Validation Results for LC/MS/MS Pesticide Multiresidue Analysis Using Triggered MRM and Online Dilution

Supplementary Information for Application Note 5991-7193EN

Technical Overview

Introduction

This technical overview presents the validation results as supplementary information for the application note entitled "Improved LC/MS/MS Pesticide Multiresidue Analysis Using Triggered MRM and Online Dilution", publication number 5991-7193EN, including trueness (recovery) and precision (repeatability and intermediate precision) results obtained for pesticides included in the Agilent LC/MS mixes 1–8 (p/n 5190-0551) during the method validation in tomato, orange juice, spinach, and wheat flour.

This study was conducted in accordance with the document SANTE/11945/2015 entitled "Guidance document on analytical quality control and method validation procedures for pesticide residue analysis in food and feed", which was issued by the European Commission Directorate General for Health and Food Safety, and became effective on January 1, 2016.

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Results and Discussion

Trueness and precision were evaluated for each analyte using blank matrices fortified at 0.01 and 0.02 mg/kg. The fortified samples were prepared in five replicates, and each preparation was injected once. Intermediate precision was evaluated based on data generated by a second analyst repeating the trueness and precision experiments for wheat flour on a different day using different matrix-matched standard preparations. The intermediate precision results were used for the determination of measurement uncertainty (MU) at the 95 % confidence level. The obtained MU results were less than 50 % in the majority of cases; therefore, a default expanded MU of 50 % can be used for the interpretation of results based on the SANTE/11945/2015 guidelines.

Based on the SANTE/11945/2015 guidelines, mean recoveries calculated from the results of individual analysts should be between 70 and 120 %, with corresponding relative standard deviations (RSDs) ≤ 20 %. Recoveries outside of this range are acceptable in multiresidue methods (especially if low and consistent), but should be explained and documented. Tables 1 through 5, respectively summarize the trueness and precision results for tomato, orange juice, spinach, wheat flour (0.01 mg/kg), and wheat flour (0.02 mg/kg). Results outside of the acceptable criteria are highlighted in bold. Mean recoveries of the majority of analytes (at concentrations ≥ LOQ) were between 70 and 120 %, with RSDs ≤ 20 %; exceptions are discussed and explained in the following paragraphs.

Quinmerac and tribenuron-methyl gave lower recoveries (with acceptable RSDs) due to their higher polarity and reduced transfer into acetonitrile during the QuEChERS partition step.

In the spinach matrix, alanycarb, hydramethylnon, pyridate, and tolylfluanid gave slightly lower recoveries (with acceptable RSDs) due to degradation in this matrix. Benfuracarb and carbosulfan showed more pronounced degradation in spinach. These analytes are known to be prone to degradation in certain matrices. Based on the SANTE/11945/2015 guidelines, standard addition should be used when highly accurate, matrix-based quantification is required for detected pesticide residues, and no suitable blank commodity is available for the preparation of matrix-matched standards. The standard addition should be done into the sample matrix prior to the extraction, thus inherently taking into account the recovery of the analytical procedure (including potentially lower recoveries of the above discussed pesticides), and also compensating for any matrix effects.

Ethoxyquin gave higher recoveries in orange juice, and lower recoveries in wheat flour. This analyte is also prone to degradation, which depends on the matrix composition and exposure to air (ethoxyquin acts as an antioxidant). The degradation can occur in matrix-matched standards or sample extracts, leading to high or low recoveries, respectively.

Spinosad (spinosyns A and D) gave more variable results in spinach (results in all other matrices were acceptable with low RSDs).

Certain analytes, such as bifenthrin, dichlorvos, and disulfoton, included in the Agilent LC/MS mixes (p/n 5190-0551) are more suitable for GC/MS analysis. Most of these analytes were included in the LC/MS/MS method for confirmation purposes, with the exception of isocarbophos (mix 4), methacrifos (mix 8), procymidone (mix 3), and tolclofos-methyl (mix 3). Propham (mix 3), another compound with a better performance in GC/MS/MS, was included in the LC/MS/MS method, but its results are not listed in the following tables due to inadequate sensitivity at the evaluated concentration levels. Fluazinam (mix 8) would require electrospray negative mode, and was omitted from the presented LC/MS/MS method.

Table 1. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Tomato Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Abamectin - Avermectin B1a	7	67.2	80.8	55.8	66.0	78.2	69.6	15	80.0	67.1	78.3	80.5	94.7	80.1	12
Acephate	1	80.3	71.1	82.0	82.1	82.5	79.6	6.0	72.1	70.7	66.7	70.4	69.9	70.0	2.8
Acetamiprid	5	83.4	84.4	96.0	91.2	94.5	89.9	6.4	88.5	85.8	94.7	90.9	86.7	89.3	4.0
Alanycarb	5	78.7	74.4	79.9	83.6	84.8	80.3	5.1	85.3	86.1	65.1	69.7	72.5	75.8	13
Aldicarb	5	79.3	89.9	85.8	80.2	82.6	83.6	5.2	80.7	76.8	77.3	85.4	91.1	82.3	7.3
Amidosulfuron	4	91.6	83.6	90.2	85.0	93.8	88.8	4.9	87.9	87.4	75.3	75.5	75.6	80.3	8.3
Aminocarb	4	90.7	89.3	89.5	85.0	85.3	87.9	3.0	85.4	72.2	78.0	79.7	79.9	79.0	6.0
Azaconazole	1	83.5	81.9	87.4	85.7	83.5	84.4	2.6	87.2	82.2	89.2	96.3	86.2	88.2	5.9
Azamethiphos	2	87.8	76.0	92.6	84.3	85.7	85.3	7.1	86.1	84.4	76.7	73.7	75.8	79.3	7.0
Azinphos-ethyl	1	85.9	83.8	77.8	81.4	75.9	81.0	5.1	67.9	80.0	87.7	82.3	84.4	80.5	9.4
Azinphos-methyl	1	85.6	86.6	84.1	82.9	87.1	85.3	2.1	73.9	74.0	78.3	80.4	77.4	76.8	3.7
Azoxystrobin	5	83.1	81.0	83.3	82.3	80.8	82.1	1.4	85.6	84.5	95.6	90.0	86.8	88.5	5.1
Beflubutamid	8	81.3	75.0	83.2	83.3	80.7	80.7	4.2	73.2	76.3	81.3	81.1	75.8	77.5	4.6
Benalaxyl	2	91.8	86.6	87.2	83.7	93.1	88.5	4.4	76.2	86.1	81.8	76.9	78.9	80.0	5.1
Benfuracarb	4	72.6	69.2	71.8	82.2	75.9	74.3	6.7	79.4	82.9	72.4	75.1	77.3	77.4	5.2
Benzoximate	7	87.1	83.5	81.3	91.2	89.2	86.5	4.7	80.2	86.5	89.2	80.0	76.3	82.4	6.4
Bifenazate	8	76.1	94.6	88.9	88.7	92.6	88.2	8.2	75.6	82.0	74.8	84.3	79.3	79.2	5.1
Bifenthrin	2	81.2	81.7	86.2	86.4	98.0	86.7	7.8	81.3	90.6	82.4	80.5	88.5	84.7	5.4
Bispyribac	7	91.6	90.4	83.6	82.0	88.6	87.2	4.8	89.7	82.9	69.3	70.8	77.9	78.1	11
Bitertanol	3	89.5	89.4	85.6	77.3	92.6	86.9	6.8	77.4	81.0	83.1	92.3	80.6	82.9	6.8
Boscalid	4	76.3	86.9	89.5	89.0	84.7	85.3	6.3	73.1	83.4	85.7	91.6	84.0	83.6	8.0
Bromuconazole (2 diastereoisomers)	2	92.5	92.2	92.5	90.1	89.6	91.4	1.6	78.6	80.0	89.9	91.2	89.4	85.8	7.0
Bupirimate	2	81.6	80.7	87.8	83.6	87.1	84.2	3.8	86.5	70.7	82.4	96.0	78.3	82.8	11
Buprofezin	1	82.1	82.0	89.1	88.4	83.8	85.1	4.0	80.7	81.0	77.6	74.7	81.6	79.1	3.7
Butocarboxim	4	95.4	81.1	81.3	75.2	82.8	83.2	9.0	84.1	81.2	79.3	82.4	73.9	80.2	4.9
Carbaryl	6	79.1	79.8	82.4	80.1	85.1	81.3	3.0	75.7	77.5	90.3	84.5	88.4	83.3	7.8
Carbendazim	5	87.2	86.8	95.2	81.3	88.5	87.8	5.7	106	78.2	71.8	89.9	83.2	85.7	15
Carbofuran	8	83.0	88.1	83.4	81.4	85.8	84.3	3.1	80.9	81.9	89.4	94.0	93.3	87.9	7.1
Carbosulfan	6	82.1	78.1	84.6	87.3	84.2	83.3	4.1	73.8	74.8	82.8	82.8	76.0	78.1	5.7
Carboxin	5	82.2	78.1	86.0	80.5	85.0	82.4	3.9	82.2	81.9	79.6	84.0	79.8	81.5	2.2
Carfentrazone-ethyl	4	93.1	78.5	91.4	82.9	92.3	87.6	7.5	97.6	95.3	89.7	86.7	79.7	89.8	7.9
Chlorantraniliprole	8	81.2	81.1	92.8	74.7	91.4	84.2	9.1	80.1	85.6	86.6	78.9	72.1	80.6	7.2
Chlorfenvinphos (E- and Z-isomers)	2	89.3	82.2	86.6	90.9	90.0	87.8	4.0	86.7	84.4	81.5	83.6	81.5	83.5	2.6
Chloridazon (Pyrazon)	4	88.8	85.8	88.6	89.8	89.2	88.4	1.7	83.5	84.3	85.9	79.6	80.4	82.7	3.2
Chlorotoluron (Chlortoluron)	7	84.3	78.4	81.9	85.3	84.7	82.9	3.4	78.4	81.0	84.0	81.9	88.1	82.7	4.4
Chloroxuron	7	93.3	89.0	85.9	89.0	91.7	89.8	3.2	66.0	79.1	88.6	89.6	83.6	81.4	12
Chlorpyrifos	2	85.0	83.8	87.7	84.4	87.5	85.7	2.1	80.5	83.1	79.1	81.6	84.2	81.7	2.5
Chlorpyrifos-methyl	2	87.2	92.2	82.4	93.5	85.8	88.2	5.2	78.3	86.4	75.2	85.7	85.0	82.1	6.1
Chlorsulfuron	4	81.7	86.1	83.3	89.2	87.1	85.5	3.5	78.8	84.0	81.7	84.7	79.4	81.7	3.2

Table 1. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Tomato Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Clethodim (E- and Z-isomers)	3	96.6	82.2	87.4	83.4	96.2	89.2	7.7	84.5	85.9	87.0	81.5	80.2	83.8	3.4
Clofentezine	4	80.6	81.0	90.5	79.0	79.9	82.2	5.7	86.3	79.8	79.5	85.4	78.0	81.8	4.6
Clomazone	8	82.0	77.6	80.0	82.1	81.6	80.6	2.4	81.9	77.4	83.6	84.1	82.3	81.9	3.3
Coumaphos	2	80.2	75.8	71.9	77.2	82.9	77.6	5.4	72.5	76.6	74.8	69.5	79.9	74.6	5.3
Cyazofamid	4	87.6	83.7	90.0	92.6	87.9	88.4	3.7	83.9	80.6	87.8	82.6	86.8	84.3	3.5
Cycloate	1	81.9	96.2	83.7	93.1	81.5	87.3	7.9	78.5	77.6	82.7	78.4	94.4	82.3	8.6
Cycluron	7	86.0	84.2	80.7	79.7	89.2	83.9	4.6	78.1	83.9	88.0	89.0	84.5	84.7	5.1
Cymiazole	1	96.9	88.4	85.1	86.6	82.7	87.9	6.2	80.5	75.5	86.2	82.2	91.4	83.2	7.2
Cymoxanil	4	94.7	82.5	91.5	79.7	103	90.3	10	89.5	94.6	97.5	87.9	88.0	91.5	4.7
Cyproconazole (2 diastereoisomers)	1	93.0	93.3	96.0	91.2	92.0	93.1	2.0	88.3	87.7	85.3	88.4	85.6	87.1	1.7
Cyprodinil	8	83.7	89.7	88.5	96.7	89.2	89.6	5.2	85.5	87.7	101	107	89.8	94.1	9.8
DEET (Diethyltoluamide)	4	84.1	87.2	85.3	94.5	87.5	87.7	4.6	74.2	83.9	83.8	84.3	92.5	83.8	7.7
Desmedipham	8	89.1	80.7	79.5	79.8	80.2	81.9	5.0	85.8	81.9	88.1	91.4	82.6	86.0	4.6
Diazinon	2	78.2	82.8	83.2	85.9	84.0	82.8	3.4	85.4	78.6	88.0	74.0	77.7	80.7	7.2
Dichlorvos	2	86.5	93.7	96.4	90.1	97.9	92.9	5.0	91.0	95.5	90.1	90.0	98.1	93.0	4.0
Diethofencarb	6	88.7	85.5	94.4	91.3	89.2	89.8	3.7	89.0	82.8	95.2	98.7	85.0	90.1	7.4
Difenoconazole (*cis*- and *trans*-)	3	86.4	79.8	87.3	84.0	88.0	85.1	3.9	90.6	85.8	86.5	86.4	80.4	86.0	4.2
Diflubenzuron	4	97.0	97.1	102	96.2	93.3	97.0	3.1	91.8	98.3	84.2	88.0	83.6	89.2	6.8
Diflufenican	1	78.1	76.6	80.4	87.6	86.8	81.9	6.1	80.8	88.2	84.6	86.2	81.4	84.2	3.7
Dimethachlor	1	88.8	82.9	89.2	86.2	86.0	86.6	2.9	78.8	82.1	83.1	85.5	82.7	82.5	2.9
Dimethoate	8	78.6	85.5	88.0	90.1	82.0	84.8	5.5	83.5	89.5	83.5	90.3	88.3	87.0	3.8
Dimethomorph (E- and Z-isomers)	5	67.9	69.5	69.9	69.9	77.0	70.8	5.0	78.2	74.6	81.7	75.7	70.3	76.1	5.6
Dimoxystrobin	1	87.1	82.5	88.3	91.7	81.7	86.3	4.8	91.4	93.0	99.6	100	83.5	93.6	7.4
Diniconazole	2	81.9	81.2	81.1	89.6	84.1	83.6	4.3	82.7	84.3	79.8	79.2	82.5	81.7	2.6
Dinotefuran	7	82.3	81.0	82.2	76.1	79.7	80.2	3.2	81.0	77.0	82.2	78.5	76.5	79.0	3.1
Dioxacarb	7	102	83.9	86.1	93.6	91.5	91.5	7.9	100	94.9	96.2	94.1	93.8	95.8	2.7
Disulfoton	1	86.3	81.2	97.8	80.0	88.2	86.7	8.2	81.1	76.4	85.6	83.3	76.9	80.7	5.0
Diuron	5	84.0	80.8	80.7	82.6	85.4	82.7	2.5	82.3	84.2	85.0	89.4	84.1	85.0	3.1
Epoxiconazole	2	89.5	90.4	86.5	82.0	92.1	88.1	4.5	81.6	86.1	86.8	85.4	75.6	83.1	5.6
Ethidimuron (Sulfadiazole)	8	69.2	81.1	84.7	87.5	78.1	80.1	8.8	101	89.5	88.5	91.4	82.4	90.6	7.5
Ethion	2	85.7	84.1	91.5	83.2	91.4	87.2	4.6	89.3	79.0	77.4	77.4	85.6	81.8	6.6
Ethirimol	4	93.3	90.8	93.8	97.2	86.6	92.3	4.3	87.4	83.5	94.2	98.4	86.8	90.0	6.7
Ethofumesate	4	76.4	82.6	85.8	82.7	80.8	81.7	4.2	85.3	83.7	94.0	81.9	84.4	85.9	5.5
Ethoprophos (Ethoprop)	2	74.6	80.3	85.1	84.1	89.2	82.6	6.7	87.5	86.4	92.2	85.2	84.7	87.2	3.5
Ethoxyquin	8	87.8	91.2	93.5	89.5	84.4	89.3	3.8	85.5	90.5	98.2	93.4	90.2	91.6	5.1
Etofenprox	3	81.0	81.0	84.1	88.3	95.8	86.0	7.2	88.7	89.9	91.5	84.8	91.2	89.2	3.0
Famoxadone	4	80.5	96.9	78.5	78.1	91.8	85.2	10	86.5	97.0	90.2	99.9	90.8	92.9	5.8
Fenamidone	5	82.6	80.5	87.2	85.2	87.5	84.6	3.5	93.7	86.0	87.7	77.9	76.1	84.3	8.6
Fenamiphos	1	87.4	81.0	83.0	89.5	84.3	85.1	4.0	66.9	78.4	88.2	90.6	79.6	80.7	12

Table 1. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Tomato Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Fenarimol	2	89.9	90.9	86.3	89.7	90.5	89.5	2.0	77.9	84.3	80.8	81.8	86.4	82.3	4.0
Fenazaquin	5	89.0	80.6	88.9	85.7	86.6	86.2	4.0	73.2	76.0	75.8	82.0	72.5	75.9	4.9
Fenbuconazole	2	84.3	89.4	84.2	84.4	92.4	87.0	4.3	94.1	88.0	91.0	84.3	78.9	87.2	6.8
Fenhexamid	3	82.6	74.9	84.7	87.1	94.6	84.8	8.5	82.2	86.9	81.8	81.6	96.0	85.7	7.2
Fenobucarb	5	88.0	88.4	91.8	87.5	95.2	90.2	3.6	89.2	84.8	79.5	73.7	77.8	81.0	7.5
Fenoxycarb	6	82.6	82.0	95.2	72.8	88.5	84.2	9.9	75.6	83.7	86.6	81.7	94.4	84.4	8.2
Fenpropidin	5	83.0	81.7	88.9	82.8	89.1	85.1	4.2	86.4	85.1	94.2	89.1	83.0	87.6	4.9
Fenpyroximate	5	83.7	78.7	86.6	90.4	87.7	85.4	5.2	83.8	87.5	79.9	80.0	79.8	82.2	4.2
Fenuron	7	96.3	88.8	93.6	88.7	84.1	90.3	5.2	93.1	100	90.9	88.8	91.5	92.9	4.7
Fipronil	4	91.1	89.7	68.5	92.0	79.7	84.2	12	87.2	113	89.2	106	70.6	93.3	18
Flazasulfuron	4	76.4	80.3	86.4	80.7	84.5	81.7	4.8	72.4	79.2	74.7	85.4	78.1	78.0	6.4
Flonicamid	6	91.3	81.0	86.2	92.3	83.8	86.9	5.6	88.6	77.1	89.1	71.4	83.1	81.9	9.3
Flubendiamide	7	105	86.1	96.1	100	88.1	95.1	8.4	78.3	79.3	95.7	84.9	91.6	86.0	8.9
Fludioxonil	2	88.8	81.3	89.2	87.1	79.0	85.1	5.5	86.9	79.7	87.1	92.1	86.1	86.4	5.1
Flufenacet	1	92.5	84.0	86.1	89.5	80.0	86.4	5.6	77.3	80.4	85.6	81.7	76.3	80.3	4.6
Flufenoxuron	4	89.7	83.5	82.5	86.3	91.3	86.6	4.4	86.8	82.6	80.4	85.8	76.7	82.5	5.0
Flumetsulam	8	94.4	78.3	88.2	82.1	91.4	86.9	7.6	87.3	69.6	96.9	97.3	80.1	86.2	14
Flumioxazin	6	88.3	107	85.3	81.5	99.3	92.2	11	84.2	74.5	88.6	91.2	88.6	85.4	7.7
Fluometuron	8	86.4	84.4	85.2	86.9	88.5	86.3	1.9	84.3	81.3	89.6	88.1	90.7	86.8	4.5
Fluopicolide	1	87.5	83.4	84.3	85.6	80.1	84.2	3.3	93.7	94.8	95.3	91.0	93.2	93.6	1.8
Fluoxastrobin	8	89.4	72.1	83.9	89.5	84.1	83.8	8.4	89.6	78.3	96.2	102	95.5	92.2	9.6
Fluquinconazole	2	80.3	91.7	87.3	92.1	82.3	86.7	6.2	77.3	80.7	88.8	89.3	83.2	83.9	6.1
Flusilazole	2	79.0	75.4	82.6	67.3	74.5	75.8	7.5	84.5	76.5	75.7	79.4	85.3	80.3	5.5
Flutriafol	8	85.2	80.5	86.3	91.4	82.3	85.2	4.9	88.0	83.4	83.8	88.5	85.7	85.9	2.7
Foramsulfuron	3	84.4	72.5	82.5	81.4	82.1	80.6	5.8	77.8	77.9	80.9	76.3	77.3	78.0	2.2
Forchlorfenuron	7	84.6	81.5	87.3	83.9	87.3	84.9	2.9	76.3	80.9	78.7	80.7	75.8	78.5	3.0
Fosthiazate (sum of isomers)	1	81.4	88.0	83.3	86.9	81.4	84.2	3.7	75.2	82.0	83.4	79.5	84.9	81.0	4.7
Fuberidazole	4	87.4	83.3	92.9	91.3	85.8	88.1	4.5	76.8	72.4	88.3	87.0	78.1	80.5	8.5
Furalaxyl	7	80.4	77.0	78.3	76.9	77.3	78.0	1.9	81.2	73.3	86.3	84.7	81.3	81.4	6.2
Furathiocarb	6	90.5	80.7	92.9	77.2	87.0	85.7	7.7	78.1	83.3	78.4	83.7	85.8	81.9	4.2
Halofenozide	8	89.7	81.3	87.3	79.6	89.4	85.5	5.5	87.6	83.5	88.0	91.4	83.0	86.7	4.0
Halosulfuron-methyl	8	78.9	77.1	82.1	78.5	71.8	77.7	4.8	72.2	75.5	84.7	83.0	78.3	78.7	6.6
Hexaconazole	2	80.9	89.2	94.9	88.1	87.1	88.0	5.7	84.2	83.1	95.6	92.8	83.2	87.8	6.8
Hexaflumuron	7	90.0	91.8	92.1	102	86.9	92.5	6.0	87.1	80.3	86.2	78.9	79.4	82.4	4.8
Hexythiazox	4	83.6	80.9	84.9	86.3	88.0	84.7	3.2	88.3	88.1	87.3	81.0	83.2	85.6	3.8
Hydramethylnon	7	82.0	79.3	86.9	89.3	92.8	86.1	6.4	77.8	77.4	70.6	77.9	74.8	75.7	4.2
Imazalil	2	78.2	82.9	90.5	83.4	78.9	82.8	5.9	79.3	79.0	91.4	94.3	83.6	85.5	8.2
Imidacloprid	5	85.0	75.9	92.9	88.8	82.5	85.0	7.6	90.0	83.8	88.3	81.5	82.8	85.3	4.3
Indoxacarb	3	85.5	79.0	89.4	82.8	85.1	84.3	4.5	88.4	96.6	93.9	96.7	80.1	91.1	7.7

Table 1. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Tomato Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Ipconazole	2	90.5	101	121	98.3	104	103	11	91.1	99.7	119	126	117	111	13
Iprovalicarb	5	93.7	88.1	87.8	94.6	96.1	92.1	4.2	84.0	87.2	75.9	84.5	80.0	82.3	5.4
Isofenphos-methyl	1	79.1	92.8	88.7	84.3	80.2	85.0	6.8	84.4	81.9	93.1	90.1	81.4	86.2	6.0
Isoprothiolane	1	97.7	98.9	92.9	87.6	96.0	94.6	4.8	84.0	76.5	92.3	85.3	94.9	86.6	8.4
Isoxaben	4	86.0	86.1	88.3	78.9	86.8	85.2	4.3	89.6	85.8	102	93.3	86.4	91.5	7.3
Isoxaflutole	3	88.4	86.8	88.8	91.0	85.6	88.1	2.3	84.2	85.6	87.7	90.3	91.7	87.9	3.6
Ivermectin B1a	7	89.5	86.0	88.4	89.2	83.8	87.4	2.7	75.8	82.7	77.2	86.2	79.6	80.3	5.3
Kresoxim-methyl	4	88.1	89.8	88.5	82.9	83.4	86.5	3.6	88.9	84.0	90.8	82.9	93.9	88.1	5.3
Lenacil	1	82.4	85.0	86.0	80.7	84.7	83.8	2.6	88.7	91.1	86.2	98.3	89.8	90.8	5.0
Linuron	4	73.6	77.3	88.5	81.5	90.7	82.4	8.8	82.4	82.6	86.8	81.7	77.4	82.2	4.1
Lufenuron	4	77.3	72.4	90.4	93.3	87.6	84.2	11	89.2	95.9	85.2	81.5	76.7	85.7	8.6
Malaoxon	3	81.7	83.7	82.1	88.6	95.3	86.3	6.7	79.7	80.9	88.3	91.2	94.2	86.9	7.3
Malathion	3	105	80.5	90.5	71.6	91.6	87.9	14	84.6	83.0	89.2	88.5	95.0	88.1	5.3
Mandipropamid	4	83.9	74.4	91.7	87.3	83.5	84.2	7.6	93.4	81.1	82.5	84.2	71.6	82.6	9.4
Mecarbam	3	80.5	84.8	94.4	93.2	84.4	87.5	6.9	83.7	89.8	78.6	86.1	86.7	85.0	4.9
Mepanipyrim	3	86.9	86.7	86.8	85.6	84.4	86.1	1.2	77.7	81.1	85.1	78.1	85.0	81.4	4.4
Mesosulfuron-methyl	6	86.4	82.5	87.5	91.9	85.6	86.8	3.9	83.1	81.1	101	108	94.7	93.6	12
Metaflumizone	4	96.5	99.1	78.7	90.5	89.7	90.9	8.7	88.7	87.7	73.7	74.8	76.2	80.2	9.2
Metalaxyl	3	79.5	79.0	87.9	83.1	79.4	81.8	4.7	75.4	79.8	89.4	89.8	89.3	84.8	7.9
Metamitron	4	86.6	72.2	83.4	81.4	94.3	83.6	9.6	108	94.3	76.4	58.2	68.1	81.1	25
Metazachlor	3	82.4	84.5	83.6	84.6	84.1	83.9	1.1	78.4	77.7	86.0	90.5	89.8	84.5	7.2
Metconazole	2	81.8	76.2	83.6	89.3	88.7	83.9	6.4	84.9	85.5	82.4	83.8	86.7	84.7	2.0
Methabenzthiazuron	5	85.3	80.1	86.0	81.6	89.8	84.6	4.5	80.5	83.7	90.3	86.8	88.2	85.9	4.5
Methamidophos	1	82.4	71.8	77.9	77.9	81.9	78.4	5.4	80.9	79.1	76.4	78.2	80.1	78.9	2.2
Methidathion	3	87.5	92.3	91.2	95.4	89.9	91.3	3.2	80.2	86.1	87.8	94.7	93.3	88.4	6.6
Methiocarb	7	85.6	80.3	84.1	79.4	86.5	83.2	3.8	81.9	84.4	89.7	94.3	81.9	86.5	6.3
Methomyl	5	88.9	82.9	106	96.5	80.3	90.9	11	79.4	84.8	86.0	86.3	80.6	83.4	3.9
Methoprotryne	7	86.5	86.3	91.1	90.9	91.0	89.2	2.8	81.8	86.9	88.2	86.8	93.7	87.5	4.8
Methoxyfenozide	5	79.5	90.5	88.7	87.6	92.3	87.7	5.6	78.1	74.6	107	121	93.7	94.9	21
Metobromuron	8	80.0	78.4	81.1	84.6	86.8	82.2	4.2	78.4	83.2	84.6	84.2	82.6	82.6	3.0
Metolachlor	3	88.1	97.7	92.4	87.1	81.8	89.4	6.7	78.6	82.4	122	114	104	100	19
Metrafenone	4	93.1	88.6	88.8	85.5	89.6	89.1	3.1	81.7	83.0	79.2	79.1	75.9	79.8	3.4
Metribuzin	4	88.2	80.9	90.1	81.5	92.8	86.7	6.1	84.8	89.8	81.7	85.1	80.9	84.4	4.1
Metsulfuron-methyl	4	76.9	95.4	83.6	84.9	80.5	84.2	8.2	73.0	78.0	102	107	95.7	90.9	16
Mevinphos (E- and Z-isomers)	3	91.5	91.9	94.8	90.7	89.0	91.6	2.3	86.3	85.4	82.7	80.2	82.3	83.4	2.9
Mexacarbate	7	79.6	90.3	85.5	85.3	85.6	85.2	4.4	83.6	76.4	79.0	83.2	86.1	81.6	4.8
Molinate	3	77.4	71.5	78.2	73.0	81.8	76.4	5.5	77.6	68.7	80.5	81.7	77.5	77.2	6.6
Monocrotophos	4	94.7	86.3	94.2	80.9	91.0	89.4	6.5	80.8	82.4	90.6	89.0	87.6	86.1	4.9
Moxidectin	7	93.1	87.1	93.2	97.2	98.4	93.8	4.7	95.6	85.2	87.1	76.4	84.6	85.8	8.0

Table 1. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Tomato Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Myclobutanil	1	86.8	83.7	74.9	91.9	83.8	84.2	7.3	93.9	98.5	95.5	91.2	94.2	94.6	2.8
Nicosulfuron	4	88.7	92.3	91.0	84.0	88.4	88.9	3.6	77.7	70.2	79.9	77.1	71.9	75.4	5.4
Nitenpyram	7	91.0	95.2	85.7	86.2	92.0	90.0	4.5	79.8	82.3	81.7	81.2	87.7	82.5	3.7
Novaluron	4	88.9	91.7	94.6	91.7	96.4	92.7	3.1	83.8	89.3	89.6	86.4	82.7	86.4	3.6
Omethoate	6	88.8	69.5	77.1	83.0	71.6	78.0	10	92.2	81.3	84.9	84.1	70.5	82.6	9.5
Oxadiazon	3	86.3	80.9	98.9	91.0	85.3	88.5	7.7	103	104	87.0	86.8	88.1	93.6	9.3
Oxadixyl	3	87.8	84.8	95.1	89.4	87.3	88.9	4.3	87.7	84.6	85.8	89.1	84.0	86.2	2.5
Oxamyl	5	93.2	77.3	89.7	80.5	87.7	85.7	7.7	86.9	82.2	80.7	81.0	92.1	84.6	5.8
Oxasulfuron	4	73.9	83.9	88.8	77.8	73.2	79.5	8.4	75.7	74.6	83.9	86.0	76.8	79.4	6.5
Paclobutrazol	3	85.0	82.8	85.8	84.2	87.4	85.0	2.0	81.6	81.4	77.3	77.3	78.4	79.2	2.7
Penconazole	3	83.3	81.6	88.0	85.1	89.3	85.5	3.7	83.9	80.7	85.3	86.7	85.4	84.4	2.7
Pencycuron	6	87.3	83.4	86.9	87.5	89.9	87.0	2.7	71.1	79.3	79.0	83.6	78.6	78.3	5.8
Pendimethalin	3	91.5	73.8	88.8	84.3	81.6	84.0	8.2	90.2	84.6	81.4	80.9	79.4	83.3	5.2
Phenmedipham	4	81.6	86.9	82.9	86.2	80.9	83.7	3.2	77.4	75.8	80.3	85.8	79.3	79.7	4.8
Phenthoate	3	105	91.5	77.5	86.8	90.7	90.3	11	96.4	85.7	97.6	99.0	92.1	94.1	5.7
Phosalone	3	82.3	68.8	91.8	81.1	93.9	83.6	12	81.1	84.2	81.9	84.7	81.0	82.6	2.1
Phosmet	6	83.7	85.5	85.2	84.8	86.2	85.1	1.1	84.3	87.8	94.3	95.1	98.8	92.1	6.4
Phosphamidon (E- and Z-isomers)	3	86.9	82.1	86.3	83.4	88.7	85.5	3.1	86.6	77.5	75.2	77.4	80.2	79.4	5.6
Phoxim	4	89.3	87.0	88.6	83.4	88.6	87.4	2.8	85.5	74.8	80.7	85.1	79.1	81.0	5.5
Picolinafen	3	92.6	86.2	75.3	85.8	84.8	85.0	7.3	83.2	78.5	78.0	76.2	80.4	79.3	3.3
Picoxystrobin	5	86.7	81.9	88.5	83.3	87.3	85.5	3.3	77.7	83.4	80.3	84.7	85.8	82.4	4.1
Pirimicarb	3	85.9	82.9	86.4	87.7	90.0	86.6	3.0	78.8	75.0	82.6	82.9	79.8	79.8	4.0
Pirimiphos-methyl	3	79.1	76.3	78.3	82.7	84.9	80.2	4.3	87.1	82.2	87.6	79.6	92.8	85.9	5.9
Prochloraz	1	89.5	78.4	85.6	87.0	85.9	85.3	4.8	82.9	78.1	84.2	84.6	78.7	81.7	3.8
Profenofos	3	89.1	79.1	88.9	83.5	90.6	86.2	5.6	85.0	77.3	62.1	64.4	66.3	71.0	14
Promecarb	7	77.3	86.8	86.2	82.7	87.1	84.0	4.9	82.8	81.0	86.0	82.0	83.7	83.1	2.3
Prometon	4	85.9	81.0	88.9	85.8	89.5	86.2	3.9	80.9	88.3	91.0	87.4	85.4	86.6	4.3
Propamocarb	5	81.4	77.5	82.3	74.8	86.3	80.5	5.5	79.0	67.9	79.6	86.5	84.3	79.5	9.0
Propaquizafop	4	79.3	78.3	84.7	79.6	86.4	81.7	4.5	78.5	72.0	84.8	83.3	78.9	79.5	6.3
Propargite	4	81.9	82.4	82.7	85.0	90.3	84.5	4.1	86.9	84.1	78.4	80.1	81.8	82.3	4.1
Propetamphos	3	76.9	77.9	81.8	87.0	80.6	80.8	4.9	75.8	75.9	82.3	85.3	83.2	80.5	5.4
Propiconazole (sum of isomers)	2	79.7	88.4	83.0	85.5	81.9	83.7	4.0	85.6	81.8	86.7	92.6	88.6	87.0	4.6
Propoxur	6	100	82.3	94.4	89.9	97.2	92.8	7.5	93.7	90.7	67.9	73.1	70.8	79.3	15
Propyzamide (Pronamide)	3	86.1	79.0	87.4	83.7	74.8	82.2	6.4	78.5	78.0	91.6	90.6	91.5	86.0	8.3
Proquinazid	1	87.5	76.4	86.1	77.4	85.0	82.5	6.3	78.8	74.4	72.2	70.1	77.1	74.5	4.8
Prosulfocarb	4	73.4	77.8	76.7	82.2	81.3	78.3	4.6	76.5	73.3	70.1	62.5	69.9	70.5	7.4
Pymetrozine	7	81.8	86.9	90.2	87.3	81.6	85.5	4.4	84.0	90.5	91.1	99.0	89.9	90.9	5.9
Pyracarbolid	7	80.8	82.2	81.9	79.7	83.9	81.7	1.9	83.7	83.6	85.7	88.5	87.1	85.7	2.5
Pyraclostrobin	5	87.0	81.4	82.5	88.3	91.8	86.2	5.0	80.6	78.5	81.6	80.5	78.0	79.9	1.9

Table 1. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Tomato Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Pyridaben	5	80.5	85.5	86.7	81.6	85.9	84.1	3.3	80.3	81.4	82.7	73.2	85.5	80.6	5.7
Pyridate	5	80.9	79.0	79.8	76.6	86.0	80.5	4.3	75.3	84.3	84.5	73.8	82.1	80.0	6.4
Pyrimethanil	6	82.9	83.0	86.8	81.1	83.4	83.4	2.5	81.2	84.3	89.3	90.0	81.9	85.3	4.8
Pyriproxyfen	5	85.2	80.7	95.0	89.7	89.9	88.1	6.1	83.9	79.9	88.8	84.2	81.8	83.7	4.0
Quinalphos	3	83.0	76.3	92.8	82.9	78.4	82.7	7.7	80.9	88.0	80.8	79.0	82.9	82.3	4.2
Quinmerac	7	63.8	55.5	71.1	59.3	56.1	61.2	11	64.9	55.5	75.6	64.5	70.4	66.2	11
Quinoclamine	4	83.5	86.9	89.0	81.1	84.2	84.9	3.6	77.8	86.5	83.7	88.4	96.2	86.5	7.8
Quinoxyfen	3	86.2	83.6	80.0	84.6	93.4	85.6	5.8	82.0	79.2	79.8	71.1	79.8	78.4	5.4
Rimsulfuron	4	76.8	73.8	82.3	77.2	83.6	78.7	5.2	71.1	79.1	81.8	77.0	77.4	77.3	5.1
Rotenone	7	91.9	86.7	79.0	87.6	88.7	86.8	5.5	82.4	85.6	82.3	75.3	82.4	81.6	4.6
Secbumeton	7	83.0	80.9	92.6	83.0	84.5	84.8	5.4	77.1	79.1	77.4	73.0	79.6	77.3	3.4
Silthiofam	4	83.4	75.7	89.5	83.1	80.2	82.4	6.1	82.6	90.1	85.9	76.7	86.8	84.4	6.0
Spinosad - Spinosyn A	7	87.9	89.6	85.2	86.6	86.5	87.2	1.9	88.4	77.5	76.2	83.6	71.2	79.4	8.4
Spinosad - Spinosyn D	7	81.5	75.4	82.6	75.6	88.2	80.7	6.6	84.8	73.6	69.8	72.5	76.2	75.4	7.6
Spirodiclofen	1	89.3	94.7	91.0	89.7	97.2	92.4	3.7	87.8	86.6	83.0	81.0	87.6	85.2	3.6
Spiromesifen	6	85.6	82.5	85.4	82.8	96.7	86.6	6.7	87.8	91.2	85.9	82.0	83.5	86.1	4.2
Spirotetramat	6	84.0	76.4	92.1	93.5	83.5	85.9	8.1	76.1	77.3	81.2	82.9	70.6	77.6	6.2
Spiroxamine (2 diastereoisomers)	1	90.0	88.6	90.0	85.0	96.0	89.9	4.4	86.8	83.3	83.6	79.3	81.6	82.9	3.3
Sulfentrazone	6	81.8	86.7	85.2	88.3	92.0	86.8	4.3	84.8	91.1	95.4	82.0	91.2	88.9	6.1
Tebuconazole	2	85.7	84.5	84.4	89.7	84.3	85.7	2.7	84.4	82.3	85.9	89.1	93.3	87.0	5.0
Tebufenozide	5	59.7	64.5	80.1	80.2	69.5	70.8	13	94.2	98.7	106	90.7	80.6	94.1	10
Tebufenpyrad	3	89.8	81.8	90.5	87.5	92.3	88.4	4.6	80.1	82.2	79.4	79.8	80.8	80.5	1.4
Tebuthiuron	7	87.4	82.5	84.0	82.1	89.5	85.1	3.8	78.2	80.7	86.9	86.3	86.6	83.7	4.8
Teflubenzuron	4	76.5	77.9	91.9	78.5	80.1	81.0	7.7	83.0	83.6	85.0	79.3	85.3	83.2	2.9
Temephos	7	85.1	81.6	81.1	92.2	84.9	85.0	5.2	82.6	80.6	78.3	70.6	67.6	75.9	8.6
Tepraloxydim (E- and Z-isomers)	3	86.4	87.0	89.2	94.5	94.3	90.3	4.3	86.7	89.6	94.6	85.7	90.6	89.4	3.9
Terbufos	3	83.0	82.6	85.9	90.9	87.7	86.0	4.0	80.9	88.0	81.5	85.1	79.0	82.9	4.3
Tetraconazole	2	84.9	87.4	83.3	86.3	89.0	86.2	2.6	83.8	85.5	88.5	87.8	82.3	85.6	3.0
Thiabendazole	5	83.1	81.7	92.5	75.3	83.6	83.2	7.4	77.0	85.7	92.8	79.4	89.7	84.9	7.9
Thiacloprid	5	94.4	81.4	79.2	78.5	81.8	83.1	7.8	72.4	90.4	79.1	84.6	83.3	82.0	8.2
Thiamethoxam	5	88.2	97.4	101	92.5	84.2	92.6	7.2	94.7	90.6	98.4	97.2	88.9	94.0	4.4
Thidiazuron	7	85.3	80.0	85.2	85.4	82.3	83.6	2.9	85.0	84.2	81.1	88.7	78.5	83.5	4.6
Thifensulfuron-methyl	4	76.3	80.3	79.3	87.4	82.4	81.2	5.1	87.7	80.4	92.5	90.7	83.8	87.0	5.7
Thiodicarb	5	70.9	87.5	97.0	93.3	74.3	84.6	14	69.1	93.4	74.2	81.4	74.9	78.6	12
Thiofanox	5	76.4	92.2	87.4	81.8	79.4	83.4	7.6	68.3	81.4	123	135	124	106	28
Tolylfluanid	3	78.7	73.3	76.3	77.8	85.1	78.2	5.6	69.9	74.2	69.6	65.6	69.5	69.8	4.4
Tralkoxydim	1	86.6	85.5	85.9	85.3	91.0	86.9	2.7	83.7	87.3	77.2	76.4	80.8	81.1	5.6
Triadimefon	3	86.3	83.1	81.0	83.9	86.9	84.2	2.9	76.0	74.5	88.7	87.9	82.8	82.0	8.0
Triadimenol	6	74.1	64.9	82.9	78.1	74.6	74.9	8.8	84.7	80.4	86.3	83.8	82.4	83.5	2.7

Table 1. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Tomato Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Triasulfuron	4	85.9	86.2	93.7	91.1	82.1	87.8	5.2	73.4	79.1	85.2	90.7	88.7	83.4	8.5
Triazophos	3	92.9	86.5	85.4	90.2	94.1	89.8	4.3	85.6	87.4	90.1	93.7	95.4	90.4	4.6
Tribenuron-methyl	4	69.5	68.4	67.9	66.6	69.0	68.3	1.6	72.0	72.8	72.4	66.3	73.1	71.3	4.0
Trichlorfon (Metrifonate)	6	86.0	72.5	88.3	80.9	82.8	82.1	7.4	86.3	91.3	94.1	79.9	81.7	86.7	7.0
Tricyclazole	2	91.5	82.9	87.4	80.9	86.2	85.8	4.8	86.8	79.6	82.7	83.3	77.0	81.9	4.6
Trietazine	6	90.8	86.9	84.1	83.9	91.5	87.4	4.1	84.4	81.8	89.9	87.8	86.1	86.0	3.6
Trifloxystrobin	5	86.1	83.8	83.8	81.7	90.9	85.3	4.1	86.1	87.3	84.2	80.9	78.9	83.5	4.2
Triflumizole	3	85.2	81.2	78.6	80.7	90.2	83.2	5.5	87.6	85.8	84.2	84.1	82.3	84.8	2.3
Triflumuron	4	84.8	67.4	83.9	78.1	86.4	80.1	9.7	86.7	76.3	56.2	67.7	59.3	69.2	18
Trimethacarb	6	86.9	86.2	91.7	88.1	87.3	88.0	2.5	91.5	93.1	98.1	92.2	88.1	92.6	3.9
Triticonazole	2	82.3	80.1	79.5	90.5	75.6	81.6	6.8	97.5	87.2	85.0	86.6	90.5	89.3	5.6
Uniconazole	2	95.2	106	91.0	114	105	102	8.8	114	104	102	109	124	110	7.9
Vamidothion	2	82.7	83.2	91.9	86.4	88.1	86.5	4.4	82.5	79.0	92.8	81.5	83.5	83.9	6.3
Zoxamide	6	85.8	86.7	82.2	88.9	92.7	87.3	4.4	76.7	85.1	79.6	86.1	85.8	82.7	5.2

Table 2. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Orange Juice Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Abamectin - Avermectin B1a	7	102	94.7	94.0	88.5	69.5	89.8	14	99.2	121	96.1	89.2	92.4	99.6	13
Acephate	1	95.0	94.0	91.6	91.8	86.6	91.8	3.5	80.7	94.0	89.8	86.5	84.6	87.1	5.8
Acetamiprid	5	93.9	83.4	105	102	85.2	94.0	10	84.8	100	84.5	84.9	96.6	90.3	8.5
Alanycarb	5	93.7	93.8	85.2	86.5	93.4	90.5	4.7	89.2	101	99.0	83.5	95.4	93.6	7.7
Aldicarb	5	95.2	93.6	93.5	96.1	96.8	95.0	1.5	83.5	102	97.3	83.1	81.9	89.6	11
Amidosulfuron	4	86.2	90.1	96.2	89.3	89.7	90.3	4.0	76.5	92.4	82.4	86.0	92.3	85.9	7.9
Aminocarb	4	92.4	112	76.8	89.8	79.1	89.9	15	86.4	105	93.8	95.3	100	96.1	7.2
Azaconazole	1	83.9	79.2	93.4	84.7	95.9	87.4	8.0	89.2	91.2	94.1	87.3	91.1	90.6	2.8
Azamethiphos	2	92.9	92.0	98.0	92.9	91.0	93.4	2.9	79.6	88.3	87.3	84.1	80.1	83.9	4.8
Azinphos-ethyl	1	96.9	106	91.2	102	106	100	6.4	79.7	96.9	100	97.6	97.5	94.4	8.8
Azinphos-methyl	1	82.5	83.9	80.7	86.6	84.1	83.6	2.6	91.3	95.3	85.9	82.4	87.3	88.5	5.7
Azoxystrobin	5	84.3	78.9	83.7	89.9	90.9	85.5	5.7	75.1	103	90.8	88.6	81.1	87.6	12
Beflubutamid	8	84.3	87.4	96.4	83.2	102	90.6	8.9	78.8	102	97.4	93.5	88.7	92.0	9.6
Benalaxyl	2	92.2	98.0	84.1	86.4	97.0	91.5	6.8	78.9	90.9	92.1	89.5	84.2	87.1	6.3
Benfuracarb	4	71.9	84.1	70.1	91.7	92.6	82.1	13	79.1	102	93.8	93.2	91.5	91.9	9.0
Benzoximate	7	85.3	93.8	86.6	97.1	88.8	90.3	5.5	83.0	97.0	85.2	83.1	87.8	87.2	6.7
Bifenazate	8	71.7	94.8	86.3	89.3	82.0	84.8	10	77.1	94.4	99.7	95.0	83.4	89.9	10
Bifenthrin	2	92.2	93.5	97.4	85.6	93.5	92.5	4.6	88.3	96.2	95.7	81.2	98.2	91.9	7.7
Bispyribac	7	96.4	91.7	86.9	90.6	102	93.4	6.1	84.7	97.1	101	89.1	82.6	90.9	8.6

Table 2. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Orange Juice Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	**Mix**	**A**	**B**	**C**	**D**	**E**	**Mean**	**(%)**	**A**	**B**	**C**	**D**	**E**	**Mean**	**(%)**
Bitertanol	3	101	95.0	90.6	91.7	86.0	92.8	5.8	84.0	99.8	90.3	80.4	106	92.1	12
Boscalid	4	83.1	80.6	85.0	96.6	91.9	87.4	7.6	78.8	105	94.7	90.8	86.6	91.2	11
Bromuconazole (2 diastereoisomers)	2	91.7	86.5	89.3	93.8	90.4	90.3	3.0	84.4	97.7	94.8	85.9	85.8	89.7	6.8
Bupirimate	2	83.5	81.6	94.3	94.6	80.3	86.9	8.1	74.4	98.1	104	97.9	94.9	93.8	12
Buprofezin	1	97.1	83.8	87.7	92.0	86.7	89.5	5.8	82.7	108	84.1	91.1	90.9	91.3	11
Butocarboxim	4	91.2	86.8	83.4	75.5	89.4	85.2	7.3	77.7	97.4	92.5	92.1	82.1	88.3	9.2
Carbaryl	6	86.5	92.5	83.0	92.6	91.8	89.3	4.9	84.5	92.5	96.5	89.4	86.3	89.8	5.4
Carbendazim	5	73.2	76.1	61.5	71.1	71.3	70.6	7.8	73.1	81.4	71.8	74.5	97.7	79.7	13
Carbofuran	8	87.5	83.6	83.5	85.8	78.3	83.7	4.1	84.1	103	92.8	86.9	86.9	90.7	8.1
Carbosulfan	6	82.7	76.5	80.9	78.7	75.6	78.9	3.8	72.7	98.8	98.6	74.9	77.1	84.4	16
Carboxin	5	92.9	88.6	93.0	88.5	90.4	90.7	2.4	83.1	97.0	89.6	87.1	84.5	88.3	6.2
Carfentrazone-ethyl	4	81.4	88.0	74.7	79.3	94.4	83.5	9.2	80.4	93.5	88.3	78.2	88.6	85.8	7.4
Chlorantraniliprole	8	91.8	95.7	92.0	93.7	97.0	94.0	2.4	84.0	107	98.8	88.3	91.2	93.9	9.7
Chlorfenvinphos (E- and Z-isomers)	2	102	105	107	98.4	102	103	3.2	91.0	107	100	100	104	101	6.0
Chloridazon (Pyrazon)	4	78.6	83.4	79.2	89.7	82.3	82.6	5.4	76.3	91.4	81.3	86.1	81.7	83.3	6.8
Chlorotoluron (Chlortoluron)	7	91.8	91.8	90.6	94.9	96.5	93.1	2.6	81.9	100	95.4	87.7	81.1	89.3	9.4
Chloroxuron	7	93.1	95.7	94.6	87.0	92.6	92.6	3.6	83.4	99.8	100	90.7	88.7	92.5	7.8
Chlorpyrifos	2	88.6	89.8	87.4	87.0	87.3	88.0	1.3	82.1	99.3	93.9	88.3	88.1	90.3	7.2
Chlorpyrifos-methyl	2	90.5	99.4	95.4	79.8	84.5	89.9	8.8	74.9	99.8	93.8	88.9	82.1	87.9	11
Chlorsulfuron	4	94.3	102	102	89.6	100	97.6	5.5	84.3	97.7	90.8	91.8	79.6	88.8	7.9
Clethodim (E- and Z-isomers)	3	87.5	95.3	92.5	94.7	89.1	91.8	3.7	79.5	89.2	102	88.5	83.1	88.5	9.6
Clofentezine	4	88.8	87.5	79.0	84.6	90.2	86.0	5.2	85.9	89.8	98.2	80.1	77.4	86.3	9.5
Clomazone	8	84.5	93.3	89.9	90.0	87.2	89.0	3.7	83.7	94.7	89	92.5	87.4	89.5	4.8
Coumaphos	2	94.9	91.6	88.4	97.7	87.5	92.0	4.7	84.7	95.7	93.5	86.6	96.3	91.4	5.9
Cyazofamid	4	91.1	93.9	91.6	80.6	96.1	90.6	6.6	81.5	98.2	100	89.5	92.3	92.3	8.0
Cycloate	1	95.4	79.4	89.9	91.5	93.4	89.9	6.9	78.1	105	95.3	87.7	88.7	90.9	11
Cycluron	7	84.8	88.2	85.7	91.9	89.5	88.0	3.3	83.9	107	103	95.6	87.0	95.3	10
Cymiazole	1	98.5	95.5	111	95.9	104	101	6.6	93.4	98.2	106	83.1	89.7	94.1	9.3
Cymoxanil	4	94.8	98.4	91.0	96.5	90.8	94.3	3.6	77.7	87.3	85.5	85.3	88.2	84.8	4.9
Cyproconazole (2 diastereoisomers)	1	91.7	102	109	94.1	85.8	96.5	9.3	78.0	97.6	95.8	98.1	98.5	93.6	9.4
Cyprodinil	8	85.2	87.9	89.2	86.2	89.0	87.5	2.0	83.3	98.3	93.6	103	81.1	91.8	10
DEET (Diethyltoluamide)	4	83.8	95.5	92.2	97.9	95.7	93.0	6.0	77.6	90.8	90.5	93.4	85.5	87.6	7.2
Desmedipham	8	89.0	91.4	94.9	96.3	88.5	92.0	3.8	82.6	96.1	87.3	83.9	84.3	86.8	6.3
Diazinon	2	89.7	89.6	93.2	86.5	93.1	90.4	3.1	76.5	89.9	87.6	98.2	83.0	87.0	9.3
Dichlorvos	2	96.0	96.5	93.2	86.3	91.5	92.7	4.4	76.6	106	93.3	93.2	87.6	91.4	12
Diethofencarb	6	89.4	95.3	87.5	94.3	95.6	92.4	4.0	79.7	99.1	86.9	92.8	82.7	88.2	8.9
Difenoconazole (*cis*- and *trans*-)	3	82.2	94.8	81.2	91.2	86.0	87.1	6.7	75.8	94.0	89.4	98.1	87.9	89.0	9.5
Diflubenzuron	4	91.2	93.6	95.0	83.7	99.2	92.6	6.2	88.4	85.2	102	91.0	85.2	90.3	7.6
Diflufenican	1	91.0	95.2	96.4	87.5	96.4	93.3	4.2	82.6	93.8	94.3	84.7	86.9	88.4	6.0

Table 2. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Orange Juice Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Dimethachlor	1	95.6	97.2	92.7	91.5	94.1	94.2	2.4	82.1	94.4	96.2	94.1	89.1	91.2	6.3
Dimethoate	8	78.7	82.6	100	88.3	103	90.6	12	76.1	106	96.7	110	93.3	96.2	14
Dimethomorph (E- and Z-isomers)	5	93.0	87.2	90.9	99.1	106	95.1	7.6	82.4	91.9	89.1	93.3	83.4	88.0	5.6
Dimoxystrobin	1	107	82.7	79.5	77.1	87.7	86.8	14	94.3	117	106	88.0	88.3	98.9	13
Diniconazole	2	99.2	96.6	96.3	100	95.3	97.6	2.2	81.9	97.2	89.5	92.9	84.1	89.1	7.0
Dinotefuran	7	87.1	78.4	78.8	89.5	91.2	85.0	7.1	73.2	97.0	95.3	93.7	93.1	90.5	11
Dioxacarb	7	106	95.8	81.0	108	89.3	96.0	12	90.7	103	93.8	95.7	106	97.9	6.7
Disulfoton	1	81.8	83.2	87.4	90.5	91.1	86.8	4.8	84.8	95.1	94.2	88.4	86.5	89.8	5.2
Diuron	5	88.2	89.6	87.4	83.6	92.8	88.3	3.8	76.5	87.0	87.6	91.0	85.2	85.5	6.3
Epoxiconazole	2	81.5	93.6	80.2	84.0	86.5	85.2	6.2	82.5	96.9	94.2	82.6	84.4	88.1	7.8
Ethidimuron (Sulfadiazole)	8	93.0	91.8	75.7	83.2	92.9	87.3	8.8	78.8	85.4	79.7	87.4	96.1	85.5	8.2
Ethion	2	90.3	104	96.3	101	102	98.7	5.6	76.0	100	94.4	87.2	85.6	88.6	10
Ethirimol	4	94.1	89.4	88.1	96.3	84.3	90.4	5.3	78.6	96.4	89.5	102	81.6	89.6	11
Ethofumesate	4	86.7	93.5	87.2	79.8	91.5	87.7	6.0	82.3	95.0	88.4	86.2	84.6	87.3	5.5
Ethoprophos (Ethoprop)	2	86.7	85.0	92.3	89.0	93.7	89.3	4.1	79.8	105	94.3	91.0	87.4	91.5	10
Ethoxyquin	8	171	165	169	166	174	169	2.1	129	143	138	140	135	137	3.7
Etofenprox	3	87.3	88.3	91.3	87.4	90.4	88.9	2.0	80.1	107	87.8	93.1	89.7	91.5	11
Famoxadone	4	79.0	89.1	76.6	76.4	90.7	82.4	8.5	79.6	81.8	104	86.6	72.0	84.7	14
Fenamidone	5	93.2	86.7	94.2	87.7	94.9	91.3	4.2	83.8	97.6	92.1	82.8	82.2	87.7	7.8
Fenamiphos	1	97.4	99.6	84.0	91.6	78.7	90.3	9.8	68.0	97.9	108	105	102	96.1	17
Fenarimol	2	91.4	89.2	89.7	102	98.7	94.2	6.1	77.1	98.2	91.6	91.3	80.5	87.7	9.9
Fenazaquin	5	99.4	95.3	104	111	96.8	101	6.4	86.8	97.0	96.8	82.9	95.4	91.8	7.1
Fenbuconazole	2	88.6	102	86.8	86.9	96.8	92.3	7.6	79.4	98.5	90.5	89.7	88.6	89.3	7.6
Fenhexamid	3	93.7	84.9	88.2	87.3	90.0	88.8	3.7	78.3	80.7	95.6	90.0	89.1	86.8	8.2
Fenobucarb	5	91.1	89.4	89.8	94.3	95.3	92.0	2.9	79.7	101	89.4	90.8	88.6	90.0	8.5
Fenoxycarb	6	96.1	87.0	99.2	85.9	94.9	92.7	6.3	85.7	98.6	88.4	85.4	81.1	87.9	7.5
Fenpropidin	5	96.5	95.9	95.2	95.2	99.4	96.5	1.8	82.0	93.5	87.2	89.4	87.1	87.9	4.7
Fenpyroximate	5	92.6	95.4	99.1	97.8	95.6	96.1	2.6	72.4	93.0	85.7	90.6	87.4	85.8	9.3
Fenuron	7	92.2	92.1	86.7	85.5	96.3	90.6	4.9	84.5	93.5	89.2	84.5	91.5	88.6	4.6
Fipronil	4	90.3	105	99.0	83.2	90.2	93.5	9.0	90.4	128	89	98.4	83.5	97.8	18
Flazasulfuron	4	96.6	90.6	94.5	77.0	87.7	89.3	8.6	78.2	93.0	82.5	89.6	85.3	85.7	6.8
Flonicamid	6	87.5	93.6	89.4	74.8	88.5	86.8	8.2	75.3	75.3	90.1	80.9	80.8	80.5	7.5
Flubendiamide	7	96.0	101	100	85.9	85.9	93.8	8.0	65.9	87.6	93.1	81.4	93.1	84.2	13
Fludioxonil	2	90.2	84.9	87.2	86.9	99.3	89.7	6.4	93.8	88.7	99.1	85.5	88.6	91.1	5.9
Flufenacet	1	96.7	101	110	93.5	106	101	6.6	90.7	107	110	93.7	99.2	100	8.4
Flufenoxuron	4	91.1	92.6	94.4	90.5	99.4	93.6	3.8	79.1	90.5	88	87.2	84.0	85.8	5.1
Flumetsulam	8	82.0	84.0	98.0	93.3	97.8	91.0	8.3	94.0	89.0	103	77.5	82.2	89.1	11
Flumioxazin	6	63.6	100	89.4	88.5	81.6	84.6	16	83.1	88.0	97.3	91.1	89.9	89.9	5.7
Fluometuron	8	94.6	94.9	92.7	93.8	95.3	94.3	1.1	80.7	95.0	87.2	90.2	86.2	87.9	6.0

Table 2. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Orange Juice Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Fluopicolide	1	85.8	87.5	97.3	90.5	83.3	88.9	6.1	84.5	94.0	90.8	89.4	95.6	90.8	4.8
Fluoxastrobin	8	84.9	99.5	74.6	82.2	87.2	85.7	11	81.2	85.9	85.6	74.0	93.6	84.1	8.6
Fluquinconazole	2	90.7	90.3	100	89.8	103	94.7	6.6	75.7	101	95	106	99.6	95.5	12
Flusilazole	2	79.3	86.3	79.6	77.1	89.4	82.4	6.3	78.1	105	99.4	94.1	86.5	92.6	11
Flutriafol	8	86.3	94.2	92.8	90.4	91.9	91.1	3.3	84.4	100	91.3	94.5	90.3	92.2	6.4
Foramsulfuron	3	84.7	94.8	93.2	96.7	83.6	90.6	6.7	79.6	99.3	99	89.8	82.4	90.0	10
Forchlorfenuron	7	89.7	86.4	92.4	95.4	96.2	92.0	4.4	81.7	96.9	87.8	93.2	83.2	88.5	7.3
Fosthiazate (sum of isomers)	1	94.2	87.9	90.3	83.0	87.6	88.6	4.6	80.0	93.5	86.7	86.8	89.9	87.4	5.7
Fuberidazole	4	90.7	94.6	97.0	91.2	82.8	91.3	5.9	79.5	88.9	99.3	83.7	90.3	88.4	8.5
Furalaxyl	7	89.9	91.5	83.8	76.9	81.5	84.7	7.1	87.0	96.5	95.7	97.2	92.4	93.8	4.5
Furathiocarb	6	95.0	89.6	88.9	88.9	89.8	90.5	2.8	85.3	93.0	98.5	90.5	91.0	91.7	5.2
Halofenozide	8	95.8	97.5	93.2	92.7	90.1	93.9	3.1	74.4	94.0	90.3	86.2	98.3	88.7	10
Halosulfuron-methyl	8	100	104	93.7	99.3	104	100	4.2	80.4	100	90.4	92.0	90.3	90.7	7.8
Hexaconazole	2	97.3	94.5	88.5	92.8	94.5	93.5	3.5	84.8	103	92.2	94.5	90.9	93.0	6.9
Hexaflumuron	7	88.0	84.2	87.3	87.1	91.3	87.6	2.9	72.8	91.0	89.4	86.4	80.6	84.0	8.8
Hexythiazox	4	86.5	98.1	95.1	87.8	99.9	93.5	6.5	81.0	93.8	95.2	88.6	82.0	88.1	7.4
Hydramethylnon	7	103	102	98.3	90.6	99.3	98.6	4.9	89.5	92.5	93.1	85.0	88.7	89.8	3.6
Imazalil	2	83.4	97.1	101	89.6	98.8	94.0	7.7	84.6	97.7	94.4	94.9	83.2	90.9	7.2
Imidacloprid	5	75.2	80.2	90.7	72.3	77.1	79.1	9.0	83.8	104	85.2	80.0	87.0	88.1	11
Indoxacarb	3	87.1	90.6	90.6	91.0	89.8	89.8	1.8	79.5	86.2	81.3	91.0	84.8	84.5	5.3
Ipconazole	2	94.9	90.7	92.9	93.8	94.2	93.3	1.7	83.9	106	101	89.3	86.8	93.4	10
Iprovalicarb	5	83.6	89.5	91.1	90.3	87.7	88.4	3.4	74.9	92.2	85.2	86.3	86.6	85.0	7.4
Isofenphos-methyl	1	89.7	87.0	84.6	86.3	92.8	88.1	3.7	83.7	89.3	89.9	90.5	89.5	88.6	3.1
Isoprothiolane	1	117	139	104	102	68.8	106	24	89.9	99.5	109	103	92.6	98.8	7.8
Isoxaben	4	83.5	95.5	87.3	98.1	85.1	89.9	7.3	85.8	101	109	94.4	92.3	96.5	9.2
Isoxaflutole	3	89.6	89.6	92.8	92.0	90.1	90.8	1.6	80.3	97.2	91.6	85.9	82.5	87.5	7.9
Ivermectin B1a	7	101	97.2	105	95.2	92.1	98.0	5.0	76.4	92.0	86.6	83.6	88.2	85.3	6.9
Kresoxim-methyl	4	90.4	107	97.0	96.6	103	98.7	6.4	86.5	94.5	97.7	93.2	89.8	92.3	4.7
Lenacil	1	90.6	91.0	101	99.2	102	96.6	5.6	89.8	97.4	93.6	96.9	82.5	92.1	6.7
Linuron	4	83.8	90.8	84.4	97.8	92.2	89.8	6.5	76.2	94.1	101	94.7	91.7	91.6	10
Lufenuron	4	85.7	92.1	99.7	98.1	95.3	94.2	5.9	78.0	87.0	83.8	81.4	86.2	83.3	4.4
Malaoxon	3	103	96.8	98.5	86.4	86.1	94.1	8.0	80.6	90.6	97.2	97.4	93.8	91.9	7.5
Malathion	3	91.3	100	87.7	93.2	90.8	92.7	5.1	72.9	85.1	92.9	85.8	85.6	84.5	8.5
Mandipropamid	4	83.3	94.6	96.5	83.5	88.7	89.3	6.8	77.7	97.1	85.1	86.1	90.7	87.3	8.2
Mecarbam	3	94.4	90.5	89.5	85.2	86.9	89.3	4.0	75.3	95.6	87.8	93.9	91.5	88.8	9.1
Mepanipyrim	3	89.7	81.1	84.1	75.2	84.0	82.8	6.4	69.9	89.3	88.6	85.8	84.6	83.7	9.5
Mesosulfuron-methyl	6	96.0	90.6	86.2	86.4	96.9	91.2	5.6	75.4	92.7	76.3	87.9	77.7	82.0	9.5
Metaflumizone	4	97.1	102	106	95.8	107	102	5.1	85.9	98.9	88.2	101	91.0	93.0	7.1
Metalaxyl	3	88.7	93.4	82.8	88.7	83.9	87.5	4.9	80.0	96.0	87.2	87.7	85.8	87.4	6.6

Table 2. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Orange Juice Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Metamitron	4	84.0	87.1	79.8	85.7	82.4	83.8	3.4	82.2	102	83.6	90.3	81.7	88.1	9.9
Metazachlor	3	94.9	86.5	89.2	85.4	90.5	89.3	4.2	81.9	94.4	88.9	86.5	88.2	88.0	5.1
Metconazole	2	98.9	98.4	98.9	98.2	94.5	97.8	1.9	83.9	103	96.7	89.0	93.9	93.3	7.9
Methabenzthiazuron	5	90.9	102	90.7	92.0	90.9	93.2	5.1	83.6	95.5	95.4	86.6	88.6	89.9	5.9
Methamidophos	1	85.8	83.9	86.0	83.1	93.9	86.5	5.0	80.1	92.1	88.1	83.6	84.4	85.7	5.4
Methidathion	3	92.7	92.4	87.9	78.0	92.1	88.6	7.1	81.9	106	93.9	84.7	94.5	92.1	10
Methiocarb	7	93.2	99.5	91.4	92.6	101	95.5	4.4	89.8	108	96.1	97.4	93.2	97.0	7.2
Methomyl	5	95.2	94.5	92.7	97.0	88.8	93.6	3.3	79.9	98.9	86.3	94.1	90.9	90.0	8.1
Methoprotryne	7	86.3	91.5	94.5	94.7	91.9	91.8	3.7	82.9	96.0	90.7	89.2	89.8	89.7	5.2
Methoxyfenozide	5	103	96.7	100	88.2	89.1	95.5	7.0	75.6	96.2	91	96.5	89.1	89.7	9.5
Metobromuron	8	91.9	88.3	91.0	94.7	94.0	92.0	2.7	83.1	94.0	95.8	89.7	85.6	89.6	6.0
Metolachlor	3	99.4	106	108	102	95.8	102	4.8	81.1	105	104	86.5	85.0	92.4	12
Metrafenone	4	95.8	89.8	92.4	94.9	100	94.6	4.1	90.7	97.9	93.6	93.3	86.9	92.5	4.4
Metribuzin	4	91.3	90.7	95.0	101	91.5	94.0	4.7	80.9	98.9	88.8	98.4	88.0	91.0	8.4
Metsulfuron-methyl	4	91.0	85.8	103	91.6	93.7	92.9	6.6	83.9	101	93.3	86.9	85.8	90.2	7.9
Mevinphos (E- and Z-isomers)	3	94.1	94.5	90.8	89.1	89.3	91.6	2.8	87.6	93.6	91.8	95.3	88.6	91.4	3.6
Mexacarbate	7	88.2	90.0	91.8	79.7	115	93.0	14	83.6	98.4	88.4	86.1	86.4	88.6	6.5
Molinate	3	91.9	94.7	77.5	99.1	93.3	91.3	9.0	83.1	99.5	85.3	103	85.0	91.2	10
Monocrotophos	4	82.5	87.3	77.4	73.0	85.1	81.1	7.2	72.8	89.9	93.8	84.4	88.6	85.9	9.4
Moxidectin	7	97.9	93.8	88.1	96.0	97.5	94.7	4.2	85.0	104	86.4	93.1	94.2	92.5	8.2
Myclobutanil	1	92.4	99.0	94.4	94.2	100	96.0	3.5	89.3	88.7	102	85.7	87.1	90.5	7.0
Nicosulfuron	4	88.4	89.1	95.3	90.8	97.9	92.3	4.5	67.9	87.9	86	85.0	75.6	80.5	11
Nitenpyram	7	106	96.3	103	91.9	88.5	97.0	7.5	79.5	89.6	86	67.0	85.1	81.4	11
Novaluron	4	90.0	85.3	96.0	87.6	97.3	91.2	5.7	78.9	98.0	86.7	87.3	95.2	89.3	8.5
Omethoate	6	97.8	80.1	104	81.2	95.2	91.7	12	92.4	98.8	105	101	95.0	98.4	5.1
Oxadiazon	3	89.7	91.4	79.1	90.9	92.8	88.8	6.2	89.0	93.5	95.8	80.9	89.1	89.6	6.4
Oxadixyl	3	90.8	87.6	93.7	90.2	91.6	90.8	2.5	73.6	91.2	88.3	90.5	87.1	86.2	8.4
Oxamyl	5	89.2	91.6	81.0	104	80.8	89.4	11	76.2	89.8	91.9	89.4	85.9	86.7	7.2
Oxasulfuron	4	89.9	97.1	104	102	95.7	97.7	5.6	76.8	98.9	94.3	88.7	89.7	89.7	9.2
Paclobutrazol	3	84.0	93.8	86.0	89.6	93.5	89.4	4.9	79.2	88.2	92.3	85.1	87.7	86.5	5.6
Penconazole	3	82.1	83.6	91.5	86.8	91.4	87.1	5.0	84.1	93.6	97.2	88.9	84.9	89.7	6.3
Pencycuron	6	78.7	79.4	82.5	74.4	92.0	81.4	8.1	90.3	99.5	95.5	90.3	99.9	95.1	4.9
Pendimethalin	3	91.9	84.9	98.0	85.9	89.1	90.0	5.9	75.5	95.6	91.6	89.5	89.0	88.2	8.6
Phenmedipham	4	99.8	93.1	91.0	97.9	94.6	95.3	3.7	83.9	95.8	92.9	89.9	90.2	90.5	4.9
Phenthoate	3	81.1	95.3	107	96.2	90.4	94.0	9.9	85.7	76.2	83.7	93.0	106	88.9	13
Phosalone	3	95.7	99.9	94.4	99.5	88.9	95.7	4.7	87.8	97.4	99.6	92.5	85.3	92.5	6.6
Phosmet	6	95.2	88.2	96.6	84.1	85.9	90.0	6.2	81.8	101	96	105	92.9	95.4	9.4
Phosphamidon (E- and Z-isomers)	3	92.2	91.7	93.9	90.2	91.3	91.8	1.5	81.0	95.0	93.7	91.3	86.6	89.5	6.4
Phoxim	4	86.8	91.9	82.0	91.1	90.2	88.4	4.6	79.0	90.9	90.6	89.7	88.8	87.8	5.7

Table 2. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Orange Juice Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Picolinafen	3	97.4	97.4	92.1	90.5	85.9	92.7	5.3	83.9	97.7	90.5	91.7	89.0	90.6	5.5
Picoxystrobin	5	91.4	86.7	88.4	82.3	82.5	86.3	4.5	87.6	91.4	84.6	92.5	83.3	87.9	4.6
Pirimicarb	3	93.2	97.8	95.6	94.2	94.5	95.1	1.9	87.9	98.0	97.8	89.8	91.1	92.9	5.0
Pirimiphos-methyl	3	97.8	91.8	101	100	99.3	98.0	3.7	76.5	113	103	90.2	95.3	95.6	14
Prochloraz	1	86.5	101	88.3	90.4	104	94.1	8.5	81.1	94.9	88.9	107	80.0	90.5	12
Profenofos	3	88.4	97.7	98.2	88.5	90.8	92.7	5.3	77.0	98.0	91.1	84.1	90.2	88.1	9.0
Promecarb	7	93.9	83.7	86.3	92.1	85.2	88.2	5.1	90.3	95.4	96.3	93.5	90.2	93.1	3.1
Prometon	4	92.8	93.0	96.9	95.9	91.0	93.9	2.6	77.1	101	97.8	87.8	83.4	89.4	11
Propamocarb	5	94.6	103	95.8	98.8	94.1	97.3	3.8	92.2	91.1	96.3	85.9	82.9	89.7	5.9
Propaquizafop	4	86.1	98.8	92.2	96.7	87.2	92.2	6.1	75.0	82.6	88	84.0	87.5	83.4	6.3
Propargite	4	94.8	93.5	94.6	91.0	91.8	93.1	1.8	82.1	101	92	92.1	89.9	91.4	7.2
Propetamphos	3	91.5	77.8	91.3	93.5	93.4	89.5	7.4	85.0	90.3	87.4	96.9	95.7	91.1	5.7
Propiconazole (sum of isomers)	2	84.1	83.8	94.0	85.0	87.3	86.8	4.9	82.1	101	93.2	86.9	83.8	89.3	8.6
Propoxur	6	91.3	83.0	95.6	88.5	102	92.2	8.0	89.0	96.5	91.6	91.3	88.0	91.3	3.6
Propyzamide (Pronamide)	3	88.3	92.6	93.2	95.7	98.9	93.7	4.2	87.7	104	94.1	93.1	88.1	93.5	7.2
Proquinazid	1	93.6	90.5	91.5	92.3	97.9	93.1	3.1	79.6	98.0	95.4	87.6	94.8	91.1	8.2
Prosulfocarb	4	89.9	89.4	91.1	86.7	92.4	89.9	2.4	84.3	95.0	94.2	91.5	79.0	88.8	7.8
Pymetrozine	7	89.4	86.8	98.4	93.7	100	93.7	6.1	82.6	98.7	90.3	86.9	81.7	88.0	7.8
Pyracarbolid	7	98.4	95.6	90.8	93.4	88.9	93.4	4.0	80.0	93.6	86.3	77.8	87.9	85.1	7.5
Pyraclostrobin	5	92.4	95.1	92.8	88.7	96.4	93.1	3.2	75.3	86.6	85.7	86.0	80.3	82.8	5.9
Pyridaben	5	87.2	88.1	88.7	86.7	92.8	88.7	2.7	82.9	88.6	91.8	81.0	86.1	86.1	5.0
Pyridate	5	84.7	94.5	85.9	88.7	76.6	86.1	7.5	82.9	107	92	85.2	83.6	90.2	11
Pyrimethanil	6	83.9	85.8	84.5	72.0	84.8	82.2	7.0	76.8	88.2	90.7	88.9	85.4	86.0	6.4
Pyriproxyfen	5	88.1	82.2	86.1	85.2	83.3	85.0	2.7	77.3	98.3	97.4	94.5	85.4	90.6	10
Quinalphos	3	91.6	92.2	96.4	77.8	90.7	89.7	7.8	79.3	100	87.6	89.3	87.1	88.7	8.4
Quinmerac	7	69.1	76.7	72.8	75.7	77.1	74.3	4.5	76.8	97.2	87.4	69.6	71.6	80.5	14
Quinoclamine	4	99.6	91.1	85.0	88.9	94.4	91.8	6.0	83.6	91.1	94	85.7	93.0	89.5	5.1
Quinoxyfen	3	85.4	83.8	86.8	91.5	95.2	88.5	5.3	85.4	95.5	85	94.9	85.7	89.3	6.1
Rimsulfuron	4	90.1	86.8	92.0	89.9	88.8	89.5	2.1	80.9	92.5	89.8	86.6	82.7	86.5	5.6
Rotenone	7	91.3	87.4	95.8	84.0	86.8	89.1	5.1	78.4	95.6	93.1	81.9	91.7	88.1	8.6
Secbumeton	7	91.0	91.3	94.9	94.0	100	94.3	4.0	84.6	100	90.4	89.9	85.8	90.1	6.7
Silthiofam	4	87.2	82.5	71.0	78.0	86.9	81.1	8.4	86.7	107	88.8	93.7	81.4	91.5	10
Spinosad - Spinosyn A	7	102	95.6	103	90.3	92.1	96.7	6.0	82.3	93.7	82.8	99.6	94.0	90.5	8.4
Spinosad - Spinosyn D	7	90.0	84.2	78.1	79.1	81.6	82.6	5.8	70.7	90.4	87.9	83.5	93.2	85.1	10
Spirodiclofen	1	81.0	85.1	87.7	88.7	80.3	84.6	4.5	74.3	104	95.8	87.8	87.7	89.8	12
Spiromesifen	6	90.3	95.8	93.0	84.9	87.0	90.2	4.9	81.9	93.0	94.3	89.9	83.5	88.5	6.3
Spirotetramat	6	89.0	85.3	90.4	85.5	95.7	89.2	4.8	87.6	105	91.2	82.5	96.5	92.6	9.3
Spiroxamine (2 diastereoisomers)	1	104	109	102	99.7	104	104	3.1	85.8	99.9	89.9	86.5	91.4	90.7	6.2
Sulfentrazone	6	89.9	88.9	94.9	92.9	95.3	92.4	3.1	83.1	105	92.1	87.3	89.2	91.4	9.2

Table 2. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Orange Juice Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Tebuconazole	2	83.1	92.6	83.6	83.0	91.8	86.8	5.7	84.0	93.2	86.3	88.0	83.9	87.1	4.4
Tebufenozide	5	103	98.7	91.6	91.4	92.4	95.4	5.4	92.2	94.0	73.8	98.3	90.8	89.8	10
Tebufenpyrad	3	90.3	82.2	86.5	85.2	91.7	87.2	4.4	85.7	104	96.5	89.0	85.2	92.0	8.6
Tebuthiuron	7	96.2	95.2	91.0	96.9	97.9	95.4	2.8	72.9	86.1	82.1	83.4	76.1	80.1	6.8
Teflubenzuron	4	85.3	88.5	84.7	78.3	102	87.8	10	70.8	103	89.4	81.9	82.2	85.5	14
Temephos	7	103	112	107	99.9	102	105	4.5	85.2	117	101	109	94.7	101	12
Tepraloxydim (E- and Z-isomers)	3	87.6	81.2	86.8	84.0	78.4	83.6	4.7	80.5	92.1	86.8	92.0	91.6	88.6	5.7
Terbufos	3	93.4	93.2	93.6	95.9	91.5	93.5	1.7	84.9	101	89.3	87.7	82.6	89.1	7.9
Tetraconazole	2	89.9	93.2	95.3	86.6	87.9	90.6	4.0	79.8	92.2	94.5	95.9	92.5	91.0	7.1
Thiabendazole	5	84.4	84.2	90.3	82.4	84.0	85.1	3.6	78.6	93.8	93	87.2	92.2	89.0	7.1
Thiacloprid	5	89.7	82.8	87.5	90.4	93.1	88.7	4.3	77.5	90.4	74.5	89.8	95.9	85.6	11
Thiamethoxam	5	101	93.9	92.5	86.4	90.9	92.9	5.6	73.4	83.3	86	79.7	91.3	82.8	8.2
Thidiazuron	7	91.9	86.6	98.4	93.9	92.8	92.7	4.6	85.7	100	91.2	86.7	86.2	90.0	6.7
Thifensulfuron-methyl	4	95.5	104	97.7	91.1	92.4	96.2	5.5	80.2	101	96.8	94.8	86.4	91.8	9.1
Thiodicarb	5	87.1	88.0	86.9	84.4	101	89.5	7.4	83.3	101	102	86.8	83.7	91.5	10
Thiofanox	5	82.7	84.6	107	89.7	95.1	91.9	11	81.0	109	90.1	107	84.5	94.3	14
Tolylfluanid	3	90.3	92.7	113	91.8	90.1	95.5	10	81.0	83.6	94.2	73.3	78.9	82.2	9.4
Tralkoxydim	1	90.0	93.9	96.0	95.9	93.5	93.9	2.6	81.2	84.1	88.1	91.4	83.5	85.7	4.7
Triadimefon	3	95.3	97.9	92.1	98.4	90.2	94.8	3.8	75.5	90.2	103	90.1	81.3	88.0	12
Triadimenol	6	115	97.3	106	92.4	102	103	8.5	87.0	88.7	89.9	89.1	87.8	88.5	1.3
Triasulfuron	4	94.2	102	88.6	98.2	99.0	96.3	5.3	86.0	107	98.3	90.5	90.4	94.5	8.9
Triazophos	3	86.6	76.5	94.1	72.6	85.7	83.1	10	77.1	94.7	89.7	77.2	91.1	86.0	9.6
Tribenuron-methyl	4	74.5	81.9	73.3	78.4	78.8	77.4	4.5	73.6	87.3	86.7	81.7	74.7	80.8	8.0
Trichlorfon (Metrifonate)	6	77.5	77.2	82.7	83.0	86.7	81.4	4.9	73.9	87.1	87.8	97.2	84.2	86.0	9.7
Tricyclazole	2	95.4	99.2	95.9	93.1	92.3	95.2	2.9	83.4	94.8	93.2	89.7	89.2	90.1	4.9
Trietazine	6	90.7	98.3	99.7	95.0	103	97.4	5.0	80.6	92.8	83.9	87.9	93.5	87.8	6.4
Trifloxystrobin	5	88.7	102	94.4	86.8	96.4	93.6	6.5	74.7	95.2	86.3	83.1	83.9	84.6	8.7
Triflumizole	3	93.9	95.3	93.0	91.8	104	95.5	4.9	80.3	96.8	92.7	92.4	87.0	89.8	7.1
Triflumuron	4	97.0	96.3	96.7	91.9	91.0	94.6	3.1	82.9	85.5	86.7	95.0	95.3	89.1	6.4
Trimethacarb	6	91.9	89.5	86.7	91.1	95.1	90.8	3.4	84.3	101	89.9	91.1	86.7	90.6	7.0
Triticonazole	2	76.7	94.6	89.1	90.9	92.6	88.8	8.0	79.8	103	97.3	85.3	88.7	90.8	10
Uniconazole	2	96.4	100	93.9	85.7	94.3	94.1	5.7	85.5	109	101	82.0	98.8	95.2	12
Vamidothion	2	103	112	120	104	99.0	108	7.8	88.0	105	86.5	85.7	79.3	88.9	11
Zoxamide	6	89.5	91.9	93.3	94.4	94.3	92.7	2.2	86.6	98.1	90.6	94.3	83.3	90.6	6.5

Table 3. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Spinach Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Abamectin - Avermectin B1a	7	99.1	91.6	69.9	60.0	108	85.7	23	79.1	103	91.2	71.6	107	90.3	17
Acephate	1	95.9	78.2	76.0	75.1	82.2	81.5	10	65.7	81.2	70.6	91.6	97.6	81.3	17
Acetamiprid	5	92.1	85.8	86.9	88.9	82.5	87.2	4.1	79.1	81.6	77.3	87.0	91.0	83.2	6.8
Alanycarb	5	82.1	58.2	62.2	59.1	54.1	63.1	17	71.9	73.8	68.0	64.7	79.5	71.6	7.9
Aldicarb	5	98.2	89.6	89.7	90.9	91.3	92.0	3.9	79.7	80.2	79.8	82.8	86.9	81.9	3.7
Amidosulfuron	4	92.1	92.1	87.8	88.2	91.4	90.3	2.3	86.1	82.0	83.3	88.7	90.4	86.1	4.1
Aminocarb	4	106	89.7	91.0	95.7	92.9	94.9	6.7	83.4	87.1	81.0	85.5	86.3	84.6	2.9
Azaconazole	1	94.5	96.4	88.7	89.8	97.3	93.3	4.1	82.4	89.2	82.9	80.5	91.9	85.4	5.7
Azamethiphos	2	99.1	78.7	94.8	91.5	86.1	90.0	8.8	95.4	84.3	81.3	87.2	95.2	88.7	7.2
Azinphos-ethyl	1	81.8	88.9	87.4	80.7	84.1	84.6	4.1	79.8	77.4	82.7	88.1	88.3	83.2	5.8
Azinphos-methyl	1	79.4	70.7	81.4	70.6	81.4	76.7	7.3	85.3	76.8	85.0	85.1	87.5	83.9	4.9
Azoxystrobin	5	97.2	98.1	92.4	102	102	98.5	4.2	92.9	97.2	89.1	85.3	95.3	92.0	5.2
Beflubutamid	8	85.1	95.3	85.4	82.9	93.7	88.5	6.4	87.1	79.9	88.9	92.1	95.9	88.8	6.7
Benalaxyl	2	90.1	87.5	85.9	95.6	89.2	89.7	4.1	82.4	91.6	75.2	87.2	85.6	84.4	7.3
Benfuracarb	4	50.6	18.3	18.0	12.5	12.0	22.3	72	40.5	43.2	26.5	47.3	67.7	45.1	33
Benzoximate	7	104	87.0	83.5	88.9	95.0	91.6	8.6	93.5	90.8	83.6	84.3	96.9	89.8	6.5
Bifenazate	8	108	103	73.7	93.7	94.9	94.8	14	78.8	83.0	116	63.2	92.5	86.7	22
Bifenthrin	2	85.0	79.3	73.0	75.4	74.8	77.5	6.2	73.4	73.5	73.3	81.5	76.0	75.5	4.7
Bispyribac	7	90.5	91.8	84.6	89.7	91.5	89.6	3.2	77.0	80.9	79.4	80.3	81.5	79.8	2.2
Bitertanol	3	95.9	73.1	92.5	80.0	82.6	84.8	11	84.4	84.4	78.0	75.7	71.6	78.8	7.1
Boscalid	4	91.9	88.5	84.4	84.1	90.5	87.9	4.0	81.8	87.5	80.7	87.8	82.4	84.0	4.0
Bromuconazole (2 diastereoisomers)	2	102	90.2	91.4	90.4	91.7	93.1	5.3	81.1	75.9	76.3	92.1	89.2	82.9	9.0
Bupirimate	2	92.0	97.6	88.1	102	104	96.7	6.9	91.6	91.4	85.4	98.0	107	94.7	8.7
Buprofezin	1	84.9	81.8	84.0	81.1	80.8	82.5	2.2	78.1	79.8	79.0	80.3	85.3	80.5	3.5
Butocarboxim	4	97.5	87.0	95.8	92.5	93.7	93.3	4.3	86.1	86.6	87.4	87.1	86.2	86.7	0.7
Carbaryl	6	100	95.7	94.6	91.3	90.5	94.4	4.0	81.8	83.0	81.5	85.0	89.3	84.1	3.8
Carbendazim	5	99.9	91.7	83.4	94.0	99.2	93.7	7.1	74.4	75.2	71.7	82.6	77.7	76.3	5.4
Carbofuran	8	97.1	94.8	95.9	91.8	100	95.9	3.2	94.6	87.6	91.9	91.5	95.3	92.2	3.3
Carbosulfan	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carboxin	5	93.5	87.1	84.2	93.3	94.1	90.5	5.0	78.4	78.2	82.0	88.6	80.8	81.6	5.2
Carfentrazone-ethyl	4	88.9	96.7	89.0	85.6	86.9	89.4	4.8	92.1	90.4	83.2	88.4	91.2	89.0	4.0
Chlorantraniliprole	8	99.4	96.3	90.1	98.7	97.6	96.4	3.9	79.9	80.2	79.2	83.8	90.5	82.7	5.7
Chlorfenvinphos (E- and Z-isomers)	2	92.3	92.1	84.7	88.9	93.0	90.2	3.8	86.3	83.0	78.7	87.6	90.8	85.3	5.4
Chloridazon (Pyrazon)	4	87.2	90.4	86.6	86.7	82.8	86.8	3.1	92.6	83.3	81.6	83.2	84.9	85.1	5.1
Chlorotoluron (Chlortoluron)	7	94.0	90.9	84.9	90.0	90.5	90.0	3.7	84.5	83.4	82.7	86.3	90.3	85.4	3.5
Chloroxuron	7	103	102	105	98.6	103	102	2.3	89.4	88.4	77.4	91.2	91.4	87.6	6.7
Chlorpyrifos	2	99.3	89.4	90.7	92.5	89.9	92.4	4.4	82.5	86.7	87.9	89.8	89.8	87.3	3.5
Chlorpyrifos-methyl	2	90.5	90.2	90.2	85.3	95.9	90.4	4.2	82.6	87.9	77.5	85.5	83.7	83.5	4.6
Chlorsulfuron	4	77.8	89.7	77.4	81.7	80.7	81.4	6.1	81.9	77.8	78.3	84.3	87.6	82.0	5.1

Table 3. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Spinach Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Clethodim (E- and Z-isomers)	3	96.9	91.0	101	92.6	102	96.6	5.0	83.2	85.9	90.2	88.9	85.1	86.7	3.3
Clofentezine	4	93.7	87.5	85.1	84.5	98.5	89.8	6.8	92.0	86.4	81.2	87.7	92.1	87.9	5.2
Clomazone	8	88.6	86.7	87.6	85.1	89.0	87.4	1.8	81.4	79.5	72.1	82.3	85.1	80.1	6.1
Coumaphos	2	93.6	93.1	90.3	92.2	88.1	91.5	2.5	84.1	90.8	87.5	87.0	93.4	88.6	4.1
Cyazofamid	4	91.4	89.1	86.3	95.4	88.9	90.2	3.8	89.9	90.7	87.3	90.5	87.1	89.1	2.0
Cycloate	1	99.0	88.0	91.4	94.5	82.7	91.1	6.8	81.8	94.1	79.5	85.6	85.7	85.4	6.5
Cycluron	7	80.5	83.4	86.1	84.8	85.9	84.2	2.7	82.6	83.6	81.2	84.5	79.4	82.2	2.4
Cymiazole	1	87.8	85.3	82.9	85.2	81.9	84.6	2.7	75.8	83.2	78.6	74.3	83.2	79.0	5.2
Cymoxanil	4	116	90.4	97.4	87.2	112	100	13	85.1	92.3	91.4	92.7	89.9	90.3	3.4
Cyproconazole (2 diastereoisomers)	1	93.6	90.5	85.3	90.8	89.1	89.9	3.4	81.3	84.7	83.6	86.2	86.7	84.5	2.6
Cyprodinil	8	81.0	81.4	86.0	86.4	90.2	85.0	4.5	83.1	84.5	82.4	87.3	80.0	83.5	3.2
DEET (Diethyltoluamide)	4	89.8	85.7	92.0	89.2	82.1	87.8	4.4	85.2	82.3	77.8	80.1	86.2	82.3	4.2
Desmedipham	8	93.1	101	86.3	89.7	91.9	92.5	6.0	93.7	80.4	85.8	91.5	90.0	88.3	5.9
Diazinon	2	94.7	91.7	85.5	90.7	86.2	89.8	4.3	91.4	79.8	83.2	79.5	76.4	82.1	7.0
Dichlorvos	2	125	123	114	117	118	120	3.9	107	101	110	108	111	108	3.7
Diethofencarb	6	94.6	88.7	91.7	89.2	86.8	90.2	3.4	82.2	91.3	87.2	89.4	89.6	87.9	4.0
Difenoconazole (*cis*- and *trans*-)	3	86.2	88.4	90.1	88.5	92.7	89.2	2.7	81.3	85.3	78.5	78.6	79.7	80.7	3.5
Diflubenzuron	4	100	73.5	94.5	89.4	95.2	90.6	11	87.0	86.7	80.9	85.9	86.5	85.4	3.0
Diflufenican	1	91.9	88.1	82.3	84.0	80.9	85.5	5.3	83.6	79.4	82.4	87.9	87.3	84.1	4.2
Dimethachlor	1	91.6	91.7	89.6	86.4	89.4	89.7	2.4	91.8	92.8	85.1	89.5	90.9	90.0	3.4
Dimethoate	8	91.5	85.0	82.3	88.5	96.3	88.7	6.2	89.7	95.0	93.2	101	93.3	94.5	4.6
Dimethomorph (E- and Z-isomers)	5	106	93.1	97.1	99.8	99.3	99.1	4.8	82.9	80.0	79.5	85.8	85.6	82.8	3.6
Dimoxystrobin	1	94.6	100	83.8	95.2	82.0	91.2	8.6	90.0	96.0	93.3	84.1	97.2	92.1	5.7
Diniconazole	2	95.1	99.2	92.0	96.9	88.7	94.4	4.3	84.8	83.7	88.5	89.9	87.7	86.9	3.0
Dinotefuran	7	101	79.4	80.5	88.6	83.4	86.5	10	81.0	85.6	84.1	80.6	103	86.8	11
Dioxacarb	7	109	98.6	118	90.2	80.9	99.3	15	98.0	87.9	85.6	90.9	95.0	91.5	5.5
Disulfoton	1	96.5	103	106	100	86.8	98.4	7.5	85.6	90.4	87.4	85.8	94.9	88.8	4.4
Diuron	5	95.5	94.3	97.8	92.9	101	96.2	3.1	82.8	82.6	78.8	86.1	88.8	83.8	4.5
Epoxiconazole	2	102	111	92.1	94.3	83.3	96.6	11	88.9	97.3	100	90.5	95.6	94.5	4.9
Ethidimuron (Sulfadiazole)	8	101	96.8	97.3	94.9	98.2	97.6	2.2	79.3	100	82.3	92.2	95.3	89.9	9.9
Ethion	2	98.2	91.9	100	92.0	99.1	96.3	4.2	81.1	85.0	78.6	89.7	88.1	84.5	5.5
Ethirimol	4	98.4	88.4	95.9	91.6	95.0	93.9	4.1	86.7	91.9	68.2	83.1	83.0	82.6	11
Ethofumesate	4	82.0	88.5	90.0	85.2	96.6	88.4	6.2	81.8	82.9	87.6	91.4	96.5	88.0	7.0
Ethoprophos (Ethoprop)	2	82.0	89.0	76.4	75.8	94.1	83.5	9.5	92.9	106	89.1	92.6	91.4	94.4	7.1
Ethoxyquin	8	94.8	86.5	94.2	97.2	93.6	93.3	4.3	73.1	73.2	73.0	68.0	81.5	73.8	6.6
Etofenprox	3	78.8	77.0	80.0	76.7	76.3	77.8	2.0	72.9	78.3	75.5	74.5	78.1	75.8	3.1
Famoxadone	4	89.4	78.2	75.9	72.1	94.4	82.0	12	89.4	81.3	83.7	99.8	94.7	89.8	8.5
Fenamidone	5	96.9	98.6	85.2	95.0	88.1	92.8	6.3	74.9	83.8	70.8	78.3	84.8	78.5	7.6
Fenamiphos	1	102	89.9	82.9	86.2	91.4	90.4	7.8	72.0	85.4	75.5	78.8	89.7	80.3	9.0

Table 3. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Spinach Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Fenarimol	2	92.7	100	107	94.3	105	99.8	6.4	76.1	82.5	89.7	95.1	92.1	87.1	8.8
Fenazaquin	5	95.4	89.4	83.5	79.7	90.8	87.8	7.1	75.5	75.8	80.3	76.4	70.8	75.7	4.5
Fenbuconazole	2	96.5	92.2	82.6	85.2	94.8	90.3	6.7	100	94.2	87.9	96.1	84.0	92.5	7.1
Fenhexamid	3	97.2	91.7	82.6	85.3	86.1	88.6	6.6	79.6	79.2	80.1	99.2	87.3	85.1	10
Fenobucarb	5	96.0	96.6	89.6	91.2	89.1	92.5	3.9	92.5	88.2	86.3	90.1	87.6	89.0	2.7
Fenoxycarb	6	95.0	86.7	88.5	101	92.9	92.9	6.2	87.9	92.9	96.4	88.1	100	93.1	5.8
Fenpropidin	5	90.9	89.9	83.2	84.5	90.6	87.8	4.2	79.3	86.5	84.5	80.2	83.1	82.7	3.6
Fenpyroximate	5	86.5	82.0	74.2	80.2	82.6	81.1	5.6	80.8	73.1	84.8	83.6	81.8	80.8	5.7
Fenuron	7	92.4	100	97.3	87.0	99.6	95.3	5.8	91.7	94.2	85.6	97.7	91.7	92.2	4.8
Fipronil	4	93.5	93.3	111	106	105	102	7.7	101	92.9	96.1	87.6	83.7	92.3	7.5
Flazasulfuron	4	87.7	88.8	94.4	94.0	93.2	91.6	3.4	87.7	88.9	88.8	85.7	89.4	88.1	1.7
Flonicamid	6	128	83.8	87.4	87.9	78.4	93.2	21	78.6	101	81.4	88.3	102	90.2	12
Flubendiamide	7	95.6	85.2	78.3	77.9	82.9	84.0	8.6	72.3	94.2	70.9	87.6	88.9	82.8	13
Fludioxonil	2	104	90.1	90.2	82.9	88.4	91.1	8.6	83.3	80.0	76.5	81.1	94.2	83.0	8.1
Flufenacet	1	98.9	89.5	94.2	86.1	88.0	91.3	5.7	84.3	87.2	84.8	87.2	90.4	86.8	2.8
Flufenoxuron	4	85.2	88.3	84.5	83.0	89.8	86.2	3.3	86.0	87.8	81.4	86.1	89.3	86.1	3.4
Flumetsulam	8	94.0	90.0	101	81.6	89.4	91.2	7.8	81.2	83.1	91.8	78.8	87.9	84.6	6.2
Flumioxazin	6	89.7	109	80.7	75.2	72.2	85.4	17	69.5	77.0	79.0	80.4	92.6	79.7	10
Fluometuron	8	100	96.4	93.2	98.1	95.0	96.5	2.7	85.2	85.6	88.6	89.4	93.2	88.4	3.7
Fluopicolide	1	83.6	93.3	92.9	97.8	93.7	92.3	5.7	79.0	85.6	80.8	86.2	87.5	83.8	4.4
Fluoxastrobin	8	80.0	86.6	84.3	99.0	77.0	85.4	9.9	77.7	80.5	80.1	75.0	75.6	77.7	3.2
Fluquinconazole	2	89.3	100	81.3	86.4	78.2	87.0	9.7	84.0	79.6	91.7	91.7	81.4	85.7	6.7
Flusilazole	2	97.5	96.0	87.8	88.4	90.7	92.1	4.8	89.7	91.6	83.8	94.1	93.9	90.6	4.6
Flutriafol	8	88.6	83.9	81.2	84.0	87.6	85.1	3.5	77.5	84.4	79.6	81.0	77.6	80.0	3.6
Foramsulfuron	3	88.4	85.2	86.2	87.8	90.7	87.6	2.4	84.6	79.9	79.7	81.8	86.6	82.5	3.7
Forchlorfenuron	7	92.6	89.9	91.9	95.2	95.5	93.0	2.5	80.8	84.4	86.4	85.4	83.7	84.1	2.5
Fosthiazate (sum of isomers)	1	89.2	90.7	87.1	88.0	89.0	88.8	1.5	82.6	87.9	80.3	86.4	88.5	85.1	4.2
Fuberidazole	4	91.0	83.9	84.1	78.9	83.5	84.3	5.1	81.7	77.7	75.3	76.2	81.6	78.5	3.8
Furalaxyl	7	81.7	84.3	84.2	80.3	89.0	83.9	4.0	83.7	82.2	85.5	88.9	86.1	85.3	3.0
Furathiocarb	6	88.1	85.7	77.5	85.8	87.4	84.9	5.0	74.1	77.3	81.1	77.2	95.7	81.1	11
Halofenozide	8	97.0	85.3	82.7	84.7	89.9	87.9	6.5	80.8	80.7	85.6	88.9	90.1	85.2	5.2
Halosulfuron-methyl	8	99.7	104	93.0	99.7	95.0	98.3	4.4	94.1	81.9	84.8	101	93.8	91.1	8.5
Hexaconazole	2	89.5	88.7	92.2	83.9	86.2	88.1	3.6	83.0	88.5	84.5	83.4	86.8	85.2	2.8
Hexaflumuron	7	97.8	97.4	90.4	92.4	95.4	94.7	3.4	84.7	76.7	86.0	86.8	89.3	84.7	5.7
Hexythiazox	4	83.5	81.4	82.3	79.4	86.1	82.5	3.0	76.4	78.2	72.3	86.2	81.1	78.8	6.6
Hydramethylnon	7	72.4	66.7	65.1	65.3	62.1	66.3	5.7	70.7	68.2	70.2	76.8	66.7	70.5	5.5
Imazalil	2	82.0	86.5	77.5	80.9	83.6	82.1	4.0	78.4	74.8	76.5	78.7	84.5	78.6	4.7
Imidacloprid	5	103	99.9	91.9	94.2	96.0	97.1	4.7	83.5	90.9	86.3	93.6	91.2	89.1	4.6
Indoxacarb	3	93.4	99.7	91.2	92.2	95.1	94.3	3.5	86.9	92.7	83.8	89.4	95.5	89.7	5.1

Table 3. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Spinach Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Ipconazole	2	91.5	94.0	89.9	87.9	97.4	92.1	4.0	85.0	84.9	83.5	91.9	87.6	86.6	3.8
Iprovalicarb	5	97.0	97.8	97.3	95.5	96.8	96.9	0.9	98.4	91.5	88.5	88.5	100	93.4	5.9
Isofenphos-methyl	1	97.1	103	102	100	102	101	2.1	88.0	91.0	86.1	89.6	95.5	90.0	4.0
Isoprothiolane	1	81.6	85.9	81.9	76.9	91.2	83.5	6.4	82.2	91.9	94.5	90.4	93.1	90.4	5.4
Isoxaben	4	88.1	81.3	81.4	70.2	86.4	81.5	8.6	87.5	82.0	84.3	92.2	94.4	88.1	5.9
Isoxaflutole	3	85.1	82.3	78.0	83.9	81.2	82.1	3.3	73.9	75.2	75.2	73.1	75.0	74.5	1.3
Ivermectin B1a	7	95.0	68.5	75.3	90.1	97.3	85.2	15	82.4	81.9	82.7	90.3	97.0	86.9	7.7
Kresoxim-methyl	4	96.4	81.8	94.8	82.9	96.8	90.5	8.3	81.7	86.7	82.6	93.1	90.1	86.9	5.6
Lenacil	1	90.3	89.6	86.5	82.2	92.5	88.2	4.5	78.5	74.5	78.3	85.6	80.7	79.5	5.1
Linuron	4	89.9	89.1	87.4	88.8	94.6	90.0	3.1	75.1	81.0	75.5	77.9	86.8	79.3	6.1
Lufenuron	4	82.5	82.7	74.2	78.4	89.2	81.4	6.9	74.9	79.7	72.2	78.5	79.4	76.9	4.2
Malaoxon	3	92.3	90.2	83.2	83.5	86.4	87.1	4.6	75.1	86.9	76.9	77.1	80.7	79.3	5.9
Malathion	3	86.0	86.8	83.4	79.4	88.6	84.8	4.2	92.7	103	80.3	85.9	112	94.8	14
Mandipropamid	4	84.9	89.2	89.7	81.1	82.5	85.5	4.5	84.5	89.6	80.5	82.0	80.8	83.5	4.5
Mecarbam	3	96.5	91.0	88.7	84.5	94.4	91.0	5.2	89.9	85.8	89.5	91.6	88.5	89.1	2.4
Mepanipyrim	3	91.6	92.9	91.7	82.6	89.2	89.6	4.6	81.5	83.4	82.7	84.2	83.0	83.0	1.2
Mesosulfuron-methyl	6	90.7	86.7	79.0	85.6	96.3	87.6	7.3	96.4	91.0	80.3	80.6	92.9	88.2	8.4
Metaflumizone	4	97.8	88.5	94.4	83.6	86.4	90.1	6.5	87.2	81.9	83.7	88.1	84.8	85.1	3.0
Metalaxyl	3	86.4	91.2	97.2	92.1	89.1	91.2	4.4	80.7	86.8	85.3	95.6	86.7	87.0	6.2
Metamitron	4	100	82.7	77.8	85.4	86.4	86.5	9.6	97.9	97.7	85.2	100	85.2	93.3	8.0
Metazachlor	3	90.7	89.5	90.6	88.3	95.7	91.0	3.1	81.9	88.5	80.9	85.8	87.1	84.8	3.9
Metconazole	2	98.1	91.4	94.9	91.9	93.3	93.9	2.9	83.5	88.2	87.2	92.0	88.8	87.9	3.5
Methabenzthiazuron	5	87.1	82.6	86.6	88.0	87.8	86.4	2.6	80.3	77.2	77.3	82.7	85.6	80.6	4.5
Methamidophos	1	89.8	70.4	68.7	67.4	73.8	74.0	12	71.3	73.7	69.5	84.2	77.4	75.2	7.7
Methidathion	3	82.1	82.5	88.9	91.6	88.5	86.7	4.8	81.2	78.1	85.1	90.5	88.0	84.6	5.9
Methiocarb	7	90.0	96.9	100	94.5	96.4	95.6	3.9	84.6	86.8	77.6	93.1	90.6	86.5	6.9
Methomyl	5	126	97.9	106	104	111	109	9.5	93.1	113	95.0	102	109	103	8.6
Methoprotryne	7	89.7	90.9	89.8	89.9	88.3	89.7	1.0	81.0	78.6	88.6	80.0	84.6	82.6	4.9
Methoxyfenozide	5	89.0	88.2	71.3	90.4	80.1	83.8	9.6	82.9	78.5	75.1	87.6	92.1	83.2	8.2
Metobromuron	8	98.7	95.1	90.8	98.5	98.8	96.4	3.6	83.8	89.9	79.3	89.5	87.6	86.0	5.2
Metolachlor	3	94.6	90.1	85.9	90.6	88.4	89.9	3.5	80.7	82.6	77.2	78.8	88.3	81.5	5.3
Metrafenone	4	84.2	92.5	87.8	85.5	81.2	86.2	4.9	83.4	77.0	80.0	82.0	84.7	81.4	3.7
Metribuzin	4	95.0	91.6	88.2	91.1	93.7	91.9	2.8	90.3	85.4	85.3	91.3	85.8	87.6	3.3
Metsulfuron-methyl	4	80.9	80.8	89.1	89.7	96.8	87.5	7.7	94.4	94.8	94.8	81.0	81.6	89.3	8.2
Mevinphos (E- and Z-isomers)	3	97.5	93.2	92.2	81.4	88.7	90.6	6.7	90.3	95.5	81.9	95.2	88.2	90.2	6.2
Mexacarbate	7	93.4	95.6	88.7	84.9	91.5	90.8	4.6	88.3	86.2	72.2	86.3	92.4	85.1	9.0
Molinate	3	105	96.9	90.6	94.6	97.0	96.7	5.3	85.0	84.4	79.5	97.8	89.4	87.2	7.9
Monocrotophos	4	93.1	91.9	83.4	84.0	91.6	88.8	5.3	79.0	81.8	77.8	83.6	86.9	81.8	4.4
Moxidectin	7	85.3	86.9	81.8	86.3	78.5	83.8	4.2	89.2	80.0	75.5	77.7	83.8	81.2	6.7

Table 3. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Spinach Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Myclobutanil	1	93.3	98.3	85.9	93.3	93.9	92.9	4.8	92.5	91.6	84.4	81.1	103	90.5	9.3
Nicosulfuron	4	82.6	91.9	85.2	83.2	78.9	84.4	5.7	69.4	79.5	75.0	81.7	77.1	76.5	6.1
Nitenpyram	7	76.9	82.0	82.1	71.5	71.1	76.7	7.0	71.7	73.3	72.3	73.7	82.4	74.7	5.9
Novaluron	4	84.9	85.6	84.3	84.5	87.6	85.4	1.6	82.4	76.1	79.9	85.2	81.7	81.1	4.1
Omethoate	6	115	97.2	103	97.6	90.1	101	9.2	78.6	78.2	87.5	83.7	101	85.9	11
Oxadiazon	3	85.3	86.8	77.4	85.6	79.7	82.9	5.0	72.1	74.8	76.1	76.3	77.9	75.4	2.9
Oxadixyl	3	95.8	91.7	91.8	91.7	92.3	92.7	1.9	89.4	85.7	82.1	87.5	89.7	86.9	3.6
Oxamyl	5	107	102	94.2	91.8	85.8	96.2	8.8	76.6	83.2	78.6	84.1	110	86.6	16
Oxasulfuron	4	97.5	91.7	96.8	87.9	88.3	92.4	4.9	80.1	85.4	91.3	76.7	85.7	83.8	6.7
Paclobutrazol	3	88.4	85.7	87.0	84.8	88.0	86.8	1.8	83.8	82.4	81.1	82.7	87.3	83.5	2.8
Penconazole	3	91.8	96.6	87.4	89.1	93.6	91.7	4.0	84.0	85.1	93.5	94.3	94.4	90.3	5.8
Pencycuron	6	101	88.5	92.3	89.0	95.7	93.3	5.6	94.2	92.3	87.9	90.4	91.8	91.3	2.6
Pendimethalin	3	104	96.3	75.9	123	90.5	98.1	18	53.1	96.1	67.7	75.7	85.2	75.6	22
Phenmedipham	4	87.4	91.3	80.5	89.2	91.3	87.9	5.1	86.0	82.1	77.8	89.0	83.9	83.8	5.0
Phenthoate	3	106	87.9	89.9	92.1	95.8	94.4	7.7	95.5	90.4	100	94.6	87.5	93.6	5.2
Phosalone	3	89.7	80.9	82.1	76.0	92.6	84.3	8.0	89.3	84.1	77.6	87.4	92.7	86.2	6.7
Phosmet	6	97.1	90.5	82.6	88.2	95.7	90.8	6.5	88.6	82.0	95.1	87.1	92.0	89.0	5.6
Phosphamidon (E- and Z-isomers)	3	88.5	89.2	84.2	81.9	85.8	85.9	3.6	82.5	84.1	85.5	85.1	87.6	84.9	2.2
Phoxim	4	87.6	92.3	80.5	84.7	82.9	85.6	5.3	84.1	80.1	88.5	91.4	86.4	86.1	5.0
Picolinafen	3	86.9	84.3	89.3	91.8	92.5	89.0	3.8	90.9	89.6	86.6	88.5	84.0	87.9	3.1
Picoxystrobin	5	98.4	88.2	91.2	89.9	56.3	84.8	19	89.5	86.7	87.6	100	97.4	92.3	6.7
Pirimicarb	3	90.9	86.7	81.8	86.3	89.0	86.9	3.9	78.2	77.6	80.9	76.9	83.6	79.5	3.5
Pirimiphos-methyl	3	91.3	90.1	93.1	84.6	93.0	90.4	3.9	92.5	89.3	85.0	90.5	98.6	91.2	5.5
Prochloraz	1	93.9	88.7	91.8	98.0	107	95.8	7.3	82.7	88.0	77.9	85.4	90.2	84.8	5.6
Profenofos	3	96.1	93.8	89.7	89.1	90.1	91.7	3.3	87.9	90.5	88.9	91.3	94.6	90.6	2.8
Promecarb	7	88.3	94.0	91.2	86.2	83.8	88.7	4.5	85.0	93.6	90.2	95.5	94.1	91.7	4.6
Prometon	4	94.2	96.5	88.3	92.0	94.9	93.2	3.4	80.0	79.6	79.8	86.4	84.7	82.1	3.9
Propamocarb	5	98.3	86.1	82.6	91.7	88.9	89.5	6.6	77.1	86.2	80.5	78.3	91.7	82.7	7.4
Propaquizafop	4	92.7	97.6	89.2	92.6	95.8	93.6	3.4	84.8	75.2	78.7	81.9	83.5	80.8	4.8
Propargite	4	87.1	92.5	87.1	93.7	89.4	90.0	3.4	87.6	88.6	86.2	92.9	89.7	89.0	2.9
Propetamphos	3	78.4	85.1	91.1	94.8	91.8	88.2	7.4	84.4	86.2	83.4	83.7	91.4	85.8	3.9
Propiconazole (sum of isomers)	2	89.5	91.2	83.5	85.0	88.7	87.6	3.7	81.6	83.1	86.2	84.9	89.7	85.1	3.7
Propoxur	6	89.1	92.1	93.3	89.8	91.4	91.1	1.9	86.6	88.5	83.5	91.0	92.2	88.4	3.9
Propyzamide (Pronamide)	3	93.6	101	99.6	103	95.2	98.5	4.0	85.6	85.5	93.1	102	92.2	91.7	7.3
Proquinazid	1	78.6	80.2	73.6	84.8	82.2	79.9	5.3	75.2	84.5	74.1	84.4	81.7	80.0	6.2
Prosulfocarb	4	93.8	88.8	88.8	91.5	92.8	91.1	2.5	92.4	85.1	89.1	85.7	87.1	87.9	3.3
Pymetrozine	7	78.9	79.4	66.7	73.4	69.4	73.6	7.6	93.3	81.1	78.1	75.3	96.2	84.8	11
Pyracarbolid	7	96.9	92.2	83.8	89.9	87.4	90.1	5.5	89.4	85.4	78.9	88.1	93.1	87.0	6.1
Pyraclostrobin	5	96.6	93.5	92.3	94.7	85.7	92.5	4.5	91.3	84.8	93.5	96.4	98.9	93.0	5.8

Table 3. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Spinach Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Pyridaben	5	96.9	91.0	89.5	89.5	90.1	91.4	3.4	82.6	74.1	69.8	82.5	84.2	78.6	8.1
Pyridate	5	72.1	63.9	62.6	68.9	69.0	67.3	5.8	64.7	62.5	69.9	75.7	64.0	67.4	8.0
Pyrimethanil	6	90.4	94.0	88.2	88.5	86.9	89.6	3.1	87.5	88.4	82.3	84.5	87.3	86.0	2.9
Pyriproxyfen	5	94.2	84.8	89.9	84.8	86.1	88.0	4.6	81.5	79.4	76.4	86.6	86.1	82.0	5.3
Quinalphos	3	97.8	93.5	82.8	85.5	95.8	91.1	7.3	84.2	85.3	87.9	101	96.1	90.8	7.9
Quinmerac	7	56.2	65.0	64.4	63.9	68.2	63.5	7.0	52.3	52.9	59.7	55.4	50.6	54.2	6.5
Quinoclamine	4	96.0	93.4	91.4	93.2	94.7	93.7	1.8	83.4	84.8	83.9	89.0	82.5	84.7	3.0
Quinoxyfen	3	83.2	82.5	80.9	87.3	97.5	86.3	7.8	80.2	75.1	79.1	88.9	85.7	81.8	6.7
Rimsulfuron	4	90.6	88.3	82.5	83.1	87.7	86.4	4.1	79.9	89.9	81.9	85.7	84.8	84.4	4.5
Rotenone	7	95.5	93.0	94.4	97.1	92.6	94.5	1.9	80.6	85.7	87.2	82.5	83.6	83.9	3.1
Secbumeton	7	86.1	84.2	88.3	83.5	85.9	85.6	2.2	84.6	82.9	79.6	83.0	79.6	81.9	2.7
Silthiofam	4	86.0	88.2	73.3	97.9	88.4	86.8	10	92.4	85.5	79.1	89.1	96.1	88.4	7.4
Spinosad - Spinosyn A	7	126	165	79.3	162	221	151	35	114	127	62.9	157	62.0	105	40
Spinosad - Spinosyn D	7	175	101	109	119	155	132	24	120	92.8	66.8	86.9	88.5	90.9	21
Spirodiclofen	1	92.5	77.3	78.1	85.6	88.2	84.3	7.8	84.0	84.9	81.3	76.2	81.4	81.5	4.1
Spiromesifen	6	93.3	94.9	88.8	83.5	86.6	89.4	5.3	88.6	88.0	85.5	90.3	88.5	88.2	2.0
Spirotetramat	6	87.5	76.3	82.1	79.0	89.7	82.9	6.8	77.7	84.1	81.4	91.9	92.1	85.5	7.5
Spiroxamine (2 diastereoisomers)	1	96.1	93.1	92.5	95.6	94.5	94.4	1.7	88.0	83.8	81.5	87.4	86.9	85.5	3.2
Sulfentrazone	6	86.7	89.8	89.9	104	94.2	92.9	7.2	78.1	91.1	83.7	93.9	87.6	86.9	7.2
Tebuconazole	2	97.3	91.3	87.8	94.3	96.0	93.4	4.1	83.0	87.3	86.8	91.0	84.7	86.5	3.5
Tebufenozide	5	90.5	88.6	94.8	84.7	100	91.7	6.4	88.2	89.8	92.8	101	105	95.4	7.8
Tebufenpyrad	3	93.6	94.7	92.5	91.6	91.2	92.7	1.5	83.2	80.2	84.6	87.1	87.1	84.4	3.4
Tebuthiuron	7	93.8	92.5	86.3	86.2	90.2	89.8	3.9	85.8	86.7	82.6	88.5	94.8	87.7	5.1
Teflubenzuron	4	75.4	88.7	87.2	89.5	87.4	85.6	6.8	82.7	78.1	87.4	86.8	78.6	82.7	5.3
Temephos	7	78.3	89.1	91.4	94.1	83.0	87.2	7.4	84.6	88.9	87.3	81.2	92.2	86.8	4.8
Tepraloxydim (E- and Z-isomers)	3	95.5	90.5	90.3	92.0	91.6	92.0	2.3	81.4	80.5	85.1	78.4	83.0	81.7	3.1
Terbufos	3	103	105	103	98.9	103	103	2.3	85.7	85.2	88.8	82.0	92.5	86.8	4.6
Tetraconazole	2	94.6	90.8	90.6	89.9	93.8	91.9	2.3	83.4	85.1	96.4	89.1	92.6	89.3	6.0
Thiabendazole	5	94.5	98.3	91.8	87.5	95.2	93.5	4.3	81.7	84.1	85.0	96.3	93.7	88.1	7.3
Thiacloprid	5	91.9	85.0	89.7	94.2	86.5	89.4	4.2	90.1	81.5	93.0	89.8	92.9	89.5	5.2
Thiamethoxam	5	83.2	111	92.8	94.0	87.6	93.6	11	78.1	80.9	79.1	93.3	94.2	85.1	9.3
Thidiazuron	7	82.7	81.4	78.5	75.7	87.6	81.2	5.5	68.3	80.3	78.9	80.9	82.4	78.2	7.2
Thifensulfuron-methyl	4	80.7	91.6	87.4	77.7	89.9	85.4	7.0	94.9	83.4	90.9	83.8	77.0	86.0	8.1
Thiodicarb	5	82.6	73.9	73.0	77.8	83.4	78.2	6.1	74.6	81.3	77.0	82.0	80.9	79.1	4.0
Thiofanox	5	80.2	75.5	92.9	79.6	88.0	83.2	8.4	70.4	80.9	69.1	77.6	79.9	75.6	7.2
Tolylfluanid	3	63.9	60.4	60.8	57.9	56.9	60.0	4.6	64.5	69.5	58.8	73.4	70.8	67.4	8.6
Tralkoxydim	1	88.2	95.9	82.9	92.5	92.8	90.4	5.6	84.0	86.7	84.7	92.7	96.0	88.8	5.9
Triadimefon	3	88.8	92.2	96.9	105	97.9	96.1	6.3	87.6	82.9	85.9	85.8	93.8	87.2	4.6
Triadimenol	6	82.8	95.6	86.8	90.1	91.4	89.3	5.4	90.4	80.6	85.8	98.4	92.2	89.5	7.5

Table 3. Trueness (% Recovery) and Precision (% RSD) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Spinach Matrix at the Fortification Levels of 0.01 and 0.02 mg/kg Evaluated in Five Replicates (A–E) (continued)

		Fortification level 0.01 mg/kg							Fortification level 0.02 mg/kg						
		Trueness (%)						RSD	Trueness (%)						RSD
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)
Triasulfuron	4	89.9	94.3	92.3	90.4	90.9	91.6	1.9	82.6	82.6	84.5	90.5	81.6	84.3	4.3
Triazophos	3	99.1	86.2	96.7	102	91.3	95.0	6.6	85.8	72.1	83.8	91.8	94.5	85.6	10
Tribenuron-methyl	4	85.3	84.9	76.8	74.3	75.0	79.3	6.8	75.3	77.6	74.2	83.8	82.5	78.7	5.5
Trichlorfon (Metrifonate)	6	98.9	102	103	98.1	99.3	100	2.1	82.6	90.7	85.9	87.4	85.1	86.4	3.5
Tricyclazole	2	89.7	89.0	91.7	92.2	92.5	91.0	1.7	83.3	83.8	82.1	86.4	89.0	84.9	3.3
Trietazine	6	86.0	86.2	89.9	74.1	79.4	83.1	7.6	84.3	85.7	77.7	80.4	83.1	82.2	3.9
Trifloxystrobin	5	92.0	88.3	92.3	85.0	87.0	88.9	3.6	88.6	85.9	80.9	87.5	81.0	84.8	4.3
Triflumizole	3	85.0	83.0	83.4	88.2	87.4	85.4	2.7	82.3	80.9	81.4	89.6	89.1	84.7	5.1
Triflumuron	4	84.1	86.5	87.1	85.0	93.3	87.2	4.1	87.8	79.5	75.4	82.4	79.5	80.9	5.7
Trimethacarb	6	85.1	79.4	91.7	82.7	87.2	85.2	5.5	84.6	87.6	93.4	83.6	85.6	87.0	4.5
Triticonazole	2	91.8	94.3	89.2	85.1	92.1	90.5	3.9	90.2	82.1	80.3	83.6	93.2	85.9	6.5
Uniconazole	2	78.5	88.7	90.3	88.1	95.1	88.1	6.9	83.8	79.5	77.3	85.9	85.6	82.4	4.7
Vamidothion	2	99.5	88.1	81.7	87.6	89.8	89.3	7.2	72.9	83.1	81.0	78.4	89.3	80.9	7.5
Zoxamide	6	102	102	106	95.0	109	103	5.2	90.2	87.8	86.2	85.7	90.5	88.1	2.5

Table 4. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.01 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days

		Fortification level 0.01 mg/kg (Analyst 1)							Fortification level 0.01 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Abamectin - Avermectin B1a	7	177	194	145	123	122	152	21	82.7	98.4	58.7	63.2	117	84.0	29	118	38	85
Acephate	1	116	106	101	103	99.4	105	6.4	86.8	83.5	87.6	89.0	87.8	86.9	2.4	96.0	11	25
Acetamiprid	5	94.4	110	103	97.7	104	102	5.8	112	112	105	100	100	106	5.6	104	5.7	13
Alanycarb	5	114	117	123	111	110	115	4.4	121	109	98.7	84.7	113	105	13	110	10	23
Aldicarb	5	116	118	107	114	110	113	3.8	92.7	93.1	86.1	94.2	80.9	89.4	6.4	101	13	30
Amidosulfuron	4	104	104	103	98.7	100	102	2.4	101	88.0	82.5	91.3	101	92.8	8.8	97.5	7.7	17
Aminocarb	4	127	115	118	112	112	117	5.2	81.9	72.9	85.6	83.9	86.7	82.2	6.7	99.6	19	43
Azaconazole	1	104	102	110	108	104	106	2.9	94.7	86.6	98.5	92.6	97.1	93.9	5.0	99.9	7.3	16
Azamethiphos	2	123	116	120	118	119	119	2.2	92.1	94.8	91.4	91.1	90.3	91.9	1.8	106	14	31
Azinphos-ethyl	1	109	110	120	109	127	115	7.1	104	90.9	107	110	98.0	102	7.5	109	9.3	21
Azinphos-methyl	1	112	115	110	101	110	110	4.7	99.4	93.5	96.0	102	89.6	96.2	5.2	103	8.4	19
Azoxystrobin	5	110	106	110	107	112	109	2.2	96.3	89.5	95.5	103	91.9	95.2	5.3	102	8.1	18
Beflubutamid	8	124	119	127	122	122	123	2.3	93.9	81.9	89.1	99.9	88.6	90.7	7.4	107	17	37
Benalaxyl	2	111	111	101	102	112	108	4.9	103	93.1	85.1	90.0	87.9	91.8	7.5	99.7	10	23
Benfuracarb	4	107	108	96.1	103	112	105	5.6	119	134	120	112	134	124	7.8	115	11	24
Benzoximate	7	122	123	123	112	118	120	3.8	101	105	106	97.6	96.9	101	4.1	110	9.5	21
Bifenazate	8	83.3	80.2	83.5	78.6	75.3	80.2	4.3	61.5	51.6	58.4	56.2	58.6	57.3	6.4	68.7	18	41
Bifenthrin	2	99.6	101	108	113	134	111	12	142	222	225	170	223	197	19	154	34	76

Table 4. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.01 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.01 mg/kg (Analyst 1)							Fortification level 0.01 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Bispyribac	7	106	97.7	99.2	97.4	98.6	99.7	3.4	86.7	83.1	68.4	80.2	89.8	81.6	10	90.7	12	28
Bitertanol	3	116	114	117	105	109	112	4.6	111	98.7	103	102	102	103	4.6	108	6.0	13
Boscalid	4	109	107	99.3	99.4	107	104	4.5	92.8	99.1	105	98.9	103	99.8	4.7	102	5.0	11
Bromuconazole (2 diastereoisomers)	2	128	116	120	122	108	119	6.3	91.1	99.4	87.0	86.7	96.4	92.1	6.1	105	15	32
Bupirimate	2	121	114	117	95.3	96.7	109	11	93.5	99.6	109	98.3	104	101	5.7	105	9.3	21
Buprofezin	1	108	110	110	104	107	108	2.6	90.5	93.7	95.9	95.8	95.2	94.2	2.4	101	7.5	17
Butocarboxim	4	119	121	120	117	120	119	1.2	99.2	95.5	95.3	95.3	102	97.5	3.2	108	11	24
Carbaryl	6	118	113	111	109	115	113	2.9	90.4	93.7	93.1	96.3	90.6	92.8	2.6	103	11	24
Carbendazim	5	99.1	92.3	92.8	89.1	96.4	93.9	4.1	82.9	87.3	83.2	84.2	78.8	83.3	3.7	88.6	7.3	16
Carbofuran	8	110	110	105	105	97.2	105	5.0	97.4	103	103	104	101	102	2.7	104	4.2	9.3
Carbosulfan	6	108	101	100	102	110	104	4.2	92.8	80.0	92.8	84.6	95.4	89.1	7.3	96.6	9.8	22
Carboxin	5	113	100	101	100	101	103	5.0	101	98.3	91.7	97.2	97.2	97.1	3.4	100	5.2	12
Carfentrazone-ethyl	4	105	94.8	98.4	99.1	93.3	98.0	4.4	94.4	90.3	89.1	83.2	89.8	89.4	4.5	93.7	6.4	14
Chlorantraniliprole	8	109	112	115	105	113	111	3.5	96.6	99.6	100	100	97.1	98.7	1.7	105	6.6	15
Chlorfenvinphos (E- and Z-isomers)	2	114	111	107	109	110	110	2.3	98.8	96.4	92.8	93.7	98.8	96.1	2.9	103	7.5	17
Chloridazon (Pyrazon)	4	97.5	105	100	98.1	105	101	3.6	97.1	88.0	86.8	89.6	83.4	89.0	5.7	95.0	8.0	18
Chlorotoluron (Chlortoluron)	7	121	117	121	113	117	118	3.0	91.5	90.6	94.6	88.8	97.2	92.5	3.6	105	13	29
Chloroxuron	7	113	102	106	104	107	106	4.0	100	95.9	97.0	96.6	100	98.0	2.1	102	5.4	12
Chlorpyrifos	2	107	109	106	101	98.8	104	4.2	91.6	84.8	94.7	82.4	84.4	87.6	6.1	95.9	10	23
Chlorpyrifos-methyl	2	111	122	104	114	114	113	5.7	104	119	110	123	112	114	6.6	113	5.8	13
Chlorsulfuron	4	122	122	120	110	119	119	4.2	90.9	89.8	88.4	85.5	88.7	88.6	2.3	104	16	35
Clethodim (E- and Z-isomers)	3	96.8	103	103	99.8	97.1	100	3.2	94.4	121	112	105	108	108	9.0	104	7.7	17
Clofentezine	4	119	111	120	114	112	115	3.6	89.2	84.1	100	109	100	96.6	10	106	11	25
Clomazone	8	119	112	115	107	114	114	3.8	99.1	102	101	93.1	102	99.4	3.7	107	7.9	18
Coumaphos	2	100	100	108	90.4	113	103	8.6	92.1	94.4	88.0	92.8	99.1	93.3	4.3	97.9	8.3	18
Cyazofamid	4	113	112	109	100	102	107	5.2	96.9	93.2	98.5	98.0	106	98.6	4.8	103	6.5	14
Cycloate	1	110	111	121	103	117	112	6.0	83.0	88.3	82.0	85.8	90.8	86.0	4.2	99.1	15	33
Cycluron	7	108	108	100	109	104	106	3.3	88.9	90.4	86.0	88.5	96.5	90.1	4.4	97.9	9.2	20
Cymiazole	1	112	107	115	112	102	110	4.6	100	101	100	101	95.8	99.6	2.1	105	6.2	14
Cymoxanil	4	122	121	123	116	103	117	7.1	92.3	98.5	82.9	84.7	91.4	90.0	7.0	104	15	34
Cyproconazole (2 diastereoisomers)	1	104	102	93.5	95.3	104	99.6	4.9	93.8	87.1	93.4	93.1	93.3	92.1	3.1	95.9	5.7	13
Cyprodinil	8	104	108	97.3	102	98.8	102	4.0	90.1	94.5	103	105	94.3	97.5	6.7	99.7	5.6	13
DEET (Diethyltoluamide)	4	113	114	115	104	109	111	4.1	88.6	97.6	106	105	96.7	98.7	7.1	105	8.1	18
Desmedipham	8	109	114	109	101	103	107	4.8	95.8	97.0	95.4	93.2	96.0	95.5	1.5	101	7.0	16
Diazinon	2	115	117	107	120	113	115	4.2	96.2	93.4	90.6	99.1	99.7	95.8	4.0	105	10	23
Dichlorvos	2	129	127	127	122	125	126	2.1	110	117	115	117	111	114	2.8	120	5.7	13
Diethofencarb	6	117	115	112	106	116	113	3.8	82.7	87.5	91.3	87.1	91.0	87.9	4.0	100	14	31
Difenoconazole (*cis*- and *trans*-)	3	109	105	113	105	112	109	3.4	86.7	85.9	88.7	93.9	98.3	90.7	5.8	99.8	11	24

Table 4. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.01 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.01 mg/kg (Analyst 1)							Fortification level 0.01 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Diflubenzuron	4	130	120	125	123	129	125	3.3	99.5	79.8	78.4	89.5	91.1	87.6	9.9	106	20	44
Diflufenican	1	97.2	102	98.7	98.5	105	100	3.0	93.9	94.1	96.1	101	93.2	95.7	3.3	97.9	3.8	8.5
Dimethachlor	1	119	114	113	112	112	114	2.4	98.9	98.8	94.1	95.9	104	98.3	3.9	106	8.3	18
Dimethoate	8	106	115	109	102	113	109	4.9	102	90.2	84.4	95.4	83.4	91.1	8.5	100	11	25
Dimethomorph (E- and Z-isomers)	5	86.8	90.7	88.1	90.7	91.7	89.6	2.3	98.7	93.3	102	116	85.7	99.2	11	94.4	9.7	22
Dimoxystrobin	1	113	122	106	107	121	114	6.4	91.2	88.9	103	105	90.8	95.8	7.9	105	11	25
Diniconazole	2	109	112	101	98.0	104	105	5.4	95.1	90.1	99.0	94.5	94.5	94.7	3.3	99.8	6.9	15
Dinotefuran	7	107	96.6	94.3	96.8	102	99.3	5.2	91.2	86.2	84.0	80.8	84.7	85.4	4.5	92.4	9.2	20
Dioxacarb	7	118	111	119	110	103	112	5.9	100	93.3	91.5	90.9	115	98.1	10	105	10	23
Disulfoton	1	104	113	114	104	109	109	4.1	42.9	61.8	64.1	61.5	44.0	54.8	19	81.8	36	80
Diuron	5	105	105	105	106	102	105	1.3	100	97.2	101	103	94.4	99.3	3.5	102	3.7	8.2
Epoxiconazole	2	108	106	111	100	103	105	3.8	94.7	95.3	95.1	95.9	99.2	96.1	1.9	101	5.7	13
Ethidimuron (Sulfadiazole)	8	108	93.2	105	86.7	96.6	97.9	8.8	110	114	130	91.0	107	111	13	104	12	28
Ethion	2	97.5	107	113	101	92.2	102	8.0	97.9	89.4	90.5	95.4	88.8	92.4	4.4	97.3	8.2	18
Ethirimol	4	113	102	110	104	112	108	4.5	93.9	99.5	95.6	107	93.1	97.8	5.8	103	7.2	16
Ethofumesate	4	108	102	114	106	113	109	4.6	104	104	105	107	105	105	1.1	107	3.6	8.1
Ethoprophos (Ethoprop)	2	119	114	108	106	113	112	4.7	103	93.5	99.3	98.3	110	101	6.1	106	7.5	17
Ethoxyquin	8	84.0	83.9	84.5	84.3	83.8	84.1	0.3	26.1	25.9	26.3	25.6	26.2	26.0	1.1	55.1	56	124
Etofenprox	3	117	113	113	109	143	119	11	87.9	124	119	77.6	122	106	20	113	16	36
Famoxadone	4	131	136	132	121	128	130	4.3	101	96.0	93.8	93.2	80.4	92.8	8.1	111	18	41
Fenamidone	5	115	105	102	98.8	116	108	7.1	104	94.3	91.6	107	92.5	98.0	7.4	103	8.4	19
Fenamiphos	1	116	115	101	97.9	102	106	7.9	96.5	101	103	91.0	99.9	98.2	4.7	102	7.5	17
Fenarimol	2	103	111	100	105	117	107	6.3	123	132	83.4	115	112	113	16	110	12	27
Fenazaquin	5	113	108	110	115	111	111	2.3	72.3	71.0	79.3	82.7	75.5	76.2	6.4	93.8	20	45
Fenbuconazole	2	115	109	109	100	108	108	5.0	99.5	91.7	88.5	97.2	97.7	94.9	4.9	102	8.4	19
Fenhexamid	3	101	108	96.3	104	98.8	102	4.6	97.2	92.0	83.6	83.8	109	93.1	11	97.4	9.2	20
Fenobucarb	5	103	106	105	94.8	94.0	101	5.7	95.5	98.3	88.4	90.2	95.1	93.5	4.4	97.0	6.2	14
Fenoxycarb	6	105	113	124	118	107	113	7.0	103	98.0	86.4	108	101	99.2	8.1	106	10	22
Fenpropidin	5	113	109	115	107	114	112	3.1	97.7	103	97.1	96.6	103	99.5	3.3	106	6.8	15
Fenpyroximate	5	108	111	114	120	107	112	4.9	82.7	76.0	80.7	80.2	77.3	79.4	3.4	95.6	18	41
Fenuron	7	115	110	118	105	112	112	4.5	101	102	88.7	98.9	106	99.5	6.6	106	8.2	18
Fipronil	4	119	119	126	87.7	95.2	109	15	97.5	64.3	79.1	69.0	80.9	78.2	16	93.8	23	52
Flazasulfuron	4	118	116	116	110	117	116	2.7	96.2	95.5	103	99.6	101	99.2	3.3	107	8.5	19
Flonicamid	6	126	123	115	101	127	118	9.0	94.2	92.0	93.5	91.2	83.0	90.8	5.0	105	16	35
Flubendiamide	7	114	112	101	102	121	110	7.6	96.4	133	164	153	103	130	23	120	19	43
Fludioxonil	2	114	96.4	98.0	101	102	102	6.9	104	103	100	84.8	105	99.5	8.5	101	7.5	17
Flufenacet	1	121	113	120	110	116	116	4.1	106	87.1	95.7	107	100	99.1	8.1	108	10	23
Flufenoxuron	4	110	116	116	109	113	113	3.0	80.8	77.8	70.9	85.9	81.5	79.4	7.0	96.1	19	42
Flumetsulam	8	107	91.3	89.5	98.4	90.8	95.5	7.8	82.7	92.7	95.0	112	81.7	92.8	13	94.2	10	23

Table 4. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.01 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.01 mg/kg (Analyst 1)							Fortification level 0.01 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Flumioxazin	6	113	123	125	119	127	121	4.5	87.3	100	65.3	65.7	82.4	80.2	19	101	24	53
Fluometuron	8	109	109	107	97.4	106	106	4.6	95.3	100	99.4	94.8	93.4	96.6	3.2	101	6.0	13
Fluopicolide	1	99.9	118	98.4	106	109	106	7.5	90.7	103	106	95.2	88.8	96.7	7.7	101	8.7	19
Fluoxastrobin	8	98.5	127	107	100	106	108	11	107	97.0	114	113	107	108	6.4	108	8.3	19
Fluquinconazole	2	116	118	116	111	115	115	2.2	94.2	94.5	104	75.4	91.5	92.0	11	104	14	31
Flusilazole	2	116	107	112	107	111	111	3.6	99.4	90.0	92.3	97.2	96.2	95.0	4.0	103	8.9	20
Flutriafol	8	107	109	104	99.9	103	105	3.5	95.5	97.7	99.9	93.1	96.6	96.5	2.6	101	5.2	12
Foramsulfuron	3	130	129	125	118	125	125	3.8	93.6	99.7	94.0	82.8	91.0	92.2	6.7	109	17	37
Forchlorfenuron	7	106	102	97.9	96.4	95.2	99.4	4.3	91.6	90.8	89.6	89.9	90.6	90.5	0.9	95.0	5.8	13
Fosthiazate (sum of isomers)	1	114	113	113	109	114	113	1.8	96.3	93.6	93.0	107	90.1	95.9	6.6	104	9.5	21
Fuberidazole	4	106	99.7	99.4	91.2	101	99.5	5.3	99.2	91.9	100	104	99.1	99.0	4.5	99.2	4.6	10
Furalaxyl	7	117	120	119	118	120	119	1.0	93.5	90.6	96.8	93.2	99.4	94.7	3.6	107	12	27
Furathiocarb	6	115	109	111	118	108	112	3.8	80.7	75.6	92.6	75.6	102	85.4	14	98.8	17	37
Halofenozide	8	112	116	113	111	105	112	3.5	97.1	90.5	92.5	89.0	94.5	92.7	3.5	102	10	23
Halosulfuron-methyl	8	104	98.9	103	102	109	103	3.5	94.8	97.5	93.4	93.6	98.0	95.5	2.3	99.4	5.0	11
Hexaconazole	2	107	108	107	103	99.3	105	3.5	89.4	96.4	102	89.9	91.3	93.9	5.8	99.4	7.4	16
Hexaflumuron	7	105	101	104	98.8	106	103	2.9	86.2	87.6	92.0	93.0	101	91.9	6.3	97.3	7.3	16
Hexythiazox	4	103	106	109	105	108	106	2.3	82.6	77.1	75.4	76.6	82.3	78.8	4.3	92.5	16	36
Hydramethylnon	7	122	124	112	105	106	114	7.6	103	99.5	99.0	106	104	102	3.0	108	8.1	18
Imazalil	2	108	121	113	114	116	114	4.1	99.3	102	105	103	85.6	99.1	7.9	107	9.5	21
Imidacloprid	5	106	113	92.9	88.5	88.7	97.9	11	101	89.6	97.9	88.6	91.3	93.7	5.8	95.8	9.0	20
Indoxacarb	3	115	118	115	105	114	113	4.5	96.8	97.1	104	96.5	99.2	98.7	3.0	106	8.1	18
Ipconazole	2	117	108	110	110	111	111	2.9	97.8	92.0	93.3	91.2	101	95.1	4.5	103	9.0	20
Iprovalicarb	5	120	111	113	109	108	112	4.1	97.8	96.5	95.1	98.2	105	98.5	3.9	105	7.8	17
Isofenphos-methyl	1	118	119	106	103	109	111	6.4	90.8	87.7	103	103	99.3	96.6	7.2	104	9.7	22
Isoprothiolane	1	117	104	105	92.7	109	105	8.2	94.7	96.2	98.1	96.5	94.3	96.0	1.6	101	7.7	17
Isoxaben	4	131	119	125	111	106	118	8.3	98.6	93.6	94.5	104	86.8	95.5	6.6	107	13	30
Isoxaflutole	3	114	105	112	106	109	109	3.6	92.9	92.6	101	98.2	105	98.0	5.5	104	7.2	16
Ivermectin B1a	7	118	123	129	124	134	126	5.0	120	114	106	130	113	117	7.7	121	7.2	16
Kresoxim-methyl	4	108	121	94.5	104	105	107	8.9	91.1	104	117	84.8	106	101	13	104	11	24
Lenacil	1	102	104	113	105	96.3	104	5.7	105	97.2	102	94.5	93.5	98.5	5.1	101	5.8	13
Linuron	4	120	98.4	102	105	108	107	7.5	92.6	96.0	96.1	91.4	101	95.3	3.8	101	8.3	18
Lufenuron	4	103	105	117	109	111	109	5.1	90.1	96.8	100	88.0	107	96.4	8.1	103	9.0	20
Malaoxon	3	112	112	110	107	105	109	3.0	91.8	92.8	95.7	102	97.3	95.9	4.1	103	7.6	17
Malathion	3	103	105	105	104	103	104	1.1	91.3	90.5	106	103	91.5	96.3	7.6	100	6.4	14
Mandipropamid	4	124	110	115	115	115	116	4.2	110	109	115	109	102	109	4.0	112	5.0	11
Mecarbam	3	105	103	95.4	96.8	91.8	98.4	5.5	96.4	100	97.4	97.6	84.4	95.2	6.5	96.8	5.9	13
Mepanipyrim	3	103	103	103	105	104	104	1.0	94.9	93.6	88.1	94.8	87.6	91.8	3.9	97.7	6.9	15
Mesosulfuron-methyl	6	111	108	112	119	127	115	6.5	92.9	121	112	121	113	112	10	114	8.2	18

Table 4. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.01 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.01 mg/kg (Analyst 1)							Fortification level 0.01 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Metaflumizone	4	108	123	128	122	104	117	8.8	96.2	106	126	119	115	113	10	115	9.3	21
Metalaxyl	3	111	109	110	104	111	109	2.7	96.6	96.4	105	98.2	103	99.7	3.8	104	5.7	13
Metamitron	4	102	99.3	89.2	94.2	109	98.6	7.5	81.0	82.2	87.6	84.1	92.7	85.5	5.6	92.1	9.8	22
Metazachlor	3	111	108	105	97.5	106	106	4.8	91.7	94.8	100	102	95.8	96.8	4.2	101	6.2	14
Metconazole	2	114	111	106	105	114	110	3.8	96.1	87.8	90.5	95.7	103	94.6	6.2	102	9.2	20
Methabenzthiazuron	5	111	107	98.9	100	101	104	5.0	95.1	92.7	91.1	97.8	90.6	93.5	3.2	98.6	6.8	15
Methamidophos	1	95.9	97.8	94.6	92.0	101	96.3	3.6	77.5	77.7	79.5	80.7	79.4	79.0	1.7	87.6	11	24
Methidathion	3	108	109	107	105	107	107	1.6	83.5	85.2	91.6	98.1	95.2	90.7	6.9	99.0	9.8	22
Methiocarb	7	110	110	106	108	117	110	3.7	105	92.5	96.9	96.6	92.9	96.8	5.2	103	8.0	18
Methomyl	5	126	125	117	107	126	120	6.9	90.1	81.8	77.8	102	78.2	86.0	12	103	19	43
Methoprotryne	7	114	109	110	101	111	109	4.4	93.8	95.7	99.1	94.2	95.7	95.7	2.2	102	7.6	17
Methoxyfenozide	5	122	120	114	113	111	116	4.2	109	114	126	136	116	120	9.0	118	7.0	16
Metobromuron	8	103	105	104	104	102	104	1.2	96.5	89.2	102	89.9	90.4	93.6	5.9	98.5	6.5	15
Metolachlor	3	101	114	116	99.1	111	108	7.2	90.9	109	119	106	91.1	103	12	106	9.4	21
Metrafenone	4	108	109	107	101	101	105	3.6	99.9	103	96.8	102	103	101	2.6	103	3.7	8.2
Metribuzin	4	104	97.0	103	104	112	104	5.2	95.6	96.7	90.0	91.1	96.5	94.0	3.4	99.1	6.9	15
Metsulfuron-methyl	4	112	105	104	107	108	108	2.7	91.7	90.5	87.1	87.8	82.5	87.9	4.1	97.7	11	25
Mevinphos (E- and Z-isomers)	3	114	116	118	103	112	113	5.2	104	85.4	98.4	103	106	99.3	8.3	106	9.2	21
Mexacarbate	7	115	121	114	108	114	114	3.8	92.5	89.7	102	105	91.2	96.2	7.3	105	11	24
Molinate	3	107	108	99.9	106	99.2	104	4.0	96.2	84.6	104	113	107	101	11	103	7.8	17
Monocrotophos	4	132	128	122	121	113	123	5.8	96.6	88.6	91.9	93.5	92.9	92.7	3.1	108	16	35
Moxidectin	7	124	122	122	131	172	134	16	79.8	127	90.8	56.1	104	91.6	29	113	28	63
Myclobutanil	1	112	94.2	93.6	96.0	99.8	99.1	7.6	111	101	96.1	80.4	104	98.6	12	98.8	9.3	21
Nicosulfuron	4	108	101	103	99.0	119	106	7.5	77.0	83.1	91.9	85.0	83.5	84.1	6.3	95.0	14	31
Nitenpyram	7	107	109	116	97.9	104	107	6.2	96.6	77.7	89.2	86.7	87.7	87.6	7.7	97.2	12	27
Novaluron	4	104	115	104	105	103	106	4.9	94.1	83.2	95.7	92.0	92.1	91.4	5.3	98.8	9.2	21
Omethoate	6	113	103	103	92.0	101	102	7.4	84.0	82.7	78.6	93.7	79.2	83.6	7.3	93.0	13	28
Oxadiazon	3	104	98.1	101	94.4	103	100	4.0	96.3	83.7	91.3	102	96.1	93.8	7.2	97.0	6.4	14
Oxadixyl	3	111	118	113	110	106	112	3.9	92.4	85.1	93.0	93.9	93.5	91.6	4.0	102	11	25
Oxamyl	5	119	114	115	102	119	114	6.2	83.0	79.9	84.1	84.7	88.7	84.1	3.8	98.9	17	37
Oxasulfuron	4	105	107	105	101	107	105	2.2	104	109	108	110	108	108	2.0	107	2.4	5.4
Paclobutrazol	3	116	120	105	105	108	111	6.1	99.6	99.4	95.1	95.8	95.6	97.1	2.3	104	8.3	18
Penconazole	3	121	107	111	108	109	111	5.4	95.7	93.1	92.4	97.5	93.0	94.3	2.3	103	9.6	21
Pencycuron	6	102	92.1	99.9	94.6	93.0	96.4	4.6	90.9	94.1	83.4	94.8	92.0	91.0	5.0	93.7	5.5	12
Pendimethalin	3	96.9	120	115	114	106	110	8.2	85.3	87.9	116	103	106	99.6	13	105	11	25
Phenmedipham	4	126	112	113	117	111	116	5.1	104	106	104	108	98.1	104	3.6	110	7.1	16
Phenthoate	3	90.6	99.5	95.1	88.0	103	95.2	6.4	103	118	105	107	107	108	5.5	102	8.6	19
Phosalone	3	116	103	107	100	108	107	5.5	96.1	93.7	97.3	99.5	92.0	95.7	3.1	101	7.2	16

Table 4. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.01 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.01 mg/kg (Analyst 1)							Fortification level 0.01 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Phosmet	6	118	111	108	115	108	112	3.9	94.2	103	100	103	98.4	99.7	3.7	106	7.0	16
Phosphamidon (E- and Z-isomers)	3	100	103	104	110	116	107	6.0	95.0	89.9	93.8	80.3	96.2	91.0	7.1	98.9	10	23
Phoxim	4	109	109	115	102	103	108	4.8	102	102	98.5	92.0	97.4	98.3	4.1	103	6.4	14
Picolinafen	3	111	105	112	107	99.9	107	4.5	90.3	83.9	94.4	95.7	90.9	91.0	5.1	99.1	9.7	22
Picoxystrobin	5	122	110	123	104	115	114	7.0	110	88.7	95.6	97.1	97.4	97.8	8.0	106	11	24
Pirimicarb	3	102	101	101	103	103	102	1.0	101	90.6	93.2	94.5	98.1	95.5	4.4	98.8	4.5	10
Pirimiphos-methyl	3	115	100	98.3	104	109	105	6.5	89.6	92.8	87.3	99.8	106	95.2	8.2	100	8.7	19
Prochloraz	1	119	103	111	102	108	109	6.1	90.8	91.3	99.1	101	91.1	94.6	5.2	102	9.0	20
Profenofos	3	110	107	121	106	104	110	6.0	99.7	113	99.8	111	97.3	104	6.9	107	6.7	15
Promecarb	7	107	101	105	96.4	107	103	4.5	101	96.8	96.8	102	96.3	98.6	2.8	101	4.3	9.6
Prometon	4	106	105	97.2	110	106	105	4.5	89.2	94.5	99.1	97.0	93.2	94.6	4.0	99.7	6.8	15
Propamocarb	5	111	104	106	105	110	107	2.7	103	100	98.6	101	108	102	3.5	105	3.9	8.7
Propaquizafop	4	105	108	106	105	105	106	1.2	102	91.2	93.2	100	99.1	97.1	4.7	101	5.5	12
Propargite	4	115	118	116	118	117	117	1.1	86.2	81.6	84.9	82.4	83.0	83.6	2.2	100	18	39
Propetamphos	3	110	115	112	113	111	112	1.8	91.1	86.5	96.0	85.7	95.3	90.9	5.2	102	12	26
Propiconazole (sum of isomers)	2	111	116	111	106	116	112	3.8	98.6	85.7	91.3	89.1	89.1	90.8	5.3	101	12	26
Propoxur	6	108	106	101	103	103	104	2.9	100	87.0	90.9	92.0	95.0	93.0	5.2	98.5	7.1	16
Propyzamide (Pronamide)	3	112	110	108	113	116	112	2.5	97.0	91.3	107	101	88.4	97.0	7.7	104	9.0	20
Proquinazid	1	103	108	114	105	105	107	4.2	64.6	64.0	66.8	68.8	67.8	66.4	3.1	86.8	25	56
Prosulfocarb	4	102	105	101	105	101	103	2.2	88.8	90.1	95.5	99.6	89.4	92.7	5.1	97.7	6.5	15
Pymetrozine	7	109	83.2	102	98.7	99.7	98.5	9.6	106	75.7	88.5	78.6	82.6	86.2	14	92.4	13	29
Pyracarbolid	7	107	107	104	105	101	105	2.3	92.0	87.7	93.9	97.2	87.6	91.7	4.5	98.2	7.7	17
Pyraclostrobin	5	109	106	110	100	104	106	3.6	107	97.2	97.2	103	109	103	5.4	104	4.6	10
Pyridaben	5	125	129	127	119	118	124	4.0	69.1	69.9	71.5	73.4	76.7	72.1	4.2	97.8	28	62
Pyridate	5	119	117	112	109	109	113	3.9	55.8	49.6	52.5	50.6	56.0	52.9	5.5	83.1	39	86
Pyrimethanil	6	115	114	115	108	112	113	2.5	85.5	91.6	91.5	94.5	90.6	90.7	3.6	102	12	26
Pyriproxyfen	5	108	108	109	102	105	106	2.8	93.1	91.8	89.7	95.0	94.4	92.8	2.3	99.7	7.6	17
Quinalphos	3	120	107	112	106	104	110	5.9	81.4	99.8	96.2	99.2	87.3	92.8	8.7	101	11	25
Quinmerac	7	69.6	66.3	72.0	80.2	69.0	71.4	7.5	38.9	43.5	34.1	39.8	38.9	39.0	8.5	55.2	32	71
Quinoclamine	4	104	98.2	107	105	105	104	3.2	84.4	91.2	96.7	94.3	92.3	91.8	5.1	97.7	7.5	17
Quinoxyfen	3	115	115	111	107	108	111	3.3	93.4	96.0	93.5	96.1	103	96.4	4.0	104	8.2	18
Rimsulfuron	4	104	94.9	102	102	101	101	3.6	83.7	82.7	88.7	88.3	98.7	88.4	7.2	94.7	8.7	19
Rotenone	7	106	113	105	103	111	108	4.1	93.6	88.1	98.6	94.1	94.3	93.8	4.0	101	8.2	18
Secbumeton	7	115	114	103	106	96.7	107	7.3	97.9	88.9	97.2	104	95.5	96.7	5.6	102	8.2	18
Silthiofam	4	116	104	118	110	119	113	5.6	94.1	108	99.7	104	94.2	99.9	5.9	107	8.5	19
Spinosad - Spinosyn A	7	124	120	122	112	122	120	3.9	93.6	109	105	107	109	105	6.2	112	8.5	19
Spinosad - Spinosyn D	7	123	126	119	120	122	122	2.4	104	104	101	106	98.8	103	2.7	112	9.4	21
Spirodiclofen	1	119	87.3	112	117	112	109	12	70.9	75.2	72.1	76.5	70.4	73.0	3.7	91.2	23	52

Table 4. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Pesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.01 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.01 mg/kg (Analyst 1)							Fortification level 0.01 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Spiromesifen	6	119	119	114	111	113	115	3.0	72.4	65.2	68.9	70.2	77.6	70.8	6.5	92.9	25	57
Spirotetramat	6	141	128	135	119	118	128	7.6	123	97.1	102	102	103	106	9.5	117	13	29
Spiroxamine (2 diastereoisomers)	1	106	124	122	113	124	118	7.0	106	101	89.0	98.3	102	99.3	6.4	109	11	25
Sulfentrazone	6	122	122	127	111	123	121	4.9	86.6	96.2	105	90.9	93.0	94.4	7.4	108	14	32
Tebuconazole	2	104	98.3	98.7	103	102	101	2.6	104	105	97.7	103	100	102	2.7	102	2.5	5.6
Tebufenozide	5	139	115	122	98.4	105	116	14	112	101	93.8	97.7	80.1	97.0	12	107	15	34
Tebufenpyrad	3	105	103	101	104	107	104	2.0	95.9	98.9	93.2	94.1	92.9	95.0	2.6	99.4	5.2	12
Tebuthiuron	7	108	102	99.4	98.4	107	103	4.3	96.5	92.0	96.0	93.0	97.9	95.1	2.6	99.1	5.5	12
Teflubenzuron	4	110	108	113	86.2	115	106	11	94.0	84.1	85.0	80.6	102	89.1	9.8	97.8	14	30
Temephos	7	94.5	96.9	105	102	109	101	5.8	93.1	101	103	91.3	91.9	96.0	5.6	98.7	6.1	14
Tepraloxydim (E- and Z-isomers)	3	106	106	107	99.7	101	104	3.1	114	121	124	122	114	119	4.0	111	8.0	18
Terbufos	3	108	105	108	105	98.0	105	3.9	99.5	88.2	108	115	88.7	99.9	12	102	8.5	19
Tetraconazole	2	118	123	114	112	120	118	3.8	88.6	99.5	104	104	99.4	99.1	6.3	108	10	23
Thiabendazole	5	107	88.6	89.2	94.6	95.1	94.8	7.7	80.6	84.0	88.4	82.3	79.6	83.0	4.2	88.9	9.3	21
Thiacloprid	5	112	105	117	103	112	110	5.1	108	97.5	89.5	99.8	97.7	98.4	6.5	104	8.0	18
Thiamethoxam	5	86.8	109	103	98.7	111	102	9.5	92.1	101	109	92.2	86.2	96.1	9.3	98.9	9.4	21
Thidiazuron	7	99.5	102	95.8	90.7	103	98.2	5.1	86.5	87.9	78.2	88.1	89.0	85.9	5.2	92.0	8.5	19
Thifensulfuron-methyl	4	98.9	100	92.3	91.4	97.6	96.1	4.2	98.2	80.6	86.4	80.9	90.1	87.2	8.4	91.7	8.0	18
Thiodicarb	5	103	106	107	105	107	106	1.7	87.4	92.3	75.0	81.5	102	87.7	12	96.7	12	27
Thiofanox	5	130	120	114	122	118	121	4.9	88.3	107	128	123	101	109	15	115	11	25
Tolylfluanid	3	94.3	94.4	97.4	93.3	96.8	95.3	1.9	74.8	71.9	80.7	72.6	70.6	74.1	5.4	84.7	14	30
Tralkoxydim	1	106	111	109	102	103	106	3.5	80.1	81.1	83.3	82.4	81.7	81.7	1.5	93.9	14	31
Triadimefon	3	109	116	113	91.1	109	108	9.0	99.0	97.1	96.9	106	105	101	4.4	104	7.6	17
Triadimenol	6	106	97.3	103	103	102	102	3.2	106	97.4	98.3	94.9	100	99.3	4.1	101	3.8	8.5
Triasulfuron	4	106	105	105	111	114	108	3.9	94.7	95.6	87.6	89.7	97.8	93.1	4.6	100	8.7	19
Triazophos	3	124	112	123	118	109	117	5.7	102	84.3	87.3	88.8	88.1	90.2	7.8	104	15	34
Tribenuron-methyl	4	101	106	102	97.9	98.5	101	3.1	76.5	81.1	70.0	72.0	74.8	74.9	5.7	88.0	16	36
Trichlorfon (Metrifonate)	6	109	109	106	109	106	108	1.6	95.4	95.8	92.9	91.1	98.0	94.7	2.8	101	7.2	16
Tricyclazole	2	102	105	95.8	102	99.8	101	3.2	99.7	94.6	91.8	99.1	85.1	94.0	6.4	97.3	5.9	13
Trietazine	6	112	105	107	102	115	108	4.8	91.2	87.5	94.3	86.6	96.2	91.2	4.6	99.7	10	22
Trifloxystrobin	5	119	118	108	99.4	102	109	8.2	96.1	97.0	90.8	94.2	98.5	95.3	3.1	102	9.5	21
Triflumizole	3	110	116	107	103	112	110	4.3	99.5	98.4	92.5	96.9	100	97.4	3.1	104	7.2	16
Triflumuron	4	105	107	105	102	104	105	1.7	104	99.8	91.1	87.9	97.3	96.1	6.9	100	6.4	14
Trimethacarb	6	111	101	99.5	102	99.7	103	4.7	100	92.6	102	97.0	90.4	96.4	5.0	99.5	5.6	13
Triticonazole	2	106	98.4	113	109	112	108	5.4	102	93.3	104	104	88.5	98.3	7.2	103	7.6	17
Uniconazole	2	112	115	109	110	98.9	109	5.5	99.6	99.4	95.1	95.8	95.6	97.1	2.3	103	7.3	16
Vamidothion	2	92.4	106	105	102	106	102	5.5	103	95.9	110	103	98.3	102	5.1	102	5.0	11
Zoxamide	6	101	102	104	101	106	103	2.3	97.2	85.0	101	97.9	90.3	94.3	6.9	98.4	6.5	14

Table 5. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Oesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.02 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days

		Fortification level 0.02 mg/kg (Analyst 1)							Fortification level 0.02 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Abamectin - Avermectin B1a	7	104	82.6	90.0	123	117	103	17	57.6	70.1	63.2	71.0	63.7	**65.1**	8.4	84.3	**28**	62
Acephate	1	89.4	85.5	91.2	86.9	84.3	87.5	3.2	73.2	75.7	80.9	76.1	75.4	76.3	3.7	81.9	7.9	18
Acetamiprid	5	92.1	100	115	97.0	98.6	101	8.5	118	92.9	104	110	108	106	8.7	103	8.6	19
Alanycarb	5	104	113	103	108	108	107	3.7	147	150	91	108	101	119	**23**	113	17	38
Aldicarb	5	99.7	95.7	101	92.7	98.6	97.5	3.4	106	89.8	89.9	103	88.8	95.3	8.5	96.4	6.2	14
Amidosulfuron	4	90.9	92.2	91.3	87.2	96.8	91.7	3.7	108	98.2	87.3	93.2	86.6	94.6	9.3	93.2	7.0	16
Aminocarb	4	91.8	101	97.1	101	101	98.4	4.1	89.4	74.3	98.6	95.3	89.4	89.4	10	93.9	8.8	20
Azaconazole	1	91.2	94.7	98.0	100	95.7	96.0	3.5	95.1	85.9	93.4	91.0	102	93.4	6.2	94.7	4.9	11
Azamethiphos	2	99.0	102	98.2	99.8	97.5	99.3	1.8	94.8	90.9	92.5	92.6	89.7	92.1	2.1	95.7	4.4	9.7
Azinphos-ethyl	1	110	116	113	104	100	109	5.9	97.6	92.4	104	97.0	102	98.6	4.6	104	7.2	16
Azinphos-methyl	1	90.2	90.0	110	106	110	101	10	105	90.3	92.9	94.4	80.2	92.6	9.8	97.0	11	24
Azoxystrobin	5	94.0	95.4	96.7	105	105	99.1	5.3	92.0	93.9	93.3	102	87.6	93.8	5.6	96.4	5.9	13
Beflubutamid	8	92.6	92.9	101	97.0	101	96.8	4.2	94.2	87.9	87.6	89.3	97.5	91.3	4.8	94.1	5.2	12
Benalaxyl	2	90.2	103	100	96.1	90.9	96.1	5.9	88.8	86.3	87.2	85.3	97.0	88.9	5.3	92.5	6.7	15
Benfuracarb	4	96.9	98.8	92.5	102.0	105	99.1	5.0	151	149	141	138	136	**143**	4.7	**121**	20	44
Benzoximate	7	115	108	106	100	106	107	5.2	103	92.5	98.2	103	96.5	98.6	4.4	103	6.3	14
Bifenazate	8	77.2	76.5	77.0	69.7	82.3	76.5	5.9	70.6	60.1	61.7	67.2	81.7	**68.3**	13	72.4	11	24
Bifenthrin	2	109	81.9	117	75.6	91.5	95.0	19	164	158	168	207	255	**190**	**22**	**143**	**41**	91
Bispyribac	7	92.9	88.2	96.0	96.7	96.6	94.1	3.8	89.9	81.7	72.7	81.1	71.0	79.3	9.6	86.7	11	25
Bitertanol	3	102	101	94.6	100	104	101	3.6	110	82.1	95.8	95.6	98.1	96.4	10	98.4	7.6	17
Boscalid	4	91.2	99.2	96.4	91.0	88.1	93.2	4.8	87.2	97.7	105	91.1	103	96.7	7.7	94.9	6.4	14
Bromuconazole (2 diastereoisomers)	2	94.7	105	112	95.2	106	102	7.2	86.7	86.7	89.7	97.7	90.1	90.2	5.0	96.3	9.0	20
Bupirimate	2	98.3	103	105	106	101	103	2.9	93.5	91.0	104	96.3	105	97.9	6.4	100	5.2	12
Buprofezin	1	95.7	93.9	102	99.7	96.7	97.7	3.5	87.2	95.0	96.0	91.0	91.8	92.2	3.8	94.9	4.6	10
Butocarboxim	4	90.7	104	96.7	96.8	98.9	97.4	4.8	103	101	94.8	96.2	95.0	98.1	4.0	97.7	4.2	9.3
Carbaryl	6	98.5	102	99.8	98.5	103	100	1.9	99.7	92.3	93.4	94.4	97.0	95.4	3.1	97.8	3.6	8.0
Carbendazim	5	87.7	92.1	102	93.4	91.4	93.3	5.6	77.4	68.1	61.7	65.4	66.1	**67.7**	8.7	80.5	18	40
Carbofuran	8	96.1	103	105	96.8	96.1	99.4	4.2	97.9	94.8	95.9	84.1	99.1	94.4	6.3	96.9	5.7	13
Carbosulfan	6	90.2	101.0	96.3	98.7	97.6	96.8	4.2	103	99.4	109	105	101	103	3.7	100	5.1	11
Carboxin	5	95.2	92.1	97.0	97.1	101	96.4	3.2	104	99.9	96.3	97.9	99.9	99.5	2.7	98.0	3.3	7.3
Carfentrazone-ethyl	4	89.4	92.0	86.7	88.1	87.4	88.7	2.4	88.0	94.6	84.5	81.1	103	90.3	9.8	89.5	6.8	15
Chlorantraniliprole	8	97.4	93.6	106	95.1	96.2	97.8	5.1	90.9	84.5	88.5	82.5	85.3	86.3	3.9	92.0	7.9	18
Chlorfenvinphos (E- and Z-isomers)	2	93.2	90.5	85.1	91.8	94.0	90.9	3.9	104	91.3	93.4	93.9	94.8	95.4	5.0	93.2	5.0	11
Chloridazon (Pyrazon)	4	92.7	89.3	99.6	87.4	94.0	92.6	5.1	93.2	91.3	94.5	91.1	89.5	91.9	2.1	92.3	3.7	8.3
Chlorotoluron (Chlortoluron)	7	96.9	99.6	99.5	100	105	100	2.9	97.6	87.8	90.0	92.4	94.8	92.5	4.2	96.4	5.4	12
Chloroxuron	7	97.6	102	105	93.0	99.0	99.2	4.5	89.5	92.0	94.0	94.8	94.6	93.0	2.4	96.1	4.8	11
Chlorpyrifos	2	95.1	95.1	103	101	93.5	97.5	4.2	92.6	84.0	82.0	90.9	86.9	87.3	5.1	92.4	7.3	16
Chlorpyrifos-methyl	2	104	105	100	103	105	103	1.9	85.1	96.1	108	89.5	117	99.2	13	101	9.1	20

Table 5. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Oesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.02 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.02 mg/kg (Analyst 1)							Fortification level 0.02 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Chlorsulfuron	4	98.2	91.0	101	98.1	100	97.7	4.0	82.3	85.1	87.3	86.6	82.3	84.7	2.8	91.2	8.2	18
Clethodim (E- and Z-isomers)	3	104	101	108	96.2	114	104	6.5	101	93.1	88.6	97.4	90.4	94.0	5.3	99.3	7.9	18
Clofentezine	4	93.4	96.0	96.9	99.6	99.7	97.1	2.7	91.7	90.8	93.9	93.7	92.3	92.5	1.4	94.8	3.3	7.4
Clomazone	8	102	101	98.0	100	98.5	100	1.8	100	96.9	89.4	95.3	105	97.3	5.8	98.7	4.3	9.5
Coumaphos	2	95.1	87.9	93.8	98.1	102	95.3	5.4	99.6	94.3	87.9	99.3	94.3	95.1	5.0	95.2	4.9	11
Cyazofamid	4	96.4	105	98.6	103	100	101	3.3	91.5	92.9	95.8	93.2	95.8	93.8	2.0	97.3	4.5	10
Cycloate	1	90.6	101	110	117	108	105	9.4	91.6	98.3	93.4	119	85.9	97.6	13	101	11	25
Cycluron	7	97.5	94.4	99.0	95.7	101	97.4	2.5	96.1	85.3	93.2	94.4	100	93.9	5.9	95.6	4.6	10
Cymiazole	1	108	93.2	112	94.2	98.5	101	8.2	101	99.9	86.2	82.3	99.0	93.6	9.3	97.3	9.1	20
Cymoxanil	4	107	106	105	94.0	95.2	101	6.2	101	91.8	95.0	82.8	91.5	92.5	7.3	97.0	8.0	18
Cyproconazole (2 diastereoisomers)	1	90.7	90.1	96.7	86.6	89.5	90.7	4.0	102	103	97.9	97.3	102	101	2.8	95.6	6.3	14
Cyprodinil	8	106	101	102	103	90.1	100	5.9	79.2	81.3	91.6	76.6	90.0	83.7	8.0	92.0	11	25
DEET (Diethyltoluamide)	4	93.4	91.0	98.2	98.3	100	96.2	3.9	82.9	89.7	98.3	97.5	95.1	92.7	6.9	94.4	5.6	13
Desmedipham	8	101	99.3	100	91.0	102	98.8	4.6	101	89.3	93.6	94.0	95.8	94.7	4.4	96.7	4.8	11
Diazinon	2	96.7	102	105	98.2	107	102	4.4	98.2	87.3	87.7	88.9	91.9	90.8	5.0	96.4	7.5	17
Dichlorvos	2	110	110	120	113	110	113	3.8	113	104	102	115	112	109	5.2	111	4.6	10
Diethofencarb	6	99.5	97.8	120	105	102	105	8.4	87.7	82.8	94.2	86.5	90.2	88.3	4.8	96.5	11	25
Difenoconazole (*cis*- and *trans*-)	3	99.2	102	94.2	98.8	98.8	98.6	2.9	90.9	95.3	93.9	84.3	89.5	90.8	4.7	94.7	5.7	13
Diflubenzuron	4	111	111	111	103	107	109	3.3	106	94.4	97.8	88.6	88.7	95.0	7.5	102	8.8	20
Diflufenican	1	85.8	96.9	101	94.2	100	95.6	6.4	100	92.1	89.9	98.5	99.6	96.1	5.0	95.9	5.4	12
Dimethachlor	1	103	99.7	111	103	113	106	5.6	100	97.7	98.6	101	92.4	98.0	3.5	102	6.0	13
Dimethoate	8	96.2	97.8	112	105	98.4	102	6.4	81.9	98.0	86.8	95.6	84.6	89.4	7.9	95.6	9.6	21
Dimethomorph (E- and Z-isomers)	5	87.0	89.9	92.5	91.9	95.9	91.4	3.6	94.1	92.2	92.5	94.0	92.5	93.1	1.0	92.2	2.6	5.9
Dimoxystrobin	1	99.9	94.2	98.6	104	100	99.3	3.4	93.9	86.6	92.5	87.2	90.1	90.1	3.6	94.7	6.1	14
Diniconazole	2	85.3	86.3	96.4	94.0	93.4	91.1	5.5	95.5	88.8	88.5	85.4	97.9	91.2	5.7	91.2	5.3	12
Dinotefuran	7	101	96.3	92.9	88.2	89.7	93.7	5.7	85.6	82.4	82.9	91.7	85.0	85.5	4.3	89.6	6.8	15
Dioxacarb	7	94.8	104	110	105	104	104	5.3	95.0	83.3	87.7	99.3	114	95.8	12	99.7	9.6	21
Disulfoton	1	89.2	92.2	104	100	99.5	97.0	6.3	90.4	79.8	88.6	73.3	106	87.6	14	92.3	11	25
Diuron	5	102	101	102	96.9	103	101	2.3	96.4	93.8	93.1	93.9	93.0	94.0	1.5	97.5	4.1	9.2
Epoxiconazole	2	114	114	98.5	105	111	108	6.2	84.1	94.9	93.8	101	91.6	93.0	6.5	101	10	22
Ethidimuron (Sulfadiazole)	8	88.9	98.1	89.8	100	94.8	94.3	5.2	113	112	111	123	121	116	4.7	105	12	26
Ethion	2	94.0	96.0	96.1	87.4	95.6	93.8	3.9	94.6	93.5	89.8	95.6	86.0	91.9	4.3	92.9	4.0	9.0
Ethirimol	4	102	94.3	93.3	90.5	93.7	94.7	4.5	89.1	82.8	85.5	84.9	87.1	85.9	2.7	90.3	6.3	14
Ethofumesate	4	93.0	95.3	109	93.7	107	99.7	7.9	102	87.6	95.8	93.0	100	95.7	6.0	97.7	7.0	16
Ethoprophos (Ethoprop)	2	104	93.6	97.5	92.3	90.3	95.5	5.6	88.2	80.7	101	87.8	94.0	90.3	8.2	92.9	7.2	16
Ethoxyquin	8	42.4	42.4	42.6	42.6	42.8	**42.6**	0.4	13.4	13.7	13.4	14.2	14.0	**13.7**	2.7	**28.1**	**54**	120
Etofenprox	3	113	94.1	113	83.9	102	101	12	97.5	87.4	82.1	134	127	106	**22**	104	17	39
Famoxadone	4	106	106	117	67.9	97.6	98.9	19	79.0	78.4	93.2	94.6	86.0	86.2	8.8	92.6	16	36

Table 5. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Oesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.02 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.02 mg/kg (Analyst 1)							Fortification level 0.02 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Fenamidone	5	97.5	93.3	98.5	98.1	96.8	96.9	2.1	95.7	91.5	88.1	106	93.6	95.0	7.1	95.9	5.0	11
Fenamiphos	1	84.9	89.0	85.4	95.2	108	92.4	10	84.7	84.4	93.5	99.5	90.2	90.5	7.0	91.4	8.4	19
Fenarimol	2	92.2	84.3	98.7	89.7	85.7	90.1	6.3	101	105	101	96.6	94.2	99.7	4.4	94.9	7.3	16
Fenazaquin	5	105	97.9	104	105	109	104	3.9	73.7	70.4	77.6	74.9	74.0	74.1	3.5	89.2	18	40
Fenbuconazole	2	97.2	103	99.2	104	95.0	99.7	3.9	93.1	89.6	98.4	89.9	96.8	93.6	4.2	96.7	5.1	11
Fenhexamid	3	94.1	91.0	111	85.9	103	97.1	10	101	91.2	91.1	98.7	94.0	95.3	4.8	96.2	7.8	17
Fenobucarb	5	91.1	94.6	103	94.3	96.5	95.9	4.6	98.8	86.2	81.9	90.5	92.5	90.0	7.1	92.9	6.5	15
Fenoxycarb	6	109	107	103	97.2	102	104	4.6	109	89.4	92.2	89.9	104	96.9	9.3	100	7.7	17
Fenpropidin	5	104	99.6	101	100	100	101	1.8	102	104	95.8	95.7	98.2	99.2	3.8	100	2.9	6.4
Fenpyroximate	5	114	103	108	104	107	107	4.2	71.3	69.0	67.4	64.2	70.5	68.5	4.1	87.8	**24**	52
Fenuron	7	110	96.7	103	94.2	106	102	6.4	89.3	86.7	91.0	99.7	96.2	92.6	5.7	97.3	7.7	17
Fipronil	4	93.3	98.0	91.9	90.4	107	96.2	7.1	77.0	76.5	60.3	78.5	98.9	78.2	18	87.2	16	36
Flazasulfuron	4	95.3	97.4	99.0	95.6	95.7	96.6	1.6	90.0	81.5	88.8	88.2	85.2	86.8	3.9	91.7	6.3	14
Flonicamid	6	107	105	123	99.1	135	114	13	73.9	73.3	88.8	74.3	88.1	79.7	10	96.7	**22**	49
Flubendiamide	7	89.0	75.7	109	98.8	91.9	92.9	13	108	99.1	129	104	100	108	11	100	14	31
Fludioxonil	2	98.8	103	106	96.4	102	101	3.8	106	86.6	97.6	88.5	89.0	93.5	8.7	97.4	7.5	17
Flufenacet	1	99.2	97.0	95.0	80.0	91.9	92.6	8.1	85.8	85.6	86.9	95.7	95.4	89.9	5.8	91.2	6.9	15
Flufenoxuron	4	98.0	99.0	98.7	100	101	99.5	1.4	91.2	87.8	74.9	88.3	92.7	87.0	8.1	93.2	8.7	19
Flumetsulam	8	103	110	98.6	97.4	109	104	5.5	106	90.4	78.8	104	92.8	94.5	12	99.0	9.7	22
Flumioxazin	6	113	112	123	112	122	116	4.9	98.0	108	93.7	80.9	95.6	95.2	10	106	13	28
Fluometuron	8	95.5	98.2	103	96.5	99.8	98.7	3.2	94.6	89.8	90.2	96.2	98.8	93.9	4.1	96.3	4.3	9.6
Fluopicolide	1	96.8	107	106	93.1	97.1	100	6.2	88.4	82.1	102	87.2	93.6	90.6	8.2	95.3	8.5	19
Fluoxastrobin	8	99.8	103	90.5	99.0	101	98.7	4.8	87.9	83.4	101	77.4	85.7	87.0	9.8	92.9	9.7	22
Fluquinconazole	2	94.1	96.9	107	110	102	102	6.3	91.5	94.0	100	92.8	92.2	94.2	3.8	98.0	6.5	14
Flusilazole	2	92.9	94.4	95.9	100	98.2	96.3	3.0	95.1	84.1	92.5	91.9	88.2	90.3	4.7	93.3	5.0	11
Flutriafol	8	95.7	96.9	101	100	103	99.4	3.1	94.6	97.4	91.1	92.3	96.7	94.4	2.9	96.9	3.9	8.7
Foramsulfuron	3	102	101	94.1	103	99.6	99.8	3.4	99.0	103	97.4	99.0	84.2	96.5	7.4	98.2	5.7	13
Forchlorfenuron	7	91.1	88.4	91.0	88.4	95.1	90.8	3.0	88.7	88.8	95.6	92.7	93.9	91.9	3.4	91.4	3.1	6.9
Fosthiazate (sum of isomers)	1	99.3	101	105	96.5	102	101	3.0	98.6	85.8	96.7	95.2	97.8	94.8	5.5	97.8	5.2	12
Fuberidazole	4	88.3	92.5	96.5	88.8	85.5	90.3	4.7	92.3	90.8	86.9	87.4	94.1	90.3	3.5	90.3	3.9	8.7
Furalaxyl	7	100	97.5	103	97.1	99.8	99.6	2.5	88.2	82.3	97.0	99.7	105	94.4	9.6	97.0	7.1	16
Furathiocarb	6	102	102	94.8	96.7	95.0	98.1	3.7	103	95.3	96.4	86.8	101	96.6	6.7	97.4	5.1	11
Halofenozide	8	99.7	100	104	101	104	102	2.2	101	91.6	89.8	89.0	98.3	93.9	5.6	97.8	5.8	13
Halosulfuron-methyl	8	91.7	92.7	90.4	91.7	102	93.8	5.2	90.7	90.1	89.1	87.2	88.4	89.1	1.6	91.4	4.5	10
Hexaconazole	2	97.8	94.7	96.1	86.3	90.4	93.1	5.0	96.2	86.5	84.7	89.7	90.9	89.6	4.9	91.3	5.1	11
Hexaflumuron	7	89.2	91.3	96.9	93.5	95.2	93.2	3.3	91.6	85.6	88.3	82.8	94.9	88.6	5.4	90.9	4.9	11
Hexythiazox	4	95.7	96.7	103	99.3	99.3	98.8	2.8	87.9	82.0	82.3	81.8	87.0	84.2	3.6	91.5	8.9	20
Hydramethylnon	7	101	106	110	102	103	105	3.5	110	99.9	100	96.0	92.9	99.8	6.5	102	5.4	12

Table 5. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Oesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.02 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.02 mg/kg (Analyst 1)							Fortification level 0.02 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Imazalil	2	96.7	101	101	101	110	102	4.7	85.3	88.7	98.3	85.6	88.3	89.3	5.9	95.6	8.6	19
Imidacloprid	5	84.2	90.4	98.6	97.0	92.5	92.5	6.2	86.2	88.3	89.0	82.5	109	91.1	12	91.8	8.8	20
Indoxacarb	3	94.0	94.5	100	105	103	99.5	5.1	97.4	99.9	92.3	92.8	103	97.2	4.9	98.4	4.9	11
Ipconazole	2	94.0	97.4	101	96.4	101	98.0	3.1	98.2	87.2	90.5	97.0	95.0	93.6	4.9	95.8	4.5	10
Iprovalicarb	5	100	96.6	94.0	94.5	100	97.0	3.0	96.6	87.9	103	98.9	97.5	96.7	5.7	96.9	4.3	9.5
Isofenphos-methyl	1	103	94.0	98.0	98.1	95.6	97.8	3.6	91.9	83.8	96.2	86.3	109	93.4	11	95.6	7.7	17
Isoprothiolane	1	89.0	82.3	89.1	86.8	93.3	88.1	4.5	94.6	98.2	97.5	92.0	110	98.4	6.9	93.3	8.1	18
Isoxaben	4	102	111	96.5	93.6	91.2	98.9	7.9	97.6	80.6	91.7	105	87.2	92.4	10	95.7	9.2	21
Isoxaflutole	3	86.5	90.3	96.4	96.8	101	94.3	6.2	89.4	83.4	89.2	89.4	98.6	90.0	6.1	92.1	6.3	14
Ivermectin B1a	7	135	97.8	124	97.4	108	112	15	118	108	136	112	106	116	10	114	12	27
Kresoxim-methyl	4	95.4	91.9	111	102	112	102	8.8	93.0	95.8	99.5	78.5	105	94.4	11	98.5	10	22
Lenacil	1	93.4	98.8	97.2	89.4	99.9	95.7	4.5	95.8	80.3	96.0	91.8	97.2	92.2	7.6	94.0	6.1	14
Linuron	4	93.6	102	106	101	104	101	4.7	95.4	88.5	91.7	93.1	93.8	92.5	2.8	96.8	6.0	13
Lufenuron	4	104	96.1	101	85.6	106	98.5	8.3	106	92.4	85.2	95.4	95.4	94.9	7.9	96.7	7.9	18
Malaoxon	3	95.6	84.7	104	97.7	100	96.5	7.6	89.2	84.2	94.4	101	97.7	93.3	7.1	94.9	7.2	16
Malathion	3	107	94.6	109	99.2	98.2	102	6.2	87.0	80.0	91.2	95.4	94.9	89.7	7.1	95.7	9.1	20
Mandipropamid	4	101	110	118	108	119	111	6.6	108	98.8	94.1	103	101	101	5.2	106	7.5	17
Mecarbam	3	96.1	105	106	106	96.0	102	5.1	105	102	92.5	93.8	95.8	97.7	5.4	99.7	5.4	12
Mepanipyrim	3	101	94.5	96.9	90.8	96.1	96.0	4.1	94.8	83.3	92.0	101	101	94.3	7.7	95.1	5.9	13
Mesosulfuron-methyl	6	105	98.2	109	104	96.1	102	5.0	85.3	79.4	112	91.3	96.7	92.9	13	97.7	11	23
Metaflumizone	4	95.2	91.4	85.0	104	89.4	93.0	7.6	110	84.3	95.7	96.8	102	97.8	9.6	95.4	8.6	19
Metalaxyl	3	98.9	97.2	105	98.1	97.7	99.4	3.2	107	99.4	95.8	98.2	97.5	99.6	4.5	99.5	3.7	8.2
Metamitron	4	95.8	96.7	95.8	88.2	95.4	94.4	3.7	92.2	81.2	87.1	94.3	84.2	87.8	6.2	91.1	6.1	14
Metazachlor	3	97.7	96.1	100	96.9	104	99.0	3.3	87.9	88.4	89.4	90.3	93.7	89.9	2.5	94.4	5.8	13
Metconazole	2	89.1	101	102	102	101	99.0	5.6	102	90.5	86.3	96.7	89.9	93.1	6.8	96.1	6.7	15
Methabenzthiazuron	5	92.6	90.9	101	92.8	98.4	95.1	4.6	91.0	87.6	93.1	95.0	97.8	92.9	4.2	94.0	4.3	9.6
Methamidophos	1	84.3	82.0	84.3	79.7	87.4	83.5	3.4	78.9	78.7	74.1	78.9	75.5	77.2	2.9	80.4	5.1	11
Methidathion	3	100	93.8	94.5	99.0	98.2	97.2	3.0	93.8	83.2	99.1	94.8	86.7	91.5	7.1	94.4	5.9	13
Methiocarb	7	97.3	95.0	103	99.4	95.7	98.1	3.3	98.4	92.5	85.7	95.6	91.8	92.8	5.1	95.4	5.0	11
Methomyl	5	97.6	103	102	106	100	102	3.0	103	93.0	104	99.4	85.5	97.0	8.0	99.3	6.1	14
Methoprotryne	7	95.3	92.5	103	104	103	99.6	5.3	92.4	88.1	95.9	100	91.4	93.7	5.0	96.6	5.9	13
Methoxyfenozide	5	95.2	102	109	99.2	99.2	101	5.2	104	88.8	140	118	125	115	17	108	14	32
Metobromuron	8	93.0	102	94.2	94.9	101	97.0	4.2	94.4	97.5	93.5	95.2	98.1	95.7	2.1	96.4	3.2	7.1
Metolachlor	3	110	108	106	109	113	109	2.2	71.9	73.9	90.6	93.9	89.5	84.0	12	96.5	16	35
Metrafenone	4	94.4	94.7	97.9	95.3	88.8	94.2	3.5	91.8	84.3	84.0	89.9	87.0	87.4	3.9	90.8	5.3	12
Metribuzin	4	107	105	109	101	110	106	3.4	96.4	86.7	93.7	92.5	87.0	91.3	4.7	98.7	8.8	20
Metsulfuron-methyl	4	91.7	88.6	89.7	94.6	92.1	91.4	2.5	87.6	81.8	97.9	93.3	101	92.4	8.4	91.9	5.9	13
Mevinphos (E- and Z-isomers)	3	95.0	90.1	95.5	92.2	92.6	93.1	2.4	124	109	97.5	110	99.1	108	10	101	11	24

Table 5. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Oesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.02 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.02 mg/kg (Analyst 1)							Fortification level 0.02 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Mexacarbate	7	93.8	90.4	113	85.3	96.2	95.8	11	85.6	88.5	99.8	95.1	90.5	91.9	6.1	93.8	8.8	20
Molinate	3	96.3	98.7	98.5	90.4	86.2	94.0	5.9	68.2	69.4	103	92.4	83.6	83.3	18	88.7	14	30
Monocrotophos	4	102	101	111	90.9	98.6	101	7.1	106	87.6	80.0	87.8	96.6	91.5	11	96.0	9.8	22
Moxidectin	7	119	100	138	92.6	88.4	108	19	95.0	109	119	147	130	120	17	114	18	39
Myclobutanil	1	91.1	96.3	108	99.2	94.0	97.8	6.7	89.5	107	98.0	97.9	103	99.2	6.8	98.5	6.4	14
Nicosulfuron	4	87.6	80.8	80.1	83.6	97.7	86.0	8.3	89.0	87.7	88.9	86.0	90.8	88.5	2.0	87.2	5.9	13
Nitenpyram	7	97.8	88.1	95.1	94.1	95.6	94.1	3.9	82.3	78.5	84.9	86.2	73.8	81.1	6.2	87.6	9.1	20
Novaluron	4	103	104	103	101	97.8	101	2.3	105	93.0	96.8	93.0	95.2	96.6	5.1	99.0	4.5	10
Omethoate	6	83.9	80.4	88.1	83.8	87.2	84.7	3.7	88.1	79.6	96.4	80.8	91.6	87.3	8.2	86.0	6.2	14
Oxadiazon	3	105	91.9	88.1	99.6	89.1	94.8	7.8	96.2	95.8	92.8	83.0	92.3	92.0	5.8	93.4	6.7	15
Oxadixyl	3	100	103	101	101	103	102	1.4	99.2	94.0	93.6	93.3	87.8	93.6	4.3	97.7	5.3	12
Oxamyl	5	106	96.3	105	97.5	102	101	4.2	78.6	83.0	77.6	75.4	78.6	78.6	3.5	90.0	14	31
Oxasulfuron	4	94.6	95.7	103	93.4	104	98.2	5.1	94.2	90.0	89.8	91.8	93.7	91.9	2.2	95.0	5.2	12
Paclobutrazol	3	100	97.1	104	100	98.2	99.9	2.7	107	102	99.7	97.8	99.4	101	3.6	101	3.1	6.8
Penconazole	3	98.7	106	97.7	93.4	95.3	98.3	5.1	108	91.6	87.9	88.9	90.7	93.4	8.7	95.9	7.2	16
Pencycuron	6	88.8	91.2	96.0	92.7	98.3	93.4	4.1	96.5	93.6	94.2	96.5	95.6	95.3	1.4	94.3	3.0	6.7
Pendimethalin	3	98.3	105	104	96.3	109	103	5.0	94.6	93.6	82.6	83.7	79.3	86.7	8.0	94.7	11	24
Phenmedipham	4	99.6	97.1	96.7	100	93.8	97.5	2.6	93.7	94.2	97.9	90.7	94.5	94.2	2.7	95.8	3.1	6.8
Phenthoate	3	83.9	90.9	86.2	93.9	99.2	90.8	6.7	83.3	91.5	109	83.2	110	95.4	14	93.1	11	24
Phosalone	3	99.1	98.3	110	101	109	104	5.4	85.5	93.1	83.0	84.8	101	89.5	8.5	96.5	10	22
Phosmet	6	100	99.4	101	99.7	110	102	4.5	90.4	95.5	93.4	88.7	91.0	91.8	2.9	96.9	6.6	15
Phosphamidon (E- and Z-isomers)	3	92.6	93.1	92.8	92.2	92.5	92.6	0.4	106	97.4	95.6	94.5	96.6	97.9	4.5	95.3	4.3	9.5
Phoxim	4	104	97.3	109	101	105	103	4.1	85.5	89.7	94.9	96.9	100	93.4	6.2	98.3	7.2	16
Picolinafen	3	107	97.9	106	100	102	103	3.9	100	80.4	85.9	90.0	83.9	88.1	8.7	95.4	10	22
Picoxystrobin	5	103	123	115	112	112	113	6.5	97.2	95.3	90.6	103	98.7	96.9	4.7	105	9.8	22
Pirimicarb	3	95.0	92.1	93.5	83.5	94.6	91.7	5.2	94.8	95.4	99.8	99.6	94.9	96.9	2.6	94.3	4.8	11
Pirimiphos-methyl	3	107	103	99.8	98.6	107	103	3.9	105	93.3	92.5	102	89.8	96.4	6.6	99.8	6.2	14
Prochloraz	1	106	97.8	112	102	99.0	104	5.7	97.6	86.7	87.8	87.7	89.2	89.8	4.9	96.7	9.1	20
Profenofos	3	99.1	92.5	104	94.1	101	98.2	5.0	102	97.4	87.5	90.0	96.6	94.7	6.2	96.5	5.6	13
Promecarb	7	91.4	102	103	101	94.6	98.6	5.3	99.6	96.9	97.8	94.5	90.5	95.8	3.7	97.2	4.6	10
Prometon	4	88.3	100	98.6	94.2	98.3	95.9	5.0	94.8	90.0	93.6	92.6	97.2	93.6	2.8	94.8	4.0	9.0
Propamocarb	5	88.6	87.1	86.8	93.8	85.8	88.4	3.6	95.2	85.8	88.8	85.1	90.6	89.1	4.6	88.8	3.9	8.7
Propaquizafop	4	91.4	99.6	104	99.2	92.3	97.3	5.6	99.1	87.7	95.5	93.9	89.7	93.2	4.9	95.3	5.5	12
Propargite	4	111	108	107	102	106	107	3.2	77.6	74.1	73.1	71.3	70.0	73.2	4.0	89.9	20	44
Propetamphos	3	92.7	101	94.8	95.1	97.1	96.2	3.3	95.3	91.2	89.1	93.1	102	94.1	5.1	95.1	4.2	9.4
Propiconazole (sum of isomers)	2	101	98.0	106	91.9	96.8	98.9	5.4	94.9	87.3	95.0	93.7	93.0	92.8	3.4	95.8	5.5	12
Propoxur	6	101	101	104	101	97.6	101	2.1	104	101	87.3	97.0	91.1	96.1	7.1	98.4	5.5	12
Propyzamide (Pronamide)	3	96.3	105	101	101	96.0	99.8	3.8	101	89.1	97.8	105	94.8	97.6	6.2	98.7	5.0	11

Table 5. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Oesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.02 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.02 mg/kg (Analyst 1)							Fortification level 0.02 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Proquinazid	1	93.7	107	97.7	96.0	93.7	97.6	5.4	71.0	62.9	63.3	64.8	60.6	**64.5**	6.1	81.0	**22**	49
Prosulfocarb	4	97.7	93.8	103	98.0	97.6	97.9	3.2	104	94.2	89.5	98.8	96.9	96.6	5.5	97.3	4.3	9.5
Pymetrozine	7	90.1	84.0	89.9	83.5	94.2	88.3	5.1	81.0	73.8	87.3	82.9	82.1	81.4	6.0	84.9	6.8	15
Pyracarbolid	7	96.8	94.7	103	97.4	94.6	97.3	3.6	96.7	94.5	93.3	94.9	95.3	94.9	1.3	96.1	2.9	6.4
Pyraclostrobin	5	105	98.9	102	94.4	103	101	4.1	89.5	86.3	91.3	83.1	104	90.8	8.8	95.8	8.3	18
Pyridaben	5	115	109	101	106	105	107	4.8	79.9	70.0	71.0	67.6	73.5	72.4	6.5	89.8	**21**	47
Pyridate	5	91.0	99.3	94.1	89.5	93.5	93.5	4.0	60.1	52.9	55.1	53.2	55.6	**55.4**	5.2	74.4	**27**	**61**
Pyrimethanil	6	99.1	90.3	103	96.8	95.9	97.0	4.7	80.2	88.5	82.1	89.9	93.5	86.8	6.4	91.9	7.8	17
Pyriproxyfen	5	112	93.7	96.3	98.8	99.4	100	7.0	95.2	87.1	86.7	92.7	83.2	89.0	5.5	94.5	8.6	19
Quinalphos	3	99.4	97.2	109	100	97.7	101	4.6	103	95.5	91.0	93.5	86.1	93.9	6.7	97.2	6.5	14
Quinmerac	7	53.4	51.0	48.0	53.8	51.3	**51.5**	4.5	37.2	33.3	37.8	39.2	35.1	**36.5**	6.4	**44.0**	19	41
Quinoclamine	4	98.5	94.4	98.6	91.9	98.5	96.4	3.2	92.6	88.8	91.3	88.4	88.8	90.0	2.1	93.2	4.4	9.9
Quinoxyfen	3	97.2	99.8	99.4	97.0	105	99.6	3.1	90.6	87.0	85.7	86.7	90.8	88.2	2.7	93.9	7.0	16
Rimsulfuron	4	82.4	88.2	95.4	92.4	89.4	89.6	5.5	96.1	88.7	80.9	86.8	89.6	88.4	6.2	89.0	5.5	12
Rotenone	7	95.5	94.7	95.6	96.8	98.2	96.2	1.4	102	99.2	96.6	96.6	91.4	97.1	4.0	96.7	2.9	6.4
Secbumeton	7	90.1	99.4	103	95.3	93.5	96.3	5.3	93.6	89.3	94.4	95.6	94.6	93.5	2.6	94.9	4.3	9.6
Silthiofam	4	96.3	110	107	99.1	117	106	8.0	108	106	92.0	106	96.5	102	6.9	104	7.4	16
Spinosad - Spinosyn A	7	97.7	95.4	105	96.8	105	100	4.7	97.5	95.6	96.9	96.7	103	97.9	2.9	98.9	3.8	8.6
Spinosad - Spinosyn D	7	107	113	112	97.9	95.9	105	7.5	103	105	98.3	103	98.0	101	3.1	103	5.8	13
Spirodiclofen	1	111	114	113	106	100	109	5.0	77.3	75.6	77.1	75.0	74.5	75.9	1.6	92.2	19	43
Spiromesifen	6	112	117	114	108	110	112	2.9	73.0	71.4	70.2	70.4	67.9	70.6	2.6	91.5	**24**	54
Spirotetramat	6	109	99.5	123	108	128	113	10	80.1	87.5	97.7	92.6	79.3	87.4	9.1	100	17	37
Spiroxamine (2 diastereoisomers)	1	89.4	92.7	94.9	94.0	97.2	93.6	3.1	105	97.2	96.5	101	94.2	98.8	4.3	96.2	4.5	10
Sulfentrazone	6	106	103	98.9	108	101	103	3.5	89.4	88.2	93.0	86.9	94.1	90.3	3.4	96.9	7.8	17
Tebuconazole	2	95.1	96.3	95.6	95.9	105	97.5	4.2	90.7	94.8	91.7	95.0	92.7	93.0	2.0	95.3	4.0	9.0
Tebufenozide	5	96.6	140	109	112	115	114	14	94.2	87.2	94.3	89.9	91.1	91.3	3.3	103	16	35
Tebufenpyrad	3	95.4	101	100	95.0	98.7	98.0	2.8	94.0	93.3	98.0	91.6	93.7	94.1	2.5	96.1	3.3	7.3
Tebuthiuron	7	96.0	97.7	100	98.9	94.0	97.3	2.5	92.6	92.2	94.7	101	96.1	95.3	3.7	96.3	3.1	7.0
Teflubenzuron	4	96.5	105	117	91.8	107	103	9.5	106	90.9	92.6	83.6	85.6	91.7	9.6	97.6	11	24
Temephos	7	98.8	95.2	107	101	101	101	4.4	96.5	87.9	99.0	89.4	81.2	90.8	7.8	95.7	7.9	18
Tepraloxydim (E- and Z-isomers)	3	97.4	98.4	101	98.5	107	100	3.7	121	107	108	122	122	116	6.5	108	9.2	21
Terbufos	3	100	101	94.2	94.9	87.4	95.5	5.6	94.7	81.1	92.4	87.4	91.3	89.4	6.0	92.4	6.5	14
Tetraconazole	2	101	96.2	102	104	102	101	2.8	106	99.5	96.1	98.8	101	100	3.7	101	3.1	6.9
Thiabendazole	5	95.4	94.5	105	95.0	106	99.3	6.0	84.2	78.5	84.7	90.1	88.2	85.2	5.2	92.2	9.7	22
Thiacloprid	5	96.7	102	98.4	97.5	99.9	98.9	2.1	93.4	92.1	97.3	97.3	93.8	94.8	2.5	96.8	3.1	6.9
Thiamethoxam	5	95.1	87.2	99.5	107	110	99.8	9.2	105	91.8	99.4	110	93.6	100	7.6	99.9	8.0	18
Thidiazuron	7	87.5	88.3	88.8	93.9	101	91.8	6.0	95.9	83.1	86.5	92.7	92.9	90.2	5.8	91.0	5.6	13
Thifensulfuron-methyl	4	80.3	87.7	84.6	82.7	79.3	82.9	4.1	78.7	86.8	90.0	89.4	92.8	87.5	6.1	85.2	5.7	13

Table 5. Trueness (% Recovery), Precision (% RSD), and Measurement Uncertainty (% MU) Data Obtained for Oesticides Included in the Agilent LC/MS Mixes 1–8 in Wheat Flour Matrix at the Fortification Level of 0.02 mg/kg Evaluated in Five Replicates (A–E) by Two Different Analysts on Two Different Days (continued)

		Fortification level 0.02 mg/kg (Analyst 1)							Fortification level 0.02 mg/kg (Analyst 2)							Overall		
		Trueness (%)						RSD	Trueness (%)						RSD	Trueness	RSD	MU
Analyte	Mix	A	B	C	D	E	Mean	(%)	A	B	C	D	E	Mean	(%)	(%)	(%)	(%)
Thiodicarb	5	98.5	92.9	99.6	92.7	104	97.6	5.0	85.3	79.9	83.3	77.9	96.3	84.5	8.5	91.1	9.9	22
Thiofanox	5	99.1	101	84.2	104	113	100	10	82.1	73.3	98.1	90.9	105	89.9	14	95.1	13	29
Tolylfluanid	3	85.3	80.5	83.7	80.4	76.9	81.3	4.0	64.6	70.9	67.7	62.3	66.9	**66.5**	4.9	73.9	11	25
Tralkoxydim	1	99.4	95.9	104	94.4	97.6	98.2	3.8	82.6	75.8	75.3	82.0	87.7	80.7	6.4	89.5	11	25
Triadimefon	3	97.3	93.2	97.1	99.2	95.9	96.5	2.3	100	86.3	104	101	112	101	9.1	98.6	6.8	15
Triadimenol	6	97.1	96.5	95.7	98.7	83.7	94.3	6.4	84.2	110	100	101	89.4	96.8	10	95.6	8.3	19
Triasulfuron	4	97.7	90.5	95.0	108	89.7	96.1	7.6	94.8	88.9	91.3	96.7	94.2	93.2	3.3	94.7	5.8	13
Triazophos	3	108	109	113	97.8	120	109	7.3	106	88.6	95.7	87.0	97.5	95.0	8.1	102	10	23
Tribenuron-methyl	4	86.0	92.7	83.5	90.5	82.2	87.0	5.2	68.0	66.2	66.7	71.0	72.3	68.9	3.9	77.9	13	29
Trichlorfon (Metrifonate)	6	94.2	93.8	93.1	93.7	93.7	93.7	0.4	98.6	90.8	84.3	93.5	85.1	90.4	6.6	92.1	4.7	11
Tricyclazole	2	90.9	90.5	91.7	87.3	91.1	90.3	1.9	89.3	95.1	88.5	87.0	84.3	88.9	4.5	89.6	3.3	7.4
Trietazine	6	94.3	102	109	97.2	102	101	5.5	102	85.8	101	92.6	99.8	96.2	7.1	98.5	6.5	14
Trifloxystrobin	5	95.8	95.2	97.9	91.1	101	96.2	3.8	92.4	92.8	94.4	97.0	95.4	94.4	2.0	95.3	3.0	6.7
Triflumizole	3	94.3	99.8	105	102	103	101	4.2	106	92.7	99.0	99.5	98.4	99.2	4.9	100	4.4	9.8
Triflumuron	4	101	95.5	113	99.0	103	102	6.4	117	105	91.4	98.8	102	103	9.2	102	7.5	17
Trimethacarb	6	95.9	97.2	98.8	95.4	98.1	97.1	1.5	88.4	99.1	96.6	91.5	103	95.6	6.0	96.4	4.1	9.2
Triticonazole	2	101	83.6	109	93.5	99.5	97.4	9.7	91.9	95.5	94.5	95.6	97.8	95.0	2.2	96.2	6.9	15
Uniconazole	2	91.6	96.4	98.0	80.1	87.6	90.8	8.0	107	102	99.7	97.8	99.4	101	3.6	96.0	8.1	18
Vamidothion	2	113	91.6	106	99.6	96.2	101	8.3	90.6	87.7	87.6	89.2	95.3	90.1	3.5	95.7	8.8	20
Zoxamide	6	92.6	93.7	95.7	101	111	98.9	7.8	108	96.6	81.9	82.3	94.7	92.7	12	95.8	10	22

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Printed in the USA
January 9, 2017
5991-7194EN

Agilent Technologies