

# EURL-PROFICIENCY TEST-FV-25 Pesticide Residues in Melon Homogenate Final Report - November 2023

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# EURL-EUROPEAN UNION PROFICIENCY TEST 25 FOR THE DETERMINATION OF PESTICIDES IN FRUITS AND VEGETABLES USING MULTIRESIDUE METHODS 2023

According to Article 28 of Regulation 396/2005/EC (23<sup>rd</sup> February 2005) of the European Parliament and of the Council, concerning maximum residue levels for pesticides in or on food and feed of plant and animal origin<sup>1</sup>, all laboratories analysing samples for the official control of pesticide residues shall participate in the European Union Proficiency Tests (EUPTs) for pesticide residues organised by the European Union. These proficiency tests are carried out on an annual basis in order to continuously improve the quality, accuracy and comparability of the residue data reported by EU Member States to the European Union, as well as by other Member States, within the framework of the EU multi-annual coordinated control programme and national monitoring programmes.

Regulation (EU) 2017/625<sup>2</sup> lays down the general tasks, duties and requirements for European Union Reference Laboratories (EURLs)<sup>3</sup> for Food, Feed and Animal Health. Among these tasks is the provision for independently organised comparative tests. European Proficiency Test FV-25 has been organised by the EURL in Fruits and Vegetables at the University of Almería, Spain<sup>4</sup>.

Participation in European Proficiency Test FV-25 was mandatory for all National Reference Laboratories (NRLs), as well as all other EU official laboratories, involved in the determination of pesticide residues in fruits and vegetables for the EU multi-annual coordinated control programme or for their own national monitoring programmes. Additionally, laboratories from China, Costa Rica, Egypt, Kenya, Peru, Serbia, Singapore, Tanzania, Thailand, Turkey and United Kingdom participated in this test.

DG-SANTE will have full access to all data from the EUPTs including the lab-code/lab-name key. The NRLs will also have that information for the OfLs within their network. This report may be presented to the European Union Standing Committee on Plants, Animals, Food and Feed (PAFF).

<sup>&</sup>lt;sup>1</sup> Regulation (EC) No 396/2005, published in the OJ of the EU L70 on 16.03.2005, last amended by Regulation 839/2008 published in the OJ of the EU L234 on 30.08.2008.

 $<sup>^2</sup>$  Regulation (EU) 2017/625 of the European Parliament and of the Council on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products. Published in the OJ of the EU L95 on 07.04.2017.

<sup>&</sup>lt;sup>3</sup> The Community Reference Laboratory (CRL) changed its name to the European Union Reference Laboratory (EURL) on 1<sup>st</sup> December 2009 as a result of the Treaty of Lisbon. OJ of the EU C306 on 17.12.2007.

<sup>&</sup>lt;sup>4</sup> Commission Regulation (EC) No 776/2006 of 23<sup>rd</sup> May 2006 - amending Annex VII to Regulation (EC) No 882/2004 of the European Parliament and of the Council as regards European Union Reference Laboratories.

# 1. INTRODUCTION

One hundred and seventy-five laboratories agreed to participate in EUPT-FV25.

The proficiency test was performed in 2023 using melon homogenate. Galia melons were cultivated in a greenhouse in Almería, Spain, and were treated before harvest using commercial formulations applied by spraying with conventional diffusors. After harvest, they were also treated with analytical standards. In EUPT-FV25, participating laboratories were not provided with a 'blank' sample.

The test item, 200 g of melon homogenate containing pesticide residues, was shipped to participants on 6<sup>th</sup> March 2023. The deadline for results submission to the Organiser was 3<sup>rd</sup> April 2023. The participants were asked to determine the residue levels of all the pesticides that they detected and to report the concentrations in mg/kg. The participants were provided with two target pesticide lists, one with pesticides that had to be analysed on a compulsory basis, and a second one with pesticides to be analysed voluntarily. The compulsory list contained 212 target pesticides. The pesticide target list is detailed in Annex A together with the voluntary target list, which contained 48 pesticides. The lists of target pesticides also contained the MRRL for each pesticide fixed at 0.01 mg/kg, except for the following pesticides which have lower MRRLs based on Regulation (EU) No. 396/2005 and EU Directive 2006/125/EC, or for which EFSA reguested lower LOQs: aldrin (0.005 mg/kg), azinphos-methyl (0.005 mg/kg), cadusafos (0.005 mg/kg), carbaryl (0.005 mg/kg), carbofuran (0.005 mg/kg), carbofuran-3-hydroxy (0.005 mg/kg), chlorpyrifos (0.005 mg/kg), chlorpyrifos methyl (0.005 mg/kg), demeton-S-methylsulfone (0.005 mg/kg), diazinon (0.005 mg/kg), dichlorvos (0.005 mg/kg), dieldrin (0.005 mg/kg), dimethoate (0.003 mg/kg), ethoprophos (0.005 mg/kg), fenbuconazole (0.005 mg/kg), fipronil (0.004 mg/kg), fipronil sulfone (0.004 mg/kg), imazalil (0.005 mg/kg), monocrotophos (0.005 mg/kg), omethoate (0.003 mg/kg), oxydemeton-methyl (0.005 mg/kg) and triazophos (0.005 mg/kg).

Participants were asked to analyse and report results for any of the pesticides they found which were included in the target lists.

The robust mean values of the analytical data submitted by EU/EFTA participants were used to obtain the assigned (true) values for each of the pesticide residues present. A fit-for-purpose relative target standard deviation (FFP-RSD) of 25 % was chosen to calculate the target standard deviations ( $\sigma$ ) as well as the z scores for the individual pesticides.

For the assessment of overall laboratory performance, the Average of the squared z scores (AZ<sup>2</sup>) was used. Laboratories that had 'sufficient scope' and were able to analyse at least 90 % of the compulsory pesticides in the target pesticides list, had correctly detected and quantified a sufficiently high percentage of the pesticides present in the Test Item (at least 90 %) and reported no false positives, were classified into Category A. Within this category, the laboratories were also subclassified as 'good', 'satisfactory' or 'unsatisfactory', in relation to the overall accuracy of the results that they reported.

All the other laboratories were classified into Category B. For laboratories in Category B, individual z scores were calculated but the overall accuracy of their results was not assessed.

Laboratories that did not report results have not been classified into any category and are listed in Annex B with the remainder of laboratories that participated in EUPT-FV-25.

## 2. TEST ITEMS

#### 2.1 Preparation of the treated test item

The melons were cultivated in a greenhouse in Almería, Spain, and were treated before harvest using commercial formulations applied by spraying with conventional diffusors. Additionally, they were post-harvest treated using analytical standards. The pesticides used as commercial formulations were cyazofamid, difenoconazole, fenitrothion, imazalil, pyriproxyfen and thiamethoxam. The pesticides spiked as analytical standards were chlorpyrifos-methyl, diazinon, ethirimol, fenazaquin, flutriafol, mandipropamid, mepanipyrim, metrafenone, profenofos, proquinazid, zoxamide and novaluron.

Before preparation of the test item, the pesticides and target residue levels were selected, following recommendations made by the QCG, which had been appointed specifically for EUPT-FV-25. Approximately 600 m<sup>2</sup> of melon plants were treated with commercial formulations, which were dissolved in water. Three days after the application, a representative sample of the treated melon was collected and analysed to check if the residue levels present were close to the target levels. As the residue levels in the melon sample were low for some pesticides, a second treatment in the field was applied. Five days after the second treatment, the pesticide residue levels were checked, and as they were close to the target levels, 80 kg of melons were harvested (eighteen days after the first treatment). The melons were ground and homogenised in a large stainless steel container. Subsequently, they were spiked with analytical standards dissolved in acetonitrile. Once homogenized, the material was packed in zip bags and frozen at -18° C. Four days later, the resulting ice blocks were crushed with ice crushers, and 200 g portions of the material were weighed out into screw-capped polyethylene plastic bottles, sealed and stored in a freezer at about - 20 °C prior to distribution to participants.

## 2.2 Homogeneity test

The homogeneity and stability tests were performed by the EURL-FV laboratory at the University of Almería (accredited under ISO/IEC 17025 by the Spanish accreditation body, ENAC). Ten bottles of the treated test item were randomly chosen from those stored in the freezer and analyses were performed on duplicate portions taken from each bottle. The injection sequence of the 20 extracts that were analysed by GC and LC was also randomly chosen.

The statistical evaluation was performed according to the International Harmonized Protocol published by IUPAC, ISO and AOAC [1]. The individual residues data from the homogeneity tests are given in **Appendix 1**. The results of the statistical analyses (for the evaluated compounds) are given in **Table 1**. The acceptance criteria for the test item to be sufficiently homogenous for the

proficiency test were that:  $Ss^2 < c$ , where Ss is the between-bottle sampling standard deviation and  $c = F_1\sigma_{all}^2 + F_2S_{an}^2$ ;  $F_1$  and  $F_2$  being constant values of 1.88 and 1.01, respectively, from the ten samples taken, and  $\sigma_{all}^2 = (0.3 \times FFP-RSD(25\%) \times mean \text{ concentration})^2$ . This was used to demonstrate that the between-bottle variance was not higher than the within-bottle variance.

Pesticide	Mean Conc. (mg/kg)	Ss <sup>2</sup>	с	Ss <sup>2</sup> < c Pass/Fail						
Chlorpyrifos-methyl	0.090	1.56E-05	1.04E-04	Pass						
Cyazofamid	0.081	4.46E-06	9.83E-05	Pass						
Diazinon	0.108	2.84E-05	1.51E-04	Pass						
Difenoconazole	0.266	1.20E-04	1.06E-03	Pass						
Ethirimol	0.180	8.61E-06	3.47E-04	Pass						
Fenazaquin	0.075	1.43E-05	7.34E-05	Pass						
Fenitrothion	0.078	7.87E-06	8.54E-05	Pass						
Flutriafol	0.319	5.44E-05	1.17E-03	Pass						
Imazalil	0.113	7.31E-05	1.47E-04	Pass						
Mandipropamid	0.524	6.30E-04	3.34E-03	Pass						
Mepanipyrim	0.077	1.24E-05	7.93E-05	Pass						
Metrafenone	0.613	0.00E+00	7.19E-03	Pass						
Pyriproxyfen	0.245	1.41E-05	1.09E-03	Pass						
Profenofos	0.121	1.96E-05	2.47E-04	Pass						
Proquinazid	0.073	0.00E+00	1.99E-04	Pass						
Thiamethoxam	0.235	2.20E-05	5.93E-04	Pass						
Zoxamide	0.580	1.01E-03	3.74E-03	Pass						
Voluntary Pesticides										
Novaluron	0.089	4.69E-05	1.04E-04	Pass						

Table 1. Statistical evaluation of the homogeneity test data (n = 20 analyses)

Ss: Between-Sampling Standard Deviation

As can be seen from Table 1, all the pesticides evaluated in the melon test item passed the homogeneity test.

## 2.3 Stability tests

Stability tests were also carried out by the EURL-FV laboratory at the University of Almería (accredited under ISO/IEC 17025 by the Spanish accreditation body, ENAC). The tests were performed according to ISO 13528:2015, Annex B [2]. Shortly before the test item shipment, three bottles that were stored in the freezer at -20 °C were chosen randomly and stored in a -80 °C freezer (Day 1). After the deadline for reporting results, those three bottles stored at -80 °C, together with three other bottles that were stored in the freezer at -20 °C and were chosen randomly (Day 2) were analysed by duplicate.

A pesticide was considered to be adequately stable if  $|x_1 - y_i| \le 0.3 \times \sigma$ , where  $x_1$  is the mean value of the Day 1 stability test,  $y_i$  the mean value of the Day 2 stability test and  $\sigma$  the standard deviation used for proficiency assessment (typically 25 % of the assigned value).

The individual results for the evaluated compounds are given in **Table 2**. This test did not show any significant decrease in the pesticide concentrations with time. This demonstrates that, for the duration of the proficiency test, and provided that the storage conditions prescribed were

followed, the time elapsed until the participants performed the analysis would not have influenced their results.

				Da	y 1			Day 2								
(mg/kg)	Sample 170_A	Sample 170_B	Sample 55_A	Sample 55_B	Sample 54_A	Sample 54_B	Mean 1	Sample 111_A	Sample 111_B	Sample 181_A	Sample 181_B	Sample 134_A	Sample 134_B	Mean 2	(M2 – M1)	M2-M1 ≤ 0.3*σ
Chlorpyrifos-methyl	0.089	0.089	0.090	0.096	0.094	0.087	0.091	0.091	0.092	0.087	0.076	0.088	0.086	0.087	-0.004	Pass
Cyazofamid	0.071	0.081	0.080	0.075	0.078	0.073	0.076	0.080	0.072	0.077	0.074	0.067	0.065	0.072	-0.004	Pass
Diazinon	0.105	0.099	0.100	0.111	0.120	0.111	0.108	0.112	0.109	0.111	0.121	0.107	0.090	0.108	0.001	Pass
Difenoconazole	0.193	0.224	0.221	0.222	0.212	0.215	0.215	0.234	0.240	0.245	0.266	0.187	0.180	0.225	0.011	Pass
Ethirimol	0.297	0.292	0.294	0.290	0.295	0.290	0.293	0.299	0.291	0.292	0.295	0.284	0.283	0.291	-0.002	Pass
Fenazaquin	0.070	0.071	0.071	0.075	0.072	0.068	0.071	0.073	0.073	0.069	0.060	0.069	0.069	0.069	-0.002	Pass
Fenitrothion	0.076	0.076	0.076	0.078	0.075	0.069	0.075	0.077	0.076	0.069	0.059	0.068	0.068	0.070	-0.005	Pass
Flutriafol	0.295	0.277	0.276	0.262	0.280	0.260	0.275	0.295	0.275	0.258	0.287	0.257	0.258	0.271	-0.004	Pass
Imazalil	0.085	0.084	0.090	0.082	0.089	0.085	0.086	0.087	0.088	0.081	0.083	0.073	0.071	0.081	-0.005	Pass
Mandipropamid	0.447	0.425	0.478	0.442	0.444	0.435	0.445	0.455	0.446	0.425	0.430	0.433	0.429	0.436	-0.009	Pass
Mepanipyrim	0.071	0.071	0.070	0.073	0.073	0.069	0.071	0.073	0.072	0.067	0.059	0.068	0.068	0.068	-0.003	Pass
Metrafenone	0.427	0.417	0.505	0.541	0.412	0.469	0.462	0.557	0.460	0.501	0.446	0.406	0.501	0.478	0.017	Pass
Pyriproxyfen	0.261	0.288	0.283	0.286	0.277	0.273	0.278	0.273	0.295	0.297	0.292	0.258	0.240	0.276	-0.002	Pass
Profenofos	0.112	0.090	0.112	0.101	0.110	0.100	0.104	0.109	0.109	0.108	0.109	0.089	0.094	0.103	-0.001	Pass
Proquinazid	0.062	0.064	0.065	0.068	0.065	0.061	0.064	0.074	0.070	0.074	0.068	0.064	0.056	0.068	0.003	Pass
Thiamethoxam	0.239	0.227	0.222	0.207	0.231	0.226	0.225	0.238	0.222	0.223	0.234	0.228	0.218	0.227	0.002	Pass
Zoxamide	0.662	0.630	0.729	0.659	0.761	0.697	0.690	0.727	0.671	0.655	0.698	0.679	0.755	0.697	0.008	Pass
	Voluntary Pesticides															
Novaluron	0.082	0.084	0.086	0.085	0.093	0.092	0.087	0.093	0.080	0.092	0.092	0.079	0.089	0.088	0.001	Pass

Table 2. Statistical test for analytical precision and to demonstrateresults stability after the interval of time-elapse between the shipmentof the test item and the deadline for reporting of results.

Moreover, regarding the stability of the sample arriving not completely frozen, a duplicate analysis of three bottles reproducing the delivery conditions that the samples experienced for 48 hours was performed (Day 3). Laboratories could therefore be sufficiently confident in accepting the treated test item even if it was not completely frozen. All the pesticides passed this second stability test. Results for this 48-hour stability test are indicated in **Table 3**.

As one of the parcels sent to an EU Member State arrived after 72 hours of the shipment, an additional stability test reproducing the delivery conditions that the samples experienced for 72 hours was performed (Day 4). All the pesticides passed this third stability test. Results for this 72 hour stability test are indicated in **Table 4**.

	Day 1 Day 3															
(mg/kg)	Sample 170_A	Sample 170_B	Sample 55_A	Sample 55_B	Sample 54_A	Sample 54_B	Mean 1	Sample 25_A	Sample 25_B	Sample 22_A	Sample 22_B	Sample 18_A	Sample 18_B	Mean 2	(M2 – M1)	M3-M1 ≤ 0.3*σ
Chlorpyrifos-methyl	0.089	0.089	0.090	0.096	0.094	0.087	0.091	0.085	0.088	0.083	0.093	0.099	0.089	0.090	-0.001	Pass
Cyazofamid	0.071	0.081	0.080	0.075	0.078	0.073	0.076	0.070	0.076	0.077	0.073	0.067	0.068	0.072	-0.004	Pass
Diazinon	0.105	0.099	0.100	0.111	0.120	0.111	0.108	0.118	0.110	0.109	0.109	0.090	0.102	0.107	-0.001	Pass
Difenoconazole	0.193	0.224	0.221	0.222	0.212	0.215	0.215	0.227	0.229	0.238	0.264	0.207	0.217	0.230	0.016	Pass
Ethirimol	0.297	0.292	0.294	0.290	0.295	0.290	0.293	0.294	0.298	0.291	0.287	0.288	0.291	0.292	-0.001	Pass
Fenazaquin	0.070	0.071	0.071	0.075	0.072	0.068	0.071	0.069	0.069	0.067	0.072	0.078	0.070	0.071	-0.001	Pass
Fenitrothion	0.076	0.076	0.076	0.078	0.075	0.069	0.075	0.074	0.075	0.067	0.075	0.080	0.072	0.074	-0.001	Pass
Flutriafol	0.295	0.277	0.276	0.262	0.280	0.260	0.275	0.283	0.292	0.283	0.267	0.264	0.276	0.277	0.003	Pass
Imazalil	0.085	0.084	0.090	0.082	0.089	0.085	0.086	0.085	0.087	0.080	0.081	0.076	0.073	0.080	-0.005	Pass
Mandipropamid	0.447	0.425	0.478	0.442	0.444	0.435	0.445	0.432	0.427	0.499	0.449	0.435	0.416	0.443	-0.002	Pass
Mepanipyrim	0.071	0.071	0.070	0.073	0.073	0.069	0.071	0.070	0.067	0.068	0.072	0.076	0.069	0.070	-0.001	Pass
Metrafenone	0.427	0.417	0.505	0.541	0.412	0.469	0.462	0.493	0.527	0.521	0.454	0.535	0.478	0.501	0.039	Pass
Pyriproxyfen	0.261	0.288	0.283	0.286	0.277	0.273	0.278	0.281	0.286	0.290	0.277	0.260	0.265	0.276	-0.001	Pass
Profenofos	0.112	0.090	0.112	0.101	0.110	0.100	0.104	0.097	0.108	0.107	0.094	0.089	0.097	0.099	-0.005	Pass
Proquinazid	0.062	0.064	0.065	0.068	0.065	0.061	0.064	0.068	0.066	0.065	0.062	0.061	0.057	0.063	-0.001	Pass
Thiamethoxam	0.239	0.227	0.222	0.207	0.231	0.226	0.225	0.221	0.240	0.225	0.214	0.228	0.221	0.225	0.000	Pass
Zoxamide	0.662	0.630	0.729	0.659	0.761	0.697	0.690	0.775	0.685	0.731	0.667	0.774	0.660	0.715	0.025	Pass
							Voluntary Pe	esticide	es							
Novaluron	0.082	0.084	0.086	0.085	0.093	0.092	0.087	0.093	0.082	0.100	0.086	0.095	0.092	0.091	0.004	Pass

Table 3. Statistical test for analytical precision and to demonstrate stabilityfor the 48-hour time-elapse interval.

Table 4. Statistical test for analytical precision and to demonstratestability for the 72-hour time-elapse interval.

				Da	iy 1						Da	iy 4				
(mg/kg)	Sample 170_A	Sample 170_B	Sample 55_A	Sample 55_B	Sample 54_A	Sample 54_B	Mean 1	Sample 68_A	Sample 68_B	Sample 247_A	Sample 247_B	Sample 88_A	Sample 88_B	Mean 2	(M2 – M1)	M4-M1 ≤ 0.3*σ
Chlorpyrifos-methyl	0.089	0.089	0.090	0.096	0.094	0.087	0.091	0.097	0.089	0.081	0.083	0.102	0.099	0.092	0.001	Pass
Cyazofamid	0.071	0.081	0.080	0.075	0.078	0.073	0.076	0.085	0.076	0.076	0.070	0.078	0.072	0.076	0.000	Pass
Diazinon	0.105	0.099	0.100	0.111	0.120	0.111	0.108	0.114	0.110	0.112	0.098	0.123	0.108	0.111	0.003	Pass
Difenoconazole	0.193	0.224	0.221	0.222	0.212	0.215	0.215	0.210	0.229	0.194	0.188	0.219	0.235	0.212	-0.002	Pass
Ethirimol	0.297	0.292	0.294	0.290	0.295	0.290	0.293	0.297	0.296	0.289	0.274	0.299	0.292	0.291	-0.002	Pass
Fenazaquin	0.070	0.071	0.071	0.075	0.072	0.068	0.071	0.076	0.071	0.065	0.064	0.083	0.080	0.073	0.002	Pass
Fenitrothion	0.076	0.076	0.076	0.078	0.075	0.069	0.075	0.080	0.074	0.066	0.065	0.087	0.082	0.076	0.001	Pass
Flutriafol	0.295	0.277	0.276	0.262	0.280	0.260	0.275	0.296	0.290	0.279	0.246	0.289	0.286	0.281	0.006	Pass
Imazalil	0.085	0.084	0.090	0.082	0.089	0.085	0.086	0.090	0.090	0.086	0.086	0.084	0.087	0.087	0.002	Pass
Mandipropamid	0.447	0.425	0.478	0.442	0.444	0.435	0.445	0.468	0.471	0.453	0.462	0.508	0.487	0.475	0.030	Pass
Mepanipyrim	0.071	0.071	0.070	0.073	0.073	0.069	0.071	0.076	0.071	0.065	0.064	0.079	0.077	0.072	0.001	Pass
Metrafenone	0.427	0.417	0.505	0.541	0.412	0.469	0.462	0.468	0.471	0.395	0.412	0.542	0.532	0.470	0.008	Pass
Pyriproxyfen	0.261	0.288	0.283	0.286	0.277	0.273	0.278	0.271	0.283	0.274	0.259	0.251	0.235	0.262	-0.016	Pass
Profenofos	0.112	0.090	0.112	0.101	0.110	0.100	0.104	0.100	0.111	0.107	0.098	0.109	0.099	0.104	0.000	Pass
Proquinazid	0.062	0.064	0.065	0.068	0.065	0.061	0.064	0.059	0.073	0.056	0.061	0.062	0.059	0.062	-0.003	Pass
Thiamethoxam	0.239	0.227	0.222	0.207	0.231	0.226	0.225	0.231	0.234	0.212	0.198	0.223	0.225	0.220	-0.005	Pass
Zoxamide	0.662	0.630	0.729	0.659	0.761	0.697	0.690	0.753	0.673	0.739	0.667	0.723	0.774	0.722	0.032	Pass
Novalurap	0.082	0.084	0.084	0.085	0.003	0.002	Voluntary Pe	sticide	s	0.090	0.094	0 112	0.001	0.002	0.005	Pass

#### 2.4 Distribution of test items and protocol to participants

One bottle of frozen treated test item was shipped to each participant in boxes containing dry ice. The test items were sent out on 6<sup>th</sup> March 2023. All the shipments to EU/EFTA countries arrived within the first 72 hours.

Before sample shipment, the laboratories received full instructions (Annex A) for the receipt and storage of the test item, and they were encouraged to use their normal sample receipt procedure and method(s) of analysis. These instructions were uploaded onto the open site of the EURL-FV webpage as part of the Specific Protocol. The Application Form was also available as an on-line form. After applying for the test, each participant laboratory received their Lab Code and password, thus allowing them to participate. This ensured that confidentiality was maintained throughout the duration of Proficiency Test 25. The Target Pesticide List and the Minimum Required Reporting Levels (MRRLs), as established by the Advisory Group, were uploaded onto the EURL-FV open website at least three months before the shipment of the test item to allow laboratories enough time to purchase standards and to validate their methods.

## 3. STATISTICAL METHODS

## 3.1 False positives and negatives

#### 3.1.1 False positives

These are results of pesticides from the Target Pesticides List, that are reported at, or above, their respective MRRLs although they were: (i) not detected by the Organiser, even after repeated analyses, and/or (ii) not detected by the overwhelming majority (e.g. > 95 %) of the participating laboratories that had targeted the specific pesticides. In certain instances, case-by-case decisions by the EUPT-Panel may be necessary.

Any results reported lower than the MRRL will not be considered as false positives, even though these results should not have been reported.

No z score values have been calculated for false positive results. Any laboratory reporting a false positive, even when reporting the necessary number of pesticides to obtain sufficient scope, has been classified into Category B.

## 3.1.2 False negatives

These are results for pesticides reported by the laboratories as 'analysed' but without reporting numerical values although they were: a) used by the Organiser to treat the Test Item and b) detected by the Organiser as well as the majority of the participants that had targeted these specific pesticides at or above the respective MRRLs. Results reported as '< RL' (RL= Reporting Limit of the laboratory) will be considered as not detected and will be judged as false negatives. In certain instances, case-by-case decisions by the EUPT-Panel may be necessary.

In cases of the assigned value being less than a factor of 3 times the MRRL, false negatives will typically not be assigned. The EUPT-Panel may decide to take case-by-case decisions in this

respect after considering all relevant factors such as the result distribution and the reporting limits of the affected labs.

All false negatives have been assigned a z score of -4.0. However, these z scores have not been taken into account in assessing the 90 %, or more, of pesticides present in the sample needed to be classified into Category A.

#### 3.2 Estimation of the assigned values (x<sub>pt</sub>)

In order to minimise the influence of out-lying results on the statistical evaluation, the assigned value (= consensus concentration) was estimated using robust statistics as described in ISO 13528:2015, considering the results reported by EU and EFTA countries laboratories only. Individual results without any numerical values reported, such as detected (D), were not considered. The spread of results for each pesticide was tested for multimodality. Results that were  $\geq$  10 times above or below the assigned value were excluded for the calculation of the assigned value. In special justifiable cases, the EUPT-Panel may decide to eliminate certain results traceably associated with gross errors or to use only the results of a subgroup consisting of laboratories that have repeatedly demonstrated good performance for the specific compound in the past.

Considering the normative for robust analysis in ISO 13528:2015, the uncertainty accompanying the assigned value for each pesticide was calculated according to the following equation:

$$u(x_{pt}) = 1.25 \frac{s^*}{\sqrt{p}}$$

Where:

- $u(x_{pt})$  is the uncertainty in mg/kg.
- s\* is the robust standard deviation of the results.
- *p* is the total number of results.

### 3.3 Fixed target standard deviations

Based on the experience gained from previous EU proficiency tests and recommendations from the EURL Advisory Group, a fixed relative standard deviation (FFP-RSD) of 25 % was chosen [3]. This is in line with the internationally accepted target Measurement Uncertainty of 50 % for multiresidue analysis of pesticides [4], which is derived from, and linked to, the EUPTs. The same target RSD has been applied to all the pesticides, independent of concentration. For informative purposes the robust relative standard deviation (CVs<sup>\*</sup>) is calculated according to ISO 13528:2015 Chapter 7.7 (Consensus value from participant results) following Algorithm A in Annex C, and it can be compared to the FFP-RSD in **Table 7**.

#### 3.4 z scores

A z score for each laboratory/pesticide combination was calculated according to the following equation:

$$z_i = \frac{(x_i - x_{pt})}{\sigma_{pt}}$$

Where:

- *x<sub>i</sub>* is the result reported by the participant.
- *X<sub>pt</sub>* is the assigned value.
- $\sigma_{pt}$  is the target standard deviation (the FFP-RSD of 25 % multiplied by the assigned value).

z score classification is as follows:

z  ≤2.0	Acceptable
2.0 <   z   < 3.0	Questionable
z  ≥ 3.0	Unacceptable

- Any z score value of |z| > 5 has been reported as '>5' and a value of '5' has been used to calculate combined z scores.
- No z score calculations have been performed for false positive results.
- For false negative results, a z score of -4,0 will be assigned. These z scores have also been included in the graphical representation and are marked with an asterisk.

## 3.5 Combined z scores

In order to evaluate each laboratory's overall performance according to the quality of its results and its scope, two classifications - Category A and B - were used. To be classified into Category A, laboratories had to be able to analyse at least 90 % of the compulsory pesticides in the target pesticides list, to correctly identify and report quantitative results (that is *sought and detected*) for 90 % or more of the total number of pesticides valuated in the test item and report no false positives (for the 90 % criterion the number of pesticides needed to be correctly analysed to have sufficient scope will be calculated by multiplying the number of compulsory pesticides from the Target Pesticides List by 0.9 and rounded to the nearest full number with 0.5 decimals being rounded downwards). If these three requirements were met, then the combined z scores were calculated as the 'Average of the Squared z scores' (AZ<sup>2</sup>) [5].

#### 3.5.1 The Average of the Squared z scores (AZ<sup>2</sup>)

The 'Average of the Squared z scores' was introduced for the first time in EUPT-FV12. The AZ<sup>2</sup> is calculated as follows:

$$AZ^{2} = \frac{\sum_{i=1}^{n} Z_{i}^{2}}{n}$$

The resultant formula is the sum of the z scores value, multiplied by itself and divided by the number of z scores (n) detected by each laboratory, including those from false negatives.

This formula is subsequently used to produce an overall classification of laboratories with three subclassifications: 'good', 'satisfactory' and 'unsatisfactory'.

$$|AZ^2| \le 2.0$$
 Good  
2.0 <  $|AZ^2| < 3.0$  Satisfactory  
 $|AZ^2| \ge 3.0$  Unsatisfactory

In this way, a simple, single, combined value is also achieved, as with the previous formula. However, this time, it is more mathematically justifiable as it uses the actual z score value rather than the factors 1, 3 and 5. Again, the aim is to encourage laboratories to not only improve the accuracy of their results but also to analyse a greater number of pesticides.

Laboratories that did not detect and quantify sufficient pesticides, that were not able to analyse at least 90 % of the compulsory pesticides or reported a false positive, have been placed in Category B and no combined z score has been calculated.

In **Appendices 5 and 6**, only results of laboratories in Category A have been presented, along with their graphical representations.

## 4. RESULTS

#### 4.1 Summary of reported results

The laboratories that agreed to participate are listed in Annex B. All results reported by the participants are given in **Appendix 3**, whilst the analytical methods used are given in **Appendix 7** (available in the EURL-FV web page in electronic format).

One hundred and seventy-five laboratories agreed to participate in this proficiency test. Eleven did not report results, so the total number of laboratories submitting results was 164. The results reported by all the laboratories are presented in this report. However, only results reported by laboratories from EU-countries and EFTA-countries (Iceland, Norway, and Switzerland) have been included in the statistical treatment. The results from the laboratories in China, Costa Rica, Egypt, Kenya, Peru, Serbia, Singapore, Tanzania, Thailand, Turkey and United Kingdom have not been included. This last group totals 17 laboratories that reported results.

Seventeen pesticides from the compulsory pesticide target list and one voluntary compound were used to treat the sample and were present in the test item at concentrations above the MRRL. Clothianidin was present in the test item at a concentration below its MRRL. Chlorpyrifos was also present in the sample, with an assigned value equal to its MRRL (0.005 mg/kg). The SC agreed that it should not be considered for the evaluation of the participants, but information will be displayed in the report only for informative purposes.

For compounds not evaluated, no false negatives were assigned, in accordance to the General Protocol of the EUPTs.

A summary of the reported results for the pesticides included in the test item can be seen below in Table 5.

Pesticides	No. of Reported Results	No. of False Negative Results	No. of Not Analysed Results	Percentage of Reported Results <sup>a</sup> (out of 147)					
Chlorpyrifos	39	108 NR	0	27					
Chlorpyrifos-methyl	144	2	1	98					
Cyazofamid	129	8	10	88					
Diazinon	145	2	0	99					
Difenoconazole	144	2	1	98					
Ethirimol	131	8	8	89					
Fenazaquin	140	4	3	95					
Fenitrothion	136	8	3	93					
Flutriafol	141	4	2	96					
Imazalil	140	6	1	95					
Mandipropamid	137	7	3	93					
Mepanipyrim	140	3	4	95					
Metrafenone	131	8	8	89					
Pyriproxyfen	141	3	3	96					
Profenofos	140	5	2	95					
Proquinazid	124	10	13	84					
Thiamethoxam	141	4	2	96					
Zoxamide         132         9         6         90									
Voluntary Pesticides									
Novaluron	62	2	83	42					

## Table 5. Summary of Reported Results

<sup>a</sup> The percentage of Reported Results comes from 147 laboratories. It does not take into account the seventeen laboratories from Argentina, China, Colombia, Costa Rica, India, Kenya, Peru, Serbia, Singapore, Thailand, Turkey, United Kingdom and Uruguay that submitted results.
 ① For information purposes only.

NR: Not reported.

## 4.1.1 False positives

Seven laboratories reported results for eight additional pesticides that were not present in the test item. These pesticides and the residue levels reported are presented in **Table 6**, together with the MRRLs and reporting limits (RLs). Where the reported concentrations of the erroneously detected pesticide were higher than the assigned MRRL value in the Target Pesticide List (Annex A), the result has been considered as a false positive. If the concentrations reported were below the MRRLs, or if the pesticides did not appear in the pesticide list included in Annex A, then they were not considered to be false positives.

 Table 6. Laboratories that reported as quantitative results for pesticides that were not present in the treated test item

Laboratory Code	Pesticide	Concentration (mg/kg)	Determination Technique	RL (mg/kg)	MRRL (mg/kg)
37	Azoxystrobin	0.247	LC-MS/MS QQQ	0.01	0.01
94	Cyproconazole	0.236	LC - MS/MS	0.01	0.01
32	Dichlofluanid	0.151	GC-Q-Orbitrap	0.01	0.01
37	Lufenuron	0.074	LC-MS/MS QQQ	0.01	0.01
159	Myclobutanil	0.04	LC-MS/MS QQQ	0.01	0.01
153	Parathion-methyl	0.043	GC-MS/MS (QQQ)	0.01	0.01
19	Pyrethrin (sum)	0.0648	GC-MS/MS (QQQ)	0.01	0.01
207	Teflubenzuron	0.147	GC-MS/MS (QQQ)	0.01	0.01

# 4.1.2 False negatives

 Tables 7 a and b summarise the results from laboratories (including non-EU laboratories, indicated with §) that reported false negatives, presented as 'Not Detected' (ND).

LabCode	Chlorpyrifos-methyl	Cyazofamid	Diazinon	Difenoconazole	Ethirimol	Fenazaquin	Fenitrothion	Flutriafol	Imazalil	Mandipropamid	Mepanipyrim	Metrafenone	Profenofos	Proquinazid	Pyriproxyfen	Thiamethoxam	Zoxamide
37																ND	
46									ND								
47							ND										
49	ND						ND										
53							ND										
59							ND										
77						ND											
89								ND									
118												ND					
147			<u> </u>				ND	<u> </u>	<u> </u>	<u> </u>		ND	ND	ND			
157		ND	<u> </u>		ND			<u> </u>	<u> </u>	ND							
159					ND							ND					ND
173		ND												ND			
179		ND							ND	ND				ND	ND		
181		ND	ND	ND	ND	ND			ND	ND	ND		ND		ND	ND	ND
185						ND	<u> </u>										
187	1													ND			
193	 	ND			ND			ND		ND	ND	ND		ND		ND	ND
195	<u> </u>	ND			ND					ND		ND		ND			ND
203	<u> </u>		UND	ND	ND	ND			UND	UND	ND	ND	ND			I ND	ND
207																	
211					IND												
213																	
210																	
221																	
220																	
201	1	§ No	סאין n-FU	/FFTA	labo	pratorie	25				סאון			t detec	ted		

Table 7.a Laboratories that failed to report pesticides that were present in the treated test item.

Table 7.b

Laboratories that failed to report voluntary pesticides that were present in the treated test item.

Voluntary Pesticide								
Lab Code	Flupyradifurone							
22	ND							
54	ND							
ND: Not detecte								

# 4.1.3 Distribution of data

The distribution of the concentrations of the pesticides reported by the laboratories has been plotted as histograms with a bandwidth of  $0.75 \cdot \sigma$  ( $\sigma$  is the target standard deviation (the FFP-RSD

of 25 % multiplied by the assigned value). The histograms of both the compulsory and voluntary pesticides present in the test item are presented in **Appendix 2**.

### 4.2 Assigned values and target standard deviations

The assigned values are based on the robust mean values calculated using all the results reported by laboratories from EU and EFTA countries, after exclusion of gross errors (those results  $\geq$  10 times above or below the assigned value). As one laboratory reported all results in µg/kg instead of mg/kg, one outlier was removed for all the evaluated compounds except for novaluron for the calculation of the robust mean.

The assigned values for the eighteen compulsory and one voluntary pesticides and their uncertainties are presented in **Table 8**. The assigned value of chlorpyrifos is 0.005 mg/kg, which is below three times its MRRL (0.005 mg/kg). The SC agreed that it should not be considered for the evaluation of the participants. Information for that compound will be displayed only for informative purposes.

The target standard deviation was calculated using a fixed FFP-RSD value of 25 %. For comparison, a robust standard deviation (CV\*) was also calculated for informative purposes, also employing this value for the calculation of the uncertainty. These RSDs can be seen in **Table 8**.

Pesticides	MRRL (mg/kg)	Robust mean (mg/kg)	Uncertainty (mg/kg)	Number of results (n)	FFP-RSD (%)	CV* (%)			
© Chlorpyrifos	0.005	0.005	0.0002	39	25	22.2			
Chlorpyrifos-methyl	0.005	0.090	0.0018	144	25	19.6			
Cyazofamid	0.01	0.083	0.0014	129	25	15.8			
Diazinon	0.005	0.104	0.0016	145	25	14.8			
Difenoconazole	0.01	0.222	0.0041	144	25	17.6			
Ethirimol	0.01	0.388	0.0091	131	25	21.4			
Fenazaquin	0.01	0.078	0.0013	140	25	15.4			
Fenitrothion	0.01	0.085	0.0019	136	25	20.8			
Flutriafol	0.01	0.304	0.0044	141	25	13.8			
Imazalil	0.005	0.086	0.0020	140	25	22.2			
Mandipropamid	0.01	0.451	0.0083	137	25	17.3			
Mepanipyrim	0.01	0.081	0.0011	140	25	13.0			
Metrafenone	0.01	0.562	0.0098	131	25	15.9			
Pyriproxyfen	0.01	0.245	0.0044	141	25	17.1			
Profenofos	0.01	0.117	0.0018	140	25	14.9			
Proquinazid	0.01	0.079	0.0012	124	25	13.2			
Thiamethoxam	0.01	0.208	0.0030	141	25	13.8			
Zoxamide	0.01	0.457	0.0071	132	25	14.3			
Voluntary Pesticides									
Novaluron	0.01	0.102	0.0029	62	25	18.3			

Table 8. Robust mean values, uncertainty and % RSDs for all pesticides evaluated.

① For information purposes only

#### 4.3 Assessment of laboratory performance

#### 4.3.1 z scores

z scores were calculated using the FFP-RSD of 25 % for all the pesticides evaluated.

In **Appendix 3** the individual z scores are presented for each laboratory, together with the concentrations reported for each pesticide. The z scores of laboratories from non-EU countries have been included in **Appendix 3**, but have not been considered in **Table 9**, where the classification of z scores reported by EU/EFTA laboratories is shown.

Pesticides	Acceptable (%)	Questionable (%)	Unacceptable (%)						
Chlorpyrifos	86.8	0.0	13.2						
Chlorpyrifos-methyl	93.2	4.8	2.1						
Cyazofamid	88.3	2.9	8.8						
Diazinon	95.2	2.0	2.7						
Difenoconazole	94.5	2.7	2.7						
Ethirimol	89.2	2.2	8.6						
Fenazaquin	95.8	0.0	4.2						
Fenitrothion	87.5	3.5	9.0						
Flutriafol	91.0	3.4	5.5						
Imazalil	92.5	0.7	6.8						
Mandipropamid	91.0	2.1	6.9						
Mepanipyrim	97.2	0.0	2.8						
Metrafenone	91.4	0.7	7.9						
Pyriproxyfen	94.4	2.8	2.8						
Profenofos	91.7	2.1	6.2						
Proquinazid	88.1	3.0	9.0						
Thiamethoxam	93.1	2.8	4.1						
Zoxamide	88.7	1.4	9.9						
Voluntary Pesticides									
Novaluron	92.2	4.7	3.1						

 Table 9. Classification of z scores for the pesticides reported (only EU/EFTA participants)

For information purposes only

z scores for false negative results have been assigned the fixed value of -4.0.

In **Appendix 4**, graphical representations of the z scores of EU/EFTA laboratories are presented. No z scores have been calculated for false positive results; z scores for false negative results have been included on the chart and are indicated by an asterisk.

## 4.3.2 Combined z scores

As previously mentioned in Section 3.5., the AZ<sup>2</sup> formula has only been applied to those participants categorised into Category A and considering only compulsory pesticides.

The table in **Appendix 5** shows the values of individual z scores for each compulsory pesticide and the combined 'Average of the Squared z scores' (AZ<sup>2</sup>) for laboratories in Category A (including non-EU countries), which were those laboratories that were able to analyse at least 90 % of the compulsory pesticides in the target pesticides list (15), to detect and quantify at least 90 % of the

pesticides present in the Test Item (190), and that did not report any false positive result. A graphical representation of those results for the EU/EFTA laboratories can be found in **Appendix 6**. One hundred and eleven of the 147 EU and EFTA laboratories that submitted results were classified into Category A (76 %).

From the AZ<sup>2</sup>, 91 % were classed as 'good', 4 % as 'satisfactory' and 5 % as 'unsatisfactory' (Only considering EU and EFTA laboratories).

Of the 36 EU and EFTA laboratories in Category B, seven had reported a false positive result. Five of them would have been classified into Category A had it not been for this false positive result.

**Table 10** shows all the laboratories in Category A (including non-EU laboratories, indicated with §), the number of pesticides reported, the percentage of pesticides analysed from the compulsory target list, the  $AZ^2$  values and their sub classifications. Laboratories that reported false negative results in Category A are marked with the symbol  $\Theta$ .

Lab Code	No. of pesticides detected (max.17)	% of pesticides analysed from target list	AZ <sup>2</sup>	Classification
7	17	100	1.3	Good
8	17	99	0.4	Good
9	17	100	0.4	Good
10	17	98	0.2	Good
11§	17	97	0.2	Good
13§	17	100	2.9	Satisfactory
14	17	99	0.1	Good
15	17	92	0.0	Good
16	17	99	0.2	Good
17	17	100	0.4	Good
20	17	100	0.6	Good
21	17	100	0.2	Good
22	17	100	0.2	Good
23	17	100	0.2	Good
24	17	93	0.6	Good
26§	17	100	0.2	Good
27	17	100	0.3	Good
28§	17	92	0.1	Good
29	17	100	0.1	Good
31	17	98	1.2	Good
33	17	100	0.3	Good
34§	17	95	0.3	Good
35	17	100	0.4	Good
36	17	100	0.1	Good
38	17	100	0.8	Good
39§	17	97 0.1 Good		Good

Table 10. Performance and Classification of laboratories in Category A using the AZ<sup>2</sup> formula

Lab Code	No. of pesticides detected (max.17)	% of pesticides analysed from target list	AZ <sup>2</sup>	Classification
40	17	91	4.3	Unsatisfactory
41	17	98	0.1	Good
42	17	100	0.4	Good
43	17	100	2.8	Satisfactory
45	17	96	0.5	Good
46 Θ	16	100	5.7	Unsatisfactory
47 Θ	16	95	3.1	Unsatisfactory
48	17	97	0.9	Good
50	17	96	0.1	Good
52	17	100	0.1	Good
53 Θ	16	90	1.5	Good
55	17	100	0.5	Good
56	17	97	0.2	Good
57	17	100	0.1	Good
58	17	100	0.2	Good
59 O	16	99	1.6	Good
60	17	97	0.3	Good
61	17	97	0.2	Good
63§	17	98	3.0	Unsatisfactory
64§	16	93	0.4	Good
65	16	93	0.4	Good
67	17	100	0.2	Good
68	17	97	1.2	Good
69	17	100	0.8	Good
70	17	100	0.8	Good
73 <sup>§</sup>	17	100	0.8	Good
74	17	100	0.2	Good
75	17	100	0.2	Good
76	17	100	0.3	Good
77 Θ	16	97	1.9	Good
78	17	95	0.4	Good
79	17	99	0.6	Good
80	1/	98	2.3	Satisfactory
81		99	0.1	Good
82	1/	100	0.2	Good
83	1/	98	1.1	Good
84	17	9/	1./	Good
85	1/	100	0.2	Good
86	16	93	0.1	Good
87	17	95	4.6	Unsatisfactory
89 O	16	94	1.6	Good
90	1/	100	2.3	Satistactory
91	17	100	0.2	Good
92	17	100 0.3 Good		Good

93         17         100         0.5         Good           95         17         99         0.2         Good           96         17         97         0.7         Good           97         17         97         0.7         Good           99         17         100         0.1         Good           101         17         91         12.0         Unsatifactory           103         17         91         12.0         Unsatifactory           103         17         91         0.2         Good           104         17         96         0.2         Good           105         17         100         0.3         Good           107         17         97         0.3         Good           111         17         100         0.2         Good           1111         17         100         0.4         Good           1111         17         100         0.4         Good           1114         17         100         0.1         Good           1114         17         100         0.2         Good           1119         17 <th>Lab Code</th> <th>No. of pesticides detected (max.17)</th> <th>% of pesticides analysed from target list</th> <th>AZ<sup>2</sup></th> <th>Classification</th>	Lab Code	No. of pesticides detected (max.17)	% of pesticides analysed from target list	AZ <sup>2</sup>	Classification
95         17         99         0.2         Good           96         17         97         0.7         Good           97         17         97         0.7         Good           99         17         100         0.1         Good           101         17         97         1.0         Good           102 <sup>5</sup> 17         91         12.0         Unsatisfactory           103         17         100         0.8         Good           104         17         96         0.2         Good           105         17         100         0.6         Good           107         17         97         0.3         Good           108         17         100         0.4         Good           111         17         98         1.4         Good           1111         17         100         0.1         Good           114         17         100         0.1         Good           113         17         100         0.1         Good           114         17         99         0.3         Good           117         98	93	17	100	0.5	Good
96         17         99         0.8         Good           97         17         97         0.7         Good           99         17         100         0.1         Good           101         17         100         1.0         Good           1025         17         91         12.0         Unsatisfactory           103         17         100         0.8         Good           104         17         96         0.2         Good           105         17         100         0.6         Good           107         17         97         0.3         Good           108         17         100         0.3         Good           111         17         95         0.7         Good           1111         17         100         0.1         Good           1114         17         100         0.1         Good           1114         17         100         0.1         Good           1119         17         98         1.2         Good           119         17         100         0.1         Good           121         17	95	17	99	0.2	Good
97         17         97         0.7         Good           99         17         100         0.1         Good           101         17         100         1.0         Good           102 <sup>5</sup> 17         91         12.0         Unsatisfactory           103         17         100         0.8         Good           104         17         96         0.2         Good           105         17         100         0.6         Good           107         17         97         0.3         Good           108         17         100         0.3         Good           111         17         97         0.3         Good           1111         17         100         0.2         Good           1111         17         100         0.2         Good           1114         17         100         0.3         Good           1114         17         100         0.3         Good           1117         17         100         0.3         Good           1117         17         100         0.3         Good           1117         17 </td <td>96</td> <td>17</td> <td>99</td> <td>0.8</td> <td>Good</td>	96	17	99	0.8	Good
99         17         100         0.1         Good           101         17         100         1.0         Good           102 <sup>8</sup> 17         91         12.0         Unsatisfactory           103         17         100         0.8         Good           104         17         96         0.2         Good           105         17         100         0.6         Good           107         17         97         0.3         Good           108         17         100         0.3         Good           1109         17         98         1.4         Good           111         17         100         0.4         Good           1111         17         100         0.4         Good           1111         17         100         0.1         Good           1114         17         100         0.1         Good           1114         17         100         0.1         Good           114         17         100         0.1         Good           119         17         98         1.2         Good           121         17 <td>97</td> <td>17</td> <td>97</td> <td>0.7</td> <td>Good</td>	97	17	97	0.7	Good
101         17         100         1.0         Good           102 <sup>6</sup> 17         91         12.0         Unsatisfactory           103         17         100         0.8         Good           104         17         96         0.2         Good           105         17         100         0.6         Good           107         17         97         0.3         Good           108         17         100         0.3         Good           109         17         98         1.4         Good           111         17         95         0.7         Good           111         17         100         0.4         Good           111         17         100         0.1         Good           114         17         100         0.1         Good           114         17         100         0.3         Good           117         17         100         0.3         Good           119         17         98         1.2         Good           121         17         100         0.2         Good           122         17	99	17	100	0.1	Good
102 <sup>8</sup> 17         91         12.0         Unsatisfactory           103         17         100         0.8         Good           104         17         96         0.2         Good           105         17         100         0.6         Good           107         17         97         0.3         Good           109         17         98         1.4         Good           111         17         95         0.7         Good           111         17         100         0.4         Good           111         17         100         0.4         Good           111         17         100         0.4         Good           111         17         100         0.3         Good           1114         17         100         0.3         Good           1116         17         99         0.3         Good           1117         17         100         0.1         Good           118         16         97         1.8         Good           119         17         98         1.2         Good           121         17	101	17	100	1.0	Good
103         17         100         0.8         Good           104         17         96         0.2         Good           105         17         100         0.6         Good           107         17         97         0.3         Good           108         17         100         0.3         Good           109         17         98         1.4         Good           111         17         95         0.7         Good           1111         17         100         0.4         Good           1111         17         100         0.4         Good           1111         17         100         0.4         Good           111         17         100         0.1         Good           114         17         100         0.1         Good           114         17         100         0.3         Good           111         17         17         100         0.2         Good           112         17         100         0.2         Good         123           117         100         0.4         Good         135 <t< td=""><td>102§</td><td>17</td><td>91</td><td>12.0</td><td>Unsatisfactory</td></t<>	102§	17	91	12.0	Unsatisfactory
104 $17$ $96$ $0.2$ Good $105$ $17$ $100$ $0.6$ Good $107$ $17$ $97$ $0.3$ Good $108$ $17$ $100$ $0.3$ Good $109$ $17$ $98$ $1.4$ Good $111$ $17$ $98$ $1.4$ Good $111$ $17$ $98$ $0.7$ Good $111$ $17$ $99$ $0.3$ Good $1114$ $17$ $100$ $0.4$ Good $114$ $17$ $99$ $0.3$ Good $116$ $17$ $99$ $0.3$ Good $117$ $17$ $100$ $0.3$ Good $116$ $17$ $99$ $0.3$ Good $117$ $17$ $100$ $0.2$ Good $118$ $16$ $97$ $1.8$ Good $119$ $17$ $98$ $1.2$ Good $121$ $17$ $100$ $0.2$ Good $123$ $17$ $100$ $0.2$ Good $127$ $17$ $100$ $0.4$ Good $137$ $17$ $100$ $0.4$ Good $139$ $17$ $100$ $0.4$ Good $143$ $17$ $100$ $0.5$ Good $144$ $17$ $100$ $0.5$ Good $145$ $17$ $100$ $0.5$ Good $161$ $17$ $100$ $0.4$ Good $163$ $17$ $100$ $0.4$ Good $164$ $17$ $100$	103	17	100	0.8	Good
105 $17$ $100$ $0.6$ Good $107$ $17$ $97$ $0.3$ Good $108$ $17$ $100$ $0.3$ Good $109$ $17$ $98$ $1.4$ Good $110$ $17$ $95$ $0.7$ Good $111$ $17$ $95$ $0.7$ Good $112$ $17$ $100$ $0.2$ Good $113$ $17$ $100$ $0.4$ Good $114$ $17$ $99$ $0.3$ Good $114$ $17$ $99$ $0.3$ Good $116$ $17$ $99$ $0.3$ Good $117$ $17$ $100$ $0.3$ Good $118$ $97$ $1.8$ Good $117$ $17$ $99$ $0.3$ Good $112$ $17$ $99$ $0.3$ Good $112$ $17$ $99$ $0.3$ Good $112$ $17$ $99$ $0.3$ Good $123$ $17$ $100$ $0.2$ Good $123$ $17$ $100$ $0.2$ Good $127$ $17$ $100$ $0.4$ Good $137$ $17$ $100$ $0.4$ Good $139$ $17$ $100$ $0.4$ Good $143$ $17$ $100$ $0.5$ Good $144$ $17$ $100$ $0.5$ Good $144$ $17$ $100$ $0.5$ Good $144$ $17$ $100$ $0.5$ Good $165$ $17$ $100$ $0.7$ <	104	17	96	0.2	Good
107 $17$ $97$ $0.3$ Good $108$ $17$ $100$ $0.3$ Good $109$ $17$ $98$ $1.4$ Good $111$ $17$ $95$ $0.7$ Good $111$ $17$ $100$ $0.2$ Good $111$ $17$ $100$ $0.4$ Good $114$ $17$ $100$ $0.4$ Good $114$ $17$ $100$ $0.1$ Good $116$ $17$ $99$ $0.3$ Good $116$ $17$ $99$ $0.3$ Good $118$ $16$ $97$ $1.8$ Good $119$ $17$ $98$ $1.2$ Good $121$ $17$ $100$ $0.2$ Good $123$ $17$ $100$ $0.2$ Good $127$ $17$ $100$ $0.4$ Good $129$ $17$ $100$ $0.4$ Good $135$ $17$ $100$ $0.4$ Good $137$ $17$ $100$ $0.4$ Good $143$ $17$ $100$ $0.4$ Good $144$ $17$ $100$ $0.4$ Good $145$ $17$ $100$ $0.5$ Good $145$ $17$ $100$ $0.4$ Good $146$ $17$ $100$ $0.5$ Good $146$ $17$ $100$ </td <td>105</td> <td>17</td> <td>100</td> <td>0.6</td> <td>Good</td>	105	17	100	0.6	Good
108         17         100         0.3         Good           109         17         98         1.4         Good           111         17         95         0.7         Good           1112         17         100         0.2         Good           113         17         100         0.1         Good           114         17         100         0.1         Good           114         17         100         0.3         Good           114         17         100         0.3         Good           117         17         100         0.3         Good           118         16         97         1.8         Good           111         17         98         1.2         Good           123         17         100         0.2         Good           124         17         100         0.4         Good           125         17         96         0.4         Good           127         17         100         0.4         Good           139         17         100         0.4         Good           143         17         1	107	17	97	0.3	Good
109 $17$ $98$ $1.4$ Good111 $17$ $95$ $0.7$ Good112 $17$ $100$ $0.2$ Good113 $17$ $100$ $0.4$ Good114 $17$ $100$ $0.1$ Good116 $17$ $99$ $0.3$ Good117 $17$ $100$ $0.3$ Good118 $16$ $97$ $1.8$ Good119 $17$ $98$ $1.2$ Good121 $17$ $100$ $0.2$ Good123 $17$ $100$ $0.2$ Good125 $17$ $96$ $0.4$ Good127 $17$ $100$ $0.1$ Good135 $17$ $100$ $0.4$ Good137 $17$ $100$ $0.4$ Good139 $17$ $100$ $0.4$ Good143 $17$ $100$ $0.4$ Good143 $17$ $100$ $0.4$ Good144 $17$ $100$ $0.4$ Good $143$ $17$ $100$ $0.4$ Good $144$ $17$ $100$ $0.5$ Good $161$ $17$ $100$ $0.5$ Good $161$ $17$ $100$ $0.7$ Good $169$ $17$ $100$ $0.7$ Good $169$ $17$ $100$ $0.2$ Good $171$ $17$ $100$ $0.2$ Good $171$ $17$ $100$ $0.2$ Good	108	17	100	0.3	Good
111         17         95         0.7         Good           112         17         100         0.2         Good           113         17         100         0.4         Good           114         17         100         0.1         Good           114         17         100         0.3         Good           116         17         99         0.3         Good           117         17         100         0.3         Good           118         16         97         1.8         Good           119         17         98         1.2         Good           121         17         100         0.2         Good           123         17         100         0.2         Good           124         17         100         0.4         Good           127         17         100         0.4         Good           137         17         100         0.4         Good           137         17         100         0.4         Good           143         17         100         0.4         Good           145         17         10	109	17	98	1.4	Good
112         17         100         0.2         Good           113         17         100         0.4         Good           114         17         100         0.1         Good           116         17         99         0.3         Good           116         17         99         0.3         Good           117         17         100         0.3         Good           118         16         97         1.8         Good           119         17         98         1.2         Good           121         17         100         0.2         Good           123         17         100         0.2         Good           125         17         96         0.4         Good           127         17         100         0.1         Good           135         17         100         0.4         Good           137         17         100         0.4         Good           143         17         100         0.4         Good           143         17         100         0.5         Good           144         17         100	111	17	95	0.7	Good
113         17         100         0.4         Good           114         17         100         0.1         Good           116         17         99         0.3         Good           117         17         100         0.3         Good           118 Θ         16         97         1.8         Good           119         17         98         1.2         Good           121         17         100         0.2         Good           123         17         100         0.2         Good           125         17         96         0.4         Good           127         17         100         0.2         Good           135         17         100         0.4         Good           137         17         100         0.4         Good           139         17         100         0.4         Good           143         17         100         0.4         Good           144         17         100         0.5         Good           151         17         100         0.5         Good           155         17 <td< td=""><td>112</td><td>17</td><td>100</td><td>0.2</td><td>Good</td></td<>	112	17	100	0.2	Good
114         17         100         0.1         Good           116         17         99         0.3         Good           117         17         100         0.3         Good           118         16         97         1.8         Good           119         17         98         1.2         Good           121         17         100         0.2         Good           123         17         100         0.2         Good           125         17         96         0.4         Good           127         17         100         0.2         Good           127         17         100         0.4         Good           129         17         100         0.4         Good           135         17         100         0.4         Good           139         17         100         0.4         Good           143         17         100         0.4         Good           145         17         100         0.5         Good           151         17         100         0.5         Good           161         17         1	113	17	100	0.4	Good
116         17         99         0.3         Good           117         17         100         0.3         Good           118         16         97         1.8         Good           119         17         98         1.2         Good           121         17         100         0.2         Good           123         17         100         0.2         Good           123         17         100         0.2         Good           125         17         96         0.4         Good           127         17         100         0.1         Good           129         17         100         0.4         Good           135         17         100         0.4         Good           137         17         100         0.4         Good           139         17         100         0.4         Good           143         17         100         0.4         Good           145         17         100         0.5         Good           151         17         100         0.5         Good           155         17         10	114	17	100	0.1	Good
117         17         100         0.3         Good           118 $\Theta$ 16         97         1.8         Good           119         17         98         1.2         Good           121         17         100         0.2         Good           123         17         100         0.2         Good           123         17         100         0.2         Good           125         17         96         0.4         Good           127         17         100         0.1         Good           129         17         100         0.4         Good           135         17         100         0.4         Good           137         17         100         0.4         Good           138         17         100         0.4         Good           143         17         100         0.4         Good           143         17         100         0.4         Good           149         17         100         0.5         Good           155         17         100         0.5         Good           161         17         <	116	17	99	0.3	Good
118 0         16         97         1.8         Good           119         17         98         1.2         Good           121         17         100         0.2         Good           123         17         100         0.2         Good           123         17         100         0.2         Good           125         17         96         0.4         Good           127         17         100         0.1         Good           129         17         100         0.2         Good           135         17         100         0.4         Good           137         17         100         0.4         Good           137         17         100         0.4         Good           138         17         100         0.4         Good           143         17         100         0.4         Good           143         17         100         0.5         Good           149         17         100         0.5         Good           151         17         100         0.5         Good           161         17 <td< td=""><td>117</td><td>17</td><td>100</td><td>0.3</td><td>Good</td></td<>	117	17	100	0.3	Good
119         17         98         1.2         Good           121         17         100         0.2         Good           123         17         100         0.2         Good           125         17         96         0.4         Good           127         17         100         0.1         Good           129         17         100         0.2         Good           135         17         100         0.2         Good           137         17         100         0.4         Good           137         17         100         0.4         Good           139         17         100         0.4         Good           143         17         100         0.4         Good           144         17         100         0.4         Good           145         17         100         0.5         Good           151         17         100         0.5         Good           155         17         100         0.5         Good           163         17         100         0.4         Good           165         17	118 Θ	16	97	1.8	Good
121         17         100         0.2         Good           123         17         100         0.2         Good           125         17         96         0.4         Good           127         17         100         0.1         Good           129         17         100         0.2         Good           135         17         100         0.2         Good           137         17         100         0.4         Good           139         17         100         0.4         Good           143         17         100         0.4         Good           145         17         100         0.5         Good           151         17         100         0.5         Good           161         17         100         0.4         Good           163         17         100         0.4         Good           165         17 <t< td=""><td>119</td><td>17</td><td>98</td><td>1.2</td><td>Good</td></t<>	119	17	98	1.2	Good
12317100 $0.2$ Good12517960.4Good127171000.1Good129171000.2Good135171000.4Good137171000.4Good139171000.4Good143171000.4Good145171000.4Good151171000.4Good155171000.4Good161171000.5Good163171000.5Good165171000.4Good163171000.5Good163171000.4Good165171000.4Good167171000.4Good171171000.5Good175171000.4Good171171000.4Good173 $^{6} \Theta$ 151002.8Satisfactory173 $^{5} \Theta$ 151002.8Satisfactory175171001.9Good177171000.3Good	121	17	100	0.2	Good
125         17         96         0.4         Good           127         17         100         0.1         Good           129         17         100         0.2         Good           135         17         100         0.4         Good           137         17         100         0.4         Good           137         17         100         0.4         Good           139         17         100         0.4         Good           143         17         100         0.4         Good           145         17         100         0.5         Good           151         17         100         0.5         Good           161         17         100         0.5         Good           163         17         100         0.4         Good           165         17         100         0.7         Good           169         17 <t< td=""><td>123</td><td>17</td><td>100</td><td>0.2</td><td>Good</td></t<>	123	17	100	0.2	Good
$127$ $17$ $100$ $0.1$ $Good$ $129$ $17$ $100$ $0.2$ $Good$ $135$ $17$ $100$ $0.4$ $Good$ $137$ $17$ $100$ $0.4$ $Good$ $139$ $17$ $100$ $0.9$ $Good$ $143$ $17$ $100$ $0.4$ $Good$ $145$ $17$ $100$ $0.4$ $Good$ $145$ $17$ $100$ $0.4$ $Good$ $149$ $17$ $100$ $0.4$ $Good$ $151$ $17$ $100$ $0.5$ $Good$ $155$ $17$ $100$ $0.5$ $Good$ $161$ $17$ $100$ $0.9$ $Good$ $163$ $17$ $100$ $0.4$ $Good$ $165$ $17$ $100$ $0.4$ $Good$ $167$ $17$ $100$ $0.9$ $Good$ $169$ $17$ $100$ $0.4$ $Good$ $169$ $17$ $100$ $0.2$ $Good$ $171$ $17$ $100$ $2.9$ $Satisfactory$ $173 § \Theta$ $15$ $100$ $2.8$ $Satisfactory$ $175$ $17$ $100$ $1.9$ $Good$ $177$ $17$ $100$ $0.3$ $Good$	125		96	0.4	Good
129 $17$ $100$ $0.2$ $Good$ $135$ $17$ $100$ $0.4$ $Good$ $137$ $17$ $100$ $0.4$ $Good$ $139$ $17$ $100$ $0.9$ $Good$ $143$ $17$ $100$ $0.4$ $Good$ $145$ $17$ $100$ $0.4$ $Good$ $145$ $17$ $100$ $0.4$ $Good$ $149$ $17$ $100$ $0.5$ $Good$ $151$ $17$ $100$ $0.5$ $Good$ $155$ $17$ $100$ $0.5$ $Good$ $161$ $17$ $100$ $0.9$ $Good$ $163$ $17$ $100$ $0.4$ $Good$ $165$ $17$ $100$ $0.4$ $Good$ $167$ $17$ $100$ $0.4$ $Good$ $169$ $17$ $100$ $0.4$ $Good$ $171$ $17$ $100$ $0.2$ $Good$ $171$ $17$ $100$ $2.8$ $Satisfactory$ $175$ $17$ $100$ $1.9$ $Good$ $177$ $17$ $100$ $0.3$ $Good$	127	17	100	0.1	Good
133         17         100         0.4         Good           137         17         100         0.4         Good           139         17         100         0.9         Good           143         17         100         0.4         Good           143         17         100         0.4         Good           145         17         100         0.4         Good           145         17         100         0.4         Good           149         17         100         0.4         Good           151         17         100         0.5         Good           155         17         100         0.5         Good           161         17         100         0.9         Good           163         17         100         0.4         Good           165         17         100         0.4         Good           165         17         100         0.4         Good           167         17         100         0.2         Good           169         17         100         0.2         Good           171         17         <	129	17	100	0.2	Good
137         17         100         0.4         Good           139         17         100         0.9         Good           143         17         100         0.4         Good           143         17         100         0.4         Good           145         17         100         0.4         Good           149         17         100         0.5         Good           151         17         100         0.3         Good           155         17         100         0.5         Good           161         17         100         0.5         Good           163         17         100         0.4         Good           165         17         100         0.4         Good           165         17         100         0.4         Good           167         17         100         0.7         Good           169         17         100         0.2         Good           171         17         100         2.8         Satisfactory           173 <sup>§</sup> Θ         15         100         2.8         Satisfactory           175 <sup>§</sup>	135	17	100	0.4	Good
139         17         100         0.9         Good           143         17         100         0.4         Good           145         17         100         0.4         Good           149         17         100         0.5         Good           151         17         100         0.3         Good           155         17         100         0.5         Good           161         17         100         0.9         Good           163         17         100         0.4         Good           165         17         100         0.9         Good           165         17         100         0.4         Good           165         17         100         0.4         Good           165         17         100         0.4         Good           167         17         100         0.7         Good           169         17         100         0.2         Good           171         17         100         2.9         Satisfactory           173 § Θ         15         100         2.8         Satisfactory           175         <	137	17	100	0.4	Good
143         17         100         0.4         Good           145         17         100         0.4         Good           149         17         100         0.5         Good           151         17         100         0.3         Good           155         17         100         0.5         Good           161         17         100         0.5         Good           163         17         100         0.9         Good           165         17         100         0.4         Good           165         17         100         1.6         Good           165         17         100         0.4         Good           165         17         100         0.4         Good           165         17         100         0.4         Good           167         17         100         0.2         Good           169         17         100         0.2         Good           171         17         100         2.8         Satisfactory           173 § Θ         15         100         2.8         Satisfactory           175§         <	142	17	100	0.9	Good
143       17       100       0.4       Good         149       17       100       0.5       Good         151       17       100       0.3       Good         155       17       100       0.5       Good         161       17       100       0.5       Good         163       17       100       0.9       Good         163       17       100       1.6       Good         165       17       100       0.4       Good         165       17       100       0.4       Good         165       17       100       0.4       Good         167       17       100       0.4       Good         169       17       100       0.7       Good         171       17       100       0.2       Good         171       17       100       2.9       Satisfactory         173 § Θ       15       100       2.8       Satisfactory         175§       17       100       1.9       Good         177       17       100       0.3       Good         177       17       100 <td< td=""><td>145</td><td>17</td><td>100</td><td>0.4</td><td>Good</td></td<>	145	17	100	0.4	Good
149         17         100         0.5         Good           151         17         100         0.3         Good           155         17         100         0.5         Good           161         17         100         0.9         Good           163         17         100         0.4         Good           165         17         100         0.4         Good           165         17         100         0.7         Good           165         17         100         0.4         Good           167         17         100         0.7         Good           169         17         100         0.2         Good           171         17         100         2.9         Satisfactory           173 § Θ         15         100         2.8         Satisfactory           175§         17         100         1.9         Good           177         17         100         0.3         Good           177         17         100         0.3         Good	140	17	100	0.4	Good
15117100 $0.5$ Good15517100 $0.5$ Good16117100 $0.9$ Good163171001.6Good16517100 $0.4$ Good16717100 $0.7$ Good16917100 $0.2$ Good17117100 $2.9$ Satisfactory173 § $\Theta$ 151002.8Satisfactory175§171000.3Good177171000.3Good	149	17	100	0.3	Good
15517100 $0.3$ Good16117100 $0.9$ Good163171001.6Good16517100 $0.4$ Good16717100 $0.7$ Good16917100 $0.2$ Good17117100 $2.9$ Satisfactory173 § $\Theta$ 151002.8Satisfactory175§171000.3Good177171000.3Good183§171000.5Good	155	17	100	0.5	Good
16117100 $0.7$ Good163171001.6Good165171000.4Good167171000.7Good169171000.2Good171171002.9Satisfactory173 $\S \Theta$ 151002.8Satisfactory175 $\S$ 171001.9Good177171000.3Good183 $\S$ 171000.5Good	161	17	100	0.9	Good
103         17         100         1.0         Good           165         17         100         0.4         Good           167         17         100         0.7         Good           169         17         100         0.2         Good           171         17         100         2.9         Satisfactory           173 § O         15         100         2.8         Satisfactory           175§         17         100         1.9         Good           177         17         100         0.3         Good           183§         17         100         0.5         Good	163	17	100	1.6	Good
160       17       100       0.1       600d         167       17       100       0.7       Good         169       17       100       0.2       Good         171       17       100       2.9       Satisfactory         173 § Θ       15       100       2.8       Satisfactory         175§       17       100       1.9       Good         177       17       100       0.3       Good         183§       17       100       0.5       Good	165	17	100	0.4	Good
167       17       100       0.7       Good         169       17       100       0.2       Good         171       17       100       2.9       Satisfactory         173 § Θ       15       100       2.8       Satisfactory         175§       17       100       1.9       Good         177       17       100       0.3       Good         183§       17       100       0.5       Good	167	17	100	0.7	Good
171     17     100     2.9     Satisfactory       173 § Θ     15     100     2.8     Satisfactory       175§     17     100     1.9     Good       177     17     100     0.3     Good       183§     17     100     0.5     Good	169	17	100	0.2	Good
173 § Θ     15     100     2.8     Satisfactory       175§     17     100     1.9     Good       177     17     100     0.3     Good       183§     17     100     0.5     Good	171	17	100	2.9	Satisfactory
175 <sup>§</sup> 17     100     1.9     Good       177     17     100     0.3     Good       183 <sup>§</sup> 17     100     0.5     Good	173 § A	15	100	2.7	Satisfactory
1.10         1.17         100         0.3         Good           177         17         100         0.3         Good           183 <sup>§</sup> 17         100         0.5         Good	175§	17	100	1.9	Good
183 <sup>§</sup> 17 100 0.5 Good	177	17	100	0.3	Good
	183§	17	100	0.5	Good

Lab Code	No. of pesticides detected (max.17)	% of pesticides analysed from target list	AZ <sup>2</sup>	Classification
185 <del>O</del>	16	100	7.9	Unsatisfactory
187§ Θ	16	100	2.6	Satisfactory
189	17	100	0.3	Good
191	17	100	25.0	Unsatisfactory
199	17	100	0.7	Good
201	17	100	1.0	Good
209	17	100	0.1	Good
217	17	100	0.2	Good
219	17	100	0.4	Good
223	17	100	0.1	Good
227§	17	100	1.1	Good
229	17	100	0.1	Good

Θ Laboratories reporting a false negative result § Non-EU/EFTA laboratories

**Table 11** shows all the laboratories in Category B (including non-EU laboratories, indicated with §), the number and percentage of results reported, the percentage of pesticides analysed from the compulsory target list and the number of acceptable z scores. Laboratories reporting a false negative are marked with the symbol  $\Theta$  and laboratories reporting a false positive are marked with a '+'.

Lab Code	No. of pesticides detected	% of pesticides detected	% of pesticides analysed from target list	No. of total z scores	No. of acceptable z scores (z <b>score ≤ 2</b> .0)
12	13	76	61	13	13
18	16	94	86	16	8
19 +	17	100	100	17	17
30	15	88	72	15	15
32 +	17	100	100	17	13
37 Θ+	13	76	74	14	5
44§	14	82	84	14	14
49 Θ	12	71	75	14	12
51	14	82	61	14	14
54	15	88	84	15	15
62	4	24	34	4	4
66	17	100	89	17	17
71	13	76	70	13	13
88	5	29	29	5	4
94 +	17	100	97	17	16
98	14	82	79	14	9
100	16	94	76	16	16
106	11	65	60	11	11
110	14	82	79	14	13

Table 11. Performance of laboratories in Category B

Lab Code	No. of pesticides detected	% of pesticides detected	% of pesticides analysed from target list	No. of total z scores	No. of acceptable z scores (z <b>score ≤ 2</b> .0)
115	16	94	88	16	16
131	12	71	63	12	12
133	15	88	89	15	15
147	13	76	100	17	13
153 +	17	100	100	17	17
157 Θ	14	82	100	17	14
159 <b>Θ</b> +	14	82	100	17	12
179 Θ	12	71	100	17	11
181 Θ	5	29	100	17	4
193	8	47	100	17	6
195 Θ	11	65	100	17	11
203§ Θ	4	24	100	17	2
207 Θ+	15	88	100	17	15
211 Θ	11	65	100	17	11
213 Θ	14	82	100	17	12
215 Θ	14	82	100	17	14
221 Θ	14	82	100	17	14
225 ⊖	10	59	100	17	10
231 Θ	1	6	100	17	1

D Laboratories reporting a false negative result
 + Laboratories reporting a false positive result
 § Non-EU/EFTA laboratories

The AZ<sup>2</sup> graphical representation for EU/EFTA laboratories classified into Category A can be seen in **Appendix 6**. The EU National Reference Laboratories (NRLs) for Fruits and Vegetables have been plotted using a different colour.

# 5. CONCLUSIONS

One hundred and seventy-five laboratories agreed to participate in EUPT-FV-25. Eleven of them did not submit results. From the remaining 164 laboratories that submitted results, 17 did not belong to EU nor EFTA countries, so their results were not considered for the estimation of the assigned value.

Seventeen mandatory and one voluntary pesticides were evaluated in EUPT-FV-25, based on the analysis of melon homogenate. Chlorpyrifos had an assigned value of less than three times its MRRL, so it has not been considered for participant evaluation, and the information shown for this compound is for information purposes only.

Of a total number of 2499 possible determinations from EU/EFTA laboratories (147 laboratories by 17 evaluated pesticides), 93 % were reported, 3 % were not analysed and 4 % were not detected (false negative results). However, the last percentage should be taken with caution, as some laboratories did not select their analytical scope on the platform, which may lead to an increase in the number of false negatives.

The total number of evaluated z scores for mandatory compounds of laboratories from EU/EFTA countries was 2429, with 92 % of them acceptable, 2 % questionable and 6 % unacceptable.

76 % of the EU and EFTA laboratories that submitted results were classified into Category A. Of them, 91 % were classed as 'good', 4 % as 'satisfactory' and 5 % as 'unsatisfactory'.

The robust standard deviation (CV\*) was below 22 % for all the evaluated compounds, with an average value of 16.6 % for the 17 mandatory pesticides evaluated and the voluntary one.

Participation in this year's European Proficiency Test 25 involved at least one laboratory from each Member State. Additionally, laboratories from Iceland, Norway and Switzerland participated as EFTA countries. As laid down in paragraph 2 (h) of Article 94 of Regulation (EU) 2017/625, one of the EURL's duties is to collaborate with non-EU laboratories that are responsible for analysing food and feed samples and to help them improve the quality of their analyses. Non-European laboratories from China, Costa Rica, Egypt, Kenya, Peru, Serbia, Singapore, Tanzania, Thailand, Turkey and United Kingdom participated in EUPT-FV-25.

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The Organiser wishes to give a special thank-you to the University of Almeria for the use of their facilities.

Chlorpyrif (mg	os-methyl /kg)	Cyazofamid (mg/kg)		Diazinon (mg/kg)		Difenoc (mg	onazole /kg)
Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2
0.099	0.093	0.081	0.084	0.099	0.093	0.081	0.084
0.091	0.083	0.075	0.076	0.091	0.083	0.075	0.076
0.093	0.098	0.087	0.078	0.093	0.098	0.087	0.078
0.093	0.084	0.089	0.077	0.093	0.084	0.089	0.077
0.085	0.086	0.073	0.080	0.085	0.086	0.073	0.080
0.094	0.085	0.093	0.080	0.094	0.085	0.093	0.080
0.084	0.083	0.082	0.076	0.084	0.083	0.082	0.076
0.090	0.097	0.081	0.089	0.090	0.097	0.081	0.089
0.099	0.097	0.083	0.086	0.099	0.097	0.083	0.086
0.087	0.085	0.074	0.075	0.087	0.085	0.074	0.075

# APPENDIX 1. Homogeneity

Ethii (mg	rimol J/kg)	Fenaz (mg	aquin /kg)	Fenitrothion (mg/kg)		Flutriafol (mg/kg)	
Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2
0.180	0.180	0.082	0.077	0.085	0.078	0.300	0.320
0.180	0.180	0.076	0.070	0.080	0.072	0.320	0.310
0.180	0.190	0.079	0.083	0.084	0.084	0.330	0.350
0.180	0.180	0.077	0.070	0.083	0.071	0.320	0.330
0.180	0.180	0.071	0.070	0.074	0.073	0.310	0.310
0.180	0.180	0.077	0.070	0.081	0.073	0.310	0.330
0.180	0.180	0.069	0.069	0.074	0.073	0.320	0.330
0.180	0.180	0.074	0.082	0.078	0.088	0.320	0.330
0.170	0.180	0.083	0.081	0.081	0.086	0.320	0.320
0.180	0.180	0.072	0.069	0.074	0.074	0.320	0.300

lma (mg	izalil /kg)	Mandipr (mg,	opamid /kg)	Mepanipyrim (mg/kg)		Metra (mç	fenone j/kg)
Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2
0.100	0.100	0.510	0.510	0.082	0.078	0.520	0.620
0.110	0.110	0.540	0.560	0.079	0.071	0.540	0.620
0.120	0.130	0.540	0.600	0.080	0.087	0.620	0.680
0.130	0.130	0.560	0.550	0.080	0.072	0.590	0.750
0.100	0.098	0.480	0.480	0.072	0.073	0.590	0.630
0.120	0.110	0.510	0.480	0.080	0.072	0.670	0.570
0.110	0.110	0.500	0.500	0.073	0.072	0.560	0.590
0.120	0.120	0.510	0.560	0.077	0.084	0.640	0.650
0.120	0.110	0.520	0.520	0.085	0.083	0.630	0.630
0.110	0.100	0.520	0.540	0.074	0.072	0.620	0.540

The sample numbers used for this test were: 7, 11, 12, 24, 43, 75, 159, 177, 206, 218.

Profe (mç	enofos J/kg)	Proqu (mg	Proquinazid (mg/kg)		Pyriproxyfen (mg/kg)		Thiamethoxam (mg/kg)	
Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2	
0.120	0.120	0.070	0.067	0.240	0.230	0.230	0.230	
0.120	0.110	0.081	0.070	0.260	0.240	0.230	0.240	
0.130	0.130	0.095	0.070	0.300	0.240	0.240	0.240	
0.150	0.120	0.10	0.062	0.290	0.230	0.230	0.240	
0.120	0.110	0.071	0.064	0.230	0.220	0.230	0.230	
0.130	0.110	0.089	0.074	0.290	0.250	0.230	0.230	
0.110	0.110	0.064	0.066	0.230	0.220	0.240	0.250	
0.120	0.130	0.066	0.072	0.230	0.250	0.230	0.230	
0.120	0.130	0.066	0.078	0.230	0.260	0.240	0.240	
0.110	0.110	0.065	0.074	0.240	0.240	0.230	0.240	

Zoxamide (mg/kg)						
Replicate 1	Replicate 2					
0.610	0.640					
0.520	0.520					
0.590	0.580					
0.580	0.570					
0.550	0.550					
0.570	0.610					
0.560	0.560					
0.620	0.640					
0.600	0.610					
0.560	0.560					

# **Voluntary Pesticides**

Novaluron (mg/kg)						
Replicate 1	Replicate 2					
0.095	0.097					
0.083	0.082					
0.087	0.085					
0.096	0.110					
0.086	0.081					
0.092	0.089					
0.077	0.079					
0.087	0.090					
0.100	0.091					
0.083	0.088					

The sample numbers used for this test were: 7, 11, 12, 24, 43, 75, 159, 177, 206, 218.



# APPENDIX 2. Histograms of residue data for each pesticide from EU/EFTA laboratories.









## Results reported by the laboratories for the mandatory pesticides (mg/kg)

and their calculated z score value using FFP-RSD 25 %

Lab Code	Chlorpyrifos methyl	FP-RSD 25 %)	Ciazofamid	-P-RSD 25 %)	Diazinon	-P-RSD 25 %)	Difenoconazol	-P-RSD 25 %)	Ethirimol	-P-RSD 25 %)	Fenazaquin	-P-RSD 25 %)	Fenitrothion	-P-RSD 25 %)	Flutriafol	-P-RSD 25 %)	Imazali	FP-RSD 25 %)
MRRL (mg/kg)	0.005	z score (FF	0.010	z score (F	0.005	z score (F	0.010	z score (FF	0.010	z score (FF	0.010	z score (FF	0.010	z score (FF	0.010	z score (FF	0.005	z score (FF
Robust mean (mg/kg)	0.090		0.083		0.104		0.222		0.388		0.078		0.085		0.304		0.086	
7	0.0702	-0.9	0.0621	-1.0	0.0818	-0.9	0.159	-1.1	0.269	-1.2	0.068	-0.5	0.0633	-1.0	0.166	-1.8	0.0592	-1.2
9	0.0736	-0.7	0.066	-0.8	0.0953	-0.9	0.225	0.0	0.403	0.2	0.0566	-1.1	0.0735	-0.5	0.28	-0.3	0.0891	0.2
10	0.0764	-0.6	0.0749	-0.4	0.0957	-0.3	0.208	-0.3	0.458	0.7	0.08	0.1	0.0645	-1.0	0.295	-0.1	0.0849	0.0
11	0.094	0.2	0.082	-0.1	0.09	-0.5	0.255	0.6	0.345	-0.4	0.07	-0.4	0.095	0.5	0.32	0.2	0.1	0.7
12	0.095	2.7	0.085	1.3	0.114	0.4	0.24	1.9	0.3673	-0.2	0.08	1.8	0.1995	> 5.0	0.3333	-0.1	0.079	-0.3
14	0.091	0.0	0.081	-0.1	0.104	0.0	0.202	-0.4	0.412	0.3	0.086	0.4	0.07	-0.7	0.321	0.2	0.083	-0.1
15	0.093	0.1	0.079	-0.2	0.108	0.2	0.22	0.0	0.362	-0.3	0.078	0.0	0.085	0.0	0.298	-0.1	0.086	0.0
17	0.0829	-0.3	0.0720	-0.3	0.0938	-0.4	0.23	-0.4	0.377	-0.9	0.0409	-1.9	0.0706	-0.7	0.306	0.0	0.0938	0.4
18	0.095	0.2	NA		0.095	-0.3	0.095	-2.3	0.095	-3.0	0.095	0.8	0.095	0.5	0.095	-2.8	0.095	0.4
19	0.102	0.5	0.0876	0.2	0.118	0.5	0.222	0.0	0.494	1.1	0.0869	0.4	0.0861	0.1	0.306	0.0	0.0781	-0.4
20	0.097	0.3	0.078	-0.3	0.099	-0.2	0.208	0.2	0.37	-0.2	0.088	0.2	0.135	0.9	0.305	0.0	0.092	0.3
22	0.0939	0.2	0.0876	0.2	0.103	0.0	0.238	0.3	0.292	-1.0	0.0804	0.1	0.104	0.9	0.328	0.3	0.0994	0.6
23	0.0875	-0.1	0.0945	0.5	0.106	0.1	0.219	-0.1	0.328	-0.6	0.0885	0.5	0.0825	-0.1	0.29	-0.2	0.0875	0.1
24	0.069	-0.9	0.081	-0.1	0.077	-1.0	0.24	U.3 No	Results	-1.4 Report	0.072 ted	-0.3	0.062	1.1	0.29	-0.2	0.067	-0.9
26	0.099	0.4	0.08	-0.2	0.11	0.2	0.21	-0.2	0.35	-0.4	0.083	0.2	0.08	-0.2	0.28	-0.3	0.057	-1.3
27	0.0781	-0.5	0.0966	0.6	0.0951	-0.3	0.18	-0.8	0.383	0.0	0.0651	-0.7	0.0722	-0.6	0.276	-0.4	0.0763	-0.4
28	0.088	-0.1	0.082	-0.1	0.096	-0.3	0.211	-0.2	0.34	-0.5	0.08	0.1	0.07	-0.7	0.278	-0.3	0.074	-0.5
30	0.092	0.1	NA	0.1	0.102	-0.1	0.186	-0.7	NA	0.2	0.059	-1.0	0.059	-1.2	0.306	0.0	0.089	0.2
31	0.08	-0.5	0.092	0.4	0.105	0.0	0.272	0.9	0.424	0.4	0.064	-0.7	0.074	-0.5	0.317	0.2	0.079	-0.3
32	0.156	-0.3	0.081	-0.1	0.144	-0.2	0.22	0.0	0.168	-2.3	0.087	-0.8	0.185	4.7	0.129	-2.3	0.062	-1.1
34	0.092	0.1	0.096	0.6	0.11	0.2	0.23	0.1	0.34	-0.5	0.07	-0.4	0.095	0.5	0.303	0.0	0.09	0.2
35	0.1	0.4	0.0996	0.8	0.109	0.2	0.243	0.4	0.212	-1.8	0.0814	0.2	0.088	0.2	0.332	0.4	0.06	-1.2
36	0.087	-0.1	0.089	0.3	0.101	-0.1	0.225	2.3	0.389	-0.3	0.084	-0.7	0.085	-2.4	0.284	-0.3	0.091	3.6
38	0.102	0.5	0.101	0.9	0.122	0.7	0.248	0.5	0.453	0.7	0.081	0.1	0.12	1.7	0.39	1.1	0.116	1.4
39	0.0871	-0.1	0.0937	0.5	0.0999	-0.2	0.213	-0.2	0.345	-0.4	0.0801	0.1	0.0802	-0.2	0.301	0.0	0.0907	0.2
40	0.106	0.7	0.111	-0.2	0.281	> 5.0	0.231	0.2	0.342	-0.5	0.086	-0.3	0.092	1.5	0.297	-0.1	0.097	-0.1
42	0.102	0.5	0.101	0.9	0.125	0.8	0.197	-0.5	0.528	1.4	0.099	1.1	0.072	-0.6	0.288	-0.2	0.079	-0.3
43	0.12	1.3	0.1	0.8	0.14	1.4	0.27	0.9	0.4	0.1	0.14	3.1	0.83	> 5.0	0.39	1.1	0.1	0.7
44	0.0997	0.4	0.081	-0.1	0.115	0.4	0.192	-0.5	0.377	-0.1	0.0749	-0.2	0.103	2.3	0.359	0.7	0.0678	-0.8
46	0.142	2.3	0.07	-0.6	0.125	0.8	0.384	2.9	0.393	0.1	0.106	1.4	0.295	> 5.0	0.441	1.8	ND	-4.0
47	0.079	-0.5	0.136	2.5	0.072	-1.2	0.12	-1.8	0.281	-1.1	0.069	-0.5	ND	-4.0	0.209	-1.3	0.045	-1.9
48	0.071 ND	-0.9	0.081 NA	-0.1	0.097	-0.3	0.226	0.1	0.283 NA	-1.1	0.071	-0.4	0.086 ND	-4.0	0.154	-2.0	0.076	-0.5
50	0.081	-0.4	0.079	-0.2	0.108	0.2	0.22	0.0	0.328	-0.6	0.08	0.1	0.094	0.4	0.341	0.5	0.094	0.4
51	0.09	0.0	NA		0.098	-0.2	0.148	-1.3	NA		0.082	0.2	0.091	0.3	0.34	0.5	0.088	0.1
52	0.0875	-0.1	0.0859	0.1	0.0993	-0.2	0.2	-0.4	0.329	-0.6	0.0735	-0.3	0.079	-0.3	0.284	-0.3	0.0815	-0.2
54	0.093	0.1	0.0723	0.3	0.11	0.2	0.22	0.0	0.35	-0.4	0.084	0.3	0.085	0.0	0.3	-0.1	0.086	0.0
55	0.091	0.0	0.072	-0.5	0.098	-0.2	0.26	0.7	0.26	-1.3	0.081	0.1	0.082	-0.1	0.33	0.3	0.1	0.7
56	0.1	0.4	0.077	-0.3	0.108	0.2	0.211	-0.2	0.43	0.4	0.087	0.4	0.111	-0.4	0.326	0.3	0.097	0.5
58	0.09	0.0	0.085	0.1	0.105	0.2	0.223	0.3	0.435	0.5	0.075	-0.2	0.07	-0.7	0.313	0.2	0.1	0.7
59	0.077	-0.6	0.103	1.0	0.076	-1.1	0.255	0.6	0.267	-1.2	0.066	-0.6	ND	-4.0	0.353	0.6	0.078	-0.4
60	0.0814	-0.4	0.0876	0.2	0.0913	-0.5	0.233	0.2	0.259	-1.3	0.0743	-0.2	0.0625	-1.0	0.276	-0.4	0.0877	0.1
62	0.060	1.7	NA	0.0	0.113	0.2	NA	0.0	NA	-0.0	NA	0.1	0.116	1.5	NA	0.7	NA	1.1
63	0.0825	-0.3	0.217	> 5.0	0.105	0.0	0.227	0.1	0.083	-3.1	0.032	-2.4	0.0748	-0.5	0.251	-0.7	0.0843	-0.1
64	0.089	-0.1	NA 0.0E9	.1.2	0.122	0.7	0.212	-0.2	0.404	0.2	0.097	0.9	0.071	-0.6	0.343	0.5	0.079	-0.3
66	0.0889	-0.1	0.000	0.4	0.107	0.1	0.22	-0.1	0.35	0.0	0.078	-0.3	0.077	0.3	0.325	-0.2	0.078	-0.4
67	0.0808	-0.4	0.0754	-0.4	0.102	-0.1	0.224	0.0	0.434	0.5	0.0739	-0.2	0.0875	0.1	0.293	-0.1	0.0761	-0.4
68	0.0594	-1.4	0.0799	-0.2	0.0993	-0.2	0.22	0.0	0.579	2.0	0.0682	-0.5	0.0871	0.1	0.031	-3.6	0.0667	-0.9
70	0.047	-1.9	0.068	-0.7	0.066	-0.2	0.17	-0.9	0.32	-0.7	0.078	-0.8	0.049	-1.7	0.23	-1.0	0.096	0.5
71	0.07	-0.9	NA		0.08	-0.9	0.3	1.4	0.35	-0.4	0.08	0.1	0.05	-1.6	0.23	-1.0	0.08	-0.3
72	0.00	0.0	0.075	0.1	0.100	0.0	0.10	No	Results	Report	ied	0.1	0.00	0.0	0.00	0.0	0.07	
74	0.09	0.0	0.075	-0.4	0.108	0.2	0.18	-0.8	0.262	0.5	0.086	0.4	0.08	-0.2	0.28	-0.3	0.006	-0.7

Lab Code	Chlorpyrifos methyl	:P-RSD 25 %)	Ciazofamid	:P-RSD 25 %)	Diazinon	:P-RSD 25 %)	Difenoconazol	:P-RSD 25 %)	Ethirimol	:P-RSD 25 %)	Fenazaquin	:P-RSD 25 %)	Fenitrothion	:P-RSD 25 %)	Flutriafol	:P-RSD 25 %)	Imazalii	:P-RSD 25 %)
MRRL (mg/kg)	0.005	z score (F	0.010	z score (F	0.005	z score (F	0.010	z score (F	0.010	z score (F	0.010	z score (F	0.010	z score (F	0.010	z score (F	0.005	z score (FF
Robust mean (mg/kg)	0.090		0.083		0.104		0.222		0.388		0.078		0.085		0.304		0.086	
75	0.104	0.6	0.093	0.5	0.117	0.5	0.255	0.6	0.4	0.1	0.092	0.7	0.098	0.6	0.33	0.3	0.085	0.0
76	0.097	0.3	0.0797	-0.2	0.102	-0.1	0.254	0.6	0.438	0.5	0.084 ND	-4.0	0.0673	-0.8	0.339	0.5	0.116	1.4 0.6
78	0.0774	-0.6	0.0949	0.6	0.116	0.5	0.247	0.4	0.425	0.4	0.0586	-1.0	0.067	-0.8	0.311	0.1	0.072	-0.6
79	0.1	0.4	0.076	-0.3	0.096	-0.3	0.249	0.5	0.421	0.3	0.076	-0.1	0.074	-0.5	0.316	0.2	0.102	0.8
80	0.0719	-0.8	0.0592	-1.2	0.0784	-0.2	0.235	0.2	0.894	> 5.0	0.0847	0.3	0.0978	0.0	0.281	-0.3	0.0624	1.1
82	0.099	0.4	0.1	0.8	0.112	0.3	0.222	0.0	0.359	-0.3	0.076	-0.1	0.104	0.9	0.311	0.1	0.06	-1.2
83	0.119	-0.8	0.103	1.0	0.13	-0.9	0.265	-0.8	0.412	0.3	0.0865	-0.9	0.127	2.0	0.382	1.0	0.0957	0.5
85	0.0828	-0.3	0.08	-0.2	0.098	-0.2	0.1725	-0.9	0.3813	-0.1	0.0835	0.3	0.0838	0.0	0.2868	-0.2	0.0798	-0.3
86	0.097	0.3	0.088	0.2	0.117	0.5	0.224	0.0	0.348	-0.4	0.09	0.6	0.071	-0.6	0.293	-0.1	0.067	-0.9
87	0.099	2.0	0.144 NA	2.9	0.116	0.5	0.287	-0.2	0.545 NA	1.0	0.096 NA	0.9	0.098 NA	0.0	NA	2.1	0.054	-1.5
89	0.0801	-0.5	0.0599	-1.1	0.0767	-1.0	0.171	-0.9	0.448	0.6	0.051	-1.4	0.0744	-0.5	ND	-4.0	0.0578	-1.3
90 91	0.111	0.9	0.137	2.6	0.127	-0.4	0.28	-0.2	0.44	-0.3	0.077	-0.1	0.086	0.1	0.32	0.2	0.104	0.9
92	0.099	0.4	0.087	0.2	0.15	1.8	0.202	-0.4	0.421	0.3	0.092	0.7	0.093	0.4	0.272	-0.3	0.078	-0.4
93	0.085	-0.2	0.094	0.5	0.098	-0.2	0.316	1.7	0.344	-0.5	0.073	-0.3	0.099	0.7	0.298	-0.1	0.103	0.8
94	0.066	-0.3	0.085	-1.0	0.04	-2.5	0.22	-0.7	0.339	-0.5	0.062	-0.8	0.07	-0.7	0.316	0.2	0.078	-0.4
96	0.07	-0.9	0.073	-0.5	0.081	-0.9	0.18	-0.8	0.35	-0.4	0.063	-0.8	0.064	-1.0	0.24	-0.8	0.039	-2.2
97	0.111	0.9	0.103 NA	1.0	0.0745	-1.1	0.276	1.0	0.443	0.6	0.0886	0.5	0.0979	0.6	0.349	0.6	0.108	1.0
99	0.096	0.3	0.073	-0.5	0.137	0.2	0.199	-0.4	0.383	0.0	0.073	-0.2	0.087	0.1	0.291	-0.2	0.077	-0.4
100	0.116	1.1	0.088	0.2	0.121	0.7	0.18	-0.8	0.328	-0.6	0.082	0.2	0.089	0.2	0.341	0.5	0.102	0.8
101	0.081	-0.4	0.078	-0.2	0.093	-0.4	0.241	<u>0.3</u> 4.7	0.462	0.8	0.05	-1.4	0.047	-1.8	0.322	0.2	0.086	-0.6
103	0.0769	-0.6	0.0665	-0.8	0.0836	-0.8	0.156	-1.2	0.384	0.0	0.0643	-0.7	0.0588	-1.2	0.26	-0.6	0.0582	-1.3
104	0.098	0.3	0.0836	0.0	0.1213	0.7	0.2478	0.5	0.3789	-0.1	0.0729	-0.3	0.0848	0.0	0.2913	-0.2	0.0694	-0.8
105	0.073	-0.8	NA	-0.7	0.003	0.2	0.208	-0.3	NA	1.5	NA	0.7	0.082	-0.1	0.301	0.0	0.1	0.7
107	0.099	0.4	0.088	0.2	0.118	0.5	0.19	-0.6	0.379	-0.1	0.091	0.6	0.103	0.9	0.359	0.7	0.086	0.0
108	0.092	0.1	0.09	0.3	0.112	0.3	0.209	-0.2	0.519	0.9	0.076	-0.1	0.076	-0.4	0.229	-1.0	0.105	-1.5
110	0.083	-0.3	NA		0.109	0.2	0.307	1.5	0.229	-1.6	0.084	0.3	0.095	0.5	0.2	-1.4	0.176	4.2
111	0.0687	-1.0	0.0723	-0.5	0.0897	-0.5	0.175	-0.9	0.301	-0.9	0.0637	-0.8	0.0847	0.0	0.243	-0.8	0.057	-1.3
112	0.0837	-0.3	0.0796	-0.3	0.127	-0.1	0.22	-0.4	0.355	-0.3	0.0789	0.2	0.098	0.3	0.348	-0.2	0.0497	-0.1
114	0.095	0.2	0.08	-0.2	0.106	0.1	0.25	0.5	0.39	0.0	0.088	0.5	0.073	-0.6	0.31	0.1	0.095	0.4
115	0.071	-0.9	0.09	0.3	0.09	-0.5	0.22	-0.4	NA 0.33	-0.6	0.075	-0.2	0.075	-0.5	0.3	-0.1	0.077	-0.4
117	0.11	0.9	0.082	-0.1	0.11	0.2	0.237	0.3	0.441	0.6	0.078	0.0	0.09	0.3	0.3	-0.1	0.095	0.4
118	0.0414	-2.2	0.0529	-1.5	0.08603	-0.7	0.181	-0.7	0.425	0.4	0.0624	-0.8	0.08001	-0.2	0.292	-0.2	0.0682	-0.8
121	0.0807	-0.4	0.102	-0.7	0.0594	0.0	0.190	0.4	0.380	1.1	0.0500	0.3	0.0711	0.2	0.308	-0.1	0.0809	0.2
123	0.092	0.1	0.078	-0.2	0.112	0.3	0.175	-0.9	0.454	0.7	0.08	0.1	0.084	0.0	0.299	-0.1	0.061	-1.2
125	0.096	0.3	0.055	-1.4	0.104	0.0	0.143	-1.4	0.374	-0.1	0.081	0.1	0.092	-0.5	0.307	-0.2	0.097	0.7
129	0.082	-0.4	0.079	-0.2	0.1	-0.2	0.187	-0.6	0.433	0.5	0.082	0.2	0.074	-0.5	0.291	-0.2	0.071	-0.7
131	NA	0.0	0.062	-1.0	0.1	-0.2	0.246	0.4	0.288	-1.0	0.05	-1.4	NA 0.082	-0.1	0.293	-0.1	0.081	-0.2
135	0.073	-0.8	0.067	-0.1	0.093	-0.2	0.229	0.1	0.33	-0.6	0.1	1.1	0.082	-0.1	0.309	0.5	0.083	-0.1
137	0.0997	0.4	0.104	1.0	0.115	0.4	0.24	0.3	0.33	-0.6	0.0691	-0.5	0.0869	0.1	0.355	0.7	0.103	0.8
139	0.086	-0.2	0.076	-0.3	0.1	-0.2	0.22	0.0	0.71 Results	3.3 Report	0.078 red	0.0	0.076	-0.4	0.3	-0.1	0.075	-0.5
143	0.102	0.5	0.0863	0.2	0.108	0.2	0.261	0.7	0.253	-1.4	0.0954	0.9	0.103	0.9	0.351	0.6	0.0788	-0.3
145	0.059	-1.4	0.09	0.3	0.114	0.4	0.234	0.2	0.431	0.4	0.086	0.4	0.059	-1.2	0.347	0.6	0.115	1.4
147	0.083	-0.3	0.089	0.3	0.106	0.1	0.158	0.3	0.477	1.2	0.064	0.3	0.103	-4.0	0.332	0.4	0.092	-1.6
151	0.082	-0.4	0.079	-0.2	0.127	0.9	0.211	-0.2	0.314	-0.8	0.077	-0.1	0.074	-0.5	0.251	-0.7	0.08	-0.3
153	0.081	-0.4	0.082	-0.1	0.09	-0.5	0.215	-0.1	0.359	-0.3	0.091	0.6	0.084	0.0	0.251	-0.7	0.109	1.1
157	0.123	1.4	ND	-4.0	0.122	0.7	0.207	0.9	ND	-4.0	0.089	0.5	0.101	0.8	0.303	0.0	0.066	-0.9
159	0.03	-2.7	0.08	-0.2	0.107	0.1	0.23	0.1	ND	-4.0	0.053	-1.3	0.07	-0.7	0.37	0.9	0.085	0.0
161	0.114	-1.8	0.1	-1.4	0.094	-0.4	0.274	-0.8	0.638	-1.5	0.091	-1.4	0.101	-0.2	0.333	-2.5	0.109	-1.9
165	0.131	1.8	0.0868	0.2	0.123	0.7	0.228	0.1	0.369	-0.2	0.0859	0.4	0.104	0.9	0.327	0.3	0.0947	0.4
167	0.09	0.0	0.08	-0.2	0.12	0.6	0.29	1.2	0.19	-2.0	0.08	0.1	0.08	-0.2	0.35	0.6	0.11	1.1
171	0.099	1.2	0.123	1.9	0.104	0.0	0.200	1.0	0.470	0.9	0.1078	1.5	0.11	1.2	0.275	1.3	0.073	1.8
173	0.074	-0.7	ND	-4.0	0.084	-0.8	0.166	-1.0	0.321	-0.7	0.063	-0.8	0.061	-1.1	0.21	-1.2	0.058	-1.3

Lab Code	Chlorpyrifos methyl	FP-RSD 25 %)	Ciazofamid	FP-RSD 25 %)	Diazinon	FP-RSD 25 %)	Difenoconazol	FP-RSD 25 %)	Ethirimol	FP-RSD 25 %)	Fenazaquin	FP-RSD 25 %)	Fenitrothion	FP-RSD 25 %)	Flutriafol	FP-RSD 25 %)	Imazalil	FP-RSD 25 %)
MRRL (mg/kg)	0.005	z score (Fl	0.010	z score (Fl	0.005	z score (Fl	0.010	z score (Fl	0.010	z score (Fl	0.010	z score (Fl	0.010	z score (Fl	0.010	z score (Fl	0.005	z score (Fl
Robust mean (mg/kg)	0.090		0.083		0.104		0.222		0.388		0.078		0.085		0.304		0.086	
175	0.083	-0.3	0.103	1.0	0.112	0.3	0.262	0.7	0.466	0.8	0.103	1.3	0.106	1.0	0.317	0.2	0.08	-0.3
177	0.095	0.2	0.079	-0.2	0.102	-0.1	0.224	0.0	0.203	-1.9	0.087	0.4	0.093	0.4	0.29	-0.2	0.084	-0.1
179	0.09	0.0	ND	-4.0	0.089	-0.6	0.171	-0.9	0.584	2.0	0.074	-0.2	0.076	-0.4	0.32	0.2	ND	-4.0
181	0.14	2.2	ND	-4.0	ND	-4.0	ND	-4.0	ND	-4.0	ND	-4.0	0.092	0.3	0.33	0.3	ND	-4.0
183	0.116	1.1	0.097	0.7	0.118	0.5	0.238	0.3	0.345	-0.4	0.09	0.6	0.105	1.0	0.318	0.2	0.112	1.2
185	0.1279	1.7	0.7945	> 5.0	0.1378	1.3	0.4841	4.7	0.5655	1.8	ND	-4.0	0.0938	0.4	0.4746	2.2	0.1565	3.3
187	0.093	0.1	0.284	> 5.0	0.101	-0.1	0.246	0.4	0.365	-0.2	0.071	-0.4	0.088	0.2	0.297	-0.1	0.067	-0.9
189	0.085	-0.2	0.085	0.1	0.11	0.2	0.317	1.7	0.447	0.6	0.078	0.0	0.089	0.2	0.325	0.3	0.073	-0.6
191	74	> 5.0	84	> 5.0	90	> 5.0	199	> 5.0	405	> 5.0	70	> 5.0	81	> 5.0	281	> 5.0	90	> 5.0
193	0.072	-0.8	ND	-4.0	0.0525	-2.0	0.2345	0.2	ND	-4.0	0.0965	0.9	0.0315	-2.5	ND	-4.0	0.0715	-0.7
195	0.096	0.3	ND	-4.0	0.112	0.3	0.161	-1.1	ND	-4.0	0.065	-0.7	0.053	-1.5	0.256	-0.6	0.071	-0.7
197								No	Results	Report	ed							
199	0.117	1.2	0.087	0.2	0.112	0.3	0.253	0.5	0.419	0.3	0.101	1.2	0.13	2.1	0.366	0.8	0.11	1.1
201	0.082	-0.4	0.078	-0.2	0.105	0.0	0.241	0.3	0.318	-0.7	0.065	-0.7	0.097	0.6	0.195	-1.4	0.103	0.8
203	0.07	-0.9	ND	-4.0	ND	-4.0	ND	-4.0	ND	-4.0	ND	-4.0	0.03	-2.6	0.02	-3.7	ND	-4.0
205								No	Results	Report	ed							
207	0.089	-0.1	ND	-4.0	0.101	-0.1	0.144	-1.4	0.416	0.3	0.085	0.3	0.081	-0.2	0.195	-1.4	0.053	-1.5
209	0.097	0.3	0.08	-0.2	0.107	0.1	0.206	-0.3	0.37	-0.2	0.076	-0.1	0.089	0.2	0.305	0.0	0.08	-0.3
211	0.076	-0.6	ND	-4.0	0.093	-0.4	0.178	-0.8	ND	-4.0	0.065	-0.7	0.071	-0.6	0.277	-0.4	ND	-4.0
213	ND	-4.0	0.136	2.5	0.098	-0.2	0.2	-0.4	0.418	0.3	0.082	0.2	ND	-4.0	0.297	-0.1	0.086	0.0
215	0.089	-0.1	0.073	-0.5	0.088	-0.6	0.159	-1.1	0.379	-0.1	0.098	1.0	ND	-4.0	0.304	0.0	0.069	-0.8
217	0.083	-0.3	0.065	-0.9	0.098	-0.2	0.209	-0.2	0.391	0.0	0.074	-0.2	0.075	-0.5	0.263	-0.5	0.08	-0.3
219	0.084	-0.3	0.083	0.0	0.11	0.2	0.22	0.0	0.31	-0.8	0.073	-0.3	0.067	-0.8	0.28	-0.3	0.081	-0.2
221	0.085	-0.2	0.112	1.4	0.085	-0.7	0.244	0.4	0.5	1.2	0.064	-0.7	0.07	-0.7	0.31	0.1	ND	-4.0
223	0.088	-0.1	0.082	-0.1	0.114	0.4	0.186	-0.7	0.426	0.4	0.074	-0.2	0.095	0.5	0.283	-0.3	0.094	0.4
225	0.1	0.4	0.085	0.1	0.12	0.6	0.21	-0.2	ND	-4.0	0.076	-0.1	0.096	0.5	ND	-4.0	0.098	0.6
227	0.15	2.6	0.092	0.4	0.16	2.2	0.259	0.7	0.464	0.8	0.093	0.7	0.105	1.0	0.345	0.5	0.086	0.0
229	0.088	-0.1	0.086	0.1	0.094	-0.4	0.22	0.0	0.45	0.6	0.082	0.2	0.079	-0.3	0.306	0.0	0.097	0.5
231	0.126	1.6	ND	-4.0	ND	-4.0	ND	-4.0	ND	-4.0		-4.0	ND	-4.0	ND	-4.0	ND	-4.0
232								NC	Results	Report	ed							
233								INC	Results	Report	ea.							
234								INC	Results	Report	ea.							
230								INC	Results	поран	ed							
237	No Results Reported																	
200					NA: Not	analys	ed	ND:	Not det	acted	(Fako n	orativ	۵)					

Lab Code	Mandipropamid	P-RSD 25 %)	Mepanipyrim	P-RSD 25 %)	Metrafenone	P-RSD 25 %)	Profenofos	P-RSD 25 %)	Proquinazid	P-RSD 25 %)	Pyriproxyfen	P-RSD 25 %)	Thiamethoxam	P-RSD 25 %)	Zoxamide	P-RSD 25 %)
MRRL (mg/kg)	0.010	z score (FF	0.010	z score (FF	0.010	z score (FF	0.010	z score (FF	0.010	z score (FF	0.010	z score (FF	0.010	z score (FF	0.010	z score (FF
Robust mean (mg/kg)	0.451		0.081		0.562		0.117		0.079		0.245		0.208		0.457	
7	0.221	-2.0	0.0622	-0.9	0.478	-0.6	0.0987	-0.6	0.0642	-0.7	0.17	-1.2	0.143	-1.3	0.326	-1.1
8	0.365	-0.8	0.076	-0.3	0.588	0.2	0.0852	-1.1	0.0743	-0.2	0.202	-0.7	0.238	0.6	0.461	0.0
10	0.498	0.4	0.0743	-0.7	0.661	0.7	0.124	-0.5	0.0663	-0.6	0.203	-0.3	0.209	0.0	0.400	0.1
11	0.388	-0.6	0.087	0.3	0.65	0.6	0.128	0.4	0.089	0.5	0.29	0.7	0.222	0.3	0.421	-0.3
12	0.48	0.3	0.079	-0.1	NA		0.12	0.1	NA		0.263	0.3	0.252	0.8	NA	
13	0.6189	1.5	0.0878	0.3	0.7301	1.2	0.1303	0.4	0.0521	-1.4	0.2392	-0.1	0.1788	-0.6	0.5431	0.8
14	0.399	-0.5	0.082	0.0	0.511	-0.4	0.113	-0.1	0.083	0.2	0.235	-0.2	0.26	1.0	0.408	-0.4
15	0.505	-0.1	0.085	-0.2	0.554	-0.1	0.114	-0.1	0.08	-0.2	0.233	-0.2	0.208	-0.1	0.453	-0.2
17	0.448	0.0	0.0787	-0.1	0.503	-0.4	0.107	-0.3	0.0646	-0.7	0.22	-0.4	0.227	0.4	0.417	-0.3
18	0.095	-3.2	0.095	0.7	0.095	-3.3	0.095	-0.8	0.095	0.8	0.095	-2.5	0.095	-2.2	0.095	-3.2
19	0.469	0.2	0.0933	0.6	0.655	0.7	0.13	0.4	0.0842	0.3	0.249	0.1	0.22	0.2	0.484	0.2
20	0.394	-0.5	0.079	-0.1	0.548	-0.1	0.104	-0.4	0.067	-0.6	0.206	-0.6	0.22	0.2	0.432	-0.2
21	0.495	-0.6	0.0811	0.0	0.632	0.5	0.14	0.8	0.079	0.0	0.19	-0.9	0.100	-0.4	0.464	-0.3
23	0.372	-0.7	0.0905	0.4	0.533	-0.2	0.128	0.4	0.096	0.9	0.231	-0.2	0.193	-0.3	0.433	-0.2
24	0.48	0.3	0.084	0.1	0.42	-1.0	0.11	-0.2	0.058	-1.1	0.18	-1.1	0.17	-0.7	0.42	-0.3
25							No	Result	s Reporte	ed						
26	0.4	-0.5	0.087	0.3	0.59	0.2	0.11	-0.2	0.086	0.4	0.23	-0.2	0.18	-0.5	0.44	-0.1
27	0.385	-0.0	0.0718	-0.5	0.516	-0.3	0.0944	-0.8	0.0677	-0.0	0.205	-0.7	0.215	-0.1	0.375	-0.7
29	0.419	-0.3	0.0799	-0.1	0.555	-0.1	0.114	-0.1	0.0822	0.2	0.264	0.3	0.199	-0.2	0.487	0.3
30	0.521	0.6	0.078	-0.2	0.422	-1.0	0.101	-0.6	0.071	-0.4	0.226	-0.3	0.213	0.1	0.492	0.3
31	0.512	0.5	0.102	1.0	0.611	0.3	0.13	0.4	0.155	3.9	0.239	-0.1	0.235	0.5	0.583	1.1
32	0.313	-1.2	0.091	0.5	0.484	-0.6	0.117	0.0	0.066	-0.6	0.257	0.2	0.245	0.7	0.493	0.3
33	0.43	-0.2	0.075	-0.3	0.54	-0.2	0.132	-0.2	0.065	-0.7	0.21	-0.0	0.2	-0.2	0.42	-0.3
35	0.36	-0.8	0.0814	0.0	0.544	-0.1	0.113	-0.1	0.0791	0.0	0.253	0.1	0.213	0.1	0.442	-0.1
36	0.48	0.3	0.081	0.0	0.576	0.1	0.127	0.3	0.084	0.3	0.239	-0.1	0.221	0.2	0.387	-0.6
37	0.751	2.7	0.071	-0.5	NA		NA		NA		0.236	-0.2	ND	-4.0	0.668	1.8
38	0.482	0.3	0.082	0.0	0.604	0.3	0.131	0.5	0.089	0.5	0.367	2.0	0.229	0.4	0.554	0.9
40	0.412	-0.3	0.0859	0.2	0.554	-0.1	0.137	> 5.0	0.0741	-0.2	0.204	0.3	0.222	4.2	0.348	-1.0
41	0.454	0.0	0.082	0.0	0.576	0.1	0.13	0.4	0.078	0.0	0.27	0.4	0.211	0.1	0.475	0.2
42	0.512	0.5	0.08	-0.1	0.571	0.1	0.128	0.4	0.078	0.0	0.278	0.5	0.207	0.0	0.475	0.2
43	0.52	0.6	0.1	0.9	0.66	0.7	0.13	0.4	0.11	1.6	0.32	1.2	0.23	0.4	0.51	0.5
44	0.44	-0.1	0.0638	-0.9	NA 0.(7	0.0	0.126	0.3	NA	0.5	0.212	-0.5	0.175	-0.6	0.349	-0.9
45	0.568	-0.4	0.081	2.0	0.67	0.8	0.116	> 5.0	0.069	-0.5	0.286	-0.5	0.223	-0.3	0.449	-0.1
47	0.241	-1.9	0.049	-1.6	0.449	-0.8	0.115	-0.1	0.029	-2.5	0.151	-1.5	0.164	-0.8	0.301	-1.4
48	0.399	-0.5	0.068	-0.7	0.352	-1.5	0.132	0.5	0.047	-1.6	0.274	0.5	0.194	-0.3	0.24	-1.9
49	0.253	-1.8	0.066	-0.8	0.454	-0.8	0.101	-0.6	NA		0.142	-1.7	0.184	-0.5	0.242	-1.9
50	0.398	-0.5	0.094	0.6	0.583	0.1	0.124	0.2	0.073	-0.3	0.238	-0.1	0.22	0.2	0.442	-0.1
52	0.478	-0.4	0.0853	0.0	0.552	-0.1	0.129	0.4	0.0768	-0.1	0.273	-0.7	0.158	-0.3	0.323	-0.6
53	0.47	0.2	0.0667	-0.7	0.717	1.1	0.127	0.3	0.076	-0.1	0.248	0.0	0.237	0.6	0.488	0.3
54	NA		0.076	-0.3	0.58	0.1	0.12	0.1	NA		0.24	-0.1	0.21	0.0	0.48	0.2
55	0.46	0.1	0.086	0.2	0.59	0.2	0.12	0.1	0.069	-0.5	0.26	0.2	0.15	-1.1	0.24	-1.9
56	0.454	0.0	0.083	0.1	0.627	0.5	0.123	0.2	0.08	0.1	0.292	0.8	0.22	0.2	0.462	0.0
58	0.462	0.3	0.0749	-0.5	0.59	0.2	0.115	-0.1	0.0790	0.0	0.246	0.0	0.218	0.2	0.425	-0.3
59	0.519	0.6	0.046	-1.7	0.675	0.8	0.146	1.0	0.087	0.4	0.243	0.0	0.262	1.0	0.521	0.6
60	0.454	0.0	0.0898	0.4	0.55	-0.1	0.123	0.2	0.0808	0.1	0.208	-0.6	0.187	-0.4	0.447	-0.1
61	0.51	0.5	0.077	-0.2	0.61	0.3	0.13	0.4	0.079	0.0	0.25	0.1	0.21	0.0	0.42	-0.3
62	NA	0.1	NA	1.0	NA	2.1	0.149	1.1	NA	1 /	NA	1.4	NA	0.1	NA 0.20	0 (
64	0.487	0.1	0.0017	-0.3	0.271	-2.1	0.100	-0.4	0.0481	-1.6	0.157	-1.4	0.212	0.1	0.39	-0.6
65	0.45	0.0	0.08	-0.1	0.575	0.1	0.125	0.3	NA	0.1	0.278	0.5	0.225	0.3	0.59	1.2
66	0.503	0.5	0.0853	0.2	0.606	0.3	0.118	0.0	0.0893	0.5	0.314	1.1	0.195	-0.3	0.493	0.3
67	0.529	0.7	0.0712	-0.5	0.674	0.8	0.104	-0.4	0.0702	-0.4	0.242	-0.1	0.219	0.2	0.515	0.5
68	0.415	-0.3	0.0734	-0.4	0.569	0.0	0.103	-0.5	0.082	0.2	0.232	-0.2	0.235	0.5	0.423	-0.3
70	0.37	-0.7	0.093	0.0	0.34	-1.0	0.12	0.1	0.068	-0.5	0.276	0.2	0.19	-0.3	0.39	-0.6
71	0.34	-1.0	0.08	-0.1	NA	0.0	0.08	-1.3	NA		NA	5.5	0.19	-0.3	0.36	-0.8
72							No	Result	s Reporte	ed						
73	0.8	3.1	0.08	-0.1	0.49	-0.5	0.095	-0.8	0.078	0.0	0.175	-1.1	0.18	-0.5	0.38	-0.7
74	0.343	-1.0	0.0758	-0.3	0.553	-0.1	0.117	0.0	0.0832	0.2	0.246	0.0	0.186	-0.4	0.406	-0.4
76	0.484	0.3	0.093	0.0	0.65	0.5	0.117	0.0	0.0813	0.4	0.28	1.1	0.242	0.7	0.493	0.3
77	0.469	0.2	0.092	0.5	0.617	0.4	0.126	0.3	0.089	0.5	0.277	0.5	0.193	-0.3	0.463	0.1

Lab Code	Mandipropamid	FP-RSD 25 %)	Mepanipyrim	FP-RSD 25 %)	Metrafenone	FP-RSD 25 %)	Profenofos	FP-RSD 25 %)	Proquinazid	FP-RSD 25 %)	Pyriproxyfen	FP-RSD 25 %)	Thiamethoxam	FP-RSD 25 %)	Zoxamide	FP-RSD 25 %)
MRRL (mg/kg)	0.010	z score (F	0.010	z score (F	0.010	z score (F	0.010	z score (F	0.010	z score (F	0.010	z score (F	0.010	z score (F	0.010	z score (F
Robust mean (mg/kg)	0.451		0.081		0.562		0.117		0.079		0.245		0.208		0.457	
78	0.496	0.4	0.0536	-1.4	0.613	0.4	0.138	0.7	0.0814	0.1	0.197	-0.8	0.222	0.3	0.485	0.2
<u>79</u> 80	0.586	1.2	0.071	-0.5	0.821	1.8	0.09	-0.9	0.063	-0.8	0.298	0.9	0.221	0.2	0.585	-0.5
81	0.468	0.2	0.0852	0.2	0.512	-0.4	0.115	-0.1	0.0793	0.0	0.247	0.0	0.221	0.2	0.456	0.0
82	0.478	0.2	0.083	0.1	0.503	-0.4	0.132	0.5	0.076	-0.1	0.265	0.3	0.211	0.1	0.485	0.2
83	0.486	0.3	0.0983	0.8	0.631	0.5	0.187	2.4	0.0841	0.3	0.265	0.3	0.263	1.1	0.53	0.6
85	0.3705	-0.7	0.0765	-0.2	0.4202	-1.0	0.1158	0.0	0.0755	-0.2	0.2168	-0.5	0.1927	-0.3	0.3952	-0.5
86	0.472	0.2	0.082	0.0	0.568	0.0	0.117	0.0	0.08	0.1	0.252	0.1	0.197	-0.2	NA	
87	1.08 NA	> 5.0	0.113 NA	1.6	0.625 NA	0.4	0.146	1.0	0.081 NA	0.1	0.291 NA	0.7	0.275 NA	1.3	1.11 NA	> 5.0
89	0.326	-1.1	0.0824	0.1	0.63	0.5	0.0997	-0.6	0.0794	0.0	0.199	-0.8	0.179	-0.6	0.364	-0.8
90	0.501	0.4	0.122	2.0	0.767	1.5	0.144	0.9	0.074	-0.2	0.302	0.9	0.361	2.9	0.849	3.4
91	0.413	-0.3	0.088	0.3	0.586	0.2	0.089	-1.0	0.089	0.5	0.19	-0.9	0.188	-0.4	0.409	-0.4
93	0.446	0.0	0.076	-0.3	0.575	0.1	0.174	1.9	0.071	-0.4	0.243	0.0	0.213	0.1	0.432	-0.2
94	0.461	0.1	0.075	-0.3	0.586	0.2	0.126	0.3	0.08	0.1	0.2	-0.7	0.229	0.4	0.447	-0.1
95	0.402	-0.4	0.09	0.4	0.567	-1.4	0.107	-0.3	0.071	-0.4	0.228	-0.3	0.206	-0.5	0.413	-0.4
97	0.67	1.9	0.0982	0.8	0.646	0.6	0.116	0.0	0.0749	-0.2	0.265	0.3	0.225	0.3	0.512	0.5
98	0.551	0.9	0.094	0.6	NA		0.203	2.9	NA		0.36	1.9	0.229	0.4	0.582	1.1
99	0.4	-0.5	0.073 NA	-0.4	0.495	-0.5	0.107	-0.3	0.07	-0.4	0.253	0.1	0.228	-0.2	0.405	-0.5
100	0.470	0.2	0.079	-0.1	0.464	-0.7	0.101	-0.6	0.045	-1.7	0.228	-0.3	0.348	2.7	0.5	0.4
102	0.892	3.9	0.163	4.0	1.16	4.3	0.239	4.2	0.139	3.1	0.523	4.5	0.187	-0.4	0.803	3.0
103	0.367	-0.7	0.0662	-0.7	0.462	-0.7	0.0908	-0.9	0.066	-0.6	0.146	-1.6	0.193	-0.3	0.367	-0.8
105	0.5	0.4	0.091	0.5	0.63	0.5	0.11	-0.2	0.088	0.5	0.3	0.9	0.23	0.4	0.5	0.4
106	0.402	-0.4	0.076	-0.3	NA	0.5	0.128	0.4	NA		0.266	0.3	0.187	-0.4	NA	0.4
107	0.475	0.2	0.078	-0.2	0.495	-0.5	0.132	-0.2	0.085	0.3	0.249	0.1	0.189	-0.4	0.444	-0.1
109	0.457	0.1	0.0911	0.5	0.604	0.3	0.127	0.3	0.0895	0.5	0.285	0.6	0.193	-0.3	0.559	0.9
110	0.443	-0.1	0.098	0.8	NA	1.0	0.119	0.1	NA	0.2	0.354	1.8	0.224	0.3	0.392	-0.6
112	0.404	-0.4	0.0663	-0.7	0.418	-1.0	0.0913	-0.9	0.072	-0.3	0.157	-1.4	0.139	-1.3	0.467	-0.1
113	0.459	0.1	0.0776	-0.2	0.56	0.0	0.107	-0.3	0.0799	0.1	0.212	-0.5	0.185	-0.4	0.418	-0.3
114	0.45	0.0	0.09	0.4	0.52	-0.3	0.11	-0.2	0.08	0.1	0.28	0.6	0.202	-0.1	0.46	0.0
115	0.449	0.2	0.0678	-0.7	0.515	-0.3	0.121	0.1	0.0909	0.6	0.22	-0.2	0.21	0.0	0.399	-0.5
117	0.408	-0.4	0.088	0.3	0.668	0.8	0.139	0.7	0.074	-0.2	0.256	0.2	0.232	0.5	0.581	1.1
118	0.28	-1.5	0.0641	-0.8	ND 0.713	-4.0	0.087	-1.0	0.064	-0.7	0.194	-0.8	0.206	0.0	0.376	-0.7
121	0.475	0.2	0.074	-0.4	0.549	-0.1	0.105	-0.4	0.076	-0.1	0.217	-0.5	0.221	0.2	0.447	-0.1
123	0.451	0.0	0.09	0.4	0.539	-0.2	0.124	0.2	0.078	0.0	0.192	-0.9	0.174	-0.7	0.456	0.0
125	0.529	-0.1	0.083	0.1	0.542	-0.1	0.126	-0.9	0.064	-0.7	0.277	0.5	0.159	-0.9	0.496	-0.4
129	0.495	0.4	0.084	0.1	0.557	0.0	0.111	-0.2	0.083	0.2	0.211	-0.6	0.243	0.7	0.473	0.1
131	0.541	0.8	0.071	-0.5	0.384	-1.3	NA 0.12	0.4	NA 0.1	1.1	0.203	-0.7	0.208	0.0	NA 0.51	0.5
133	0.324	-1.1	0.07	-0.6	0.69	-0.5	0.13	-0.6	0.1	-0.5	0.34	-1.0	0.28	-0.3	0.51	-0.4
137	0.597	1.3	0.0806	0.0	0.647	0.6	0.124	0.2	0.0766	-0.1	0.265	0.3	0.252	0.8	0.55	0.8
139	0.61	1.4	0.086	0.2	0.53	-0.2	0.097	-0.7 Posulti	0.074	-0.2	0.24	-0.1	0.21	0.0	0.52	0.6
143	0.575	1.1	0.0859	0.2	0.672	0.8	0.112	-0.2	0.0804	0.1	0.261	0.3	0.198	-0.2	0.498	0.4
145	0.502	0.5	0.086	0.2	0.569	0.0	0.101	-0.6	0.081	0.1	0.258	0.2	0.239	0.6	0.466	0.1
147	0.279	-1.5	0.079	-0.1	ND 0.629	-4.0	ND 0.109	-4.0	ND 0.096	-4.0	0.242	-0.1	0.155	-1.0	0.443	-0.1
151	0.405	-0.4	0.062	-1.0	0.5	-0.4	0.104	-0.4	0.086	0.4	0.219	-0.4	0.174	-0.7	0.403	-0.5
153	0.364	-0.8	0.075	-0.3	0.328	-1.7	0.133	0.5	0.065	-0.7	0.169	-1.2	0.132	-1.5	0.378	-0.7
155	0.3/1 ND	-0.7	0.068	-0.7	0.531	-0.2	0.0881	-1.0	0.091	0.6	0.196	-0.8	0.212	-0.9	0.255	-1.8
159	0.563	1.0	0.083	0.1	ND	-4.0	0.126	0.3	0.091	0.6	0.368	2.0	0.24	0.6	ND	-4.0
161	0.499	0.4	0.085	0.2	0.624	0.4	0.144	0.9	0.096	0.9	0.312	1.1	0.216	0.2	0.512	0.5
163	0.33	-1.1	0.058	-1.1	0.722	0.3	0.109	-0.3	0.044	-1.8	0.242	-0.1	0.185	-0.4	0.442	-0.1
167	0.49	0.3	0.07	-0.6	0.4	-1.2	0.12	0.1	0.07	-0.4	0.33	1.4	0.2	-0.2	0.48	0.2
169	0.433	-0.2	0.082	0.0	0.67	0.8	0.11	-0.2	0.082	0.2	0.251	0.1	0.198	-0.2	0.432	-0.2
173	0.732	-1.4	0.065	-0.8	0.94	-1.1	0.139	-0.7	ND	-4.0	0.378	-1.3	0.130	-0.6	0.354	-0.9
175	0.63	1.6	0.108	1.3	0.823	1.9	0.142	0.8	0.108	1.5	0.366	2.0	0.249	0.8	0.856	3.5
1/7	0.51 ND	-4.0	0.084	-0.1	0.535	-0.2	0.098	-0.7	0.071 ND	-0.4	0.214 ND	-0.5	0.186	-0.4	0.399	-0.5
			0.00	0.1	2.07.0	0.1	2.110	0.1						5.5	2.077	0.0

Lab Code	Mandipropamid	FP-RSD 25 %)	Mepanipyrim	FP-RSD 25 %)	Metrafenone	FP-RSD 25 %)	Profenofos	FP-RSD 25 %)	Proquinazid	FP-RSD 25 %)	Pyriproxyfen	FP-RSD 25 %)	Thiamethoxam	FP-RSD 25 %)	Zoxamide	FP-RSD 25 %)
MRRL (mg/kg)	0.010	z score (Fl	0.010	z score (Fl	0.010	z score (Fl	0.010	z score (Fl	0.010	z score (Fl	0.010	z score (Fl	0.010	z score (Fl	0.010	z score (Fl
Robust mean (mg/kg)	0.451		0.081		0.562		0.117		0.079		0.245		0.208		0.457	
181	ND	-4.0	ND	-4.0	0.61	0.3	ND	-4.0	0.082	0.2	ND	-4.0	ND	-4.0	ND	-4.0
183	0.47	0.2	0.099	0.9	0.624	0.4	0.127	0.3	0.101	1.1	0.282	0.6	0.232	0.5	0.43	-0.2
185	0.7594	2.7	0.0996	0.9	0.08948	-3.4	0.1612	1.5	0.1325	2.7	0.3899	2.4	0.2823	1.4	0.8301	3.3
187	0.481	0.3	0.099	0.9	0.563	0.0	0.1	-0.6	ND	-4.0	0.258	0.2	0.195	-0.3	0.434	-0.2
189	0.469	0.2	0.089	0.4	0.598	0.3	0.113	-0.1	0.077	-0.1	0.249	0.1	0.179	-0.6	0.459	0.0
191	434	> 5.0	72	> 5.0	486	> 5.0	100	> 5.0	69	> 5.0	244	> 5.0	187	> 5.0	463	> 5.0
193	ND	-4.0	ND	-4.0	ND	-4.0	0.2195	3.5	ND	-4.0	0.234	-0.2	ND	-4.0	ND	-4.0
195	ND	-4.0	0.081	0.0	ND	-4.0	0.103	-0.5	ND	-4.0	0.129	-1.9	0.238	0.6	ND	-4.0
197							No	Result	s Report	ed						
199	0.524	0.6	0.092	0.5	0.677	0.8	0.119	0.1	0.083	0.2	0.281	0.6	0.224	0.3	0.517	0.5
201	0.432	-0.2	0.046	-1.7	0.507	-0.4	0.082	-1.2	0.133	2.8	0.242	-0.1	0.179	-0.6	0.416	-0.4
203	ND	-4.0	ND	-4.0	ND	-4.0	ND	-4.0	ND	-4.0	0.21	-0.6	ND	-4.0	ND	-4.0
205							No	Result	s Report	ed						
207	0.331	-1.1	0.042	-1.9	0.377	-1.3	0.109	-0.3	ND	-4.0	0.231	-0.2	0.155	-1.0	0.341	-1.0
209	0.44	-0.1	0.083	0.1	0.58	0.1	0.11	-0.2	0.071	-0.4	0.24	-0.1	0.19	-0.3	0.408	-0.4
211	0.312	-1.2	0.078	-0.2	ND	-4.0	0.098	-0.7	ND	-4.0	0.203	-0.7	0.219	0.2	ND	-4.0
213	0.46	0.1	0.084	0.1	0.598	0.3	ND	-4.0	0.079	0.0	0.26	0.2	0.318	2.1	0.436	-0.2
215	0.373	-0.7	0.087	0.3	0.443	-0.8	0.103	-0.5	ND	-4.0	0.257	0.2	0.201	-0.1	ND	-4.0
217	0.378	-0.6	0.081	0.0	0.481	-0.6	0.116	0.0	0.088	0.5	0.231	-0.2	0.22	0.2	0.446	-0.1
219	0.43	-0.2	0.086	0.2	0.5	-0.4	0.12	0.1	0.06	-1.0	0.16	-1.4	0.15	-1.1	0.43	-0.2
221	0.49	0.3	0.074	-0.4	0.519	-0.3	0.1	-0.6	ND	-4.0	0.29	0.7	0.185	-0.4	ND	-4.0
223	0.421	-0.3	80.0	-0.1	0.501	-0.4	0.117	0.0	0.082	0.2	0.23	-0.2	0.188	-0.4	0.435	-0.2
225	ND	-4.0	0.088	0.3	ND	-4.0	ND	-4.0	ND	-4.0	0.27	0.4	0.16	-0.9	ND	-4.0
227	0.456	0.0	0.092	0.5	0.68	0.8	0.125	0.3	0.088	0.5	0.305	1.0	0.278	1.3	0.467	0.1
229	0.44/	0.0	0.08	-0.1	0.5	-0.4	0.11	-0.2	0.078	0.0	0.216	-0.5	0.212	0.1	0.43	-0.2
231	ND	-4.0	ND	-4.0	ND	-4.0		-4.0	ND	-4.0	ND	-4.0	ND	-4.0	ND	-4.0
232							INO	Result	Report	ed						
233							INO	Result	Report	ed						
234							INO No	Result	Report	ed						
230	No Results Reported															
237							NO No	Result	Report	eu od						
238							INO	Result	s keport	ea						

NA: Not analysed ND: Not detected (False negative)

Lab Code	Novaluron	RSD 25 %)	Lab Code
MRRL (mg/kg)	0.010	re (FFP-I	MRRL (mg/kg)
Robust mean (mg/kg)	0.102	z scol	Robust mean (mg/kg)
7	0.0842	- 0.7	37
8	0.163	2.4	50
9	0.0908	-	39
10	0.144	0.4	40
10	0.144	1.7	41
11	0.086	0.6	42
12	NA		40
13	0.1617	2.4	44
14	NA		45
15	NA		46
1/	0.0000	-	47
16	0.0828	0.7	48
17	0.0968	0.2	49
18	0.095	- 0.3	50
19	0.109	0.3	50
20	NA		51
21	0.092	- 0.4	52
22	ND	-	53
	0.0005	4.0	54
23	0.0885	0.5	55
24	0.085	- 0.7	56
25	NRF	2	57
26	0.11	0.3	
27	NA		58
28	0.095	-03	59
29	0.103	0.1	60
30	NA		61
31	0.17	2.7	62
32	NA		63
33	0.1	- 0.1	64
34	NA		65
35	0.1	1	66
	0.1	0.1	67
36	0.094	-	68

Results reported by the laboratories for the voluntary pesticide novaluron (mg/kg) and it	S
calculated z score value using FFP-RSD 25 %.	

Novaluron

0.010

0.102 NA

0.066 14

NA NRR 0.086

NA

0.096

0.1 0.1 NA

0.111 0.4

0.105 0.1 NA

NA 0.105 0.1

0.113 0.5 0.0842 0.7

0.1013 0.0 NA 0.137 1.4

NA

0.0854 0.6 0.157 2.2

NA

NA

0.08 0.8

0.085 0.7 0.139 1.5

NA

NA NA

NA

0.223 4.8

0.11 0.3 0.102 0.0

(FFP-RSD 25 %)

z score

Novaluron	3D 25 %)		Lab Code
0.010	e (FFP-I		MRRL (mg/kg
0.102	Z SCOI		Robust mean (mg/kg
0.105	0.1		69
0.107	0.2		70
0.0881	-05		70
NA	0.0		72
NΔ			12
0.118	0.6		73
0.12	0.7		74
0.112	-		75
0.0735	1.1		76
NA 0.120	1.0		
0.128	1.0		77
NA			70
0.067	- 1.4		79
0.040	-		80
0.069	1.3		81
0.000	-		82
0.092	0.4		83
NA			84
0.0927	-03		85
NA			86
			87
ND	4.0		88
0.11	0.3		89
INA			00
0.0947	0.3		90
	0.5		91
0.1	0.1		92
NA			73
0.0862	-		95
0.11	0.0		
NA	0.3		96
0.0663	-		97
0.120	1.4		98
NA	1.1		99
NA			100
0.102	0.1		101
0.103	0.1		102
0.103	0.1	I	

Lab Code	Novaluron	RSD 25 %)
MRRL (mg/kg)	0.010	re (FFP-F
Robust mean (mg/kg)	0.102	z scol
103	0.0742	- 1.1
104	0.1071	0.2
105	0.12	0.7
106	NA	
107	NA	
108	0.129	1.1
109	0.135	1.3
110	NA	
111	NA	
112	NA	
113	0.0942	- 0.3
114	0.123	0.8
115	NA	
116	0.0802	- 0.8
117	0.094	- 0.3
118	NA	
119	NA	
121	0.08	- 0.8
123	0.106	0.2
125	NA	
127	0.092	- 0.4
129	0.099	- 0.1
131	NA	
133	NA	
135	NA	
137	NA	
139	NA	
141	NRF	2
143	NA	
145	NA	
147	NA	
149	NA	
151	NA NA	
155	NA	
157	NA	
137	11/1	

Lab Code	Novaluron	(SD 25 %)
MRRL (mg/kg)	0.010	re (FFP-F
Robust mean (mg/kg)	0.102	z sco
159	NA	
161	NA	
163	NA	
165	NA	
167	NA	
169	NA	
171	NA	
173	NA	
175	NA	
177	NA	
179	NA	
181	NA	
183	NA	
185	NA	
187	NA	
189	NA	
191	NA	
193	NA	
195	NA	
197	NRF	2
199	NA	
201	NA	
203	NA	
205	NRF	2
207	NA	
209	NA	
211	NA	
213	NA	
215	NA	
217	NA	
219	NA	
221	NA	
223	NA	
225	NA	
227	NA	
229	NA	
231	NA	
232	NRF	<u> </u>
233	NRF NRF	<u>(</u>
234	NRF NRF	<u>(</u>
235	NRF NRF	<u>(</u>
237	NRF NRF	<u>(</u>
238	NRF	(

NA: Not analysed

ND: Not detected (False negative)

NRR: Not result reported
































































# Voluntary Compound

APPENDIX 5.	Aver	age	of the	e Squ	lared	z sc	ores	$(AZ^2)$	for	labo	orate	ories	s in (	Cate	egoi	ry A			i
Laboratory Code	Chlorpyrifos-methyl	Cyazofamid	Diazinon	Difenoconazole	Ethirimol	Fenazaquin	Fenitrothion	Flutriafol	Imazalil	Mandipropamid	Mepanipyrim	Metrafenone	Profenofos	Proquinazid	Pyriproxyfen	Thiamethoxam	Zoxamide	No. of detected pesticides	A2 <sup>2</sup>
7	-0.9	-1.0	-0.9	-1.1	-1.2	-0.5	-1.0	-1.8	-1.2	-2.0	-0.9	-0.6	-0.6	-0.7	-1.2	-1.3	-1.1	17	1.3
8	-0.7	-0.8	-0.9	0.0	0.2	-1.1	-0.5	-0.3	0.2	-0.8	-0.3	0.2	-1.1	-0.2	-0.7	0.6	0.0	17	0.4
9	0.9	0.3	-0.3	0.2	0.3	1.6	-0.7	0.6	0.3	0.6	-0.7	0.7	0.2	1.0	0.3	0.0	0.1	17	0.4
10	-0.6	-0.4	-0.3	-0.3	0.7	0.1	-1.0	-0.1	0.0	0.4	-0.3	0.7	-0.5	-0.6	-0.3	0.0	0.2	17	0.2
11	0.2	-0.1	-0.5	0.6	-0.4	-0.4	0.5	0.2	0.7	-0.6	0.3	0.6	0.4	0.5	0.7	0.3	-0.3	17	0.2
13	2.7	1.3	0.7	1.9	-0.2	1.8	5.0	0.4	-0.8	1.5	0.3	1.2	0.4	-1.4	-0.1	-0.6	0.8	17	2.9
14	0.0	-0.1	0.0	-0.4	0.3	0.4	-0.7	0.2	-0.1	-0.5	0.0	-0.4	-0.1	0.2	-0.2	1.0	-0.4	17	0.1
15	0.1	-0.2	0.2	0.0	-0.3	0.0	0.0	-0.1	0.0	0.5	0.2	-0.1	-0.1	0.1	-0.2	0.0	0.0	17	0.0
16	-0.6	-0.5	-0.1	0.1	0.1	-0.3	-1.0	-0.1	-0.5	-0.1	-0.2	-1.1	-0.3	-0.2	0.0	-0.1	-0.2	17	0.2
17	-0.3	-0.3	-0.4	-0.4	-0.9	-1.9	-0.7	0.0	0.4	0.0	-0.1	-0.4	-0.3	-0.7	-0.4	0.4	-0.3	17	0.4
20	0.3	-0.3	0.5	-0.3	-0.2	-0.6	2.4	-0.4	-1.6	-0.5	-0.1	-0.1	-0.4	-0.6	-0.6	0.2	-0.2	17	0.6
21	0.0	0.4	-0.2	0.2	0.0	0.2	0.9	0.0	0.3	0.4	0.0	0.5	0.8	0.0	-0.9	-0.4	0.2	17	0.2
22	0.2	0.2	0.0	0.3	-1.0	0.1	0.9	0.3	0.6	-0.6	0.0	0.4	0.5	0.0	0.5	0.5	-0.3	17	0.2
23	-0.1	0.5	0.1	-0.1	-0.6	0.5	-0.1	-0.2	0.1	-0.7	0.4	-0.2	0.4	0.9	-0.2	-0.3	-0.2	17	0.2
24	-0.9	-0.1	-1.0	0.3	-1.4	-0.3	-1.1	-0.2	-0.9	0.3	0.1	-1.0	-0.2	-1.1	-1.1	-0.7	-0.3	17	0.6
26	0.4	-0.2	0.2	-0.2	-0.4	0.2	-0.2	-0.3	-1.3	-0.5	0.3	0.2	-0.2	0.4	-0.2	-0.5	-0.1	17	0.2
27	-0.5	0.6	-0.3	-0.8	0.0	-0.7	-0.6	-0.4	-0.4	-0.6	-0.5	-0.3	-0.8	-0.6	-0.7	0.1	-0.7	17	0.3
28	-0.1	-0.1	-0.3	-0.2	-0.5	0.1	-0.7	-0.3	-0.5	0.0	-0.1	0.5	-0.2	-0.1	0.2	-0.1	-0.1	17	0.1
29	0.0	-0.1	0.1	-0.4	-0.2	0.0	0.6	-0.2	-0.1	-0.3	-0.1	-0.1	-0.1	0.2	0.3	-0.2	0.3	17	0.1
31	-0.5	0.4	0.0	0.9	0.4	-0.7	-0.5	0.2	-0.3	0.5	1.0	0.3	0.4	3.9	-0.1	0.5	1.1	17	1.2
33	-0.3	-0.4	-0.2	0.0	0.3	-0.8	0.0	-0.1	1.6	-0.2	-0.3	-0.2	-0.2	-0.7	-0.6	-0.2	-0.3	17	0.3
34	0.1	0.6	0.2	0.1	-0.5	-0.4	0.5	0.0	0.2	-0.3	0.0	1.3	0.5	1.1	0.2	-0.2	-0.2	17	0.3
35	0.4	0.8	0.2	0.4	-1.8	0.2	0.2	0.4	-1.2	-0.8	0.0	-0.1	-0.1	0.0	0.1	0.1	-0.1	17	0.4
36	-0.1	0.3	-0.1	0.0	0.0	0.3	0.0	-0.3	0.2	0.3	0.0	0.1	0.3	0.3	-0.1	0.2	-0.6	17	0.1
38	0.5	0.9	0.7	0.5	0.7	0.1	1.7	1.1	1.4	0.3	0.0	0.3	0.5	0.5	2.0	0.4	0.9	17	0.8
39	-0.1	0.5	-0.2	-0.2	-0.4	0.1	-0.2	0.0	0.2	-0.3	0.2	-0.1	0.7	-0.2	0.3	0.3	-1.0	17	0.1
40	0.7	1.3	5.0	0.2	-0.5	0.4	1.5	-0.1	0.5	0.1	0.3	-0.1	5.0	0.1	0.0	4.2	-0.2	17	4.3
41	0.3	-0.2	0.1	0.2	0.1	-0.3	0.3	-0.3	-0.1	0.0	0.0	0.1	0.4	0.0	0.4	0.1	0.2	17	0.1
42	0.5	0.9	0.8	-0.5	1.4	1.1	-0.6	-0.2	-0.3	0.5	-0.1	0.1	0.4	0.0	0.5	0.0	0.2	17	0.4
43	1.3	0.8	1.4	0.9	0.1	3.1	5.0	1.1	0.7	0.6	0.9	0.7	0.4	1.6	1.2	0.4	0.5	17	2.8
45	0.7	-0.1	0.1	-0.1	0.8	0.1	2.3	0.3	0.6	1.0	0.0	0.8	0.0	-0.5	0.7	0.3	-0.1	17	0.5
46	2.3	-0.6	0.8	2.9	0.1	1.4	5.0	1.8	-4.0	-0.4	2.0	1.3	5.0	0.7	-0.5	-0.1	2.3	16	5.7
47	-0.5	2.5	-1.2	-1.8	-1.1	-0.5	-4.0	-1.3	-1.9	-1.9	-1.6	-0.8	-0.1	-2.5	-1.5	-0.8	-1.4	16	3.1
48	-0.9	-0.1	-0.3	0.1	-1.1	-0.4	0.1	-2.0	-0.5	-0.5	-0.7	-1.5	0.5	-1.6	0.5	-0.3	-1.9	17	0.9
50	-0.4	-0.2	0.2	0.0	-0.6	0.1	0.4	0.5	0.4	-0.5	0.6	0.1	0.2	-0.3	-0.1	0.2	-0.1	17	0.1
52	-0.1	0.1	-0.2	-0.4	-0.6	-0.3	-0.3	-0.3	-0.2	-0.4	0.2	0.0	0.0	-0.1	-0.7	-0.3	-0.6	17	0.1
53	1.8	-0.5	1.8	0.3	0.4	-0.3	-4.0	0.1	0.7	0.2	-0.7	1.1	0.3	-0.1	0.0	0.6	0.3	16	1.5
55	0.0	-0.5	-0.2	0.7	-1.3	0.1	-0.1	0.3	0.7	0.1	0.2	0.2	0.1	-0.5	0.2	-1.1	-1.9	17	0.5
56	0.4	-0.3	0.2	-0.2	0.4	0.4	1.2	0.3	0.5	0.0	0.1	0.5	0.2	0.1	0.8	0.2	0.0	17	0.2
57	-0.6	-0.1	0.2	0.0	0.3	0.0	-0.4	0.1	0.1	0.3	-0.3	0.2	-0.1	0.0	0.0	0.2	-0.3	17	0.1
58	0.0	0.1	0.0	0.3	0.5	-0.2	-0.7	0.2	0.7	0.4	0.5	0.3	-0.6	0.3	0.6	0.2	0.2	17	0.2
59	-0.6	1.0	-1.1	0.6	-1.2	-0.6	-4.0	0.6	-0.4	0.6	-1.7	0.8	1.0	0.4	0.0	1.0	0.6	16	1.6
60	-0.4	0.2	-0.5	0.2	-1.3	-0.2	-1.0	-0.4	0.1	0.0	0.4	-0.1	0.2	0.1	-0.6	-0.4	-0.1	17	0.3
61	-0.2	0.0	-0.2	0.0	-0.6	0.1	0.0	0.7	1.1	0.5	-0.2	0.3	0.4	0.0	0.1	0.0	-0.3	17	0.2
63	-0.3	5.0	0.0	0.1	-3.1	-2.4	-0.5	-0.7	-0.1	0.1	-1.0	-2.1	-0.4	-1.6	-1.4	0.1	-0.6	17	3.0
64	-0.1		0.7	-0.2	0.2	0.9	-0.6	0.5	-0.3	0.3	-0.3	1.1	1.4	0.1	0.4	0.2	-0.1	16	0.4
65	-1.3	-1.2	-0.5	0.0	-0.4	0.0	-0.4	0.3	-0.4	0.0	-0.1	0.1	0.3		0.5	0.3	1.2	16	0.4

APPENDIX 5. Average of the Squared z score	s (AZ <sup>2</sup> ) f	for laboratories in	Category A
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tory e	os-methyl	ıfamid	inon	onazole	imol	aquin	othion	iafol	zalil	opamid	iipyrim	enone	nofos	inazid	oxyfen	thoxam	mide	lected des	
Labora Cod	Chlorpyrif	Cyazo	Diaz	Difenoc	Ethir	Fenaz	Fenitr	Flutr	Ima	Mandipi	Mepar	Metraf	Profe	Proqu	Pyripro	Thiame	Zоха	No. of det pestici	AZ <sup>2</sup>
								Z	score										
67	-0.4	-0.4	-0.1	0.0	0.5	-0.2	0.1	-0.1	-0.4	0.7	-0.5	0.8	-0.4	-0.4	-0.1	0.2	0.5	17	0.2
68	-1.4	-0.2	-0.2	0.0	2.0	-0.5	0.1	-3.6	-0.9	-0.3	-0.4	0.0	-0.5	0.2	-0.2	0.5	-0.3	17	1.2
70	1.9	-0.7	1.5	1.2	0.7	0.0	-1.7	0.1	0.5	-0.7	0.0	-1.0	0.1	1.2	0.2	-0.3	-0.0	17	0.8
70	0.0	-0.8	0.2	-0.8	0.5	0.0	-0.2	-0.1	-0.7	3 1	-0.1	-0.5	-0.8	0.0	-1 1	-0.9	-0.7	17	0.8
74	0.6	-0.1	0.0	0.0	-0.3	0.4	0.5	-0.5	0.7	-1.0	-0.3	-0.1	0.0	0.0	0.0	-0.4	-0.4	17	0.0
75	0.6	0.5	0.5	0.6	0.1	0.7	0.6	0.3	0.0	0.3	0.6	0.5	0.0	0.4	0.6	0.7	0.3	17	0.2
76	0.3	-0.2	-0.1	0.6	0.5	0.3	-0.8	0.5	1.4	0.6	0.2	0.6	0.2	0.1	1.1	0.2	0.2	17	0.3
77	1.6	0.2	0.3	0.7	3.1	-4.0	1.2	0.2	0.6	0.2	0.5	0.4	0.3	0.5	0.5	-0.3	0.1	16	1.9
78	-0.6	0.6	0.5	0.4	0.4	-1.0	-0.8	0.1	-0.6	0.4	-1.4	0.4	0.7	0.1	-0.8	0.3	0.2	17	0.4
79	0.4	-0.3	-0.3	0.5	0.3	-0.1	-0.5	0.2	0.8	1.2	-0.5	1.8	-0.9	-0.8	0.9	0.2	1.1	17	0.6
80	-0.8	-1.2	-1.0	1.7	5.0	0.3	0.6	-0.3	-1.1	-0.8	0.6	-0.4	2.2	0.1	0.7	0.1	-0.5	17	2.3
81	-0.1	-0.2	-0.2	0.2	0.1	0.5	0.1	-0.1	1.1	0.2	0.2	-0.4	-0.1	0.0	0.0	0.2	0.0	17	0.1
82	0.4	0.8	0.3	0.0	-0.3	-0.1	0.9	0.1	-1.2	0.2	0.1	-0.4	0.5	-0.1	0.3	0.1	0.2	17	0.2
83	1.3	1.0	1.0	0.8	0.3	0.4	2.0	1.0	0.5	0.3	0.8	0.5	2.4	0.3	0.3	1.1	0.6	17	1.1
84	-0.8	4.3	-0.9	-0.8	-0.4	-0.9	-0.8	-0.7	-0.7	-1.0	-0.9	-0.7	-1.2	-0.3	-0.6	0.3	-1.0	17	1.7
85	-0.3	-0.2	-0.2	-0.9	-0.1	0.3	0.0	-0.2	-0.3	-0.7	-0.2	-1.0	0.0	-0.2	-0.5	-0.3	-0.5	17	0.2
86	0.3	0.2	0.5	0.0	-0.4	0.6	-0.6	-0.1	-0.9	0.2	0.0	0.0	0.0	0.1	0.1	-0.2		16	0.1
87	0.4	2.9	0.5	1.2	1.6	0.9	0.6	2.7	1.2	5.0	1.6	0.4	1.0	0.1	0.7	1.3	5.0	17	4.6
89	-0.5	-1.1	-1.0	-0.9	0.6	-1.4	-0.5	-4.0	-1.3	-1.1	0.1	0.5	-0.6	0.0	-0.8	-0.6	-0.8	16	1.6
90	0.9	2.6	0.9	1.0	0.5	-0.1	0.1	0.2	0.9	0.4	2.0	1.5	0.9	-0.2	0.9	2.9	3.4	17	2.3
91	-0.7	-0.1	-0.4	-0.2	-0.3	0.5	0.0	-0.4	-0.5	-0.3	0.3	0.2	-1.0	0.5	-0.9	-0.4	-0.4	17	0.2
92	0.4	0.2	1.8	-0.4	0.3	0.7	0.4	-0.3	-0.4	-0.5	0.4	0.1	0.0	0.4	0.2	-0.1	0.2	17	0.3
93	-0.2	0.5	-0.2	1.7	-0.5	-0.3	0.7	-0.1	0.8	0.0	-0.3	0.1	1.9	-0.4	0.0	0.1	-0.2	17	0.5
95	-0.3	-1.0	-0.4	-0.7	-0.2	-0.4	-0.7	0.5	0.4	-0.4	0.4	0.0	-0.3	-0.4	-0.3	0.0	-0.4	17	0.2
96	-0.9	-0.5	-0.9	-0.8	-0.4	-0.8	-1.0	-0.8	-2.2	-0.9	-0.7	-1.4	0.1	-0.1	-0.6	-0.5	-0.2	17	0.8
97	0.9	1.0	-1.1	1.0	0.6	0.5	0.6	0.6	1.0	1.9	0.8	0.6	0.0	-0.2	0.3	0.3	0.5	17	0.7
99	0.3	-0.5	0.2	-0.4	0.0	-0.2	0.1	-0.2	-0.4	-0.5	-0.4	-0.5	-0.3	-0.4	0.1	0.4	-0.5	17	0.1
101	-0.4	-0.2	-0.4	0.3	0.8	-1.4	-1.8	0.2	0.0	0.3	-0.1	-0.7	-0.6	-1.7	-0.3	2.7	0.4	17	1.0
102	3.2	4.4	3.5	4.7	0.9	2.3	5.0	1.5	-0.6	3.9	4.0	4.3	4.2	3.1	4.5	-0.4	3.0	17	12.0
103	-0.6	-0.8	-0.8	-1.2	0.0	-0.7	-1.2	-0.6	-1.3	-0.7	-0.7	-0.7	-0.9	-0.6	-1.6	-0.3	-0.8	17	0.8
104	0.3	0.0	0.7	0.5	-0.1	-0.3	0.0	-0.2	-0.8	0.2	0.1	0.6	0.5	0.3	-0.5	-0.4	0.5	17	0.2
105	-0.9	-0.9	-0.7	0.9	1.3	0.7	-1.1	1.0	1.1	0.4	0.5	0.5	-0.2	0.5	0.9	0.4	0.4	17	0.6
107	0.4	0.2	0.5	-0.6	-0.1	0.6	0.9	0.7	0.0	0.2	1.2	-0.5	0.5	0.3	0.1	-0.4	-0.1	17	0.3
108	0.1	0.3	0.3	-0.2	1.4	-0.1	-0.4	-1.0	0.9	0.1	-0.2	-0.6	-0.2	0.2	0.0	0.1	0.0	17	0.3
109	1.4	0.4	0.8	0.9	0.9	0.4	0.9	3.7	-1.5	0.1	0.5	0.3	0.3	0.5	0.6	-0.3	0.9	17	1.4
110	-1.0	-0.5	-0.5	-0.9	-0.9	8.0-	0.0	-0.8	-1.3	-0.4	-0.7	-1.0	-0.9	-0.3	-1.4	-1.3	0.1	17	0.7
112	0.7	-0.3	0.9	0.0	-0.3	0.2	0.5	0.6	-0.1	-0.1	-0.2	-0.1	0.2	-0.4	-0.2	0.6	-0.1	17	0.2
113	-0.3	0.2	0.1	-0.4	-1.7	0.0	0.3	0.2	-1.7		-0.2	0.0	-0.3	0.1	-0.5	-0.4	-0.3	17	0.4
114	0.2	-0.2	0.1	0.5	0.0	0.5	-0.0		0.4	0.0	0.4	-0.3	-0.2	0.1	0.0	-0.1	0.0	17	0.1
117	-1.4	0.1	0.0	-0.4	-0.0	0.0	0.2	-0.0	-0.2	0.2	-0.7	-0.3	0.1	0.0	0.2	0.1	1 1	17	0.3
117	2.2.2	-0.1	0.2	0.3	0.0	0.0	0.3	-0.2	0.4	-0.4	0.3	-4.0	1.0	-0.2	0.2	0.5	-0.7	16	1.8
119	-0.4	0.0	-17	-0.5	0.4	-1.1	-0.6	0.2	-0.2	1.0	-1 4	11	-1.0	0.7	2 2	0.7	1.0	17	1.0
121	-0.2	-0.7		0.3	1 1	0.3	0.0	_0.0	0.2	0.2	-0.4	_0.1	-0.4	_0.0	-0.5	0.7	-0.1	17	0.2
123	0.1	-0.2	0.3	-0.9	0.7	0.1	0.0	-0.1	-1.2	0.0	0.4	-0.2	0.4	0.1	-0.9	-0.7	0.1	17	0.2
125	0.3	-1.4	0.0	-1 4	0.8	0.1	0.3	0.0	0.7	0.7	0.1	0.3	0.3	-0.7	0.5	-0.9	0.3	17	0.4
127	0.2	-0.1	0.3	-0.2	-0.1	0.6	-0.5	-0.2	0.5	-0.1	0.0	-0.1	-0.9	0.2	0.3	0.3	-0.4	17	0.1
129	-0.4	-0.2	-0.2	-0.6	0.5	0.2	-0.5	-0.2	-0.7	0.4	0.1	0.0	-0.2	0.2	-0.6	0.7	0.1	17	0.2
135	-0.8	-0.8	-0.4	0.1	-0.6	1.1	-0.9	0.1	-0.1	-1.1	-0.6	-0.5	-0.6	-0.5	-1.0	-0.3	-0.4	17	0.4

aboratory Code	lorpyrifos-methyl	Cyazofamid	Diazinon	Difenoconazole	Ethirimol	Fenazaquin	Fenitrothion	Flutriafol	Imazalil	landipropamid	Mepanipyrim	Metrafenone	Profenofos	Proquinazid	Pyriproxyfen	Thiamethoxam	Zoxamide	. of detected pesticides	AZ <sup>2</sup>
	ъ									2								No	
								Z	score										
137	0.4	1.0	0.4	0.3	-0.6	-0.5	0.1	0.7	0.8	1.3	0.0	0.6	0.2	-0.1	0.3	0.8	0.8	17	0.4
139	-0.2	-0.3	-0.2	0.0	3.3	0.0	-0.4	-0.1	-0.5	1.4	0.2	-0.2	-0.7	-0.2	-0.1	0.0	0.6	17	0.9
143	0.5	0.2	0.2	0.7	-1.4	0.9	0.9	0.6	-0.3	1.1	0.2	0.8	-0.2	0.1	0.3	-0.2	0.4	17	0.4
145	-1.4	0.3	0.4	0.2	0.4	0.4	-1.2	0.6	1.4	0.5	0.2	0.0	-0.6	0.1	0.2	0.6	0.1	17	0.4
149	0.1	0.0	0.6	0.3	1.2	0.3	0.9	0.2	-1.6	0.3	0.3	0.5	-0.3	0.9	-0.6	-0.5	1.2	17	0.5
151	-0.4	-0.2	0.9	-0.2	-0.8	-0.1	-0.5	-0.7	-0.3	-0.4	-1.0	-0.4	-0.4	0.4	-0.4	-0.7	-0.5	17	0.3
155	-0.4	-0.6	-0.1	-0.3	-0.3	0.0	-1.2	-0.1	-0.6	-0.7	-0.7	-0.2	-1.0	0.6	-0.8	0.1	-1.8	17	0.5
161	1.1	0.8	0.4	0.9	2.6	0.6	0.8	0.4	1.1	0.4	0.2	0.4	0.9	0.9	1.1	0.2	0.5	17	0.9
163	-1.8	-1.4	-0.4	-0.8	-1.5	-1.4	-0.2	-2.5	-1.9	-1.1	-1.1	1.1	-0.3	-1.8	-0.1	-0.4	-0.1	17	1.6
165	1.8	0.2	0.7	0.1	-0.2	0.4	0.9	0.3	0.4	1.4	0.4	0.3	-0.2	0.2	0.2	0.2	0.3	17	0.4
167	0.0	-0.2	0.6	1.2	-2.0	0.1	-0.2	0.6	1.1	0.3	-0.6	-1.2	0.1	-0.4	1.4	-0.2	0.2	17	0.7
169	0.4	-0.2	0.0	-0.3	0.9	0.0	1.2	-0.4	-0.6	-0.2	0.0	0.8	-0.2	0.2	0.1	-0.2	-0.2	17	0.2
171	1.2	1.9	0.8	1.0	0.8	1.5	1.2	1.3	1.8	2.5	2.0	2.7	0.7	2.1	2.2	-1.0	2.3	17	2.9
173	-0.7	-4.0	-0.8	-1.0	-0.7	-0.8	-1.1	-1.2	-1.3	-1.4	-0.8	-1.1	-0.7	-4.0	-1.3	-0.6	-0.9	15	2.8
175	-0.3	1.0	0.3	0.7	0.8	1.3	1.0	0.2	-0.3	1.6	1.3	1.9	0.8	1.5	2.0	0.8	3.5	17	1.9
177	0.2	-0.2	-0.1	0.0	-1.9	0.4	0.4	-0.2	-0.1	0.5	0.1	-0.2	-0.7	-0.4	-0.5	-0.4	0.2	17	0.3
183	1.1	0.7	0.5	0.3	-0.4	0.6	1.0	0.2	1.2	0.2	0.9	0.4	0.3	1.1	0.6	0.5	-0.2	17	0.5
185	1.7	5.0	1.3	4.7	1.8	-4.0	0.4	2.2	3.3	2.7	0.9	-3.4	1.5	2.7	2.4	1.4	3.3	16	7.9
187	0.1	5.0	-0.1	0.4	-0.2	-0.4	0.2	-0.1	-0.9	0.3	0.9	0.0	-0.6	-4.0	0.2	-0.3	-0.2	16	2.6
189	-0.2	0.1	0.2	1.7	0.6	0.0	0.2	0.3	-0.6	0.2	0.4	0.3	-0.1	-0.1	0.1	-0.6	0.0	17	0.3
191	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	17	25.0
199	1.2	0.2	0.3	0.5	0.3	1.2	2.1	0.8	1.1	0.6	0.5	0.8	0.1	0.2	0.6	0.3	0.5	17	0.7
201	-0.4	-0.2	0.0	0.3	-0.7	-0.7	0.6	-1.4	0.8	-0.2	-1.7	-0.4	-1.2	2.8	-0.1	-0.6	-0.4	17	1.0
209	0.3	-0.2	0.1	-0.3	-0.2	-0.1	0.2	0.0	-0.3	-0.1	0.1	0.1	-0.2	-0.4	-0.1	-0.3	-0.4	17	0.1
217	-0.3	-0.9	-0.2	-0.2	0.0	-0.2	-0.5	-0.5	-0.3	-0.6	0.0	-0.6	0.0	0.5	-0.2	0.2	-0.1	17	0.2
219	-0.3	0.0	0.2	0.0	-0.8	-0.3	-0.8	-0.3	-0.2	-0.2	0.2	-0.4	0.1	-1.0	-1.4	-1.1	-0.2	17	0.4
223	-0.1	-0.1	0.4	-0.7	0.4	-0.2	0.5	-0.3	0.4	-0.3	-0.1	-0.4	0.0	0.2	-0.2	-0.4	-0.2	17	0.1
227	2.6	0.4	2.2	0.7	0.8	0.7	1.0	0.5	0.0	0.0	0.5	0.8	0.3	0.5	1.0	1.3	0.1	17	1.1
229	-0.1	0.1	-0.4	0.0	0.6	0.2	-0.3	0.0	0.5	0.0	-0.1	-0.4	-0.2	0.0	-0.5	0.1	-0.2	17	0.1



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# **GENERAL PROTOCOL**

## for EU Proficiency Tests on Pesticide Residues in Food and Feed

#### Introduction

This protocol contains general procedures valid for all European Union Proficiency Tests (EUPTs) organised on behalf of the European Commission, DG-SANTE<sup>1</sup> by the four European Union Reference Laboratories (EURLs) responsible for pesticide residues in food and feed. These EUPTs are organised for laboratories belonging to the Network<sup>2</sup> of National Reference Laboratories (NRLs) and Official Laboratories (OfLs) of the EU Member States. OfLs from EFTA countries and EU- Candidate countries are also welcome to participate in the EUPTs. OfLs from Third countries may be permitted to participate on a case-by-case basis.

The following four EURLs for pesticide residues were appointed by DG-SANTE based on the official controls Regulation (EU) No. 2017/625<sup>3</sup>:

- EURL for Fruits and Vegetables (EURL-FV),
- EURL for Cereals and Feeding stuff (EURL-CF),
- EURL for Food of Animal Origin and Commodities with High Fat Content (EURL-AO) and
- EURL for pesticides requiring Single Residue Methods (EURL-SRM).

The aim of these EUPTs is to obtain information regarding the quality, accuracy and comparability of pesticide residue data in food and feed reported to the European Union within the framework of the national control programmes and the EU multiannual co-ordinated control programme<sup>4</sup>. Participating laboratories will be provided with an assessment of their analytical performance that they can use to demonstrate their analytical performance and compare themselves with other participating laboratories.

### EUPT-Organisers and Scientific Committee

EUPTs are organised by individual EURLs, or by more than one EURL, in collaboration.

An **Organising Team** (in the following named organisers) is appointed by the EURL(s) in charge. This team is responsible for all administrative and technical matters concerning the organisation of the Proficiency Test (PT), e.g. the PT-announcement, the production of the PT-material (Test Item), the undertaking of homogeneity and stability tests, the packing and shipment of the PT-materials, the handling and evaluation of the results and method information submitted by the participants, the drafting of the preliminary and final reports as well as generation and distribution of EUPT- participation certificates.

To complement the internal expertise of the EURLs, a group of external consultants forming the **EUPT-Scientific Committee** (EUPT-SC)<sup>5</sup> has been established and approved by DG-SANTE. The EUPT-SC consists of expert scientists with many years of experience in PTs and/or pesticide residue analysis. The actual <u>composition of the EUPT-SC</u> and the affiliation of each of its members is shown on the EURL-Website. The members of the EUPT-SC are also listed in the Specific Protocol and the Final Report of each EUPT.

The EUPT-SC is made up of the following two subgroups:

a. An independent Quality Control Group (EUPT-QCG) and

## b. An Advisory Group (EUPT-AG).

The EUPT-SC's role is to help the organisers make decisions regarding the EUPT design: the selection of the commodity, the selection of the analytes to be included in the Target Pesticide List (see below), the establishment of the Minimum Required Reporting Levels (MRRLs), the statistical treatment and evaluation of the participants' results (in anonymous form), and the drafting and updating of documents, such as the General and Specific PT Protocols and the Final EUPT-Reports.

The EUPT-QCG has the additional function of supervising the quality of EUPTs and of assisting the EURLs in confidential aspects such as the choice of the analytes to be present in the Test Item and the approximate concentrations at which they should be present.

The EUPT-SC typically meets once a year, after all EUPTs of the season have been conducted and preliminarily evaluated by the four pesticide EURLs. The aim of these meetings is to discuss the EUPT-results, especially where case-by-case decisions are needed. PT plans for the next EUPT season and, if needed, possible changes in the EUPT-General Protocol are also discussed during these meetings. The main topics and decisions on these meetings are documented.

<sup>&</sup>lt;sup>1</sup> DG-SANTE = European Commission, Health and Food Safety Directorate-General

<sup>&</sup>lt;sup>2</sup> For more information about the EURL/NRL/OfL-Network please refer to the EURL-Web-portal under: "<u>http://www.eurl-pesticides.eu</u>"

<sup>&</sup>lt;sup>3</sup> Regulation (EU) 2017/625 of the European Parliament and of the Council on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products.. Published at OJ of the EU L95 of 07.04.2017

<sup>&</sup>lt;sup>4</sup> European Commission Proficiency Tests for Pesticide Residues in Fruits and Vegetables, Trends in Analytical Chemistry, 2010, 29 (1), 70 – 83.

<sup>&</sup>lt;sup>5</sup> Link to the List of current members of the EUPT Scientific Committee: http://www.eurl-pesticides.eu/library/docs/allcr/EUPT-SC.pdf



Figure 1: Composition of EUPT-Scientific Committee

The present EUPT General Protocol (EUPT-GP) was drafted by the EURLs and reviewed by the EUPT-SC. Follow the link to access a website giving an <u>overview of the GP-versions.</u>

# **EUPT-Participants**

Within the European Union all NRLs operating in the same area as the organising EURL, as well as all OfLs whose scope overlaps with that of the EUPT, are legally obliged to participate in EUPTs. The legal obligation of NRLs and OfLs to participate in EUPTs arises from:

- Art 38 (b) of Regulation (EU) No. 2017/6253 Art. 28 (3) of Reg. (EC) No. 2005/396 (for all OfLs analysing for pesticide residues within the framework of official controls of food or feed<sup>6</sup>)

Art. 101 (1)(a) of Regulation (EU) No. 2017/6253 (for all NRLs)

Every year, shortly before launching the registration period of the first of the four EUPTs in a given EUPT-Season, all OfLs and NRLs are asked to update their routine scope of commodities as well their contact information within the EURL-DataPool. Based on this information the OfLs are classified into those that are obliged and those that are eligible participate in each of the EUPTs to be conducted within a given year.

NRLs are responsible for checking whether all relevant OfLs within their network are included in the list of obligated laboratories with their actual commodity-scopes and contact information.

OfLs are furthermore urged to keep their own profiles within the EURL-DataPool up-to-date, especially their commodity and pesticide scopes and their contact information.

Labs that are obliged to participate in a given EUPT, and that are not able to participate, must provide the reasons for their non-participation This also applies to any participating laboratories that fail to report results.

OfLs not paying the EUPT sample delivery fee will be initially warned that their participation in subsequent EUPTs could be denied. In case of a repetitive non-payment, the EUPT organisers will inform the corresponding NRL to take action.

### Confidentiality and Communication

The proprietor of all EUPT data is DG-SANTE and as such has access to all information.

For each EUPT, the laboratories are given a unique code (lab code), initially only known to themselves and the organisers. In the final EUPT-Report, the names of participating laboratories will not be linked to their laboratory codes. It should be noted, however, that the organisers, at the request by DG-SANTE, may present the EUPT-results on a country-by-country basis. It may therefore be possible that a link between codes and laboratories could be made, especially for those countries where only one laboratory has participated. Furthermore, the EURLs reserve the right to share EUPT results and codes amongst themselves: for example, for the purpose of evaluating overall lab or country performance as requested by DG-SANTE.

As laid down in Regulation (EU) No. 2017/6253, NRLs are responsible for evaluating and improving their own OfL-Network. On request from the NRLs, the EURLs will provide them with the PT-codes of the participating OfLs belonging to their OfL-Network. This will allow NRLs to follow the participation and performance of the laboratories within their network.

Communication between participating laboratories during the test, on matters concerning a PT exercise, is not permitted from the start of the PT exercise until the preliminary report distribution.

For each EUPT the organising EURL prepares a specific EUPT-Website where all PT-relevant documents in their latest version are linked. In case of important modifications on any of these documents, the participating laboratories will be informed via e-mail. In any case, as soon as the PT- period starts the participants are encouraged to visit the particular EUPT-Website, to make sure that they are using the latest versions of all PT-relevant documents.

The official language used in all EUPTs is English.

#### Announcement / Invitation Letter

At least 3 months before the distribution of the Test Item the EURLs will publish an Announcement/Invitation letter on the EURL-web-portal and distribute it via e-mail to the NRL/OfL mailing list available to the EURLs. This letter will inform about the commodity to be used as Test Item, as well as links to the tentative EUPT-Target Pesticide List and the tentative EUPT-Calendar.

#### Target Pesticide List

This list contains all analytes (pesticides and metabolites) to be sought for, along with the Minimum Required Reporting Levels (MRRLs) valid for the specific EUPT. The MRRLs are typically based upon the lowest MRLs found either in Regulation (EC) No. 2005/396 and Regulation (EU) No. 2016/ 128 (Baby Food Directive). Labs must express their results as stated in the Target Pesticides List.

<sup>&</sup>lt;sup>6</sup> Official controls in the sense of Regulation (EU) 2017/625. This includes labs involved in controls within the framework of national and/or EU programs, as well as labs involved in import controls according to Regulation (EU) 2019/1793 (which repealed Regulation (EC) No. 2009/669).

## Specific Protocol

For each EUPT the organising EURL will publish a Specific Protocol at least 2 weeks before the Test Item is distributed to the participating laboratories. The Specific Protocol will contain all the information previously included in the Invitation Letter but in its final version, information on payment and delivery, instructions on how to handle the Test Item upon receipt and on how to submit results, as well as any other relevant information.

#### Homogeneity of the Test Item

The Test Item will be tested for homogeneity typically before distribution to participants. The homogeneity tests usually involve analysis of two replicate analytical portions, taken from at least ten randomly chosen units of treated Test Item. Measurements should be conducted in random order. The homogeneity test data are statistically evaluated according to ISO 13528:2022, Annex B<sup>7</sup> or to the International Harmonized Protocols jointly published by ISO, AOAC and IUPAC<sup>8</sup>. The results of all homogeneity tests are presented to the EUPT-SC. In special cases, where the above homogeneity test criteria are not met, the EUPT-SC, considering all relevant aspects (e.g. the homogeneity results of other analytes spiked at the same time, the overall distribution of the participants' results (CV\*), the analytical difficulties faced during the test, knowledge of the analytical behaviour of the compound in question), may decide to overrule the test. The reasons of this overruling have to be transparently explained in the Final EUPT-Report. For certain analytes with comparable properties, an equivalent distribution within the sample can be expected if they were spiked/used at simultaneously. The homogeneity test, of one or more of these analytes, may thus be skipped or simplified. If, however, the distribution of participants' results for an analyte that was not or not fully tested for homogeneity, is found to be atypically broad, compared to the tested analytes, the EUPT-SC may decide that a homogeneity test should be performed a posteriori.

#### Stability of the analytes contained in the Test Item

The Test Items will also be tested for stability - according to ISO 13528:2022, Annex B<sup>7</sup>. The time delay between the first and the last stability test must exceed the period of the EUPT-exercise. Typically the first analysis is carried out shortly before the shipment of the Test Items and the last one shortly after the deadline for submission of results. To better recognise trends and gain additional certainty one or more additional tests may be conducted by the organisers. At least 6 subsamples (analytical portions) should be analysed on each test day (e.g. 2 analytical portions withdrawn from three randomly chosen containers OR 6 portions withdrawn from a single container). In principle, all analytes contained in the Test Item should be checked for stability. However, in individual cases, where sufficient knowledge exists that the stability of a certain analyte is very unlikely to be significantly affected during storage (e.g. based on experience from past stability tests or knowledge of its physicochemical properties), the organisers, after consultation with the EUPTQCG, may decide to omit a specific stability test. The EUPT-SC will finally decide whether analytes for which the stability test was not undertaken will be included in the Final EUPT-Report, considering all relevant aspects such as the distribution of the participant's results (CV\*).

An analyte is considered to be adequately stable if  $| yi - y | \le 0.3 \times \sigma pt$ , with yi being the mean value of the results of the last phase of the stability test, y being the mean value of the results of the first phase of the stability test and  $\sigma pt$  being the standard deviation used for proficiency assessment (typically 25 % of the assigned value).

The results of all stability tests are presented to the EUPT-SC. In special cases where the above stability test criteria are not met, the EUPT-SC considering all relevant aspects (e.g. the past experience with the stability of the compound, the overall distribution the participants' results, the measurement variability, analytical difficulties faced during the test and knowledge about the analytical behaviour of the compound in question) may decide to overrule the test. The reasons of this overruling will be transparently explained in the Final EUPT-Report. The organisers may also decide to conduct additional stability tests at different storage conditions than those recommended to the participants e.g. at ambient temperature

#### Stability during shipment:

Considering knowledge about the expected susceptibility of analytes in the Test Item to possible losses, the organisers will choose the shipment conditions to be such that analyte losses are minimised (e.g. shipment of frozen samples, addition of dry ice). As shipmentduration can differ between labs/countries it is recommended that the organisers keep track of the shipment duration and then decide whether it is reasonable to conduct additional stability tests at conditions simulating shipment. Should critical losses be detected for certain analytes, the EUPTSC will be informed (or the EUPT-QCG before or during the test). Case-by-case decisions may be taken by the EUPT-SC considering all relevant aspects including the duration and conditions of the shipment to the laboratory as well as the feedback by the laboratory.

#### Methodologies to be used by the participants

Participating laboratories are instructed to use the analytical procedure(s) that they would routinely employ in official control activities (monitoring etc.). Where an analytical method has not yet been established routinely this should be stated.

<sup>&</sup>lt;sup>7</sup> ISO 13528:2022: "Statistical methods for use in proficiency testing by interlaboratory comparisons", International Organization for Standardization.

 $<sup>^{8}</sup>$  Thompson M., Ellison S.L.R., Wood R., "The International Harmonized Protocol for the proficiency testing of analytical chemistry laboratories" (IUPAC Technical Report). Pure Appl. Chem. 2006, 78, 145  $\Box$  196

## General procedures for reporting results

Participating laboratories are responsible for reporting their own quantitative results to the organiser within the stipulated deadline. Any analyte that was targeted by a participating laboratory should be reported as "analysed". Each laboratory will be able to report only one result for each analyte detected in the Test Item. The concentrations of the analytes detected should be expressed in 'mg/kg' unless indicated otherwise in the specific protocol. Laboratories should not report results below their reporting limits.

#### Correction of results for bias

According to the DG-SANTE Guidelines, the result of an analyte needs to be adjusted for method bias if the bias exceeds 20%. Unless a method is used that inherently accounts for method bias (see cases a-c below), laboratories are required to report the recovery (in percent), and whether their results were corrected mathematically using a recovery factor reflecting the reported recovery.

The EUPT-Panel will examine whether results, for which no correction for recovery was undertaken, should be omitted from the population used for calculating the assigned value.

When the laboratory uses any of the following approaches inherently accounting for method bias, this needs to be indicated in the appropriate fields within the Web-Tool. In such cases, reporting of the recovery rate is not mandatory.

- a. use of stable isotope labelled analogues of the target analytes as Internal Standard (ILISs),added to the analytical portion at an early stage of the procedure
- b. 'procedural calibration' approach
- c. 'standard addition' approach with additions of analyte(s) to the analytical portions before extraction.

#### Methodology information

All laboratories are requested to provide information on the analytical method(s) they have used. The Web-Tool, which also serves for submitting analytical results, is typically used for collecting method information.

The collection of method information is considered very important by the EUPT-SC, as it facilitates the interpretation of results and the identification of analytical patterns associated with systematically biased results. A compilation of the methodology information submitted by all participants may be presented in an Annex of the Final EUPT-Report or in a separate report. Where the initial method information provided by the participating laboratories is not sufficient for evaluating methodology related errors, or where additional information critical for results evaluation is needed, the EURLs and/or the EUPT-Panel may decide to conduct specific follow-up surveys among the concerned laboratories. If no sufficient information on the methodology used is provided, the organisers reserve the right not to accept the analytical results reported by the participants concerned or even refuse participation in the following PT.

Where necessary the methods are evaluated and discussed within the EUPT-SC, especially in those cases where the result distribution is not unimodal or very broad (e.g.  $CV^* > 35$  %)

#### **Results evaluation**

The procedures used for the treatment and assessment of results are described below.

### False Positive (FP) results

These are results of analytes from the Target Pesticides List, that are reported, at or above, their respective MRRL although they were: (i) not detected by the organiser, even after repeated analyses, and/or (ii) not detected by the overwhelming majority (e.g. > 95 %) of the participating laboratories that had targeted the specific analytes. In certain instances, case-by-case decisions by the EUPT-SC may be necessary.

Any results reported lower than the MRRL will not be considered as false positives, even though these results should not have been reported.

#### False Negative (FN) results

These are results for analytes reported by the laboratories as 'analysed' but without reporting numerical values although they were: a) used by the organiser to treat the Test Item and b) detected by the organiser as well as the majority of the participants that had targeted these specific analytes at or above the respective MRRLs. Results reported as '< RL' (RL= Reporting Limit of the laboratory) will be considered as not detected and will be judged as false negatives. In certain instances, caseby-case decisions by the EUPT-SC may be necessary.

In cases of the assigned value being less than a factor of 3 times the MRRL, false negatives will typically not be assigned. The EUPT-SC may decide to take case-by-case decisions in this respect after considering all relevant factors such as the result distribution and the RLs of the affected labs.

#### Estimation of the assigned value (xpt)

To minimise the influence of out-lying results on the statistical evaluation, the assigned value xpt (= consensus concentration) will typically be estimated using the robust estimate of the participant's mean (x\*) as described in ISO 13528:2022°, taking into account the results reported by EU and EFTA countries laboratories only. In special justifiable cases, the EUPT-Panel may decide including results submitted by laboratories not belonging to the EU-/EFTA-OfLs network or to even to only use the results of a subgroup of ('expert') laboratories that have previously repeatedly demonstrated good performance for the specific or similar compounds.

<sup>&</sup>lt;sup>9</sup> ISO 13528:2022 'Statistical methods for use in proficiency testing by interlaboratory comparisons", International Organization for Standardization. Therein a specific robust method for determination of the consensus mean and standard deviation without the need for removal of deviating results is described (Algorithm A in Annex C).

Furthermore, the EUPT-Panel may decide to eliminate certain results traceably associated with bias or gross errors for establishing the assigned value (see 'Omission or Exclusion of results' below).

Since the assigned values of the EUPT analytes are typically generated using robust mean concentrations of participant results (xpt), which are generated by a variety of analytical standards and methods, the assigned values of EUPTs are typically metrologically not traceable.

#### **Omission or Exclusion of results**

Before estimating the assigned value, results associated with obvious mistakes have to be examined to decide whether they should be removed from the population. Such gross errors may include incorrect recording (e.g. due to transcription errors by the participant, decimal point faults or transposed digits, incorrect unit), calculation errors (e.g. missing factors), analysis of a wrong sample/extract (e.g. a spiked blank), use of wrong concentrations of standard solutions, incorrect data processing (e.g. integration of wrong peak), inappropriate storage or transport conditions (in case of susceptible compounds), and the use of inappropriate analytical steps or procedures that demonstrably lead to significantly biased results (e.g. employing inappropriate internal standards or analytical steps or conditions leading to considerable losses, due to degradations, adsorptions, incomplete extractions, partitioning etc.). Where the organisers (e.g. after the publication of the preliminary report) receive information of such gross errors, having a significant impact on a generated result, the affected results will be examined on a case-by-case basis to decide whether, or not, they should be excluded from the population used for robust statistics. Results may also be omitted e.g. if an inappropriate method has been used even if they are not outliers. All decisions to omit/exclude results will be discussed with the EUPT-SC and the reasoning for the omission of each result clearly stated in the Final EUPT-Report. However, z scores will be calculated for all results irrespective of the fact that they were omitted from the calculation of the assigned value.

Omitted results might be interesting as they might give indications about possible source(s) of errors. The organisers will thus ask the relevant lab(s) to provide feedback on possible sources of errors (see also "follow-up activities").

Results reported by laboratories from non-EU member states are typically excluded from the population that is used to derive the assigned value (see also "Estimation of the assigned value").

#### Uncertainty of the assigned value

The uncertainty of the assigned values u(xpt) is calculated according to ISO 13528:2022 as:

$$u\left(x_{pt}\right) = 1,25 \times \frac{s}{\sqrt{p}}$$

where  $s^*$  is the robust standard deviation and p is the number of results.

In certain cases, and considering all relevant factors (e.g. the result distribution, multimodality, the number of submitted results, information regarding analyte homogeneity/stability, information regarding the use of methodologies that might produce a bias that were used by the participants), the EUPT-SC may consider the assigned value of a specific analyte to be too uncertain and decide that the results should not be evaluated, or only evaluated for informative purposes. The provisions of ISO 13528:2022 concerning the uncertainty of the assigned value will be taken into account.

#### Standard deviation of the assigned value (target standard deviation)

The target standard deviation of the assigned value (FFP-opt) will be calculated using a Fit-ForPurpose approach with a fixed Relative Standard Deviation (FFP-RSD).

Based on experience from previous EUPTs<sup>10</sup>, a percentage FFP-RSD of 25 % is currently used for all analyte-matrix combination, with the target standard deviation being calculated as follows:

 $FFP-\sigma_{pt} = 0.25 \times x_{pt}$ 

The EUPT-SC reserves the right to also employ other FFP-RSDs or other approaches for setting the assigned value on a case-by-case basis, considering analytical difficulties and experience gained from previous proficiency tests. For informative purposes the robust relative standard deviation (CV\*) of the participants results is calculated according to ISO 13528:2022; Chapter 7.7 following Algorithm A in Annex C (so called "consensus approach").

#### z scores

This parameter is calculated using the following formula:

$$z_i = \frac{\left(x_i - x_{pt}\right)}{FFP - \sigma_{pt}}$$

where xi is the value reported by the laboratory, xpt is the assigned value, and FFP-opt is the standard deviation using the FFP approach. Z scores will be rounded to one decimal place. For the calculation of combined z scores (see below) the original z scores will be used and the combined z scores will be rounded to one decimal place after calculation.

Any z scores > 5 will be typically reported as '> 5' and a value of '5' will be used to calculate combined z scores (see below).

<sup>&</sup>lt;sup>10</sup> Comparative Study of the Main Top-down Approaches for the Estimation of Measurement Uncertainty in Multiresidue Analysis of

Pesticides in Fruits and Vegetables. J. Agric. Food Chem., 2011, 59(14), 7609-7619. DOI:10.1021/jf104060h

<sup>&</sup>lt;sup>11</sup> ISO/IEC 17043:2010. Conformity assessment – General requirements for proficiency testing

Following ISO 17043:2010<sup>11</sup>, z scores will be classified as follows::

|z| ≤2.0 Acceptable

2.0 < |z| < 3.0 Questionable

 $|z| \ge 3.0$  Unacceptable

All false negatives will be assigned a z score of -4. These z scores will typically appear in the z score histograms and will be used in the calculation of combined z scores.

### Collection of measurement uncertainty (MU) figures

The participating labs will be asked to report the MU figure they would routinely report with each EUPT result. The EUPT-SC will decide whether and how to evaluate these figures and whether indications will be made to the laboratories in this respect.

## Category classification

The EUPT-SC will decide if and how to classify the laboratories into categories based on their scope and/or performance. Currently, a scope-based classification into Category A and Category B is employed. Laboratories that a) are able to analyse at least 90% of the compulsory analytes in the target pesticides list, b) have correctly detected and quantified a sufficiently high percentage of the analytes present in the Test Item (at least 90%) and c) reported no false positives, will have demonstrated 'sufficient scope' and will be therefore classified into Category A. For the 90% criterion, the number of analytes needed to be correctly analysed to have sufficient scope will be calculated by multiplying the number of compulsory analytes from the Target Pesticides List by 0.9 and rounding to the nearest full number with 0.5 decimals being rounded downwards (see some examples in Table 1).

Table 1. No. of analytes from the Target Pesticides List needed to be targeted or analytes present in the Test Ite	m that need to
be correctly detected and quantified to have sufficient scope.	

No of compulsory		No of analytes needed to be		
analytes present in the Test Item / Target Pesticides List (N)	90 %	correctly detected and quantified / targeted to have sufficient scope (n)	n	
3	2.7	3	N	
4	3.6	4	IN	
5	4.5	4		
6	5.4	5		
7	6.3	6		
8	7.2	7		
9	8.1	8	NI 4	
10	9.0	9	IN - 1	
11	9.9	10		
12	10.8	11		
13	11.7	12		
14	12.6	13		
15	13.5	13		
16	14.4	14		
17	15.3	15		
18	16.2	16		
19	17.1	17	NL D	
20	18	18	IN - 2	
21	18.9	19		
22	19.8	20		
23	20.7	21		
24	21.6	22		
25	22.5	22	NL 2	
26	23.4	23	N - 3	

The EUPT-SC reserves the right to develop and apply alternative classification rules

### Overall performance of laboratories - combined z scores

For evaluation of the overall performance of laboratories within Category A, the Average of the Squared z score  $(AZ2)^{12,13}$  (see below) will be used. The  $AZ^2$  is calculated as follows:

$$AZ^2 = \frac{\sum_{i=1}^n z_i^2}{n}$$

Where n is the number of z scores to be considered in the calculation. In the calculation of  $AZ^2$ , z scores > 5 will be set as 5. Based on the AZ2 achieved, the laboratories are classified as follows:

$$AZ^2 \le 2.0$$
 Good  
2.0 <  $AZ^2 < 3.0$  Satisfactory  
 $AZ^2 \ge 3.0$  Unsatisfactory

Combined z scores are considered to be of lesser importance than individual z scores. The EUPTSC retains the right not to calculate  $AZ^2$  if it is considered as not being useful or if the number of results reported by any participant is considered to be too low.

In the case of EUPT-SRMs, where only a few results per lab may be available, the Average of the Absolute z scores (AAZ) may be calculated for informative purposes, but only for labs that have reported enough results to obtain 5 or more z scores. For the calculation of the AAZ, z scores higher than 5 will also be set as 5. The z scores appointed to false negatives will be also included in the calculation of the combined z scores.

<sup>&</sup>lt;sup>12</sup> Formerly named "Sum of squared z scores (SZ<sup>2</sup>)"

<sup>&</sup>lt;sup>13</sup> Laboratory assessment by combined z score values in proficiency tests: experience gained through the EUPT for pesticide residues in fruits and vegetables. Anal. Bioanal. Chem., 2010, 397, 3061–3070.

Laboratories within Category B will be typically ranked according to the total number of analytes they correctly reported to be present in the Test Item. The number of acceptable z scores achieved will be presented, too. The EURL-SC retains the right to calculate combined z scores (see above) also for labs within Category B, e.g. for informative purposes, provided that a minimum number of results (z scores) have been reported.

# Publication of results

The EURLs will publish a preliminary report, containing tentative assigned values and z score values for all analytes present in the Test Item, within 2 months of the deadline for result submission.

The Final EUPT-Report will be published after the EUPT-SC has discussed the results. Taking into account that the EUPT-SC meets normally only once a year (typically in late summer or autumn) to discuss the results of all EUPTs organised by the EURLs earlier in the year, the Final EUPT-Report may be published up to 12 months after the deadline for results submission. Results submitted by non-EU/EFTA laboratories might not always be used in the tables or figures in the Final Report.

### Certificates of participation

Together with the Final EUPT-Report, the EUPT organiser will deliver a Certificate of Participation to each participating laboratory showing the z scores achieved for each individual analyte, the classification into Categories, and if deemed necessary also combined z scores. The certificates of participation will be uploaded onto the EURL-DataPool where they can be accessed by the concerned laboratories only.

#### Feedback

At any time before, during or after the PT participants have the possibility to contact the organisers and make suggestions or indicate errors. After the distribution of the Final EUPT-Report, participating laboratories will be given the opportunity to give their feedback to the organisers and make suggestions for future improvements.

#### **Correction of errors**

Should errors be discovered in any of the documents issued prior to the EUPT (Calendar, Target Pesticides List, Specific Protocol, General Protocol) the corrected documents will be uploaded onto the website and in the case of substantial errors the participants will be informed. **Before starting the exercise, participants should make sure to download the latest version of these documents**.

If substantial errors are discovered in the Preliminary EUPT-Report the organisers will distribute a new corrected version, where it will be stated that the previous version is no longer valid.

Where substantial errors are discovered in the Final EUPT-Report the EUPT-SC will decide whether a corrigendum will be issued and how this should look like. The online version of the Final EUPT report will be replaced by the new one and all affected labs will be contacted.

Where errors are discovered in EUPT-Certificates the relevant laboratories will be sent new corrected ones. Where necessary the laboratories will be asked to return the old ones.

#### Follow-up activities

Laboratories are expected to undertake follow-up activities to trace back the sources of erroneous or strongly deviating results (typically those with |z| > 2.0) - including all false positives. In exceptional cases, follow-up activities may even be indicated for results within  $|z| \le 2.0$  (e.g. if two errors with opposed tendency cancel each other leading to acceptable results). Upon request, the laboratory's corresponding NRL and EURL are to be informed of the outcome of any investigative activities for false positives, false negatives and for results with  $|z| \ge 3.0$ . Concerning z scores between 2.0 and 3.0 the communication of the outcome of follow-up activities is optional but highly encouraged where the source of deviation could be identified and could be of interest to other labs. In accordance with the instructions from DG-SANTE, the "Protocol for management of underperformance in comparative testing and/or lack of collaboration of National Reference Laboratories (NRLs) with EU Reference Laboratories (EURLs) activities" is to be followed.

NRLs will be considered as underperforming in relation to scope if in at least two of the last four EUPTs falling within their responsibility area they: a) haven't participated, or b) targeted less than 90% of the compulsory analytes in the target lists (80% for SRM-compounds), or c) detected less than 90% of the compulsory compounds present in the test items (80% for SRM-compounds).

Additionally, NRLs that obtained AZ2 higher than 3 (AAZ higher than 1.3 for SRM-compounds) in two consecutive EUPTs of the last four EUPTs, will be considered as underperforming in accuracy. As soon as underperformance of an NRL is detected, a two-step protocol established by DG-SANTE will be applied<sup>14</sup>: Phase 1:

- Identifying the origin of the bad results (failure in EUPTs).
- Actions: On the spot visits and training if necessary and repetition of the comparative test iffeasible and close the assessment of results by the EURL.

Phase 2:

• If the results still reveal underperformance the Commission shall be informed officially by the EURL including a report of the main findings and corrective actions.

• The Commission shall inform the Competent Authority and require that appropriate actions are taken. Underperformance rules for the OfLs will be established at a later stage.

#### Disclaimer

The EUPT-SC retains the right to change any parts of this EUPT – General Protocol based on new scientific or technical information. Any changes will be communicated in due course.

<sup>&</sup>lt;sup>14</sup> Article 101 of Regulation (EU) 2017/625

# **EUPT-FV25 SPECIFIC PROTOCOL**

### European Union Proficiency Test for Pesticide Residues in Fruits and Vegetables (2023)

## Introduction

This protocol is complementary to the General Protocol of EU Proficiency Tests (EUPT) for Pesticide Residues in Food and Feed (10<sup>th</sup> Edition). This Proficiency Test is organised by the EURL for Pesticide Residues in Fruits and Vegetables covering Multiresidue Methods (MRM) of analysis.

According to Article 28 of Regulation 396/2005/EC (23<sup>rd</sup> February 2005) of the European Parliament and of the Council, all laboratories analysing samples for the official control of pesticide residues shall participate in the European Union Proficiency Tests (EUPTs) for pesticide residues organised by the European Union.

These proficiency tests are carried out in order to improve the quality, accuracy and comparability of the residue data and to evaluate the laboratory capacity to report results that covers the entire range of maximum residue limits (0.001 - 15 mg/kg) in all groups of fruit and vegetable matrices (high water, acid and fat content). Bearing that in mind, a wide concentration range should be covered with the different analytes present in the test item.

#### Test Item

This proficiency test is based on the analysis of pesticide residues in **melon**. Melons of *Galia* variety were grown in a greenhouse in Almería. The pesticide treatments carried out were pre-harvest using commercial formulations and post-harvest using analytical standards. The test item was milled, homogenised and packed in plastic bags. The material was frozen and it was milled again, and sub-sampled into polyethylene bottles that had previously been coded.

Ten of these bottles containing the test item were chosen randomly and analysed to check for homogeneity. The test item was stored frozen ( $-20^{\circ}$ C) prior to shipment to participants.

A minimum of six bottles, again chosen randomly, will be analysed over a period of time to confirm the stability of the pesticides in the test item (three when the test items are shipped, then other three bottles a few days after the deadline for submitting results). There will be one further analysis during this period using three bottles more and reproducing the sample shipment to see if there is any degradation of any of the pesticides present in the test item. If the sample shipment of EU/EFTA labs takes more than 48 hours, three extra bottles will be analysed each day of delay, studying this way the stability of the samples that took longer to arrive to an EU/EFTA laboratory.

All analytical determinations concerning the test item treatment analysis will be performed in a laboratory which is ISO 17025 accredited, in this case, the EURL-FV laboratory.

Blank material will not be distributed to the participants.

### Amount of Test Item

Participants will receive:

• Approximately 200 g of melon test item treated with pesticides.

#### Shipment of Test Item

All Test Items will be frozen and packed in polystyrene boxes surrounded in dry ice and packed into cardboard boxes.

The shipment of the test items will be carried out over a one-week period from the 6<sup>th</sup> March 2023. The Organiser will try to ensure that all the packages arrive on the same day to each laboratory. An information message will be sent out by e-mail before shipment. Laboratories must make their own arrangements for the receipt of the package. They must inform the Organiser of any public holidays in their country/city during the delivery period given in the calendar, as well as making the necessary arrangements for receiving the shipment, even if the laboratory is closed.

The Organisers will not take the responsibility for a parcel if it is retained at customs.

#### Advice on Test Item Handling

Once received, the test item should be stored deeply frozen (-18°C or less) prior to analysis thus avoiding any possible deterioration/spoilage. The test item should be mixed thoroughly before taking the analytical portion(s).

All participants should use their own routine standard operating procedures for extraction, clean-up and analytical measurement and their own reference standards for identification and quantification.

#### Target List

Participants will be provided with two target pesticide lists, one with pesticides that have to be analysed on a compulsory basis, and a second one with pesticides to be analysed voluntarily. Those voluntary pesticides will not be used for the evaluation of the laboratories into Category A or B, and a separate statistical evaluation will be made for them.

### Assigned value and robust relative standard deviation

In order to minimise the influence of out-lying results on the statistical evaluation, the assigned value will be estimated using the robust statistics as described in ANNEX C of ISO 13258:2015, where the robust mean  $(x^*)$  according algorithm A is defined. For the calculation of the assigned value only results reported by EU and EFTA countries laboratories will be taken into account.

Also, the robust relative standard deviation (CVs\*) will be calculated for each analyte.

#### Laboratory assessment

For the assessment of the overall laboratory performance, the Average of the Squared z-Score ( $AZ^2$ ) will be used as in the last Proficiency Test, but only for those laboratories in Category A, which will be those laboratories that are able to analyse at least 90% of the pesticides in the target list, that are able to detect at least 90% of

the pesticides evaluated in the test material and that report no false positives. Within Category A, the laboratories will be sub-classified as "good", "satisfactory" or "unsatisfactory". All the other laboratories will be classified in Category B. This information will be available in the General Protocol.

#### Steps to follow

This Proficiency Test will be made up of the following nine essential steps:

1.To participate, each laboratory must complete the Application Form on-line, whose link is available on the EURL-FV Web page, before the deadline stipulated on the Calendar. It is recommended that laboratories download the Target Pesticide Lists from this web site. Laboratories should carefully read the Target Pesticide Lists, where the Minimum Required Reporting Limits (MRRLs) are given. The MRRLs do not always correspond with the EU MRLs set for melon.

2.The participation fee will be **350 euros** for EU/EFTA participants and **450 euros** for participants from other countries. The laboratories will receive an invoice and after that they can start the payment procedure. An email showing the bank transfer confirmation, or similar, may be requested at any time by the Organiser. Payments without the <u>invoice number</u> identifying them will not be considered as paid.

3. Any communication with the Organisation should be made using a **Contact Form** placed in the restricted area, or by e-mail (cferrer@ual.es).

4.Laboratories will be assigned a user name and password for the restricted area of submission of results.

5.**Scope Form** will be placed in the restricted area and will be open to participants from the 23<sup>rd</sup> February – 6<sup>th</sup> March 2023, prior to test item shipment. The aim is that laboratories provide information regarding their scope of analysis before receipt of the test item. As default, all compounds of the mandatory target list are selected and all compounds of the voluntary target list are deselected, and the MRRL is listed in the scope. Laboratories will be asked to indicate the compounds they have in their PT scope and insert their Reporting Limits for each pesticide. If a laboratory does not select their scope, the default values will be considered for its evaluation.

6.When the participant laboratories receive the test item (and not before), they must enter the restricted area again and submit the **Test Item Receipt Form** to inform the Organiser that they have accepted the test item. If no test item has been received by 10<sup>th</sup> March 2023, the laboratories should contact the Organiser. If the test item receipt form is not filled in, the Organiser will consider that the participant has accepted the test item.

7.Once the laboratory has analysed the test item and is ready to submit their data, they must enter their results at various steps by accessing the restricted area in the EURL-FV web site. The participant laboratories must respect the deadline for submitting their results – 3<sup>rd</sup> April 2023- using the tabs **Detected**, **Edit results and Edit Methods** on-line.

For each pesticide included in the laboratory scope, the Reporting Limit (RL) will be requested. This form will also request information on which of the pesticides sought by the laboratory is within the laboratory's routine scope and whether it is accredited.

All concentrations must be expressed in mg/kg together with the recovery as a percentage. The actual results/residue levels measured must be reported as numbers. **Symbols (>**, <,  $\pm$ ,  $\geq$ ,  $\leq$ , ...) will not be accepted. IMPORTANT: If your result is not correctly expressed it will be considered as 'ND' (Not Detected).

The number of significant figures should be:

- Two, for residue levels <0.010 mg/kg (e.g. 0.0086 mg/kg).

- Three, for residue levels  $\geq$  0.010 mg/kg (e.g. 0.0673, 0.245, 1.32, 10.1 mg/kg).

Results should not be reported where a pesticide was not detected or was detected below the laboratory LOQ. In both cases, this will be recorded as 'ND'. If a pesticide was not sought, it will be recorded as 'NA' (Not Analysed). If a laboratory fills in the scope form, but it does not report results neither fills in the methods form, their results will be: "No results reported".

The laboratory will also be asked to report the details of the analytical methods they used. A list including all the pesticides detected in the sample will be shown along with a pesticide reference number. Laboratories may describe a method for the first pesticide and use this pesticide reference number to refer to other pesticides determined using the same method.

When all fields are filled out, laboratories must accept and submit their final results by clicking the check box and then click on Final submission, before 3<sup>rd</sup> April 2023.

### IMPORTANT: After the final submission it will NOT be possible to edit the results.

Participants will receive an email confirming the submission of their results, and with an attached excel file with their submitted data.

It should not be assumed that only pesticides registered for use on melon are present in the test item.

8.One final tab, **Additional Info**, will be accessible after the deadline for submission of results has passed. In this Form it will be possible to submit the method information of false negative results. The deadline for this form will be 12<sup>th</sup> April 2023. Not all laboratories may need to fill this in. It will depend upon information reported on previous Forms.

9. The Organiser will evaluate the results at the end of the proficiency test, once the deadline for receipt of results has passed. When necessary, the Organiser will ask the participants by e-mail specific details about the methods of analysis used. A preliminary report containing the preliminary assigned values and z scores will be sent to the participants. Finally, after evaluation by the Scientific Committee, the Final Report will be published online, and a copy will be sent to each participant laboratory. This report will include information regarding the design of the test, the homogeneity and stability results, a statistical evaluation of the participant's results as

well as graphical displays of the results and any conclusions. Results submitted by non-EU/EFTA laboratories might not always be used in the tables or figures in the final report. Further relevant information considered to be of value may also be included.

#### Calendar

ACTIVITY	DATE
Registration period	1st January - 10th February 2023
Specific Protocol published on the Web site.	20th February 2023 at the latest
Selection of the scope	23th February – 6th March 2023
Sample distribution.	6 <sup>th</sup> March 2023
Deadline for receiving sample acceptance	10 <sup>th</sup> March 2023
Deadline for receiving results	3 <sup>rd</sup> April 2023
Filling in additional information, if necessary.	4 <sup>th</sup> - 12 <sup>th</sup> April 2023
Preliminary Report: (containing preliminary assigned values and z scores)	April 2023
Final Report distributed to the Laboratories.	August 2023

#### Cost of test item shipment.

EU/EFTA laboratories will be charged 350 € for the shipment cost, for **non-EU/EFTA** laboratories the amount will be 450 €. Regarding payment procedures - each laboratory can specify their details and invoice requests when applying for the test.

Please, do not pay for this EUPT until you receive the invoice. Remember to include your <u>Invoice number</u> in the subject of the bank transfer.

Payment details are as follows:

BANK NAME: CAJAMAR - Caja Rural Sociedad Corporativa de Crédito BANK ACCOUNT HOLDER: Universidad de Almeria BANK ADDRESS: Office Number 990. Universidad de Almeria. Spain ACCOUNT NUMBER: ES0730580130172731005000 SWIFT: CCRIES2A

## Contact information

The official organising group details are as follows: Universidad de Almería. Edificio Químicas CITE I Ctra. Sacramento s/n 04120, La Cañada de San Urbano Almería - Spain

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# TARGET PESTICIDE LIST FOR EUPT-FV-25

Compulsory Compounds (will be considered in Category A/B classification)

Pestide No.	Pesticides	MRRL (mg/kg)	Additional information: Residue definitions or isomers to analyse	Webtool name
1	Acephate	0.01		Acephate
2	Acephate	0.01		
2	Aclonifen	0.01		Aclonifon
	Acrinathrin	0.01		Acrimeth
5	Aldicarb	0.01		Aldicarb
6	Aldicarb Sulfana	0.01		
7	Aldicarb Sulfovido	0.01		Aldicarb sulfoxido
0	Aldrin	0.01		
0	Ametoctradin	0.005		Ametoctradin
10		0.01		
10	Azorystrobin	0.005		Azinphos-methyl Azoxystrobin
12	Bifenthrin	0.01	Rifenthrin (sum of isomers)	Bifenthrin
12	Biphonyl	0.01		Biobenyl
11	Ritortanol	0.01	Ritortanol (sum of isomors)	Bitortanol
14	Rescalid	0.01		Boscalid
15	Promopropulato	0.01		Bromonronylato
10	вопороругате	0.01	Promucopazolo	ыотторгоругате
17	Bromuconazole	0.01	(sum of diastereoisomers)	Bromuconazole
18	Bupirimate	0.01		Bupirimate
19	Buprofezin	0.01		Buprofezin
20	Cadusafos	0.005		Cadusafos
21	Carbaryl	0.005		Carbaryl
22	Carbendazim	0.01	Carbendazim and benomyl (sum of benomyl and carbendazim expressed as carbendazim)	Carbendazim (sum)
23	Carbofuran	0.005		Carbofuran
24	Carbofuran-3-hydroxy	0.005		Carbofuran-3-hydroxy
25	Chlorantraniliprole	0.01		Chlorantraniliprole
26	Chlorfenapyr	0.01		Chlorfenapyr
27	Chlorfenvinphos	0.01		Chlorfenvinphos
28	Chlorobenzilate	0.01		Chlorobenzilate
29	Chlorothalonil	0.01		Chlorothalonil
30	Chlorpropham	0.01		Chlorpropham
31	Chlorpyrifos	0.005		Chlorpyrifos
32	Chlorpyrifos-methyl	0.005		Chlorpyrifos-methyl
33	Clofentezine	0.01		Clofentezine
34	Clothianidin	0.01		Clothianidin
35	Cyantraniliprole	0.01		Cyantraniliprole
36	Cyazofamid	0.01		Cyazofamid
37	Cyflufenamid	0.01	Cyflufenamid: sum of cyflufenamid (Z-isomer) and its E-isomer	Cyflufenamid
38	Cyfluthrin	0.01	Cyfluthrin (cyfluthrin incl. other mixtures of constituent isomers (sum of isomers))	Cyfluthrin (sum of isomers)
39	Cymoxanil	0.01		Cymoxanil
40	Cypermethrin	0.01	Cypermethrin (cypermethrin incl. other mixtures of constituent isomers (sum of isomers))	Cypermethrin (sum of isomers)
41	Cyproconazole	0.01		Cyproconazole
42	Cyprodinil	0.01		Cyprodinil
43	Deltamethrin	0.01	Deltamethrin (cis-deltamethrin)	Deltamethrin (cis- deltamethrin)
44	Demeton-S- methylsulfone	0.005		Demeton-S- methylsulfone
45	Diazinon	0.005		Diazinon
46	Dichlofluanid	0.01		Dichlofluanid
47	Dichlorvos	0.005		Dichlorvos
48	Dicloran	0.01		Dicloran
40	Dicofol	0.01	Dicofol	Dicofol (sum of p, p´ and
49 50	Dieldrin	0.005	(sum of p, p´ and o,p´ isomers)	o,p´isomers) Dieldrin

# ANNEX A. Protocols and Target lists of pesticides to be sought.

Pestide No.	Pesticides	MRRL (mg/kg)	Additional information: Residue definitions or isomers to analyse	Webtool name
51	Diethofencarb	0.01		Diethofencarb
52	Difenoconazole	0.01		Difenoconazole
53	Diflubenzuron	0.01		Diflubenzuron
54	Dimethoate	0.003		Dimethoate
55	Dimethomorph	0.01	Dimethomorph (sum of isomers)	Dimethomorph
F (	Dimethylaminosulfotolui	0.01		Dimethylaminosulfotoluidi
50	dide (DMST)	0.01		de (DMST)
57	Diniconazole	0.01	Diniconazole (sum of isomers)	Diniconazole
58	Diphenylamine	0.01		Diphenylamine
59	Endosulfan alpha	0.01		Endosulfan alpha
60	Endosulfan beta	0.01		Endosulfan beta
61	Endosulfan sulfate	0.01		Endosulfan sulfate
62	EPN	0.01		EPN
63	Epoxiconazole	0.01		Epoxiconazole
64	Ethion	0.01		Ethion
65	Ethirimol	0.01		Ethirimol
66	Ethoprophos	0.005		Ethoprophos
67	Etofenprox	0.01		Etofenprox
68	Etoxazole	0.01		Etoxazole
69	Famoxadone	0.01		Famoxadone
/0	Fenamidone	0.01		Fenamidone
/1	Fenamiphos	0.01		Fenamiphos
72	Fenamiphos sulfone	0.01		Fenamiphos sulfore
7.4		0.01		Fenamiphos suiloxide
74	Fenalimoi	0.01		Fenalimo
75	Fenazaquin	0.01		Fenazaquin
70	Fonboyamid	0.005		Fonboyamid
78	Fenitrothion	0.01		Fenitrothion
70	Fenovycarb	0.01		Fenoxycarb
80	Fenpropathrin	0.01		Fenoropathrin
81	Fenpropidin	0.01		Fenpropidin
82	Fenpropimorph	0.01	Fenpropimorph (sum of isomers)	Fenpropimorph
83	Fenpyrazamine	0.01		Fenpyrazamine
84	Fenpvroximate	0.01		Fenpyroximate
85	Fenthion	0.01		Fenthion
86	Fenthion oxon	0.01		Fenthion oxon
87	Fenthion oxon sulfone	0.01		Fenthion oxon sulfone
88	Fenthion oxon sulfoxide	0.01		Fenthion oxon sulfoxide
89	Fenthion sulfone	0.01		Fenthion sulfone
90	Fenthion sulfoxide	0.01		Fenthion sulfoxide
			Fenvalerate (any ratio of	Fenvalerate and
91	Fenvalerate	0.01	constituent isomers (RR, SS, RS &	Esfenvalerate (Sum of
			SR) including esfenvalerate)	RR/SS and RS/SR isomers)
92	Fipronil	0.004		Fipronil
93	Fipronil sulfone	0.004		Fipronil-Sulfone
94	Flonicamid	0.01		Honicamid
95	Flubendlamide	0.01		Flubendiamide
96	Fludioxonil	0.01		Fludioxonil
97	Flutenoxuron	0.01		Flutenoxuron
98	Fluopicolide	0.01		Fluopicolide
99	Fluopyram	0.01		Fluopyram
100	Flugilazala	0.01		Fluquinconazole
101	Flutolopil	0.01		
102	Flutriafol	0.01		Flutriafol
103	Fluxapyrovad	0.01		Fluxapyrovad
104	Fluxapyloxad	0.01	Formotanato (Sum of	Пихаруюхай
105	Formetanate	0.01	formetanate (sum of formetanate and its salts expressed as formetanate (hydrochloride))	Formetanate
106	Fosthiazate	0.01		Fosthiazate
107	Hexaconazole	0.01		Hexaconazole
108	Hexythiazox	0.01		Hexythiazox

# ANNEX A. Protocols and Target lists of pesticides to be sought.

Pestide No.	Pesticides	MRRL (mg/kg)	Additional information: Residue definitions or isomers to analyse	Webtool name
109	Imazalil	0.005		Imazalil
110	Imidacloprid	0.01		Imidacloprid
111	Indoxacarb	0.01	Indoxacarb (sum of indoxacarb and its R enantiomer)	Indoxacarb (sum of isomers)
112	Iprodione	0.01	, , , , , , , , , , , , , , , , , , ,	Iprodione
113	Iprovalicarb	0.01		Iprovalicarb
114	Isocarbophos	0.01		Isocarbophos
115	Isofenphos-methyl	0.01		lsofenphos-methyl
116	Isoprothiolane	0.01		Isoprothiolane
117	Kresoxim-methyl	0.01		Kresoxim-methyl
118	Lambda-Cyhalothrin	0.01	Lambda-cyhalothrin (sum of isomers)	Lambda-cyhalothrin (sum of isomers)
119	Linuron	0.01		Linuron
120	Lufenuron (any proportion of constituent isomers)	0.01		Lufenuron
121	Malaoxon	0.01		Malaoxon
122	Malathion	0.01		Malathion
123	Mandipropamid	0.01		Mandipropamid
124	Mepanipyrim	0.01		Mepanipyrim
125	Metaflumizone	0.01	Metaflumizone (sum of E- and Z- isomers)	Metaflumizone (sum of E- and Z- isomers)
126	Metalaxyl	0.01	Metalaxyl and metalaxyl-M	Metalaxyl
127	Methamidophos	0.01		Methamidophos
128	Methidathion	0.01		Methidathion
129	Methiocarb	0.01		Methiocarb
130	Methiocarb sulfone	0.01		Methiocarb sulfone
131	Methiocarb sulfoxide	0.01		Methiocarb sulfoxide
132	Methomyl	0.01		Methomyl
133	Methoxyfenozide	0.01		Methoxyfenozide
134	Metrafenone	0.01		Metrafenone
135	Monocrotophos	0.005		Monocrotophos
136	Myclobutanyl	0.01		Myclobutanil
137	Orthophenylphenol	0.003	Orthophenylphenol (Free	Orthophenylphenol
	entilophenyiphenoi	0.01	compound only), 2-phenylphenol	ertilephenyiphenei
139	Oxadixyl	0.01		Oxadiargyl
140	Oxamyl	0.01		Oxamyl
141	Oxydemeton-methyl	0.005	Demeton-S-Methylsulfoxide	Oxydemeton-methyl
142	Paclobutrazole	0.01		Paclobutrazol
143	Paraoxon-methyl	0.01	Deve the second second	Paraoxon-methyl
144	Parathion mothul	0.01	Parathion-ethyl	Parathion-ethyl
145	Parathion-methyl	0.01		Parathion-methyl
140	Pencycuron	0.01		Pencycuron
1/18	Pendimethalin	0.01		Pendimethalin
149	Permethrin	0.01	Permethrin (sum of isomers)	Permethrin (sum of isomors)
150	Phenthoate	0.01		Phenthoate
151	Phosalone	0.01		Phosalone
152	Phosmet	0.01		Phosmet
153	Phosmet oxon	0.01		Phosmet oxon
154	Phoxim	0.01		Phoxim
155	Pirimicarb	0.01		Pirimicarb
156	Pirimicarb-desmethyl	0.01		Pirimicarb-desmethyl
157	Pirimiphos-methyl	0.01		Pirimiphos-methyl
158	Prochloraz	0.01	Prochloraz	Prochloraz
159	Procymidone	0.01		Procymidone
160	Profenofos	0.01		Profenofos
161	Propamocarb	0.01	Propamocarb (only parent compound)	Propamocarb
162	Propargite	0.01		Propargite
163	Propiconazole	0.01	Propiconazole (sum of isomers)	Propiconazole

# ANNEX A. Protocols and Target lists of pesticides to be sought.

Pestide No.	Pesticides	MRRL (mg/kg)	Additional information: Residue definitions or isomers to analyse	Webtool name
164	Propyzamide	0.01	ĺ	Propyzamide
165	Proquinazid	0.01		Proquinazid
166	Prosulfocarb	0.01		Prosulfocarb
167	Prothioconazole	0.01	Prothioconazole (Prothioconazole-desthio) (sum of isomers)	Prothioconazole-desthio
168	Prothiofos	0.01		Prothiofos
169	Pymetrozine	0.01		Pymetrozine
170	Pyraclostrobin	0.01		Pyraclostrobin
171	Pyridaben	0.01		Pyridaben
172	Pyridalyl	0.01		Pyridalyl
173	Pyrimethanil	0.01		Pyrimethanil
174	Pyriproxyfen	0.01		Pyriproxyfen
175	Quinoxyfen	0.01		Quinoxyfen
176	Spinetoram	0.01	Spinetoram (XDE-175)	Spinetoram
177	Spinosad	0.01	Spinosad (sum of spinosyn A and spinosyn D, expr. as spinosad)	Spinosad (sum of spinosyn A and spinosyn D, expr. as spinosad)
178	Spirodiclofen	0.01		Spirodiclofen
179	Spiromesifen	0.01		Spiromesifen
180	Spirotetramat	0.01		Spirotetramat
181	Spirotetramat metabolite BYI08330- enol	0.01		Spirotetramat, BYI 03380-enol
182	Spiroxamine	0.01	Spiroxamine (sum of isomers)	Spiroxamine
183	Sulfoxaflor	0.01	Sulfoxaflor (sum of isomers)	Sulfoxaflor
184	Tau-Fluvalinate	0.01		Tau-Fluvalinate
185	Tebuconazole	0.01		Tebuconazole
186	Tebufenozide	0.01		Tebufenozide
187	Tebufenpyrad	0.01		Tebufenpyrad
188	Teflubenzuron	0.01		Teflubenzuron
189	Tefluthrin	0.01		Tefluthrin
190	Terbuthylazine	0.01		Terbuthylazine
191	Tetraconazole	0.01		Tetraconazole
192	Tetradifon	0.01		Tetradifon
193	Thiabendazole	0.01		Thiabendazole
194	Thiacloprid	0.01		Thiacloprid
195	Thiamethoxam	0.01		Thiamethoxam
196	Thiodicarb	0.01		Thiodicarb
197	Thiophanate-methyl	0.01		Thiophanate-methyl
198	Tolclofos-methyl	0.01		Tolclofos-methyl
199	Tolylfluanid	0.01		Tolvlfluanid
200	Triadimeton	0.01		Triadimeton
201	Triadimenol	0.01	Triadimenol (any proportion of constituent isomers)	Triadimenol
202	Triazophos	0.005		Triazophos
203	Trichlorfon	0.01		Trichlorfon
204	Tricyclazole	0.01		Tricyclazole
205	Trifloxystrobin	0.01		Trifloxystrobin
206	Triflumizole	0.01		Triflumizole
207	Triflumizole metabolite (FM-6-1)	0.01		Triflumizole, FM-6-1
208	Triflumuron	0.01		Triflumuron
209	Trifluralin	0.01		Trifluralin
210	Triticonazole	0.01		Triticonazole
211	Vinclozolin	0.01	Vinclozolin (only parent compound)	Vinclozolin
212	Zoxamide	0.01		7oxamide

MRRL: Minimum Required Reporting Level

This list is based on Commission Implementing Regulation (EU) EU) 2022/741 of 13 May 2022 MRRLs are based on Regulation (EC) No. 396/2005, Regulation (EU) 2016/127 and on toxicity data of each compound. Low MRRLs allow evaluation of pesticides at low concentration levels.

# VOLUNTARY PESTICIDE LIST FOR EUPT-FV-25 Voluntary Compounds (will <u>NOT</u> be considered in Category A/B classification)

Pestide	Posticidos	MRRL	Additional information:	Webtool name
No.	resticides	(mg/kg)	Residue definitions	Webtool hame
			or isomers to analyse	
1	Benalaxyl	0.01	Benalaxyl including other mixtures of constituent isomers including	Benalaxyl
2	Benzovindiflunyr	0.01		Benzovindiflupyr
2	Chlorfluazuron	0.01		Chlorfluazuron
4	Clomazone	0.01		Clomazone
5	Cyflumetofen	0.01		Cyflumetofen
6		0.01		
7	Dinotefuran	0.01		Dinotefuran
8	Diuron	0.01		Diuron
9	Fenobucarb	0.01		Fenobucarb
10	Fennicoxamid	0.01		Fennicoxamid
10	Florpyrauxifen-benzyl	0.01		Florpyrauxifen-benzyl
12	Fluensulfone	0.01		Fluensulfone
13	Flufenacet	0.01	Flufenacet (only parent	Flufenacet
14	Flupyradifurone	0.01		Flupyradifurone
15	Flutianil	0.01		Flutianil
16	Forchlorfenuron	0.01		Forchlorfenuron
17	Heptachlor	0.01		Heptachlor
18	Heptachlor epoxide,	0.01	cis-Heptachlor epoxide	Heptachlorepoxid-cis
19	Heptachlor epoxide,	0.01	trans-Heptachlor epoxide	Heptachlorepoxid-trans
20	Isofetamid	0.01		Isofetamid
20	Isopyrazam	0.01		Isopyrazam
22	Isoxaflutole	0.01		Isoxaflutole
23	Isoxaflutole diketonitrile degradate	0.01		Isoxaflutole, RPA 202248
24	Mefentrifluconazole	0.01		Mefentrifluconazole
25	Metaldehyde	0.01		Metaldehyde
26	Metconazole	0.01	Metconazole (sum of isomers)	Metconazole (sum of isomers)
27	Molinate	0.01		Molinate
28	Novaluron	0.01		Novaluron
29	Oxadiargyl	0.01		Oxadiargyl
30	Oxathiapiprolin	0.01		Oxathiapiprolin
31	Oxyfluorfen	0.01		Oxyfluorfen
32	Penflufen	0.01		Penflufen
33	Pentachloro-aniline	0.01		Pentachloroaniline
34	Penthiopyrad	0.01		Penthiopyrad
35	Phenmedipham	0.01		Phenmedipham
36	Picolinafen	0.01		Picolinafen
37	Propaquizafop	0.01		Propaquizafop
38	Pyrethrins	0.01	Pyrethrin (sum)	Pyrethrin (sum)
39	Pyridate	0.01	Pyridate (only parent compound)	Pyridate
40	Pyriofenone	0.01		Pyriofenone
41	Quinalphos	0.01		Quinalphos
42	Quinoclamine	0.01		Quinoclamine
43	Quintozene	0.01		Quintozene
44	Rotenone	0.01		Rotenone
45	Tetramethrin	0.01		Tetramethrin
46	Tolfenpyrad	0.01		Tolfenpyrad
47	Tri-allate	0.01		Tri-Allate
48	Tritosulfuron	0.01		Tritosulfuron

New pesticides this year This list is based on the working document SANCO/12745/2013 rev. 13 (4)

ON BEHALF OF	LABORATORY NAME	СІТҮ	COUNTRY	REPORTED RESULTS
Austria	AGES - Innsbruck	Innsbruck	Austria	Yes
Belgium	LOVAP NV - Belgium, Geel	Geel	Belgium	Yes
Belgium	Groen Agro Control - Netherlands	Delfgauw	The Netherlands	Yes
Belgium	Sciensano - Belgium, Brussels	Brussels	Belgium	Yes
Belgium	Primoris Belgium, Gent	Gent - Zwijnaarde	Belgium	Yes
Belgium	AGROLAB LUFA Kiel - Pesticide Lab	Kiel	Germany	Yes
Belgium	Phytocontrol (Nimes) - Pesticide Lab	Nimes	France	Yes
Belgium	Eurofins Lab Zeeuws- Vlaanderen B.V Pesticiden	Graauw	The Netherlands	Yes
Bulgaria	CLCTC - Office 2   Pesticide Lab	Sofia	Bulgaria	Yes
Bulgaria	CLCTC   Pesticide Lab	Sofia	Bulgaria	Yes
Bulgaria	Euro Lab Kapitan Andreevo (border check point)	Svilengrad	Bulgaria	Yes
Bulgaria	Primoris Belgium, Gent	Gent - Zwijnaarde	Belgium	Yes
Bulgaria	Primoris - Bulgaria, Plovdiv	Plovdiv	Bulgaria	Yes
China	Agro-product Safety Research Center - Guofang Pang	Beijing	China	Yes
China	SCDC - Pesticide Lab (Shanghai)	Shanghai	China	Yes
Costa Rica	Ministry of Agriculture - Costa Rica, San José	San José	Costa Rica	Yes
Croatia	Sample Control - Pesticide Lab	Lučko	Croatia	Yes
Croatia	Primorsko-goranska County, Rijeka - Pesticide Lab	Kotar County, Rijeka	Croatia	Yes
Croatia	INSPECTO d.o.o. Laboratorij (Osijek)	Osijek	Croatia	Yes
Croatia	Bioinstitut d.o.o., Cakovec	Cakovec	Croatia	Yes
Croatia	Croatian National Institute of Public Health-HZJZ	Zagreb	Croatia	Yes
Croatia	Eurofins Croatiakontrola	Zagreb	Croatia	Yes
Croatia	Dr. Andrija Štampar - Pesticide Lab	Zagreb	Croatia	Yes
Cyprus	SGL - Pesticide Lab (Nicosia)	Nicosia	Cyprus	Yes

ANNEX B. List of laboratories that agreed to participate in EUPT-FV-25.
on behalf of	Laboratory Name	CITY	COUNTRY	REPORTED RESULTS
Czech Republic	CAFIA - Pesticide Lab (Praha)	Praha	Czech Republic	Yes
Czech Republic	VSCHT / UCT Prague - Food Analysis (323)	Praha	Czech Republic	Yes
Denmark	DTU, National Food Institute	Lyngby	Denmark	Yes
Denmark	Laboratoriet Ringsted - Pesticide Lab	Ringsted	Denmark	Yes
Egypt	Royal International Inspection Labs - Suez	Suez	Egypt	Yes
Estonia	LABRIS - Laboratory of Chemistry (Tallinn)	Tallinn	Estonia	Yes
Finland	Finnish Food Authority	Helsinki	Finland	Yes
Finland	MetropoliLab - Pesticide Lab	Helsinki	Finland	Yes
Finland	Finnish Customs Laboratory	Espoo	Finland	Yes
France	CAPINOV (Landerneau)	Landerneau	France	Yes
France	GIRPA	Beaucouzé	France	Yes
France	CERECO (GARONS)	GARONS	France	Yes
France	Primoris Belgium, Gent	Gent - Zwijnaarde	Belgium	Yes
France	INOVALYS Le Mans - Pesticide Lab	Le Mans	France	Yes
France	SCL (Montpellier)	Montpellier	France	Yes
France	SCL (PARIS)	Massy Cedex	France	Yes
France	CAMP Méditerrannée (Perpignan)	PERPIGNAN	France	Yes
Germany	Landeslabor Schleswig-Holstein, Neumünster	Neumünster	Germany	Yes
Germany	Landeslabor Berlin- Brandenburg, Frankfurt (Oder)	Frankfurt (Oder)	Germany	Yes
Germany	CVUA Stuttgart - Pesticide Lab	Fellbach	Germany	Yes
Germany	CVUA RRW - Pesticide Lab (Krefeld)	Krefeld	Germany	Yes
Germany	LUA Saarland - Pesticide Lab	Saarbrücken	Germany	Yes
Germany	Landesamt für Verbraucherschutz, Bad Langensalza	Bad Langensalza	Germany	Yes
Germany	LAVES - Pesticide Lab (Oldenburg)	Oldenburg	Germany	Yes
Germany	Bundeswehr - Pesticide Lab (Garching-Hochbrück)	Garching-Hochbrück	Germany	No
Germany	LGL Erlangen - Pesticide Lab	Erlangen	Germany	Yes

on Behalf of	LABORATORY NAME	CITY	COUNTRY	REPORTED RESULTS
Germany	LUA Rheinland-Pfalz, Institut für LM-Chemie Speyer	Speyer	Germany	Yes
Germany	Landesamt für Verbraucherschutz, Halle/Saale	Halle/Saale	Germany	Yes
Germany	Labor Mang - Pesticide Lab	Frankfurt	Germany	Yes
Germany	Hessisches Landeslabor Kassel	Kassel	Germany	Yes
Germany	CVUA-MEL - Pesticide Lab (Münster)	Münster	Germany	Yes
Germany	BVL Unit 504 NRL for Pesticide Residues	Berlin	Germany	Yes
Germany	ZInstSanBw Kiel - Pesticide Lab	Kronshagen	Germany	Yes
Germany	Labor Friedle - Germany, Tegernheim	Tegernheim	Germany	Yes
Germany	IHU - Pesticide Lab (Hamburg)	Hamburg	Germany	Yes
Germany	LUA Sachsen - Pesticide Lab, Dresden	Dresden	Germany	Yes
Germany	LALLF - Pesticide Lab (Rostock)	Rostock	Germany	Yes
Germany	Gesellschaft für Bioanalytik Hamburg	Hamburg	Germany	Yes
Germany	LUA Bremen	Bremen	Germany	Yes
Germany	Eurofins Dr.Specht Express GmbH - Hamburg	Hamburg	Germany	Yes
Greece	Regional Center of Plant Prot Thessaloniki	Thessaloniki	Greece	Yes
Greece	GCSL - Pesticide Lab (Athens)	Athens	Greece	Yes
Greece	Benaki Phytopathological Institute, Kifissia	Kifissia	Greece	Yes
Hungary	FCSCN Ltd Pesticide Res. Anal. Lab. Miskolc	Miskolc	Hungary	Yes
Hungary	NFCSO FCSLD PPSCNRL (Velence)	Velence	Hungary	Yes
Hungary	NFCSO Pesticide Lab (Hódmezovásárhely)	Hódmezovásárhely	Hungary	No
Hungary	NFCSO - Pesticide Lab (Velence, site in Szolnok)	Szolnok	Hungary	No
Iceland	Matís - Iceland, Reykjavík	Reykjavík	lceland	Yes

on behalf of	LABORATORY NAME	CITY	COUNTRY	REPORTED RESULTS
Ireland	The Food Chemistry Laboratories - DAFM	Celbridge	Ireland	Yes
Italy	Azienda Sanitaria Locale di Firenze	Firenze	Italy	Yes
Italy	Laboratorio di Prevenzione (Bergamo)	Bergamo	Italy	Yes
Italy	ARPA FVG	Udine	Italy	Yes
Italy	APPA-Puglia   Polo Alimenti Bari - Pesticide Lab	Bari	Italy	Yes
Italy	APPA Bolzano - Pesticide Lab	Bolzano	Italy	Yes
Italy	APPA-SL Trento - Pesticide Lab	Trento	Italy	Yes
Italy	IZS LT - Italy, Rome	Roma	Italy	Yes
Italy	ARPA ER (Ferrara, Via Bologna)	Ferrara	Italy	Yes
Italy	IZSVe - Pesticide Lab	Legnaro (Padova)	Italy	Yes
Italy	IZSLER - Pesticide Lab	Brescia	Italy	Yes
Italy	Istituto Superiore di Sanità - Roma	Roma	Italy	Yes
Italy	IZSUM - Italy, Perugia	Perugia	Italy	Yes
Italy	IZS PB - Foggia	Foggia	Italy	Yes
Italy	ATS Milano - Laboratorio di Prevenzione	Milano	Italy	Yes
Italy	ARPA Lazio (sez. Latina) - Pesticide Lab	Latina	Italy	Yes
Italy	IZS PLV (sez. Cuneo) - Pesticide Lab	CUNEO	Italy	Yes
Italy	IZS Sardegna - Pesticide Lab	Sassari	Italy	Yes
Italy	IZSAM - Pesticide Lab	Teramo	Italy	Yes
Italy	ARPAL Sez. di La Spezia	La Spezia	Italy	Yes
Italy	ARPA VDA - Pesticide Lab	Saint Christophe	Italy	No
Italy	ARPAM - Pesticide Lab	Macerata	Italy	No
Italy	ARPAC - Pesticide Lab	Napoli	Italy	Yes
Italy	IZS Sicilia - Pesticide Lab	Palermo	Italy	No
Italy	IZSM - Pesticide Lab	Portici (NA)	Italy	No
Kenya	KEPHIS - Kenya, Nairobi	Nairobi	Kenya	Yes
Latvia	BIOR (Riga) - Pesticide Lab	Riga	Latvia	Yes
Lithuania	GALAB Laboratories GmbH - Hamburg	Hamburg	Germany	Yes
Lithuania	NMVRVI - Pesticide Lab (Vilnius)	Vilnius	Lithuania	Yes

ON BEHALF OF	LABORATORY NAME	CITY	COUNTRY	REPORTED RESULTS
Luxembourg	LNS Food lab	Dudelange	Luxembourg	Yes
Luxembourg	Primoris Belgium, Gent	Gent - Zwijnaarde	Belgium	Yes
Malta	Analytica Alimentaria GmbH - Almeria, Spain	Almeria	Spain	Yes
Malta	Eurofins - Germany, Hamburg	Hamburg	Germany	Yes
Norway	NIBIO - Department of Pesticide Chemistry	ÅS	Norway	Yes
Peru	Bureau Veritas - Peru, Lima	LIMA - CALLAO	Peru	Yes
Peru	SENASA - Peru, Lima	Lima	Peru	Yes
Poland	Laboratory of Food & Feed Safety in Bialystok	Bialystok	Poland	Yes
Poland	VSES Lodz - Pesticide Lab	Lodz	Poland	Yes
Poland	VSES Opole - Pesticide Lab	Opole	Poland	Yes
Poland	VSES Warszawa - Pesticide Lab	Warszaw	Poland	Yes
Poland	VSES Wroclaw - Pesticide Lab	Wroclaw	Poland	Yes
Poland	PIORIN - Central Laboratory (Torun)	Torun	Poland	Yes
Poland	JARS S.A Legionowo	Legionowo	Poland	Yes
Poland	IPP-NRI - Pesticide Lab (Poznan)	Poznan	Poland	Yes
Poland	IPP-NRI - Pesticide Lab (Sosnicowice)	Sosnicowice	Poland	Yes
Poland	WSSE - Poland, Bydgoszcz	Bydgoszcz	Poland	Yes
Poland	InHort (Skierniewice) - Pesticide Lab	Skierniewice	Poland	Yes
Portugal	Pesticide Lab (Funchal - Madeira Island)	Funchal - Madeira Island	Portugal	Yes
Portugal	INIAV Pesticide Lab (Vegetable & Animal Products)	Vairão - Vila do Conde	Portugal	Yes
Portugal	Labiagro – Portugal, Oeiras	Oeiras - Lisboa	Portugal	Yes
Portugal	Labs & Technological Services AGQ - Burguillos	Burguillos	Spain	Yes
Romania	IISPV (Bucharest) - Pesticide Lab	Bucharest	Romania	Yes
Romania	LRCRPPPV (Tirgu Mures) - Pesticide Lab	Tirgu Mures	Romania	Yes
Romania	NATIONAL PHITOSANITARY AUTHORITY	Bucharest	Romania	Yes

ON BEHALF OF	LABORATORY NAME	СІТҮ	COUNTRY	REPORTED RESULTS
Romania	State Veterinary Directorate CONSTANTA	Constanta	Romania	Yes
Romania	DSVSA Bucuresti - Pesticide Lab	Bucharest	Romania	Yes
Romania	DSVSA OLT - Lab	Slatina	Romania	Yes
Serbia	SP Laboratorija - Pesticide Lab	BECEJ	Serbia	Yes
Serbia	Inst. of Public Health of Belgrade - Pesticide Lab	Belgrade	Serbia	Yes
Serbia	Directorate for NRLs - Serbia, Belgrade	Belgrade	Serbia	Yes
Serbia	A BIO TECH LAB - Serbia, Sremska Kamenica	Sremska Kamenica	Serbia	Yes
Serbia	Field Test - Serbia, Belgrade	Belgrade	Serbia	Yes
Singapore	Singapore Food Agency	Singapore	Singapore	Yes
Slovakia	State Veterinary and Food Institute (Bratislava)	Bratislava	Slovakia	Yes
Slovenia	Pesticide Lab - Maribor	Maribor	Slovenia	Yes
Spain	Laboratorio Regional de la CCAA de La Rioja	Logroño	Spain	Yes
Spain	Lab. Agrario Regional - Junta de Castilla y Leon	Burgos	Spain	No
Spain	Laboratorio Agroalimentario de Extremadura	Cáceres	Spain	Yes
Spain	LABORATORIO KUDAM, S.L.	Pilar de la Horadada (Alicante)	Spain	Yes
Spain	Lab. de Produccion y Sanidad Vegetal de Almería	La Mojonera (Almeria)	Spain	Yes
Spain	Laboratorio Agroalimentario y de Sanidad Animal	Murcia	Spain	Yes
Spain	Labcolor-Coexphal - Spain, Almeria	La Mojonera, Almeria	Spain	Yes
Spain	Laboratorio Agroambiental de Zaragoza	Zaragoza	Spain	Yes
Spain	Agricultural and Phytopathological Lab. of Galicia	Abegondo. A Coruña	Spain	Yes
Spain	Laboratorio Analítico Bioclínico - Spain, Almeria	Almeria	Spain	Yes
Spain	Analytica Alimentaria GmbH - Almeria, Spain	Almeria	Spain	Yes

on behalf of	LABORATORY NAME	СІТҮ	COUNTRY	REPORTED RESULTS
Spain	Laboratori Agència Salut Pública Barcelona	Barcelona	Spain	Yes
Spain	Salud Publica (LSP - Madrid Salud)	Madrid	Spain	Yes
Spain	Laboratorio Arbitral Agroalimentario, Madrid	Madrid	Spain	Yes
Spain	Laboratorio de Salud Pública de Galicia, Lugo	Lugo	Spain	Yes
Spain	National Center for Technology and Food Safety	San Adrián (Navarra)	Spain	Yes
Spain	Laboratorio de Residuos, Inst. Tecnol. de Canarias	Agüimes, Gran Canaria	Spain	Yes
Spain	Ainia (Valencia)	Valencia	Spain	Yes
Spain	Labs & Technological Services AGQ - Burguillos	Burguillos	Spain	Yes
Spain	Laboratorio Agroalimentario - Spain, Valencia	Burjassot, Valencia	Spain	Yes
Spain	Laboratorio de Producción y Sanidad Vegetal (Jaén)	Mengibar (Jaén)	Spain	Yes
Spain	EUROFINS ECOSUR - Pesticide Lab	Lorqui - Murcia	Spain	Yes
Spain	Laboratorio de Salud Pública de Cuenca	Cuenca	Spain	Yes
Spain	LAC - Generalitat de Catalunya	Cabrils	Spain	Yes
Spain	Laboratorios Enoquisa S.L.	Montilla	Spain	Yes
Spain	SALUD PUBLICA (Almería) - Pesticide Lab	Almería	Spain	Yes
Spain	SOIVRE - Almeria	Almería	Spain	Yes
Spain	Nasertic - Spain, Villava	Villava	Spain	Yes
Spain	Eurofins SiCA AgriQ - Almeria, Vícar	Almeria	Spain	Yes
Spain	Dolmar Innova Tentamus, s.l.	Gimileo	Spain	No
Spain	Laboratorio Salud Pública de Badajoz	Badajoz	Spain	No
Sweden	Eurofins Food & Feed - Pesticide Lab (Lidköping)	Lidköping	Sweden	Yes
Sweden	National Food Agency - Sweden, Uppsala	Uppsala	Sweden	Yes
Switzerland	Kantonales Laboratorium Zürich	Zürich	Switzerland	Yes

## ANNEX B. List of laboratories that agreed to participate in EUPT-FV-25.

on behalf of	LABORATORY NAME	СІТҮ	COUNTRY	REPORTED RESULTS
Switzerland	Amt für Verbraucherschutz Aargau	Aargau	Switzerland	Yes
Switzerland	SCAV - Pesticide Lab (GENEVE)	GENEVE	Switzerland	Yes
Switzerland	Laboratorium der Urkantone - Pesticide Lab	Brunnen	Switzerland	Yes
Tanzania	TPHPA - Tanzania, Arusha	Arusha	Tanzania	No
Thailand	Central Laboratory - Pesticide Lab (Bangkok)	Bangkok	Thailand	Yes
The Netherlands	Wageningen Food Safety Research (WFSR)	Wageningen	The Netherlands	Yes
The Netherlands	Eurofins Lab Zeeuws- Vlaanderen B.V Pesticiden	Graauw	The Netherlands	Yes
Turkey	SGS - Turkey, Mersin	Ticaret Borsasi Kompleksi, Mersin	Turkey	Yes
United Kingdom	SASA - Pesticide Lab	Edinburgh	United Kingdom	Yes
United Kingdom	FERA - Pesticide Lab	York	United Kingdom	Yes