National summary reports on pesticide residue analysis performed in 2024

European Food Safety Authority (EFSA)

1. GREECE

1.1. Objective and design of the national control programme

The Hellenic Ministry of Rural Development and Food (MRDF) is the national authority responsible for coordinating the implementation of Regulation (EC) No 396/2005, in accordance with national legislation on pesticide marketing, sustainable use, and other relevant provisions under Law No 4036/2012. The Ministry is also responsible for the planning and coordination of official controls on food of plant origin. The competent authorities responsible of the sampling of plant origin products are the Regional Centres of Plant Protection, Quality & Phytosanitary Control (RCPPQ&PC) of the Ministry of Rural Development and Food and the Directorates-General of Regional Rural Economy and Veterinary Medicine.

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

The official laboratories that analysed the samples taken in 2024 were the Laboratory of Pesticide Residues of Benaki Phytopathological Institute, the Laboratory of Pesticide Residues of the Regional Centre of Plant Protection, Quality and Phytosanitary Control of Thessaloniki (RCPPQ&PC), the Laboratory of Pesticide Residues of the General Chemical State, the Veterinary Centre of Athens, the Laboratory of Serres and the Laboratory of Tripoli.

The national control programme of 2024 for monitoring pesticide residues is established according to Official Control Regulation and the new Regulations applicable since 15 December 2022 (Commission Delegated Regulation (EU) 2021/2244 and Commission Implementing Regulation (EU) 2021/1355).

The national monitoring programme was designed on the basis of several risk analysis criteria and parameters, including: the number of samples (domestic and imported) for each product, the type of agricultural produce, expected import volumes, results from previous years' monitoring programmes, the dietary intake contribution of each product, the sampling locations, the EU coordinated control programme (MACP), pesticides used in practice by farmers, relevant RASFF notifications concerning pesticide residues, the personnel and analytical capacity of the official laboratories, recommendations from EFSA, and the European Commission working document SANCO/12745/2013 (as applicable).

The programme aims to ensure compliance with Maximum Residue Levels (MRLs) and to assess consumer exposure, thereby achieving a high level of consumer protection and ensuring the application of Good Agricultural Practice (GAP) at all stages of production and harvest of agricultural products. The responsibilities of the participating laboratories, including the number of samples per commodity to be analysed and the respective sampling areas, were clearly defined. Sampling was performed by the regional and local authorities responsible for official sampling activities.

The sampling strategy was based on the 'from farm to fork' rationale, considering 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-Commission Directive 2002/63/EC and Regulation (EC) 152/2009 (for feed). Samples were taken by domestic production and imports, proportionally, covering all stages of the supply chain (i.e. borders, storage and packing, trade of products of plant origin, retail and wholesale).

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

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

(https://www.minagric.gr/for-farmer-2/crop-production/fytoprostasiamenu/fytoprostateytika-071124/ypoleimatafyto).

Results from controls organised by the Ministry of Rural Development and food for plant origin products are also available on a monthly basis. (https://www.minagric.gr/for-farmer-2/crop-production/fytoprostasiamenu/fytoprostateytika-071124/ypoleimatafyto/apotelesmata-elegxou-ypoleimmaton-fytoprostateftikon-proionton-se-trofima-fytikis-proelefsis-2024).

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

In 2024, 4.157 samples were analysed in total by our authorities. Of those, 2997 samples were domestic (72.10%), 168 samples originated from the EU (4.04%) and 940 originated from non-EU countries (22.60%), while the origin of 52 samples was unknown (1.25%). The total number of samples analysed is higher than the number of samples considered by EFSA for the preparation of the annual report for pesticide residues. Composite/mixed samples as well as feed samples were not considered in the EFSA report, as these commodities were not part of Annex I of Regulation (EC) No 396/2005.

Of the samples analysed, 53.12% were free of quantified residues, 41.52% contained quantified residues at or below the EU MRL, and 5.36% exceeded the EU MRL. Considering a measurement uncertainty of 50%, the percentage of non-compliant samples decreased to 2.96%. Compared with last year's results, the total number of samples decreased from 4705 to 4157, but it was higher compared to all previous years. The percentage of samples without detectable residues in 2024 decreased from 57.07% to 53.12%, while the percentage of samples with detectable residues at or below the EU MRL increased from 38.11% to 41.52%. The non-compliance rate in 2024 (2.96%) is slightly higher than the rates observed in 2023 (2.33%) and 2022 (2.4%), and similar to that recorded in 2021 (3%).

Phosmet and etofenprox were the active substances most frequently detected in various domestic non-compliant samples. Among the domestic samples analysed, grape leaves were the products most often found to be non-compliant. From third countries, tomatoes containing indoxacarb and potatoes containing imidacloprid were the most frequently identified non-compliant pesticide–product combinations. Tomatoes from TR have also been included in Annex I of Regulation (EC) 1793/2019 (Regulation (EC) 2025/1441).

The total number of pesticides analysed was approximately 550.

Regarding organic samples, 215 out of 184 samples were below the LOQ (85.6%), 28 samples contained quantified residues at or below the MRL (13%) and 3 samples exceeded the Mrl (1.4%). Considering the measurement uncertainty (50%), 1 sample was considered non-compliant (0.46%).

A targeted sampling of sesame seeds continued in 2024. A total of 102 samples were analysed. Of these, 99 samples (97%) were below the LOQ, 1 sample (1%) contained quantified residues at or below the MRL, and 2 samples (2%) exceeded the MRL. Considering a 50% measurement uncertainty, the 2 samples that initially exceeded the Mrl, were considered compliant.

Table 1: Summary results for the sampling years 2020-2024

Category	Year				
	2020	2021	2022	2023	2024
Total Number of samples	3,149	3,658	3,655	4,705	**4157**
Number of samples without detectable residues	1,516 (48%)	1,885 (52%)	1,953 (53.43%)	2685 (57.07%)	**2208 (53.12%)**
Number of samples with detectable residues at or below the EU MRL	1,429 (45%)	1,575 (43%)	1,532 (41.92%)	1793 (38.11%)	**1726 (41.52%)**
Number of samples with residues exceeding the EU MRL	204 (7%)	198 (5%)	170 (4.65%)	227 (4.82%)	**223 (5.36%)**
Non-compliant samples	123 (4%)	115 (3%)	88 (2.4%)	110 (2.33%)	**123 (2.96%)**

Fig. 1: Summary results for the sampling years 2020-2024

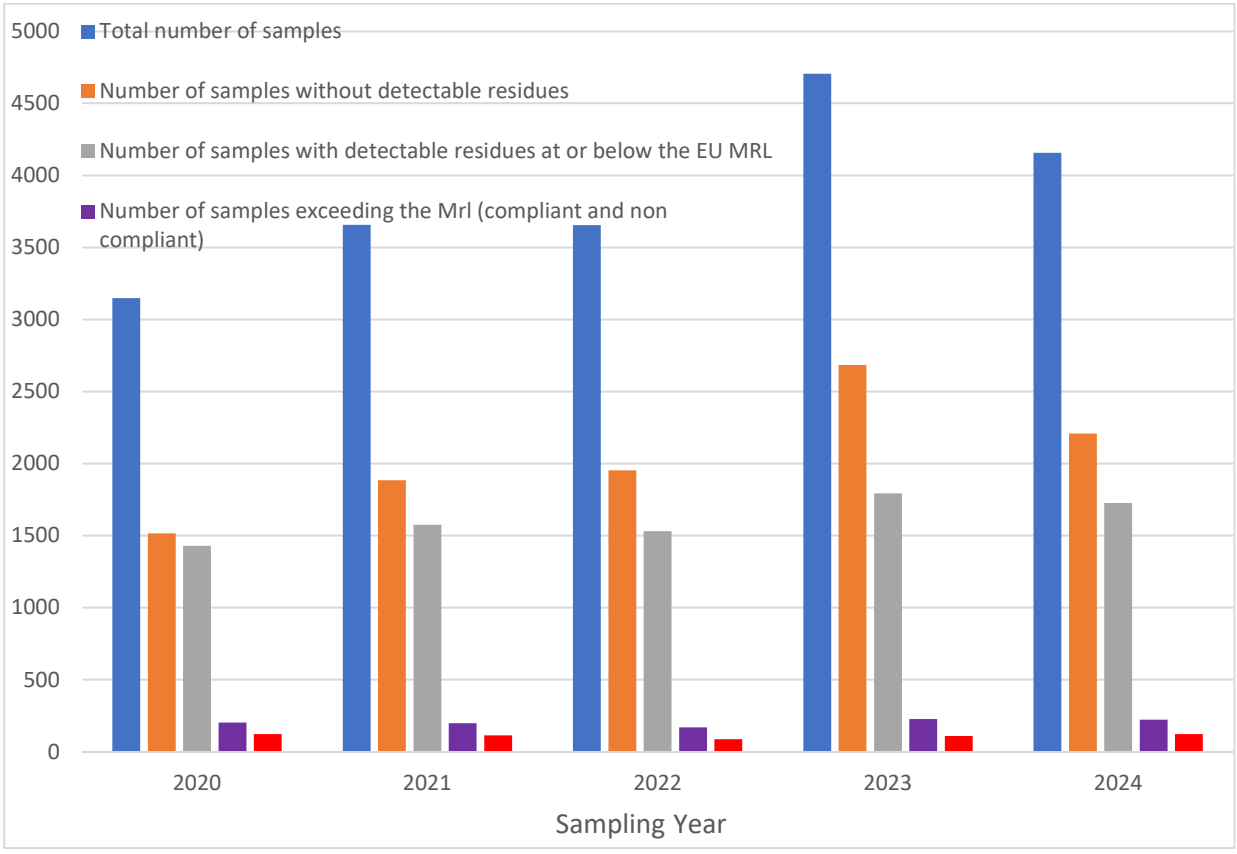

Table 2: Summary result for the sampling year 2024 per origin

Origin of samples	Total no of samples	No of samples (%)			
		<LOQ	≥LOQ and ≤MRL	>MRL	
				Compliant and non-Compliant	Non-Compliant
EU	3165 (100%)	1654 (52.26%)	1395 (44.08%)	116 (3.66%)	57 (1.80 %)
Non-EU	940 (100%)	517 (55%)	320 (34.04%)	103 (10.96%)	64 (6.81%)
Unknown	52 (100%)	37 (71.16%)	11 (21.15%)	4 7.69%	2 3.85%
Total number of samples	**4157 (100%)**	**2208 (53.12%)**	**1726 (41.52%)**	**223 (5.36%)**	**123 (2.96%)**

Fig. 2: Summary results by origin for the sampling year 2024

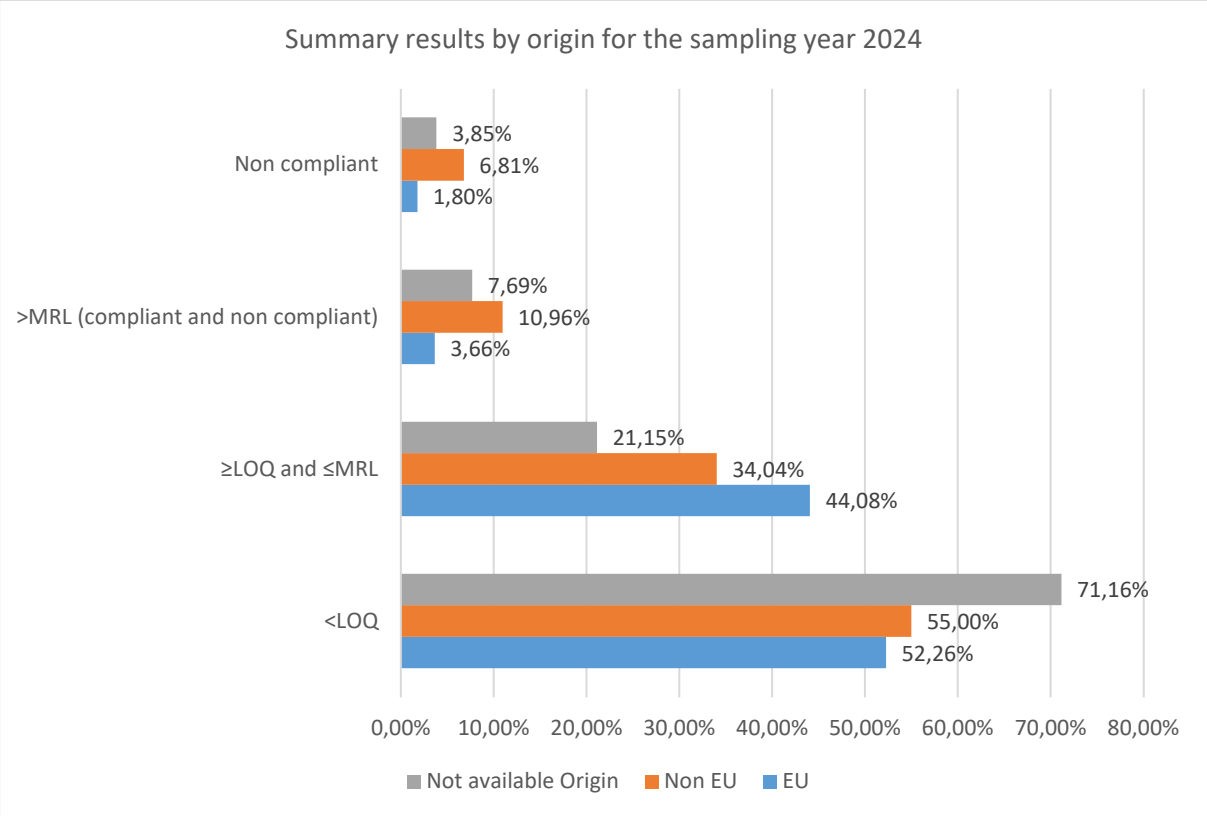

Table 3: Summary results by product type for the sampling year 2024

Product	No of samples (%)				
	Total no of samples	<LOQ	≥LOQ and ≤MRL	>MRL	
				Compliant and non-Compliant	Non-compliant
Animal products	123 (100%)	95 (77%)	28 (23%)	0	0
Baby food	8 (100%)	8 (100%)	0	0	0
Cereals	177 (100%)	112 (63,3%)	58 (32,8%)	7 (3,9%)	4 (2,2%)
Fruit, vegetables and nuts	3163 (100%)	1454 (46%)	1544 (49%)	165 (5%)	101 (3,2%)
Other plant origin products (including processed products)	686 (100%)	539 (78,6%)	96 (14%)	51 (7,4%)	18 (2,6%)
Total number of samples	4157	2208	1726	223	123

Fig. 3: Summary results by product type for the sampling year 2024

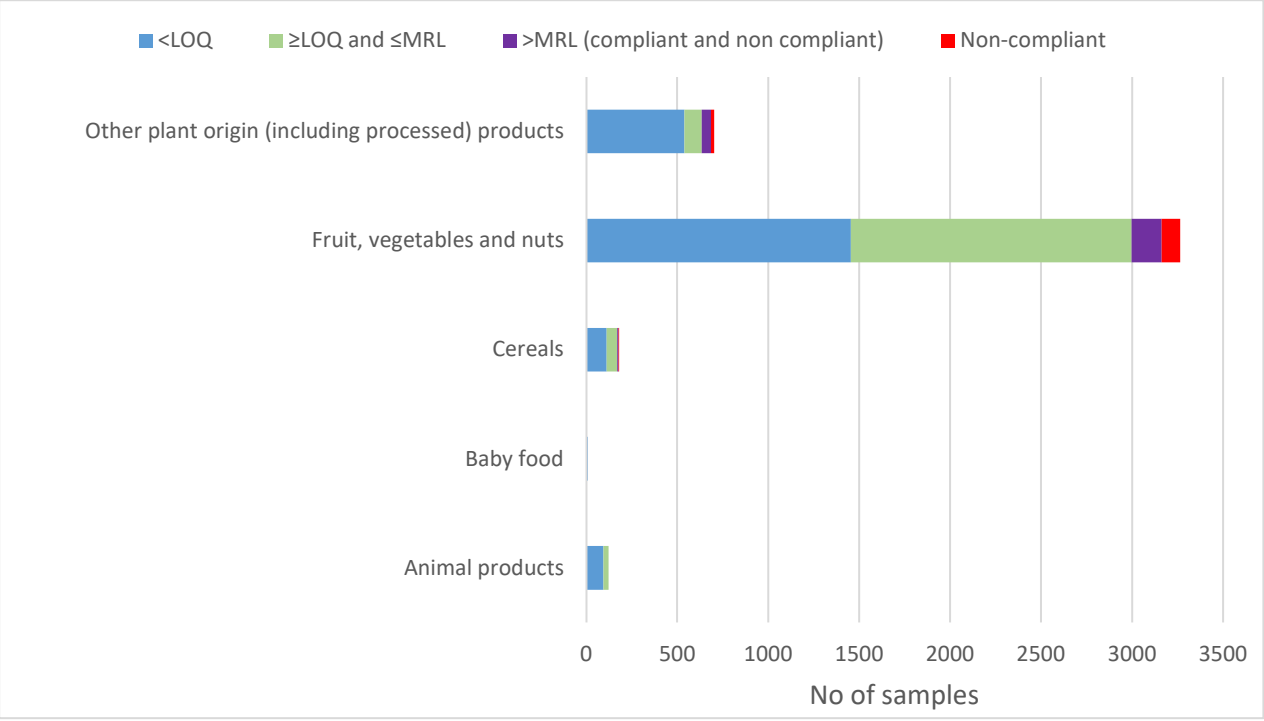

Table 4: Summary results for the sampling year 2024 per origin and sampling strategy

Sampling strategy	Origin of samples	Total No of samples	<LOQ	≥LOQ and ≤MRL	>MRL	
					Compliant and non-Compliant	Non-Compliant
Random sampling	EU	1525 (100%)	705 (46.23%)	774 (50.75%)	46 (3.02%)	24 (1.57%)
	Non-EU	251 (100%)	118 (47.01%)	120 (47.81%)	13 (5.18%)	9 (3.59%)
	Unknown	14 (100%)	11 (78.57%)	3 (21.43%)	0	0
Total number of random samples		**1790 (100%)**	**834 (46.59%)**	**897 (50.11%)**	**59 (3.30%)**	**33 (1.84%)**
Selective sampling	EU	1459 (100%)	826 (56.61%)	583 (39.96%)	50 (3.43%)	24 (1.64%)
	Non-EU	256 (100%)	151 (58.98%)	76 (29.69%)	29 (11.33%)	0 (0%)
	Unknown	32 (100%)	24 (75%)	5 (15.63%)	3 (5.77%)	0 (0%)
Total number of selective samples		**1747 (100%)**	**1001 (57.30%)**	**664 (38.01%)**	**82 (4.69%)**	**24 (1.37%)**
Suspect sampling	EU	181 (100%)	123 (67.96%)	38 (20.99%)	20 (11.05%)	8 (4.42%)
	Non-EU	433 (100%)	248 (57.27%)	124 (28.64%)	61 (14,09%)	37 (8.55%)
	Unknown	6 (100%)	2 (33.33%)	3 (50%)	1 (16.67%)	1 (16.67%)
Total number of suspect samples		**620 (100%)**	**373 (60.16%)**	**165 (26.61%)**	**82 (13.23%)**	**46 (7.42%)**
Total number of samples		**4157 (100%)**	**2208 (53.12%)**	**1726 (41.52%)**	**223 (5.36%)**	**123 (2.96%)**

Table 5: Summary results for the sampling year 2024 for sesame seeds/tahini

Commodity	Origin of samples	Total no of samples	<LOQ	≥LOQ and ≤MRL	>MRL	
					Compliant and non-compliant	Non-compliant
Sesame seeds/ tahini	EU	0	0	0	0	0
	non-EU	102 (100%)	99 (97.6%)	1 (0.98%)	2 (1.96%)	0 (0%)
	Unknown	0	0	0	0	0
Total number of samples		**102 (100%)**	**99 (97.6%)**	**1 (0.98%)**	**2 (1.96%)**	**0 (0%)**

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

Table 6: Possible reasons for MRL non-compliance

Reasons for MRL non-compliance	Pesticide[(a)]/food product	Frequency[(b)]	Comments (country of origin*)
GAP not respected: use of a pesticide not approved in the EU[(c)]	Carrots/linuron	2	Exceedance of the ARfD
	Cucumber /chlorpyrifos	1	
	Grape leaves/ethirimol	1	
	Globe artichoke/bifenthrin	1	
	Oranges/phosmet	2	Exceedance of the ARfD
	Oranges/chlorpyrifos	1	
	Olive oil/chlorpyrifos	2	
	Olive oil (refined)/phosmet	1	Country of origin unknown
	Olives for oil production/dimethoate		
	Peach/phosmet	1	Exceedance of the ARfD
	Pear /phosmet	1	Exceedance of the ARfD
	Pear/imidacloprid	1	
	Potato/oxamyl	1	Exceedance of the ARfD

	Spinach/imidacloprid	1	
GAP not respected: use of an approved pesticide not authorised on the specific crop[(c)]	Apples propamocarb	2	
	Beans with pods/formetanate	1	
	Beetroot leaves/tau fluvalinate	2	May be attributed to error in authorization since it was authorised in beetroot. Issue is under investigation for beet root leaves.
	Chards/fluvalinate	1	
	Chickpeas/propamocarb	1	
	Cucumber/formetanate	2	Exceedance of the ARfD
	Apricots/dodine	1	
	Olive oil/etofenprox	3	
	Olive oil/fenpyroximate	1	
	Parsley/penconazole	2	
	Parsley/sulfoxaflor	1	
	Peach/flupyradifurone	1	
	Pepper (sweet)/proquinazid	1	
	Quinces/etofenprox	2	
	Quinces/metaflumizone	2	
	Quinces/azoxystrobin	1	
	Saffran/pirimiphos methyl	1	
	Spinach/fluvalinate	2	
	Spinach/metaflumizone	1	
	Spinach/pyrimethanil	1	
GAP not respected: use of an approved pesticide, but application rate, number of treatments, application method or PHI not respected [(c)]	Cucumber/fluvalinate	1	
	Grape leaves/dimethomorph	2	
	Grape leaves/boscalid	1	
	Grape leaves leaves/tetraconazole	1	
	Grape leaves/cyflufemamid	1	
	Grape leaves/etofenprox	1	
	Grape leaves/fluopyram	1	

	Grape leaves/hexythiazox	2	
	Grape leaves/spiroxamine	1	
	Grape leaves/difenoconazole	1	
	Grape leaves/trifloxystrobin	1	
	Grape leaves/fenpyroximate	1	
	Grape leaves/pyrimethanil	1	
	Olive oil/pyriproxyfen	3	
	Pepper (sweet)/tetramethrin	1	
	Table grapes/acetamiprid	1	Exceedance of the ARfD
	Tomato (cherry)/abamectin	1	Exceedance of the ARfD
	Tomato/fenazaquin	1	Poland[1]
	Wheat (flour)/fludioxonil	1	
Use of a pesticide on food imported from non-EU countries for which no import tolerance was set/unknown reason(d)	Apples/propargite	2	Uganda
	Basil/fenamidone	1	Israel
	Curry powder/acetamiprid	1	India
	Cumin seeds/acetamiprid	1	India
	Cumin seeds/tricyclazole	1	India
	Cumin seeds/thiamethoxam	1	India
	Cumin seeds/clothianidin	1	India
	Cumin seed/hexaconazole	1	India
	Grape leaves/dithiocarbamates	1	Turkey
	Grape leaves/cymoxanil	1	Turkey
	Grape leaves/iprovalicarb	1	Turkey
	Grape leaves/famoxadone	1	Turkey
	Hazelnuts/malathion	1	Turkey
	Peppers (chili)/propargite	2	India
	Peppers (chili)/fipronil	1	India
	Peppers (chili)/methamidophos	1	India
	Peppers (sweet)/flutianil	1	Jordan
	Pistachios/clothianidin	3	Iran
	Pistachios/diazinon	1	Iran
	Pomegranate/acetamiprid	2	Turkey, Egypt
	Pomegranate/imidacloprid	3	Peru, Egypt

[1] Use of an approved pesticide not authorized on the specific crop can't be excluded since information on authorizations in PL is not available.

	Potato/imidacloprid	9	Egypt
	Potato/fosthiazate	1	Egypt
	Rice/azoxystrobin[2]	1	Pakistan
	Rice/acetamiprid	1	Pakistan
	Rice/imidacloprid	1	Pakistan
	Rice/tricyclazole	1	India
	Rice/profenofos	1	Pakistan
	Soybeans (edamame)/prochloraz	1	China
	Soybeans (edamame)/lufenuron	1	China
	Soyabeans/bifenthrin	1	China
	Spinach/flutriafol	1	Turkey
	Table grapes/cymoxanil	1	Turkey
	Table grapes/pyriproxyfen	1	Turkey
	Tomatoes/indoxacarb	15	Turkey
Other (use of a pesticide on food imported from a non-EU country with exceedance of the Acute Reference Dose or with a potential risk)	Beans with pods/chlorpyrifos	1	Egypt (RASFF 2024.3331)
	Cinnamon bark/chlorpyrifos	1	Vietnam
	Cumin seeds/carbendazim	1	India (RASFF 2024.5238)
	Cumin seeds/chlorpyrifos	1	India (RASFF 2024.5238)
	Cumin seeds/tolfenpyrad	1	India (RASFF 2024.5238)
	Curry powder/chlorpyrifos	1	India (RASFF 2024.2210)
	Lemon/buprofezin	1	Turkey (RASFF 2024.0319)
	Pepper (chili)/carbendazim	1	Uganda (RASFF 2024.1458)
	Peppers (chili)/ethion	2	India (RASFF 2024.2529)
	Pepper (sweet)/tolfenpyrad	1	Jordan (RASFF 2024.4721)
	Pomegranate/chlorpyrifos	1	Egypt
	Soybeans/edamame/dinotefuran	2	China

[2] For sample GR-001-24-624, please consider that the correct value for azoxystrobin is 0,019 mg/Kg) instead of 19 mg/Kg.

	Spinach/chlorpyrifos	1	Egypt
*	Indian spice mixes and similar (other than curry powder)/chlorpyrifos	1	Vietnam (RASFF 2024.3946)
	Indian spice mixes and similar (other than curry powder)/tolfenpyrad	2	Vietnam (RASFF 2024.3946)
	Tomatoes/chlorpyrifos	1	Turkey (RASFF 2024.7870)
	Tomatoes/chlorpyrifos-methyl	1	Turkey
	Tomatoes/chlorfenapyr	1	Morocco
	Tomatoes/indoxacarb	1	Turkey (RASFF 2024.8493)

*Domestic samples unless another origin is specified.
(a) Report name as specified in the MatrixTool.
(b) Number of cases (these numbers do not correspond to number of samples).
(c) Applicable only for food products produced in the EU.
(d) For imported food only.

1.4 Actions taken

In a case of an MRL exceedance, before any administrative and punitive enforcement action is taken, a default analytical uncertainty of 50% is subtracted from the measured value. If this figure still exceeds the MRL, this sample is non-compliant and enforcement action relevant to the case is taken. Risk assessment of non-compliant samples is carried out by the Directorate of Plant Production Protection (Department of Plant Protection Products).

RASFF notifications were prepared according to EU Regulations considering the results of the risk assessment and the instructions of the RASFF WI 2.2 Guidelines. Notifications were issued for MRL exceedance not only due to the health-based guidance values (HBGVs) being exceeded but also for active substances without established HBGVs due to health concerns and/or for approved active substances with use limited to non-edible crops (for example buprofezin). RASFF notifications can be found at https://webgate.ec.europa.eu/rasff-window.

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

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

For imported products, sanctions were imposed on importers.

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

1.5 Quality assurance

Table 7: Laboratory participation in the Proficiency Tests

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-SRM19, EUPT-FV26, EUPT-CF18, EUPT-AO19, COIPT 2023, ILS F-01, ILS Pyr-02
	Regional Centre of Plant Protection, Quality & Phytosanitary Control of Thessaloniki	ACCREDITED, ISO 17025 since 08/09/2009	ESYD (Hellenic Accreditation System S.A.)	EUPT-FV26
	IAPR/DG-GCSL/A' Chemical Service of Athens/Department B'	ACCREDITED, ISO 17025, 2009 up to date	ESYD	EUPT-SRM19, EUPT-FV26, EUPT-CF18, EUPT-AO19, ILS F-01, ILS PYR-02, FAPAS PT 19400 COI-PT 2024 COI CEM/2024 – IOCCHEM 2023.
		ACCREDITED, ISO 17025, 1998-2009	UKAS	
	Veterinary Centre of Athens (E02)	Accreditation number 05-5	ESYD	
	Laboratory of Tripoli (E16)	Accreditation number 05-5	ESYD	EUPT-AO18, FAPAS PT 19386, FAPAS PT 19326, FAPAS PT 19283, FAPAS PT 19263, FAPAS PT 19423
	Laboratory of Serres (E12)	Accreditation number 482-4	ESYD	EUPT-AO18 EUPT-AO19 EUPT-AO20

1.6 Processing factors

The processing factors applied were those characterised as indicative/reliable in the European database of processing factors for pesticides in food as well as generic dehydration factors. In the absence of indicative/reliable pf or other data, a default pf of one ("1") was considered.