

## **Pesticide Residue Control Results**

### **“National summary report”**

**Country** *Cyprus*

**Year:** *2021*

#### **National competent authority/organisation:**

*Pesticides Residues Laboratory of the State General Laboratory of Ministry of Health*

#### **Web address where the national annual report is published:**

[www.moh.gov.cy/sgl](http://www.moh.gov.cy/sgl)

### **1. Objective and design of the National Control Programme**

The Ministry of Health is the competent authority for the enforcement of the Pesticide Residues (PR) Legislation and the execution of the national monitoring and surveillance programs. The enforcement of Legislation and sampling is allocated to the Department of Medical and Public Health Services (MPHS). For products of animal origin, sampling is carried out by the Veterinary Services of Ministry of Agriculture, Rural Development and Environment.

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

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

The sampling regime is based on a combination of “at random” sampling and target oriented sampling focusing towards problematic pesticides/food combination. This combination is, in a way, bias towards problematic products and might end up with higher violation rates. Nevertheless, it can provide higher degree of consumer protection and cost-effectiveness. Main criteria used in the sampling design are: EU coordinated program, violations from previous years, information from RASFF, consumption rate especially for children and the needs of imports control.

The increase in the number of compounds monitored is a continuous process and is mainly defined by the requirements of the EU coordinated program. The provisions of the SANTE working document on the inclusion of pesticides in the national control plan as well as the pesticides included in the EUPTs are also taken into account. It should be noted though that the laboratory capacity and the costs of the analysis are the main factors which influence the inclusion of new pesticides in the national monitoring plan.

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

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

### Plant Origin samples

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

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

The most frequently found pesticides within 2021 were **Acetamiprid and Cypermethrin in 11.5%**, **Tebuconazole in 8.5%**, **Imidacloprid and Pyrimethanil in 7.7 %**, **Boscalid and Carbendazim in 7.1%**, **Chlorpyrifos in 6.6%**, **Azoxystrobin in 6.4%** and **Thiabendazole in 6.2 %** 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 2021, the **8.5%** of the **468** samples were considered as legal violations, which means that the samples exceed the MRLs after taking into account the measurement uncertainty.

The number of organic farming samples analyzed was **53** out of which the **43** samples were analysed in the framework of the national monitoring program of organic products. Eight samples were found to be positive with pesticide residues. All the results, which are presented in table 1, were reported to the competent authority of the organic products so that the appropriate measures to be taken.

**Table 1:** Results of organic farming samples

Product	Pesticide	Found value mg/kg
Tomatoes	Bromide ion	4.7
Mushrooms	Chlorate	0.057
Melons	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.012
Grapes	Fosetyl-AI (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)	0.30
Nectarines	Spinetoram (sum of spinetoram-J and spinetoram-L)	0.01
	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.48
Apples	Spinosad (spinosad, sum of spinosyn A and spinosyn D)	0.03
Mandarins	Acetamiprid	0.075
	Imidacloprid	0.080
	Spirodiclofen	0.027
Pomegranates	Acetamiprid	0.010

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

### Animal Origin Samples

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

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

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

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

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

#### **2. Non-compliant samples: possible reasons, ARfD exceedances and actions taken**

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

Acute exposure assessment using the Primo v 3.1 has been performed for all legal violations. In nine cases, for which no toxicological data were available, exposure assessment was not carried out (Chlorpyrifos in grapefruits, clementines, parsley, olives, mentha dry, rice and dry beans and Tricyazole in rice).

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

The following follow-up actions were taken in the cases of non-compliant samples (Table 2).

**Table 2:** Possible reasons for MRL non-compliance and actions taken

Reason for MRL non-compliance	Pesticide/food product	Frequency	Action taken
GAP not respected	Chlorpyrifos/Grapefruits & Mandarins Cypermethrin/Table olives Linuron & Triadimenol/Carrots	1	Administrative consequences
GAP not respected:	Acetamiprid/Celeries	1	

use of an approved pesticide not authorized on the specific crop	Boscalid/Grape leaves Captan/Table Grapes Chlorpyrifos/Parsley Clofentezine/Sweet Peppers Cypermethrin/Celeries & Spinaches Dimethomorph/Beans with pods Famoxadone/Celeries Flonicamid/Broccoli Fluopicolide/Beans with pods Flupyradifurone/Oranges & Parsley Formetanate/Sweet Peppers Imidacloprid/Grape leaves Lufenuron/Table Grapes Myclobutanil/Celeries Penconazole/Celeries & Grape Leaves		
GAP not respected: application rate, number of treatments, application method or PHI not respected	Acrinathrin/Sweet Peppers Cypermethrin/Table Grapes Ethepon/Table Grapes Tebuconazole/Table Grapes	1 2 1 1	
GAP not respected: use of a pesticide not approved in the EU	Chlorpyrifos/Clementins Dimethoate/Table Grapes Fenvalerate/Grape leaves Omethoate/Table Grapes	1	
Use of a pesticide on food imported from third countries which no import tolerance was set	Chlorpyrifos/Pomegranates Cyfluthrin/Pomegranates L-Cyhalothrin/Pomegranates Thiamethoxam/Rice Tricyclazole/Rice	1	Rapid Alert Notification /Lot not released on the market
Use of a pesticide on food imported from third countries which no import tolerance was set	Acetamiprid, Ametoctratin, Azoxystrobin, Chlorpyrifos, Cyflufenamid, Cymoxanil, Cyprodinil, Difenconazole, Dimethomorph, Famoxadone, Fluxapyroxad, Metalaxyl, Metrafenone, Penconazole, Pyrimethanil, Tebuconazole/Grape Leaves Chlorpyrifos/Rice & Table Olives Cyfluthrin/Pomegranates	1	Rapid Alert Notification/ Lot not released on the market /Destruction of products
Use of a pesticide on food imported from third countries which no import tolerance was set	Acetamiprid/Rice Chlorpyrifos/Dry Beans Thiamethoxam/Rice	1	Lot not released on the market /Destruction of products

	Tricyclazole/Rice		
Use of a pesticide on food imported from third countries which no import tolerance was set GAP not respected: use of a pesticide not approved in the EU	Chlorpyrifos/Dry Mint	1	Rapid Alert Notification/ Lot recalled from the market/Administrative consequences
	Chlorothalonil/Chilli Peppers		
	Malathion/Dry Mint		
	Chlorate/Baby food cereal based		
Use of a pesticide on food imported from third countries which no import tolerance was set	Chlorpyrifos/Dry Mentha	1	Rapid Alert Notification/Lot recalled from the market/Destruction of products/ Administrative consequences
	Propiconazole/Rice		
	Tricyclazole/Rice		
Use of a pesticide on food imported from third countries which no import tolerance was set GAP not respected: use of an approved pesticide not authorized on the specific crop	Chlorate/Broccoli	1	Lot recalled from the market/Administrative consequences
	Deltamethrin/Pomegranates		
Use of a pesticide on food imported from third countries which no import tolerance was set	Hexaconazole/Sweet Peppers	1	Rapid Alert Notification/Lot recalled from the market

### 3. Quality assurance

The PR Lab of the SGL is accredited since 2002 according to EN ISO/IEC 17025:2017. The PR-Lab applies Quality Control procedures, which are in line with provisions of SANTE documents "Analytical Quality Control and Method Validation Procedures for Pesticide Residues Analysis in Food and Feed". Details on the laboratory can be found in Table 3.

**Table 3:** Quality control laboratory

Country code	Laboratory Name	Laboratory Code	Accreditation Date	Accreditation Body	Participation in proficiency tests or interlaboratory tests
CY	State General Laboratory of the Ministry of Health	SGL_CYPRUS_FP	2002	Cyprus Accreditation Body (CYS-CYSAB)	PTs 2021: EUPT-SRM-16 (Milled Hulled Sesame seeds) EUPT-AO-16 (Liquid whole eggs) EUPT-FV 23 (Aubergines) EUPT-SC-05 (Dried White Beans)

#### 4. Processing Factors (PF)

Processing factors were applied to verify the compliance with EU MRLs of the processed food. Table 4 presents the PFs applied for different food.

**Table 4:** Processing factors

Pesticide (report name)	Unprocessed product (RAC)	Processed product	Processing factor	Source of PF
Ametoctradin	Table grapes	Raisins	3.4	EFSA (EU) Database
Boscalid			2.4	EFSA (EU) Database
Fludioxonil			1.1	EFSA (EU) Database
Fluopyram			2.9	EFSA (EU) Database
Methoxyfenozide			2.3	EFSA (EU) Database
Metrafenone			1.7	EFSA (EU) Database
Penconazole			1.2	EFSA (EU) Database
Proquinazid			2.8	EFSA (EU) Database
Azoxystrobin			3	BfR
Cyflufenamid			3.6	BfR
Fluxapyroxad			3.3	BfR
Imidacloprid			5.5	BfR
Metalaxyl			3	BfR
Pyrimethanil			1.6	BfR
Acetamiprid , Cypermethrin, Cyprodinil, Dimethomorph, Fenvalerate, Methomyl, Myclobutanil, Thiodicarb, Phosalone, Sulfoxaflor, Tebuconazole, Tebufenpyrad, Tetraconazole				
Carbentazim	Apricot	Apricot, dried	1.3	BfR
Thiacloprid, Trifloxystrobin			1	Default Processing factor
Imidacloprid	Plums	Plums, Dried	3.1	BfR
Methoxyfenozide			1	Default Processing factor
Acetamiprid, Amitraz, Chlorpyrifos, Cypermethrin, Dimethomorph, Fenpyroximate, Malathion, Profenofos	Peppermint & Peppermint	Spearmint & Peppermint, Dried	5.2	Drying factor
Fluopyram	Wine grapes	Wines	0.75	EFSA (EU) Database
Methoxyfenozide			0.33	EFSA (EU) Database
Spinosad sum			1	EFSA (EU) Database
Tebuconazole			0.11	EFSA (EU) Database
Triadimenol			0.5	BfR
Metalaxyl			0.5	BfR
Boscalid, Carbendazim, Chlorantraniliprole, Cyprodini, Fenhexamidl, Pyrimethanil			1	Default Processing factor
Imidacloprid			Rice grain	Rice polished
Propiconazole	0.24 & 1	EFSA (EU) Database		
Acetamiprid, Azoxystrobin, Buprofezine, Carbendazim, Chlorpyrifos, Clothianidin, Cyproconazole, Dichlorvos, Hexaconazole, Isoprothiolane, Tebuconazole, Thiamethoxam, Triazophos, Tricyclazole	1	Default Processing factor		
Bixafen, Chlorpyrifos	Olives for oil production	Olive Oil	5	EFSA (EU) Database
Cypermethrin			7.6	
Boscalid	Tomatoes	Tomato paste	0.73	EFSA (EU)Database
Imidacloprid			7.4	EFSA (EU)Database
Azoxystrobin, Carbendazim, Chlorfenapyr, Chlorpyrifos, Cypermethrin, Difenoconazole, Indoxacarb, Propamocarb, Propargite, Tebuconazole,			6.2	Production factor