples), vegetables (46.5%), as well as grains and grain-based products (31.1%). The lowest number of residues was found in the samples of animal origin (6.3%) and in baby food samples (0.6%).

Vegetables most likely to contain pesticide residues include horse mushrooms (87.0%), celeriacs (85.2%), cucumbers (78.9%), baby leaf spinaches (77.3%), lettuces and similar, (75.0%), and broccoli (66.7%). Celeriacs (44.4%), Chinese cabbages (17.7%), parsley roots (17.0%), Brussels sprouts (10.0%) and sweet peppers (8.3%) recorded the most MRL exceedances.

31.5% of the celeriac samples were found to contain linuron. In 17 out of 54 samples, the linuron level was higher than the MRL, whereas 8 of these samples exceeded the MRL even with the expanded 50% measurement uncertainty. Compounds that were often present in celeriacs, but below the MRLs, included azoxystrobin (27.8%), and difenoconazole (44.4%). All the samples were of Polish origin.

Chlorpyrifos was another compound that had one of the highest MRL exceedances, not only in celeriacs (14.8%), but also in Chinese cabbages (7.8%) and Brussels sprouts (7.5%). 5 out of 51 Chinese cabbage samples were non-compliant due to the dimetoat content.

Citrus fruits, peaches, bananas, grapes, and pome fruits were the groups with the highest frequency of detected pesticides (80% to 100% of the samples). The pesticides most often found were: captan, imazalil, fludioxonil, boscalid, fluopyram, thiabendazole, cyprodinil, pyraclostrobin, carbendazim and benomyl. In fruits, numeric MRL exceedances most frequently concerned chlorpyrifos, carbendazim and benomyl, chlorpyrifos-methyl, imazalil, bifenthrin, and mepiquat.

Of 180 baby food samples tested only one, apple-raspberry juice, contained fenbuconazol, standing at 0.009 ±0.003 mg/kg.

In products of animal origin, 13 of 50 samples of honey were found to contain some residues – thiacloprid (24%), acetamiprid (18%), and carbendazim (8%), all below the MRLs. All other products of animal origin, analysed within the monitoring and official control programme, did not contain any pesticide residue at the LOQ or higher level.

In 2020, 74 organic samples were collected and tested. Eight of them proved to have pesticide residues, while two bio leek samples contained naturally occurring dithiocarbamates, up to 0.5 mg/kg.

Of 560 grains and grain-based products, three grain samples and 33 buckwheat- and millet-based product samples were non-compliant. The non-compliant grain samples contained either chlorpropham or thiacloprid. 33 samples of buckwheat groats, millet groats and millet rolled grains exceeded the glyphosate MRL, with the expanded measurement uncertainty of 50%.

Of 109 tea samples collected at border controls, 93 contained from 1 up to 15 pesticides. Eleven samples contained at least one pesticide above the MRL and six samples were non-compliant. Thiamethoxam, chlorfenapyr, bifenthrin, folpet, and imidacloprid were found in fermented and non-fermented tea leaves and stalks more often that the other pesticides. However, the compounds that exceeded MRLs were tolfenpyrad and lambda-cyhalothrin (includes gamma-cyhalothrin).

The compounds with the largest number of overall MRL exceedances include glyphosate, chlorpyrifos, linuron, carbendazim and benomyl, dimethoate, folpet, chlorpyrifos-methyl, lambda-cyhalothrin (includes gamma-cyhalothrin), imazalil, thiophanate-methyl, propiconazole, tolfenpyrad, ethephon.

The summarised results of the year 2020 are presented in Table 148, Table 149 and Table 150.

Table 148: Overview of the 2020 results (summary of monitoring, official control and border control)

	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	1049	490	46.7	488	46.5	71	6.8
Fruits	1029	206	20.0	774	75.2	49	4.8
Cereals	218	158	72.5	57	26.1	3	1.4

	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*	
			%		%		%
Baby food	180	179	99.4	1	0.6	0	0.0
Processed products	454	266	58.6	138	30.4	50	11.0
Animal products	205	192	93.7	13	6.3	0	0.0
Others	111	18	16.2	82	73.9	11	9.9
Summary	**3246**	**1509**	**46.5**	**1553**	**47.8**	**184**	**5.7**

* - the expanded measurement uncertainty was not taken into account (numerical exceedances)

Table 149. Results for domestic samples by commodity group

	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*	
			%		%		%
Fruits	426	106	24.9	295	69.2	25	5.9
Vegetables	862	418	48.5	376	43.6	68	7.9
Cereals	147	112	76.2	32	21.8	3	2.0
Baby food	164	163	99.4	1	0.6	0	0.0
Processed products	382	206	53.9	126	33.0	50	13.1
Animal products	195	183	93.8	12	6.2	0	0.0
Others	1	1	100.0	0	0.0	0	0.0
Summary	**2177**	**1189**	**54.6**	**842**	**38.7**	**146**	**6.7**

* - the expanded measurement uncertainty was not taken into account (numerical exceedances)

Table 150. 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)	2177	1189	54.6	842	38.7	146	6.7
EU (Union)	555	174	31.4	374	67.4	7	1.3
TK (Third countries)	451	104	23.1	318	70.5	29	6.4
NN (non-specified)	63	42	66.7	19	30.2	2	3.2

* - the expanded measurement uncertainty was not taken into account (numerical exceedances)

25.2.2. Interpretation of the results

Pesticide residues were found in 53.5% of all tested samples. Although 75.2% of the fruit and 46.5% of the vegetable samples contained pesticide residues; the detected residues were much below the established MRL levels. More non-compliant samples were observed in vegetables than fruits. More MRL exceedances were found in domestic product samples (6.7%) than in samples from third countries and the EU (6.4% and 1.3% respectively).

3.5% of the tested samples were non-compliant. Of 29 non-compliant fruit samples, 13 were from third countries and 16 from the EU. Of 41 non-compliant vegetable samples, 40 were Polish and one was of unknown origin. All 36 non-compliant grain and grain-based product samples were of Polish origin. All 6 non-compliant tea samples were of Chinese origin. The highest exceedance was reported for ethephon in sweet peppers. The MRL was exceeded 210 times. The second highest exceedance was observed for mepiquat in pears, and it was 165 times higher than the MRL. In 2020, nine RASFF notifications from Poland were reported.

25.2.3. Comparability with the previous year results

The total number of samples in 2020 was about 24% higher than in the previous year.

There was no significant change between 2019 and 2020 in the percentage of samples with no residues, from 45.9% in 2019 to 46.5% in 2020. The rate of non-compliant samples in 2020, compared to 2019, was on a slightly higher level, i.e. 3.5% and 2.5% respectively. The percentage of non-compliance in domestic samples was higher in 2020 (4.0%) than in 2019 (3.2%) or 2018 (2.0%). The number of border control samples, in which tea accounted for 78.8%, was slightly lower in 2020 than in 2019, 120 and 109 respectively. The number of non-compliant tea samples rose from 3 in 2019 to 6 in 2020.

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

25.3.1. Possible reasons for non-compliant samples

In 2020, 184 (5.7%) samples had residues exceeding the MRLs provided in EU legislation. At expanded measurement uncertainty of 50%, 112 samples (3.5%) were found non-compliant. The products that presented with the highest number of exceedances leading to non-compliance are millet rolled grains (36.7%), millet groats (35.3%), celeriacs (25.9%), Chinese cabbages (15.7%), buckwheat groats (11.8%), redcurrants (11.1%) parsley roots (10.6%), Brussels sprouts (7.5%), lemons (6.7%), non-fermented tea leaves (6.6%), pears (5.7%).

In most cases, information about possible reasons for non-compliance was unavailable.

Table 151 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/Broccoli	2
	Chlorpyrifos/Brussels sprouts	2
	Chlorpyrifos/Chinese cabbages	3
	Chlorpyrifos/Red cabbages	1
	Chlorpyrifos/Raspberries (red and yellow)	1
	Chlorpyrifos/Apricots	1
	Chlorpyrifos/Cucumbers	1
	Chlorpyrifos/Parsley roots	1
	Chlorpyrifos/Blackcurrants	1
	Chlorpyrifos/Redcurrants	1
	Chlorpyrifos/Celeriacs	6
	Linuron/Parsley roots	4
	Linuron/Celeriacs	8
	Dimethoate/Head cabbages	1
	Dimethoate/Chinese cabbages	5
	Carbendazim and benomyl/Blueberries	1
	Carbendazim and benomyl/Raspberries (red and yellow)	1
	Carbendazim and benomyl/Apricots	1
	Carbendazim and benomyl/Redcurrants	1
	Bifenthrin (sum of isomers)/Redcurrants	2
	Chlorpropham/Common wheat grain	2
	Triadimenol/Celeriacs	1
	Thiacloprid/Rye grain	1
	Omethoate/Chinese cabbages	1
	Thiophanate-methyl/Raspberries (red and yellow)	1
	Propiconazole (sum of isomers)/Celeriacs	1
	Fenbutatin oxide/Lemons	1
	Chlorpyrifos/Lemons	1
	Chlorpyrifos-methyl/Lemons	1
	Chlorpyrifos-methyl/Grapefruits	3
	Dinotefuran/Tea leaves and stalks, fermented	1
	Tolfenpyrad/Tea leaves and stalks, fermented	2

Reasons for MRL non-compliance	Pesticide/food product	Frequency [a]
	Tolfenpyrad/Non-fermented tea leaves (green or white tea)	1
	Carbendazim and benomyl/Oranges	1
	Chlorpyrifos/Pomelos	1
GAP not respected: use of an approved pesticide not authorised for the specific crop[b]	Dimethomorph/Beans (with pods) and similar	1
	Ethephon/Sweet peppers	3
	Fluazifop-P/Chinese cabbages	2
	Lambda-cyhalothrin/Lettuces and similar	1
	Mepiquat/Pears	2
	Metrafenone/Chinese cabbages	1
	Penthiopyrad/Raspberries	1
	Tetraconazole/Brussels sprouts	1
	Chlormequat/Pears	1
	Fenhexamid/Pears	1
	Lambda-cyhalothrin/Tea leaves and stalks, fermented	1
	Lambda-cyhalothrin/Non-fermented tea leaves (green or white tea)	2
	Folpet/Non-fermented tea leaves (green or white tea)	2
	Flutriafol/Raspberries	1
	Thiabendazole/Nectarines	1
	Flonicamid/Strawberries	1
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Glyphosate/Buckwheat groats	10
	Glyphosate/Millet groats	12
	Glyphosate/Millet rolled grains	11
	Cyprodinil/Celeriacs	1
	Spirotetramat (RD)/Cauliflowers	1
	Tebuconazole/Chinese cabbages	1
	Tetraconazole/Raspberries	1
	Imazalil/Bananas and similar	4
	Buprofezin/Lemons	1

a) Number of cases
b) Applicable only for food products produced in the EU

25.3.2. ARfD exceedances

Experts from the National Institute of Public Health – National Institute of Hygiene conducted a risk assessment for 53 of the non-compliant samples. In 19 cases, it was concluded that residues may pose a risk to consumers, so necessary enforcement actions were taken. This mainly concerned chlorpyrifos residues in broccoli, red cabbage, parsley root, and Brussels sprout samples, ethephon residues in sweet pepper samples, linuron residues in celeriac samples, dimethoate residues in Chinese cabbage samples, and carbendazim and benomyl residues in orange and apricot samples.

The largest ARfD exceedances were found for ethephon in sweet peppers (1249.5% for children, 342.5% for adults) and lambda-cyhalothrin (includes gamma-cyhalothrin) in lettuces (609.2% for children, 194.2% for adults), both from domestic production.

25.3.3. Actions taken

Table 152 Actions taken

Action taken	Number of non-compliant samples
Rapid Alert Notification	9
Administrative sanctions (e.g. fines)	106
Lot recalled from the market	11
Rejection of a non-compliant lot at the border	6
Destruction of a non-compliant lot	6
Follow-up (suspect) sampling of similar products, samples of same producer or same country of origin	8

25.4. Quality assurance

The collected samples were analysed in five official laboratories. All the laboratories are assessed and accredited in accordance with the EN ISO/IEC 17025 by the Polish Centre for Accreditation. Two multiresidue methods (MRM) and three single methods (SRM) were used for the analysis.

Table 153. 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 21 EUPT-CF 13
Poland	Voivodship Sanitary – Epidemiological Station in Łódź	LAB 2	03/01/2006	The Polish Centre for Accreditation	EUPT-FV 21
Poland	Voivodship Sanitary – Epidemiological Station in Opole	LAB 3	15/11/2004	The Polish Centre for Accreditation	EUPT-FV 20 EUPT-CF 13
Poland	Voivodship Sanitary – Epidemiological Station in Rzeszów	LAB 4	18/06/2004	The Polish Centre for Accreditation	EUPT - AO 14 COIPT-19
Poland	Voivodship Sanitary – Epidemiological Station in Wrocław	LAB 5	08/12/2005	The Polish Centre for Accreditation	EUPT-FV 21

25.5. Processing Factors (PF)

Table 154 shows compiled processing factors, which were used by national competent authorities to verify the compliance of the processed products with EU MRLs.

Table 154: Processing factors

Pesticide)	Unprocessed product (RAC)	Processed product	Processing factor[(a)]
Deltamethrin Lambda-cyhalothrin Trifloxystrobin Chlorpyrifos Cypermethrin	Olives for oil production	Olive oil	5
Acetamiprid Amitraz Azoxystrobin Cypermethrin Chlorothalonil Fenpropathrin Difenoconazole Dithiocarbamates Imidaclopryd Carbendazim Pyridaben Propargit Pyraklostrobin Spirotetramate Spirodiklofen Tebuconazole Thiametoxam Tiophanat – methyl Triadimenol	Goji berries	Dried goji berries	5
Chlorpyrifos- methyl Cypermethrinl	Wheat grain	Wheat flour	1

Pesticide)	Unprocessed product (RAC)	Processed product	Processing factor[(a)]
Deltamethrin Pirymiphos – methyl Permethrin Tebuconazole			
Propiconazole Azoxystrobin Cyproconazole Imidacloprid Isoprothiolan Permethrin Tebuconazole	Natural rice	Polished rice	0.5

(a) Processing factor for the enforcement residue definition

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
- food commodities not included in EU coordinated programme - High

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 2018/555 from 9th April – High

26.2. Key findings, interpretation of the results and comparison with the previous year results

26.2.1. Key findings

Table 155: 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

Samples	Total	Without residues	%	With residues below the MRL	%	Exceeding MRL	%	Non compliant	%
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
Total	**723**	**336**	**46.5**	**344**	**47.6**	**43**	**5.9**	**26**	**3.6**

26.2.2. Comparison with previous results

Previous results (2016-2019):

Table 156: 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 157: 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 158

Samples	Total	Without residues	%	With residues below the MRL	%	Exceeding MRL	%	Non-compliant	%
Baby food	20	20	100	0	0	0	0	0	0
Animal products	35	35	100	0	0	0	0	0	0
Total	**55**	**55**	**100**	**0**	**0**	**0**	**0**	**0**	**0**

Table 159: Summary results: 2017

Samples	Total	Without residues	%	With residues below the MRL	%	Exceeding MRL	%	Non compli ant	%
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**

Table 160: Summary results: 2016

Samples	Total	Without residues	%	With residues below the MRL	%	Exceeding MRL	%	Non compl iant	%
Baby food	13	12	92.31	-	-	1	7.69	1	7.69
Cereals	11	11	100	-	-	0	0	0	0
Processed products	46	28	60.87	18	39.13	0	0	0	0
Sum of fruits and nuts, vegetables, other plant products	313	130	41.53	177	56.55	6	1.92	3	0.96
Animal products	46	46	100	0	0	0	0	0	0
Total	**429**	**227**	**52.91**	**195**	**45.45**	**7**	**1.63**	**4**	**0.93**

26.3. Non-compliant samples: possible reasons, ARfD exceedances and actions taken (Coordinated and National Program)

26.3.1. Possible reasons for non-compliant samples

Table 161: Possible reasons for non-compliant MRL

Reasons for MRL non-compliance	Pesticide/food product	Frequency (a)	Comments
GAP not respected: use of a pesticide not approved in the EU[(b)]	Penconazol/Tangerines	1	LRVSA Madeira
	Chlorpropham/sweet potato	1	LRVSA Madeira
	Clortalonil/Summer savory	1	LRVSA Madeira
	Chlorpyrifos-methyl/Summer savory	1	LRVSA Madeira
	Penconazol/Summer savory	1	LRVSA Madeira
GAP not respected: use of an approved pesticide not authorised on the specific crop[(b)]	Imazalil/pear	2	AGQ Labs
	Acrinathrin/banana	1	LRVSA Madeira
	Glyphosate/Wolfberries	1	AGQ Labs
	Acrinathrin/Summer savory	1	LRVSA Madeira

GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Lambda-cyhalothrin /lettuces	1	LRVSA Madeira
Naturally occurrence (e.g. dithiocarbamates in turnips)	Dithiocarbamates/broccoli Dithiocarbamates/cauliflowers Dithiocarbamates/turnips	2 1 6	LRVSA Madeira LRVSA Madeira LRVSA Madeira
Use of a pesticide on food imported from third countries for which no import tolerance was set[c] (CONTROL AT IMPORT PROGRAM)	Carbaryl/black eyed peas (dry) Clorpiryphos/ black eyed peas (dry) Procimidon/Beans dry and similar Iprodione/grapes Acefat/Carambolas Tiophanaet-methyl/Cherimoyas Piraclostrobin/Cherimoyas Tiabendazol/Pitayas	1 1 1 1 1 1 1 1	Neotron Labiagro Labiagro Labiagro Labiagro Labiagro Labiagro Labiagro

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

26.3.2. ARfD exceedances (Coordinated and National Program)

Table 162: number of samples

Pesticide/food product	Frequency	Lab
Lambda-cyhalothrin /lettuces	1	LRVSA Madeira
Clortalonil +Chlorpyrifos-methyl/Summer savory	1	LRVSA Madeira
Imazalil/pear	1	AGQ Labs
TOTAL	3	

Table 163: ARfD exceedances non-compliant (Control at Import Program)

Pesticide/food product	Frequency	Origin
Clorpyriphos/ black eyed peas (dry)	1	Madagascar
Total	1	

Table 164: Origin of the non-compliant products

Pesticide/food product	Frequency	Origin
Penconazol/Tangerines	1	Portugal
Chlorpropham/sweet potato	1	Portugal
Clortalonil+Chlorpyrifos-methyl+ Penconazol+ Acrinathrin /Summer savory		
Imazalil/pear	2	Portugal
Acrinathrin/banana	1	Portugal
Dithiocarbamates/broccoli	2	EU
Dithiocarbamates/cauliflowers	1	EU
Dithiocarbamates/turnips	6	EU
Clorpiryphos+Carbaryl/black eyed peas	1	Madagascar
Iprodione/grapes	1	Peru
Acefat/Carambolas	1	Brasil
Thiophanat-methyl/Cherimoyas	1	Brasil
Piraclostrobin/Cherimoyas	1	Brasil
Tiabendazol/Pitayas	1	Angola

26.3.3. Actions taken

Table 165: Actions taken

Action taken[a]	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	1	
Administrative sanctions (e.g. fines)	3+6	Mainland+ Madeira

Rejection of a non-compliant lot at the border	8	All non-compliant lots rejected at the border
Other actions	9 (with dithiocarbamates)	No action considering possible natural occurrence

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

26.4. Quality assurance

Table 166: 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 IT	LABIAGRO NEOTRON (LAB N.º 0026L		2003 1991	IPAC ACCREDIA	

26.5. Additional information

Other cases of non-compliances: MRLs (CS_2) and uses (organic production):

Table 167: Non-compliant uses (organic farming)

Reasons for MRL non-compliance	Pesticide/food product	Frequency	Comments
GAP not respected: use of a pesticide not approved in the organic farming	Gliphosate/Wolfberries	1	Administrative sanctions by CA for Organic Farming certification

Romania

27.1. Objective and design of the national control programme

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.

The number of active substances analysed is 150 for fruits, vegetables and cereals and 139 for olive oil and tea.

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 2020, samples from 49 agricultural products were planned 2240 samples and were analysed 2322 samples. The number of active substances analysed were 260

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 2020. 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, pappers, tomates, table grapes and wine grapes.
- Origin of food
  - compared with 2019, in 2020 the number of samples analysed for pesticide residues from EU market has been increased (from 56.2% in 2019 to 57.5% in 2020) and for samples from Third Countries the number of samples has been reduced (from 43.7% in 2019 to 42.5% in 2020)) - as presented in the Table 168.

Table 168: Summary results by sample origin

Origin of samples	2018(%)	2019(%)	2020(%)
EU	55.1	56.2	57.5
Third Countries	44.6	43.7	42.5
Unknown	0.3	0.1	0

- 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 2020, a total number of 4,289 samples were taken in order to check the MRL's compliance of pesticide residues in different crops. From these, 4,129 samples there were sampled under objective sampling strategy, 124 samples were sampled under selective sampling strategy and 34 samples were sampled under suspect sampling strategy.

A number of 1,664 samples were fruit and primary derivatives thereof, 1,895 samples were garden vegetables and primary derivatives thereof, 184 were grains and grain-based products, 42 samples of baby food and 20 samples of animal products.

From the total number of the 4289 samples that include fruit, vegetables, cereals, processed products (including baby food) and animal products, 2,322 were produced in Romania, 404 samples were produced in EU, and 1,822 samples were produced outside of the EU.

Table 169: Summary results

Samples	2018	2019	2020
Total	4,809	5,166	4,289
Without residues (%)	3101 (64.48%)	3150 (60.98%)	2916 (67.99%)
With residues below MRL (%)	1563 (32.50%)	1927 (37.30%)	1322 (30.82%)
Exceeding (%)	145 (3.02%)	89 (1.72%)	51 (1.19%)
Non-compliant (%)	90 (1.87%)	58 (1.12%)	34 (0.79%)

27.2.2. Interpretation of the results

The most frequent pesticides detected in

- the animal products were: Fipronil, Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil, DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT),
- 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, 699 foodstuffs samples had 2 or more findings. Below there are mentioned some products with different number of pesticide residues:

- oranges – 54 samples with a number of residues from 2 up to 6,
- pears – 54 samples with a number of residues from 2 up to 6,
- apples – 130 samples with a number of residues from 2 up to 5,
- apricots- 23 samples with a number of residues from 2 up to 4,
- grapefruits and similar – 98 samples with a number of residues from 2 up to 4,
- lemons -122 samples with a number of residues from 2 up to 6,
- mandarins – 57 samples with a number of residues from 2 up to 5,
- strawberries – 22 samples with a number of residues from 2 up to 5,

- table grapes – 93 samples with a number of residues from 2 up to 6,
- wine grapes – 48 samples with a number of residues from 2 up to 5,
- lettuce – 09 samples with a number of residues from 2 up to 5,
- sweet peppers – 85 samples with a number of residues from 2 up to 6,
- tomatoes – 200 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 169. 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 the 4,289 samples taken in 2020, 34 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 170: Possible reasons for MRL non-compliance

Reasons for MRL non-compliant	Pesticide/food product	Frequency[(a)]	Comments	Country of origin
GAP not respected: use of a pesticide not approved in the EU[(c)]	Chlorothalonil/spinaches	1	RO_321_LCRPPPV_0207	Romania
	Carbendazim/ lettuces	1	RO_321_LCRPPPV_0259	Romania
	Chlorfenapyr/Cherry tomatoes	1	RO_321_LCRPPPV_M6	Romania
	chlorfenapyr/tomatoes	1	RO_321_LCRPPPV_M8	Romania
	Malathion/beans	1		Ethiopia
	Buprofezin/grapefruits	1		Turkey
	Pirimiphos-methyl/mandarins	1		Turkey
	Prochloraz/lemons	2		Turkey
	Prochloraz/pomelo	1		China
	Prochloraz/grapefruits	3		Turkey
	Prochloraz/mandarins	1		Turkey
	Prochloraz/oranges	1		Turkey
	Chlorpyrifos/quinces	1		Turkey
GAP not respected: use of an approved pesticide not authorised on the specific crop[(c)]	Dimethoate/lovage leaves	1	RO_321_LCRPPPV_0109	Romania
	Dimethoate/parsley	1	RO_321_LCRPPPV_0138	Romania
	Dimethoate/ Aubergines	1	RO_321_LCRPPPV_0642	Romania
	Dimethoate/ Gherkins	1	RO_321_LCRPPPV_0650	Romania

Reasons for MRL non-compliant	Pesticide/food product	Frequency[a]	Comments	Country of origin
	Dithiocarbamates/spinaches	1	RO_321_LCRPPPV_0207	Romania
	Fenpropimorf (sum of isomers)/parsley	1	RO_321_LCRPPPV_0093	Romania
	Omethoate/parsley	1	RO_321_LCRPPPV_0138	Romania
	Spiroxamine (sum of isomers)/dill leaves	1	RO_321_LCRPPPV_0176	Romania
	Thiophanate-methyl/spinaches	1	RO_321_LCRPPPV_0096	Romania
	Thiophanate-methyl/ lettuces	1	RO_321_LCRPPPV_0259	Romania
	Triadimenol (any ratio of constituent isomers)/dill leaves	1	RO_321_LCRPPPV_0176	Romania
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Buprofezin/Sweet peppers	1	RO_321_LCRPPPV_M180	Romania
	Imazalil (any ratio of constituent isomers)/ pears	2	RO_321_LCRPPPV_M115 RO_321_LCRPPPV_M147	Romania
Use of pesticide according to authorised GAP: unexpected slow degradation of residues	Dimethoate/Strawberries	1	RO_321_LCRPPPV_0240	Romania
	Dimethoate/tomatoes	1	RO_321_LCRPPPV_0279	Romania
	Carbendazim/Gherkins	1	RO_321_LCRPPPV_0627	Romania
	Thiophanate-methyl/Gherkins	1	RO_321_LCRPPPV_0627	Romania
	Imidacloprid/Oat	1	RO_321_LCRPPPV_0714	Romania
	Pyridaben/Sweet peppers	1	RO_321_LCRPPPV_M180	Romania
Use of a pesticide on food imported from third countries for which no import tolerance was set[d]	Buprofezin/Tomatoes	1		
	Buprofezin/Sweet Peppers	6		
	Metalaxyl/Courgettes	1		
	Diflubenzuron/Quinces	1		
	Linuron/Carrots	2		
	Acetamiprid/Sweet Peppers	1		
	Imazalil/Bananas	1		

27.3.2. Actions taken

Table 171: Actions taken

	Action taken	Number of non-compliant samples concerned	Comments	Country of origin
Rapid Alert Notification				
Carbendazim/ lettuces		1		Romania
Thiophanate-methyl/ lettuces		1		Romania
Administrative sanctions (e.g. fines)				
Carbendazim/ lettuces		1		Romania
Thiophanate-methyl/ lettuces		1		Romania
Follow-up (suspect) sampling of similar products, samples of same producer or country of origin				
Chlorothalonil/spinaches		1		Romania
Buprofezin/Sweet peppers		1		Romania
Carbendazim/ lettuces		1		Romania
Chlorfenapyr/Cherry tomatoes		1		Romania
chlorfenapyr/tomatoes		1		Romania
Dimethoate/lovage leaves		1		Romania
Dimethoate/parsley		1		Romania
Dimethoate/ Aubergines		1		Romania
Dimethoate/ Gherkins		1		Romania
Dithiocarbamates/spinaches		1		Romania
Fenpropimorf (sum of isomers)/parsley		1		Romania
Imazalil (any ratio of constituent isomers)/ pears		2		Romania
Omethoate/parsley		1		Romania
Pyridaben/Sweet peppers		1		Romania
Spiroxamine (sum of isomers)/dill leaves		1		Romania
Thiophanate-methyl/spinaches		1		Romania
Thiophanate-methyl/ lettuces		1		Romania
Triadimenol (any ratio of constituent isomers)/dill leaves		1		Romania
Dimethoate/Strawberries		1		Romania
Dimethoate/tomatoes		1		Romania
Carbendazim/Gherkins		1		Romania
Thiophanate-methyl/Gherkins		1		Romania
Imidacloprid/Oat		1		Romania
Other follow-up investigations to identify reason of non-compliance or responsible food business operator				
Malathion/beans		1		Ethiopia
Buprofezin/grapefruits		1		Turkey
Pirimiphos-methyl/mandarins		1		Turkey
Prochloraz/lemons		2		Turkey
Prochloraz/pomelo		1		China
Prochloraz/grapefruits		3		Turkey

	Action taken	Number of non-compliant samples concerned	Comments	Country of origin
Prochloraz/mandarins		1		Turkey
Prochloraz/oranges		1		Turkey
Chlorpyrifos/quinces		1		Turkey
Buprofezin/Tomatoes		1		
Buprofezin/Sweet Peppers		6		
Metalaxyl/Courgettes		1		
Diflubenzuron/Quinces		1		
Linuron/Carrots		2		
Acetamiprid/Sweet Peppers		1		
Imazalil/Bananas		1		

27.4. Quality assurance

Table 172: 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	16/01/2006 Reaccreditation in 18/12/2017	RENAR-Bucharest	EUPT- CF14 EUPT- FV22 TestQual 133
RO	Sanitary Veterinary and Food Safety Laboratory Bucharest	RO321-ANSVSA	LI 496 11/04/2007	RENAR-Bucharest	EUPT- CF14 EUPT- FV22
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- CF14 EUPT- FV22
RO	Environmental hygiene laboratory	MS-RO113-MS	LI 1189/04.10.2018	RENAR-Bucharest	-
RO	Institute of Hygiene and Veterinary Public Health	RO321-IISPV	01/04/2002	RENAR-Bucharest	EUPT - CF14 EUPT – AO15
RO	Sanitary Veterinary and Food Safety Laboratory Ialomita	RO031-ANSVSA	LI 540/ 01.07.2019	RENAR Bucharest	EUPT-FV-22
RO	Sanitary Veterinary and Food Safety Laboratory Olt	RO41-ANSVSA	LI 1174 05.05.2018	RENAR Bucharest	EUPT-FV-22

Table 173: Processing factors

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

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

Slovakia

28.1. Objective and design of the national control programme

In the year 2020, 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 2020-2022, (hereinafter referred to as the 'Programme'), in which Commission Implementing Regulation No 2019/533/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 2020, the following commodities were sampled: beans (dried), carrots, oranges, pears, kiwi fruits, cauliflowers, potatoes, onions, rye grain, brown husked rice, poultry fat, bovine liver. 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 – 19.0%, EU countries – 51.1%, third countries – 27.3% (unknown origin -12 samples).

The extension of the scope of analyses in 2020 was based on the requirements of Regulation No 2019/533/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 eleven "single" residue methods (SRM) were used for food analyses (besides baby food). Three MRM 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 2020, 468 samples were analysed.

Table 174: Summary results

Samples	Total	Without residues	With residues below MRL	Exceeding MRL	Non-compliant
Animal products	24	24	0	0	0
Cereals	32	18	11	3	2
Baby food	40	40	0	0	0
Fruits and nuts, vegetables and other plant products	335	108	211	16	11
Processed products	37	14	18	5	3
Total	468	204	240	24	16

No pesticide residues were detected in 204 samples which represent 43.6 % of all analyzed samples. One or more pesticide residues under the MRL were detected in 264 samples which represent 56.4 % of all analyzed samples. Residues exceeding MRL were found in 24 analyzed samples, of which 16 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.

The multiresidual findings were detected in 197 samples. The multiresidue findings with the highest number of detected pesticide residues including their metabolites - 15 different residues were detected in two samples of goji berries from China.

Table 175: Comparability with the previous year results

Year	Total number of samples	Without residues (%)	With residues below MRL (%)	Exceeding MRL (%)	Non-compliant (%)
2018	482	44.6	51.2	4.1	2.1
2019	472	44.9	50.0	5.1	3.2
2020	468	43.6	51.3	5.1	3.4

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

In total, 3.4 % of the samples in the monitoring programme were found non-compliant with the EU MRL.

Table 176: Non-compliant samples

Sample code	Food	Country of origin	Pesticide	Residue level
BA19696_20	Grapefruit	Turkey	Buprofezin,	0.267
BA12270_20	Lemons	South Africa	Profenofos	0.032
BA11643_20	Parsley	Spain	Chlorpyrifos-methyl	0.104
BA11916_20	Parsley	Italy	Prometryn	0.044
BA2623_20	Mandarins	Turkey	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	0.1
BA2933_20	Mandarins	Turkey	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate) Fenbutatin-oxide	0.208 0.084
BA3700_20	Mandarins	Turkey	Fenbutatin-oxide	0.26
BA4739_20	Mandarins	Turkey	Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate) Fenbutatin-oxide	0.064 0.22
BA22244_20	Mandarins	Turkey	Buprofezin	0.023
BA14107_20	Rye grain	Slovakia	Chlorpyrifos	0.33
BA14567_20	Dried vegetables – Goji berries	China	Propargite	0.25
BA14211_20	Dried vegetables – Goji berries	China	Propargite	0.26
BA13643_20	Borlotti or other common beans (dry)	Ethiopia	Malathion	0.29
BA16580_20	Cauliflowers	Poland	Flonicamid (sum of flonicamid, TNFG and TNFA expressed as flonicamid) Pyrimethanil	0.304 0.55
BA19037_20	Spinaches	Italy	Deltamethrin (cis-deltamethrin)	0.086
BA8700_20	Buckwheat	Poland	Glyphosate	0.17

Table 177: 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)]	Prometryn/Parsley Chlorpyrifos/Rye grain Chlorpyrifos-methyl/ Parsley	3
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Buprofezin/Grapefruits Glyphosate/ Buckwheat Deltamethrin (cis-deltamethrin)/Spinaches Flonicamid (sum of flonicamid, TNFG and TNFA expressed as flonicamid)/Cauliflowers Malathion (sum of malathion and malaoxon expressed as malathion)/Borlotti or other common beans (dry) Pyrimethanil/ Cauliflowers	6
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)/3x Mandarins Fenbutatin oxide/3x Mandarins Buprofezin/ Mandarins Profenofos/Lemons Propargite/Dried vegetables (Goji berries)	10

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

28.2.1. ARfD exceedances

Risk of health assessment in the Slovakia is carried out by the National Agricultural and Food Centre – the Food Research Institute. In 2020, the exceedance of the ARfD was found in one sample.

Table 178: ARfD exceedances

Pesticide	Crop	Sample number	Sample origin	Residue level (mg/kg)	ARfD (mg/kg bw)	ARfD%	RASFF notification
Fenvalerate (any ratio of constituent isomers (RR, SS, RS and SR) including esfenvalerate)	Mandarins	BA2933_20	Turkey	0.208	0,0125 mg/kg (ADI)	104,8% (ADI) children	2020.1417

28.2.2. Actions taken

Table 179 gives an overview of what sort of actions have been taken when a non-compliant product was proven.

Table 179: Actions taken

Action taken	Number of samples	Reference
Rapid Alert Notification	4	2020.3363 2020.1417 2020.1695 2020.1778
Lot recalled from the market	4	112.1 kg
Lot not released on the market	1	2000 kg
Other	2	AAC notification
No action	5	

28.3. Quality assurance

An overview of the laboratories involved in the pesticide residues programme is shown in Table 188.

Table 180: 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	8.-15. 05. 2020	Slovak National Accreditation Service (SNAS)	EUPT FV 22, EUPT CF 14, EUPT SRM 15, EUPT AO 15
Slovakia	Pesticide Lab of Public Health Authority (PHA) SR - Bratislava	607223	30.05.2019	Slovak National Accreditation Service (SNAS)	EUPT-FV22, FV-14

28.4. Processing factors

An overview of the processing factors used in the pesticide residues programme is shown in Table 181: Processing factors.

Table 181: Processing factors

Pesticide[)]	Unprocessed product (RAC)	Processed product	Processing factor[(b)]	Comments
All pesticides	Herbs, spices and similar	Mints, dry	5	Drying (dehydration)
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)$Grinding / milling / crushing
All pesticides	Grains and grain-based products	Rye flour, wholemeal	1	Grain milling - flours production
All pesticides	Oilseeds and oilfruits	Poppy seeds	1	Thermal treatment (heating for preservation), Grinding / milling / crushing
All pesticides	Fruit and primary derivatives thereof	Dried vine fruits (raisins etc.)	5	Drying (dehydration)
All pesticides	Garden vegetables and primary derivatives thereof	Dried vegetables - Gojiberry	5	Drying (dehydration)
All pesticides	Garden vegetables and primary derivatives thereof	Dried vegetables - Onions	10	Drying (dehydration)
All pesticides	Fruit and primary derivatives thereof	Fruit chips	17	Freeze-drying (lyophilisation)$Drying (dehydration)$Slicing
All pesticides	Grains and grain-based products	Rice grain, polished	1	Polishing
All pesticides	Ingredients for hot drinks and infusions	Teas leaves, dry and/or fermented, and similar	1	Drying (dehydration)
All pesticides	Grains and grain-based products	Buckwheat	1	Grinding / milling / crushing

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 2020 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 (2019) 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 2020 were in national control included 862 food samples, which were examined for the content of pesticide residues. There are foods of animal origin (such as milk, poultry meat and cheese) 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.

The results of the investigations showed that 55 % of samples did not contain pesticide residues.

In 23 samples (2.7 %), 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 2020 is shown in Table 208.

Table 182: Summary results of the national control program

Samples	number of samples	No MRL exceedance	MRL exceedance	non-compliant	Percentage non-compliant
Animal products	58	58	0	0	0
Cereals	67	66	1	1	1.5
Baby food	10	10	0	0	0
Processed products	152	150	2	1	3.7
Fruits, vegetables, other plant products	575	544	31	21	0.7
total	**862**	**828**	**34**	**23**	**2.7**

By origin, there were 295 samples (34 %) from Slovenia, 345 samples (40 %) from other EU countries and 216 samples (25 %) from third countries and 6 samples from EU countries and non-EU countries (1 %).

An overview of the summary of samples taken in 2020 by region of origin is shown in Table 2

Table 183: Summary of samples taken in 2020 by region of origin

Origin	number of samples	exceeding MRL	%	Non-compliant	%
EU	640	18	2.8	11	1.7
TC	216	16	7.4	12	5.6
EU and non-EU	6	0	0	0	0
Total	**862**	**34**	**3.9**	**23**	**2.7**

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

In 2020, there were 23 food samples which were not compliant with limit values for pesticide residues set by Regulation (EC) No. 396/2005. It represents 2.7% of all tested samples taken for pesticide residue analysis.

In previous year (2019), there were 24 food samples which were not compliant by Regulation (EC) No. 396/2005, which represent 2.8 % of all tested samples.

The share of non-compliant foods has moved at the level of non-compliant foods from 2019. In the framework of controls, non-compliant foods from 2019 were also followed and find that the list of non-compliant foods is largely repeated (peppers, Chinese cabbage, rice and tea). Continued monitoring of these foods closely will be carried out also in the coming years.

29.2.1. Key findings

Table 184 summarizes 2020 key findings.

Table 184: Summary of results of non-compliant and not safety samples taken in 2020

Samples	number of samples	non-compliant	not safety
Animal products	58	0	0
Baby food	10	0	0
Cereals	67	1	0
Processed products	152	1	0
Fruits, vegetables, other products	575	21	2
total	862	23	2

29.2.2. Interpretation of the results

In 2020, 862 food samples were tested from Slovenia. There were:

- 575 samples (67 %) of vegetables (fresh or frozen), fruit (fresh or frozen), and other products
- 67 samples (8 %) of cereals,
- 152 samples (18 %) of processed foods and
- 58 samples (7 %) of food of animal origin.

In 1 sample of plums deltamethrin was detected and in 1 sample of pears chlormequat was detected (both originated in Italy). These fruits were not safe under Article 14 of the Regulation (EC) No. 178/2002.

In 23 conventional food samples (2.7 %), 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. Summary of these samples can be found in

Table 185: Summary of MRL exceedance

	Number of samples	Pesticides
Fruit samples	**13**	
Lemons	4	Chlorpyrifos-methyl, Pyrimifos-methyl, Buprofezin
Grapefruit	4	Chlorpyrifos-methyl, Chlorpyrifos-ethyl, Buprofezin
Kiwi	2	Cyprodinil and 2-phenylphenol
Susine ringlo - Nuvaluron	1	Deltamethrine
Bananas	1	Imazalil
Pears	1	Chlormequat
Vegetables	**8**	
Chinese cabbage	1	Dimethoate
Sweet peppers	1	Clothianidin

Celery roof	1	Dimetomorph
Celery steam	1	Linuron
Green beans	1	Iproidone
Kohlrabi	1	Permethrin
Tomato	2	Chlorfenapyr, Pyrimifos-methyl, Pyrophenone
Cereals	**1**	
Spelt flour	1	Tetramethrin
Other products	**1**	
Sesame seeds	1	Ethylene Oxide

29.2.3. Comparability with the previous year results

In 2020, 2.7 % of the samples (23 samples in total, from 862 samples taken) were found non-compliant with the EU-MRL. The following follow-up actions were taken for non-compliant samples.

In 2019, 2.8 % of the samples (samples in total, from 865 samples taken) were found non-compliant with the EU-MRL.

In 2020 there were 0.1 % less samples which were non-compliant, than in the year 2019. The number of non-compliant samples taken in previous years was also ranged between 2 % and 3 % of all taken samples, so we rate this deviation as a normal discrepancy that manifests itself over the years.

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

If non-compliant samples are identified, usually batch is seized and prevented from entering the market according to instructions.

For all samples exceeding the MRL appropriate measures are applied according to the risk for the consumer. Follow-up actions are also taken to verify the violation and to identify its cause.

When non-compliant samples are identified, official report are draw. The producer or importer must pay a fine according to the provisions of the legislation.

Foods sampled at import controls 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

Domestic Chinese cabbage and Spelt flour was found to be non-compliant due to the detection of Dimethoate and Tetramethrin residue, which exceeding the MRL. The reasons for non-compliance were that GAP was not respected and pesticide according to authorised GAP.

There are also other non-compliant samples from EU countries and third countries. The main reasons are that samples were non-compliant with the EU MRL, even if measurement uncertainty taken into consideration. Other reasons for non-compliant mainly remain unknown. As the highest proportion of non-compliant samples occurs in products from third countries, possible reasons are use of a pesticide on food imported from third countries for which no import tolerance was set.

An overview of possible reasons for MRL non-compliance are shown in Table 186.

Table 186: 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)]	Dimethoate - Chinese cabbage	1
GAP not respected: use of an approved pesticide not authorised on the specific crop[(b)]	Tetramethrin – Spelt flour	1
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Linuron - Celery steam	1

Reasons for MRL non-compliance	Pesticide/food product	Frequency[(a)]
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Dimetomorph - Celery roof	1
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	2-phenylphenol - Kiwi	1
Cross contamination: spray drift or other accidental contamination	Permethrin - Kohlrabi	1
Cross contamination: spray drift or other accidental contamination	Iproidone - Green beans	1
Residues resulting from other sources than plant protection product (e.g. biocides, veterinary drugs, bio fuel)	Ethylene Oxide – Sesame seeds	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[(c)]	Chlorpyrifos-methyl, Pyrimifos-methyl and Buprofezin in Lemons	4
Use of a pesticide on food imported from third countries for which no import tolerance was set[©]	Chlorpyrifos-methyl, Chlorpyrifos-ethyl and Buprofezin in Grapefruit	4
Use of a pesticide on food imported from third countries for which no import tolerance was set[(c)]	Imazalil - Bananas	1
Use of a pesticide on food imported from third countries for which no import tolerance was set[(c)]	Clothianidin – Sweet pappers	1
Unknown	Chlorfenapyr, Pyrimifos-methyl, Pyrophenone –Tomatoes	2
Unknown	Cyprodinil - Kiwi	1
Unknown	Deltamethrine – susine ringlo	1
Unknown	Chlormequat - Pears	1

(d): Number of cases
(e): Applicable only for food products produced in the EU
(f): For imported food only

29.3.2. ARfD exceedances

Detection of pesticide residues in samples notified into the RASFF concerned exceeding ARfD. Risk of health assessment is carried out in Slovenia by the National laboratory of Health, Environment and Food.

Totally, 2.7 % of the samples (23 samples) in the monitoring programme were found non-compliant with the EU MRL. For any non-compliant sample, ARfD was not exceeded.

29.3.3. Actions taken

In Table 187 an overview of what sort of actions that have been taken when a non-compliant product was proven

Table 187: Action taken

	Action taken	Number of non-compliant samples concerned
Rapid Alert Notification	Recalled from the market	2
Rejection of a non-compliant lot at the border		12
Administrative sanctions (e.g. fines)	Recalled from the market	9

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 188.

Table 188: 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 Health, Environment and Food	LP-014	25.3.2019	Slovenian Accreditation	1.) EUPT-FV20 2.) EUPT-SM10 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 189.

Table 189: Processing factors

Pesticide	Unprocessed product (RAC)	Processed product	Processing factor	Comments
All	Spelt grains	Spelt flour	1	Treatment: grinding

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.

29.1.1 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.

29.1.2 Design of programmes

Staffs responsible for sampling are inspectors from the Autonomous Communities.

Those samples taken at the border inspection posts/points of entry are taken by staff from the General Directorate of Public Health.

Sample selection:

- Data from consumers.
- The Spanish diet model for determining exposure to chemicals.
- Food intended for populations at risk (baby food).
  - Data from production.
  - Products with a high consumption in each region.
  - Information from import programme.
- Information from the Plant Health of the Ministry of Agriculture services on recent inspections, prohibited use of pesticide, etc.
- The pattern of use of plant protection products (commonly used, time of application).
- Toxicity of the active substances.
- Recent changes in the MRL or withdrawal of authorisations for use/approval of active substances.
- Scope of accreditation of the laboratory/analytical capacity/resources.
- Non-compliant results obtained in previous years.
- Pesticide residues selection: In the national risk-based programming work, the Working Document SANCO / 12745/2013 is also taken into consideration, as it includes the pesticides that should be considered for inclusion in the national control programs to guarantee compliance with the maximum levels of pesticide residues in food of plant and animal origin.

Sample–pesticide residues combination

- Frequency of findings of residues of active substances in food products in reporting plans (national and EU) official control from prior years.
- RASFF notifications.
- The products listed in the Regulation on a Coordinated Multiannual Control Programme of the European Union for 2020, 2021 and 2022, aimed at ensuring the enforcement of MRLs pesticides in food of animal or plant origin and on them, and to assess the degree of consumer exposure to these residues.

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, is conditioned mainly by two important aspects:

- The pandemic cause by COVID-19 and the consequent issues in different social and economic sectors (lockdowns, market paralysis, etc.)
- The development of an application for data collection based on Commission and EFSA's premises, which would improve the quality of the data, reducing the possibility of entering erroneous and false data, introducing data mainly related to the full residue definition and the legal limits database.

The number of samples collected doesn't cover the schedule set for the EUCP programme, mainly due to the to the pandemic and the difficulty for providing information.

30.2.1. Key findings

In 2020 a total of 1543 samples were analysed for pesticide residues. 97.9% of the samples were objective samples; 1.49% were selective samples and 0.58% were suspect sampling.

Regarding results, the analysis of the 1543 samples lead to 206179 results.

The 1.75% of the analysed samples shown pesticide residues levels exceeding the EC-MRL. In particular, there have been 27 non-compliant samples that correspond to 36 non-compliant results, since there are samples that have tested positive for more than one substance (e.g. a sample from the group 'Solanacea', was positive to Chlorpyrifos, Spiroxamine (sum of isomers) and Triadimefon) .

None of the baby food samples were non-compliant. The group of "Fruits and other vegetables" shows the higher number of non-compliant results, but it's this is the group that comprehends 77% of the sample tested. The parameter that has been confirmed in more samples within this group was Chlorpyriphos, with 4 positive results, followed by Iprodione, with 3 positive results. The greatest number of samples and analysed substances belong to this group, and 33 of the 36 pesticides detected, appeared within the group.

Regarding the groups "Products of animal origin", only one pesticide was detected (DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT)). This parameter was detected in 1 seafood samples, and it's related to "environmental contamination".

The main results are detailed in Table 190 and Table 191

Table 190: General summary – part 1

Matrix	Total number of samples	Total number of results	Compliant samples	Samples with residues >MRL	% NC
Products of animal origin	177	8753	176	1	0.06%
Baby foods	62	7259	62	0	0%
Cereals	109	14013	107	2	0.13%
Fruits and other vegetables	1195	176154	1171	24	1.56%
Total	**1543**	**206179**	**1516**	**27**	**1.75%**

Table 191: 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	160	17	7	9.6%	90.4%
Baby foods	62	0	0	0%	100%
Cereals	83	26	3	23.85%	76.15%
Fruits and other vegetables	701	494	30	41.34%	58.66%
Total	**1006**	**537**	**40**	**34.8%**	**65.2%**

30.2.2. Interpretation of the results

As mentioned previously, the pandemic situation has decreased the number of expected samples. Also, 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/11945/2015 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 192.

Table 192: NC results. Summary

Matrix	Samples	Results	Pesticide	Frequency
Animal products	1	1	DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT)	1
Baby foods	0	0	-	0
Cereals	2	2	Etofenprox Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride)	1 1
Fruits and other vegetables	24	33	Chlorpyrifos Iprodione Acetamiprid Chlorfenapyr Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil) Linuron Profenofos Imazalil (any ratio of constituent isomers) Boscalid Buprofezin Chlorpropham Diphenylamine Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide) Fenthion (fenthion and its oxigen analogue, their sulfoxides and sulfone expressed as parent) Pirimicarb Propamocarb (Sum of propamocarb and its salt expressed as propamocarb) Pymetrozine Pyraclostrobin Pyriproxyfen Spiroxamine (sum of isomers) Triadimefon Tolfenpyrad Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers)	4 3 2 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total	**27**	**36**		**36**

30.2.3. Comparability with the previous year results

In 2020, a total of 1,543 samples were analysed for pesticide residues compared to a total of 2,314 samples analysed in 2019, and the 2,711 samples analysed in 2018.

This year, the number of analyses dropped down.

The number of samples with Chlorpyrifos detected has slightly increased compared with the previous year, as seen in Table 194.

Table 193: 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

Table 194: Frequency of residue chlorpyrifos by year

Year	Residue non-compliant more common	Number of samples analysed	Number of non-compliant	%	Product more common
2018	Chlorpyrifos	2346	18	0.77	Animal products
2019	Chlorpyrifos	1176	1	0.08	Fruits and other vegetables (1 Artichoke)
2020	Chlorpyrifos	2006	4	0.2	Fruits and other vegetables (2 Coffe beans/ 2 sweet peppers)

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 195: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide/food product[(a)]	Frequency[(b)]
Accidental	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride) / (Rice)	1
Environmental contamination	Etofenprox / (Rye)	1
	DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT) /(Tuna)	1
Other	Imazalil (any ratio of constituent isomers) / (Bananas)	1
Unknown	Acetamiprid (Tea/ Pomegrates)	2
	Boscalid / (Watercresses)	1
	Buprofezin / (Sweet peppers)	1
	Chlorfenapyr / (Dill seeds/Coriander leaves)	2
	Chlorpropham / (Oranges)	1
	Chlorpyrifos / (Coffee beans and Sweet peppers)	4
	Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide) / (Sesame seeds)	1
	Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil) / (Sweet peppers)	1
	Iprodione / (Pumpkins)	1
	Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers) / (Tea)	1
	Pirimicarb / (Watercresses)	1
	Profenofos / (Oranges and Sweet Peppers)	2
	Propamocarb (Sum of propamocarb and its salt expressed as propamocarb) / (Globe Artichokes)	1
	Pymetrozine / (Coliflower)	1
	Pyraclostrobin / (Watercresses)	1
	Spiroxamine (sum of isomers) / (Sweet peppers)	1
	Tolfenpyrad / (Tea)	1
	Triadimefon/ (Tea)	1

30.3.2. Actions taken

Table 196: Actions taken

Action taken	No. of non-compliant samples concerned	Residue/Product
Destruction of animals and/or products.	1	Chlorpyrifos / Sweet peppers
Follow-up (suspect) sampling	3	Chlormequat (sum of chlormequat and its salts, expressed as chlormequat-chloride) / Rice Chlorpropham / Oranges Pymetrozine / Coliflower
Follow-up investigation	9	Boscalid / Watercresses DDT (sum of p,p'-DDT, o,p'-DDT, p-p'-DDE and p,p'-TDE (DDD) expressed as DDT) / Tuna Etofenprox / Rye Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil) / Potatoes Iprodione / Pumpkins Pirimicarb / Watercresses Propamocarb (Sum of propamocarb and its salt expressed as propamocarb) / Globe artichokes Pyraclostrobin / Watercresses
Other	17	Imazalil (any ratio of constituent isomers) / Bananas Acetamiprid / Pomegrates / Tea Buprofezin / Sweet Peppers Chlorfenapyr / Coriander leaves and Dill seeds Chlorpyrifos / Coffe beans, Sweet peppers. Ethylene oxide (sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide) / Sesame seeds Fipronil (sum Fipronil and sulfone metabolite (MB46136) expressed as Fipronil) / Sweet peppers Profenofos / Oranges, Sweet Peppers Spiroxamine (sum of isomers) / Sweet peppers Triadimefon / Sweet peppers Tolfenpyrad / Tea Lambda-cyhalothrin (includes gamma-cyhalothrin) (sum of R,S and S,R isomers) / Tea
Unknown /	6	Diphenylamine / Pears Fenthion (fenthion and its oxigen analogue, their sulfoxides and sulfone expressed as parent) / Olives Iprodione / Pears Linuron / Spinaches and Chards Pyriproxyfen / Olives

30.4. Quality assurance

Table 197: Laboratories participation in the national control program

Country	Laboratory	Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Date	Body	
Spain	Laboratorio de la Agencia de Salud Pública de Barcelona (LASPB)	03.06.19	ENAC	FAPAS, EUPT, Test-Qual
Spain	Laboratorio Regional de Salud Pública de Madrid	14.10.16	ENAC	FAPAS
Spain	Laboratorio de Salud Pública de Badajoz	24.05.13	ENAC	FAPAS, EUPT
Spain	Laboratorio de Salud Pública de Valencia	24.03.17	ENAC	FAPAS, EUPT
Spain	Laboratorio Agroalimentario de Burjasot-Valencia (Comunidad Valenciana)	02.11.99	ENAC	FAPAS, EUPT, Test-Qual

Country	Laboratory	Accreditation		Participation in proficiency tests or inter-laboratory tests
	Name	Date	Body	
Spain	Laboratorio KUDAM S.L	20.07.18	ENAC	FAPAS, EUPT, Test-Qual
Spain	Laboratorio Químico Microbiológico S.A., de Mairena de Aljarafe, de Sevilla	16.12.05	ENAC	EUPT, EUPT, Test-Qual
Spain	Laboratorio de Salud Pública de Almería (Junta de Andalucía)	11.01.19	ENAC	FAPAS, EUPT
Spain	Laboratorio COEXPHAL de El Viso (Almería)	16.02.18	ENAC	FAPAS, Test-Qual
Spain	Laboratorio Oficial de Salud Pública de la Delegación de Salud y Bienestar Social de Cuenca	02.12.11	ENAC	FAPAS, EUPT
Spain	Laboratorio Tecnológico de las Palmas de Gran Canarias (Gobierno de Canarias)		ENAC	FAPAS, EUPT, Test-Qual
Spain	Laboratorio Agroalimentario y de Sanidad Animal (LAYSA) de Murcia	21.07.15	ENAC	FAPAS, EUPT, Test-Qual
Spain	Laboratorio Agrario Regional de Burgos (Junta de Castilla León)	18.05.01	ENAC	FAPAS, EUPT
Spain	Laboratorio Normativo de Salud Pública de Bilbao	19.09.18	ENAC	FAPAS, EUPT
Spain	Laboratorios ECOSUR, S.A.L.	21.06.19	ENAC	FAPAS, EUPT, Test-Qual
Spain	AINIA	20.12.96	ENAC	FAPAS, EUPT, Test-Qual
Spain	Analytica Alimentaria GmbH Sucursal en España	11.07.16	DAKKS y IAS	FAPAS, EUPT
Spain	Químico microbiológico S.A. Murcia	14.07.06	ENAC	EUPT, Test-Qual
Spain	Laboratorio de Salud Pública (Madrid Salud) Ayto.M	04.01.06	ENAC	EUPT
Spain	Laboratorio analítico bioclínico S.L	25.11.05	ENAC	FAPAS, EUPT, Test-Qual
Spain	Labs & technological Services AGQ, S.L.	29.03.19	ENAC	FAPAS, EUPT, Test-Qual
Spain	Laboratorio de Salud Pública de Galicia	27.07.18	ENAC	FAPAS, EUPT, Test-Qual
Spain	Laboratorio de Salud Pública en Bizkaia	05.07.19	ENAC	FAPAS
Spain	Laboratorio Regional del Gobierno de La Rioja	10.07.19	ENAC	FAPAS, EUPT, Test-Qual
Spain	Laboratorio Agroalimentario de Zaragoza	19.07.19	ENAC	FAPAS, EUPT, Test-Qual
Spain	Laboratorio agroalimentario de Cordoba	21.09.01	ENAC	

30.5. 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 198: 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

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 2020 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 220 organic samples (13.7 %) was collected 2020.

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 2020, 1602 selective samples of fruits, vegetables, baby food, juices, cereal grains, bovine liver and chicken fat were analysed for residues of about 550 analytes (pesticides, metabolites and break down

products). EU harmonized Maximum Residue Limits (EC-MRLs) were exceeded in 54 samples (3.4 %). The history of exceedance has looked as follow; 2014 - 2.1 %, 2015 – 1.3 %, 2016 – 2.1 %, 2017 – 3.3 %, 2018 - 3.3 %, 2019 – 3.0 % and for 2020 it was 3.4 %. Looking over time the exceedance the last seven years is in range of 1.1-3.4 %.

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 199: Summary results from the national monitoring program for pesticide residues 2020

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)	729	172 (23,6 %)	538 (73,8)	19 (2,6%)
Vegetables (fresh or frozen)	594	312 (52,5 %)	266 (44,8 %)	16 (2,7%)
Baby food	42	42	--	--
Cereals	121	71 (58,7 %)	37 (30,6 %)	13 (10,7 %)
Products of animal origin	30	30	--	--
Others (e.g. juice, dry products, veg.oils)	86	58 (42,7 %)	22 (53,9 %)	6 (7,0 %)
Total	**1602**	**685 (42,7 %)**	**863 (53,9 %)**	

31.2.2. Interpretation of the results

When measurement uncertainty was taking into consideration, only 30 samples, of the 54 samples, were non-compliant.

Table 200: Summary over non-compliant samples 2020

Food	Origin	No. of Sample	Pesticides
Apple	Netherlands	1	Chlorpropham
Cabbage	Netherlands	1	Pyhmetrozine
Cucumber	Egypt	1	Dinotefuran; fenbutatinoxid; Chlorpyrifos
Cucumber	Egypt	1	Propargite
Cucumber	Jordan	1	Thiophanate
Bean with pods	Egypt	1	Dimethoate; Omethoate
Pomegranate	Syria	1	Acetemiprid
Bean (dried)	Australia	1	Pirimifos-methyl
Rice	India	1	Tricyklazol; Thiametoxam
Rice	Vietnam	1	Tricyklazol
Carrot	Italy	1	Chlorpyrifos-methyl; Tolclofos-methyl
Raisin	Iran	2	Chlropyrifos; Iprodione
Pepper	Turkey	1	Pyridaben
Banana	Ecuador	2	Imazalil
Carrot	Italy	1	Oxamyl
Okra	Jordan	1	Indoxacarb,methomyl,profenos,pyridaben
Okra	Sri Lanka	1	Clothianidin,thiamethoxam
Nectarine	Italy	1	Formetanate
Mandarin	Peru	1	Iprodione
Okra	Uganda	1	Thiametoxam
Rice	India	1	Thiametoxam, tricyklazol
Rice	Pakistan	1	Carbendazim, Triazophos
Rice	Unknown	2	Carbendazim
Bean with pods	Thailand	1	Dimethomorf
Okra	India	1	Metalaxyl; chlorfuazaron
Raisine	Iran	1	Chlorpyrifos
Pepper	Turkey	1	Tebufenpyrad

The suspect samples were 54 samples according to Regulation (EC) No 2019/1793. Including measurement uncertainty 13 (24.10 %) 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 8. Looking over ten years period the exceedance trend has declined.

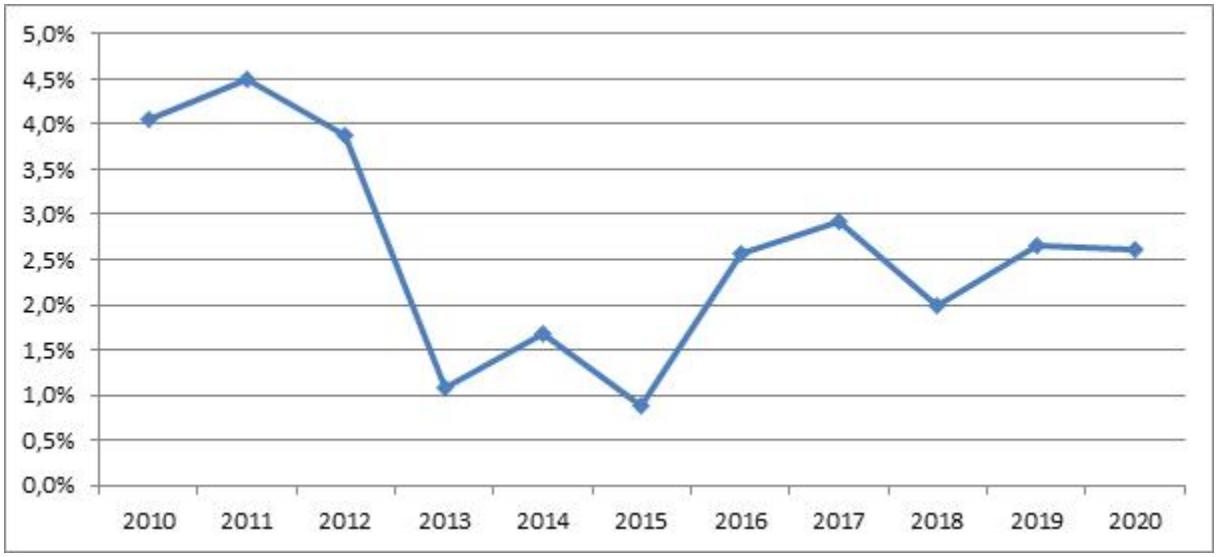


Figure 8: Exceedance rate for fresh fruit and vegetables between 2010-2020.

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

31.3.1. Possible reasons for non-compliant samples

Table 201: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide[(a)]/food product	Frequency[(b)]
GAP not respected: use of a pesticide not approved in the EU[(c)]	Chlorpropham/Apple	1
	Pyhmetrozine/Cabbage	1
	Dinotefuran/Cucumber	1
	Fenbutantinoxid/Cucumber	1
	Chlorpyrifos/Cucumber	1
	Propargite/Cucumber	1
	Thiophanate/Cucumber	1
	Dimethoate/Bean with pods	1
	Omethoate/Bean with pods	1
	Chlorpyrifos/Carrot	1
	Chlorpyrifos/Raisin	2
	Iprodione/Raisin	1
	Oxamyl/carrot	1
	Methomyl/Okra	1
	Profenos/Okra	1
	Thiametoxam/Okra	2
	Clothiandin/Okra	1
	Chlorfuazaron/Okra	1
	Iprodione/Mandarin	1
	Dimethomorf/Bean with pods	1
	Triazophos/rice	1

Reasons for MRL non-compliance	Pesticide[(a)]/food product	Frequency[(b)]
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected	Acetamiprid/Pome granate Pirimiphos-methyl/dried beans Pyridaben/Pepper Indoxacarb/Okra Pyridaben/Okra Metalaxyl/Okra Formetanate/Nectarin Thiametoxam/Rice Tebufenpyrad/Pepper	1 1 1 1 1 1 1 1 1
Changes of the MRL	Tricyklazol/rice Imazalil/Banana	2 1

a. Report name
b. Number of cases
c. Applicable only for food products produced in the EU

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. One sample exceeded the ARfD and a RASFF notification was sent to the Commissions RASFF-team.

Table 202: ARfD exceedances

Product	Origin	Risk assessment	Comments
Carrot	Italy	Calculation in PRIMo version 3.1 of the estimated intake of oxamyl, with an ARfD of 0.001 mg/kg bw, from carrots with a residue level of 0.18 mg/kg indicate an exceedance of ARfD for both children (1114%) and adults (355%). An acute health concern can therefore not be excluded.	Sample code: 20200421H705 RASFF ref: 2020.2038

31.3.3. Actions taken

A total of 45 follow-ups actions has been taken in 2020.

Table 203: Actions taken

Action taken[(a)]	Number of non-compliant samples concerned	Comments
Rapid Alert Notification	1	Sample code: 20200421H705 RASFF ref: 2020.2038
Lot recalled from the market	1	Sample code 20200421. RASFF ref: 2020.2038
Rejection of a non-compliant lot at the border	13	Within the frame of Reg. (EC) no 2019/1793
Other follow-up investigations to identify reason of non-compliance or responsible food business operator	30	

31.4. Quality assurance

Laboratories participation in the national control program.

Table 204: Laboratories

Country	Laboratory Name	Laboratory code	Accreditation Code		Participation in proficiency tests or inter-laboratory test
			Date	Body	
SE	Eurofins Food& Feed Sweden AB	Eurofins	02/09/1991	SWEDAC	**EUPT 2020:** EUPT-CF14, , EUPT-FV22, EUPT-FV-SC04, EUPT-FV-SM12, EUPT-SRM15, EUPT-AO15, **Fapas 2019**: Fapas 05132, Fapas

Country	Laboratory Name	Laboratory code	Accreditation Code		Participation in proficiency tests or inter-laboratory test
			Date	Body	
					05140, Fapas 05145, Fapas 09128, Fapas 09131, Fapas 09133, Fapas 19285, Fapas 19287, Fapas 19294, Fapas 19296, Fapas 19300, Fapas 19302
SE	National Food Agency	SLV/Kem1	02/26/2007	SWEDAC	**EUPT 2020**: EUPT-AO15, EUPT-CF14, EUPT-FV22, EUPT-SM12, EUPT-SRM15

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	
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	

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

United Kingdom

The Chemicals Regulation Division (CRD) of the Health and Safety Executive (HSE) acts as the UK competent authority for plant protection products including pesticide residues on behalf of DEFRA (Department for Environment and Rural Affairs) and other UK government departments.

The Expert Committee on Pesticide Residues in Food (PRiF) is a panel of independent experts that advises the UK government on the programme.

Results are published in a range of formats, including detailed quarterly PRiF reports and an annual report. Reports are available[26] as well as associated ODS format files containing detailed results[27]

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 UK national control programme is made up of surveys of commodities selected every year on the basis of an established prioritisation system.

Proposals for the programme for 2020 were reviewed by the Expert Committee on Pesticide Residues in Food (PRiF - a committee of independent experts) in 2019 before the programme was finalised. Full details of the programme and supporting justification were previously provided to EFSA and the 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 2020 were classified as high priority for incorporation into the national programme
- Staple foods – bread and milk are always included in the UK programme. 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 2019 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 carrot, cauliflower, herbs, infant formula, kiwi and cheese as it was considered that these foods were more likely than most to contain residues. The aim of this testing was not to check for non-compliance, but to collect information on the incidence and source of chlorate residues.

In addition, certain foods were selected for "rolling reporting", that is sampling by government inspectors and a retail marketing agency, with faster turn-around and publication of results. These results are later included in other reports and data compilations.

Other minor adjustments were made to the programme during the course of the year which affected the balance of sample numbers between surveys. In recognition of the measures in place from March 2020, to restrict the spread of the COVID-19 virus and the need to protect workers, adjustments were made to the programme. These included consideration of the selection of foods to be sampled and

[26] https://www.gov.uk/government/collections/pesticide-residues-in-food-results-of-monitoring-programme
[27] https://data.gov.uk/dataset/5d5028ef-9918-4ab7-8755-81f3ad06f308/pesticide-residues-in-food

manner in which they were collected, to ensure the integrity and scope of the programme would be maintained. In recognition of the measures in place from March 2020, to restrict the spread of the COVID-19 virus and the need to protect workers, HSE made many adjustments to its programme. These included consideration of the selection of foods to be sampled and manner in which they were collected, to ensure the integrity and scope of the programme would be maintained.

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

32.2.1. Key findings

Detailed interpretation of results is published in PRiF reports. PRiF quarterly reports for 2020[28] contain additional detailed interpretation of results including consumer risk assessments. PRiF's annual report for 2020 contains an overview of the year's results including separate consideration of chlorate results and additional information about the work of the committee[29].

The presentation of some detailed data points is inconsistent between the published UK results and the data submitted to EFSA, due to differing data standards.

Summary results (Table 206) were:

- 2,460 samples were tested in total.
- 58.46 % of samples contained no detectable residues, 39.02 % of samples contained residues at or below the MRL or assessed as compliant, and 2.52 % of samples contained residues assessed as over the MRL (without taking account of measurement uncertainty).
- These results exclude chlorate, which was considered separately.

Table 206: Summary results excluding chlorate

	Samples tested	Samples with residues over the MRL
Fruit and vegetable		
Avocado	72	0
Beans with pods	72	7
Carrot	82	0
Cauliflower	78	1
Courgette	66	0
Grapes	78	1
Herbs	32	3
Kiwi Fruit	72	2
Lettuce	72	0
Mango	66	0
Okra	73	11
Onions	72	0
Oranges	75	1
Pea without edible pods	60	0
Pears	72	1
Peas with edible pods	31	2
Potatoes	123	1
Pumpkin and squash	24	2
Sweet potatoes	48	0
Starchy foods and grains		
Bread	162	0
Rice	72	8
Rye	95	0
Animal products (including fish)		
Cheese (hard)	61	1

[28] https://www.gov.uk/government/publications/pesticide-residues-in-food-quarterly-monitoring-results-for-2019
[29] https://www.gov.uk/government/publications/expert-committee-on-pesticide-residues-in-food-prif-annual-report

	Samples tested	Samples with residues over the MRL
Fish*	108	0
Lamb	60	0
Liver	76	7
Milk	222	0
Pate (fish)*	48	0
Poultry meat	72	0
Miscellaneous groceries		
Beans (dried)	72	8
Dried fruit (grapes)	72	2
Orange juice	36	0
Infant food		
infant formula	36	0

- Separate consideration of chlorate residues

361 samples from 6 surveys were additionally tested for chlorate. These were not assessed for compliance with the MRL as part of the national monitoring programme. However, in order to include these important results in the UK data supplied to EFSA it has been necessary to code them as non-compliant to comply with the business rules set for acceptable data.

- Fresh and Frozen Fruit and Vegetables (including potatoes)

A total of 1,268 samples were tested. Within this category residues above MRLs (without taking account of measurement uncertainty) was at 2.52%. This excludes results for chlorate.

- Animal products including fish

A total of 647 samples were tested. Within this category 1.24% of residues were above MRLs (without taking account of measurement uncertainty) Most of the residues above the MRL were of the biocides BAC or DDAC.

- Starchy foods and grains

329 samples were tested. Within this category residues above MRLs (without taking account of measurement uncertainty) was at 2.43%. This excludes results for chlorate. Processing factors were applied to consider compliance in bread and pasta.

- Miscellaneous groceries

A total of 180 samples were tested. The other groceries tested were beans (dried), dried fruit (grapes) and orange juice. Overall, within these categories 5.56% of the samples had residues above the MRL.

- Infant food

36 samples of infant formula milk were tested. Four samples were found to have residues of chlorate over the MRL.

32.2.2. Interpretation of the results

- Chlorate results

361 samples from 6 of surveys were selected for testing for chlorate as well as our usual range of pesticides. This testing was targeted towards foods thought most likely to contain chlorate residues.

Residues found above 0.01 mg/kg were followed the results up with suppliers. Brand owners and other stakeholder provided responses on the likely source of residues. These findings have been reported separately.

PRiF advised reporting results for chlorate separately from other residues as they are confident that the residues detected come from use of chlorine-based disinfectants used to maintain microbiological safety (control microorganisms that cause food poisoning), not from use of pesticides used on plants.

After the new, higher MRLs came into effect, we found only a few samples with residues that measured above the MRL. The new MRL's have an extra provision that it is also legal to trade food

where residues over the MRL were incurred from disinfectant used (including from treated water) during processing.

Table 207: Summary results for chlorate

Survey	Number of samples tested	Number of samples containing residues at 0.01 mg/kg (the reporting limit)	Number of samples with residues above 0.01 mg/kg
Carrot	82	0	6
Cauliflower	78	1	8
Herbs	32	2	4
Infant formula milk	36	0	4
Kiwi fruit	72	0	0
Cheese (hard)	61	0	0

- Fresh and Frozen Fruit and Vegetables (including potatoes)

The most frequent non-compliant samples were in okra and beans with pods surveys. Speciality varieties of beans with pods and okra continue to have relatively high incidences of non-compliance. These foods are not commonly grown in Europe and many of the MRLs are set at the LOD.

- Animal products including fish

All the residues over the MRL in animal products were residues of the biocides BAC or DDAC. Responses for food business indicated expected that the residues result from the use of biocides as disinfectant on surfaces and tools/machinery in the line with product labels during the preparation and processing of meat, dairy foods and fish for consumer purchases rather than as pesticides on plants.

- Starchy foods and grains

The most frequent non-compliant samples were in rice. Most non-compliant samples of rice contained a residue of tricyclazole above the MRL. The MRL for tricyclazole changed in December 2017, these samples were imported after this date, no clear picture emerged of a cause for non-compliance.

- Miscellaneous other groceries

The most frequent non-compliant samples were in the dried grape survey. Results were not unexpected based on previous RASFF notifications. No clear picture emerged of a cause for non-compliance.

- Infant food

36 samples of infant formula were tested. Four samples contained residues of chlorate sample

32.2.3. Comparability with the previous year results

Since the UK programme is made of surveys of different foods each year, it is not appropriate to compare results statistically to previous years. Results for most foods are broadly consistent with previous years. Overall results excluding chlorate are also broadly consistent.

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

32.3.1. 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 (mainly in speciality beans) and in okra. Both will be surveyed again in 2021 as part of the rolling reporting surveys.

- Animal products including fish

All the residue over the MRL in animal products were residues of the biocides BAC or DDAC. Responses for food business indicated expected that the residues result from the use of biocides as disinfectant on surfaces and tools/machinery in line with product labels during the preparation and

processing of meat, dairy foods and fish for consumer purchases rather than as pesticides on plants. Due to the need to maintain microbiological safety food businesses have been advised not stop using biocides or change their practices in response to these results.

- Cereals and grains

The most frequent non-compliant samples were in rice. Most non-compliant samples of rice contained a residue of tricyclazole above the MRL. The MRL for tricyclazole changed in December 2017, these samples were imported after this date, no clear picture emerged of a cause for non-compliance.

- Infant food and other groceries

The most frequent non-compliant samples were in the dried grape survey. Results were not unexpected based on previous RASFF notifications. No clear picture emerged of a cause for non-compliance.

32.3.2. ARfD exceedances

All individual results were screened against intakes. 26 detailed risk assessments during 2020 were considered. Samples with residues over the MRL gave intakes over the ARfD, details and draft RASFFs were sent on to the UK's RASFF contact point (the Food Standard Agency). 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.

32.3.3. Actions taken

Individual food businesses were advised of chlorate residues and asked to provide comments to help understand of these residues and to rule out plant protection product use. Work on the general issue has continued in collaboration with the UK's Food Safety Agency and with stakeholder bodies.

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 was in most cases these were highlighted as non-compliant when brand name details were published. Brand name details are routinely published for all UK samples taken from the supply chain. For samples of non-UK food, the appropriate authorities were also notified. For UK samples were (where possible) investigated and/or referred for action under cross compliance rules.

RASFF notifications were prepared and issued in respect of several samples that were sent to the FSA for consideration. Brand name details of these samples were also published separately.

Reasons for non-compliance were not always provided, with the exception of residues of BAC and DDAC where evidence of legitimate, non-pesticide source was often 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.

Residues detected in 14 samples of organic produce; these were referred to the appropriate agriculture departments and to organic certification bodies. Exceptionally the pesticide MRL competent authority although not responsible for compliance in either organic food or infant food provided technical support in the detailed scrutiny of a residue in organic baby food.

In the PRiF annual report results for glyphosate were specifically included in response to stakeholder interest, although no safety or compliance issues were identified by the committee.

32.4. Quality assurance

All laboratories analysing for the UK national control programme are required to be accredited for the tests conduct, to participate in EU proficiency tests (EUPT) 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.

All laboratories taking part in the programme (Table 208) are accredited by the UK national accreditation body, UKAS for the necessary tests and analytical services required to deliver the programme of work.

Table 208: Accreditation of laboratories

Country	Laboratory		Accreditation	
	Name	**Code**	**Date**	**Body**
GB	Agri-Food and Biosciences Institute	AFBI	11/11/2010	UKAS
GB	Fera Science Ltd	Fera Science Ltd	1996	UKAS
GB	Science and Advice for Scottish Agriculture (SASA)	SASA	18 July 1994	UKAS

32.5. Processing Factors (PF)

Processing factors were applied to some results for samples collected during 2020. Full details are provided in our quarterly report[30]. Otherwise a processing factor of 1 was applied to simple processed foods where appropriate as an initial check.

32.6. Additional Information

The Food Standards Agency (FSA), in accordance with its statutory obligations as the UK central competent authority for food and feed, regularly submits to the EU Commission test returns for high-risk commodities controlled upon arrival at UK ports under the various safeguard measures and other legislation currently in place, either monthly, quarterly or bi-annually, as is required by the legislation during the transition period.

[30] Pesticide residues in food: quarterly monitoring results for 2020 - GOV.UK (www.gov.uk)

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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.

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

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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 Czech Republic
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
NIBIO	Norwegian Institute of Bioeconomy Research

NL	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 the Czech Republic
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