Application Note

Food and Beverage Testing

Agilent

Trusted Answers

Analysis of 197 Pesticides in Durian by Agilent PAL 3 Autosampler and 7000E Triple Quadrupole GC/MSD

Authors

Yufeng Zhang, Feng Gu, and Lay Peng Tan

Agilent Technologies, Inc.

Abstract

This application note describes a method and presents results for the sensitive and robust quantitation of 197 pesticides in durian with an Agilent 7000E Triple Quadrupole Mass Spectrometer (GC/TQ). The method involves sample extraction with an Agilent Bond Elut QuEChERS EN extraction kit, followed by Agilent Bond Elut QuEChERS Highly Pigmented dispersive SPE kit. Excellent method quantitation results were achieved for 197 pesticides, with 80% to 120% average recovery achieved for all pesticides, and < 10% RSD for all the target pesticides in durian at a spiked concentration of 10 ppb with 10 replicate injections.

Introduction

Pesticide residue analysis in food products is critical to ensuring consumer safety and regulatory compliance. Durian (*Durio zibethinus*), known as the "king of fruits" and widely exported across Southeast Asia, China, and beyond, presents unique analytical challenges due to its sulfur-rich compounds, high fat content, and complex volatile matrix. Comprehensive pesticide analysis in such matrices demands highly sensitive, selective, and robust analytical solutions.

The European Union Reference Laboratories (EURL) SANTE/11312/2021 guidelines set rigorous performance criteria for pesticide residue analysis, including strict requirements for method accuracy, precision, and sensitivity.[1] Laboratories need to achieve recoveries between 70% to 120%, precision (RSD) below 20%, and quantification limits at or below regulatory maximum residue limits (MRLs), even in complex food matrices such as durian.

This application note demonstrates a high-performance workflow for the analysis of 197 pesticides in durian using an Agilent PAL3 Autosampler combined with an Agilent 7000E Triple Quadrupole GC/MSD system. The PAL3 Autosampler provides high-throughput, precise sample handling, while the 7000E GC/MSD offers exceptional sensitivity and reproducibility for trace-level pesticide quantification. Optimized sample preparation and instrumental conditions ensure reliable performance, meeting and exceeding SANTE criteria for method validation.

Experimental

Reagents and Samples

- Internal standard Chlorpyrifos-(diethyl-d_{10}) was purchased from Sigma-Aldrich
- 197 pesticides standard was obtained from Agilent
- Durian was purchased from a local market

Sample preparation

For this analysis, both the fresh durian pulp and its shell were included as part of the sample matrix to ensure comprehensive pesticide residue testing.

A representative portion of fresh durian and its shell was collected at a 1:1 weight ratio, ensuring that both components were adequately represented in the analysis. The durian pulp was carefully separated from the seed and the shell. Both the pulp and shell were then cut into smaller pieces to facilitate effective extraction during analysis. The pieces were blended to ensure uniformity and maximize surface area exposure for the subsequent extraction process.

The prepared samples were homogenized to obtain a uniform mixture, which was essential for achieving accurate and reproducible pesticide residue extraction. This approach allowed for a thorough analysis of pesticide residues in both the edible pulp and the outer shell of the durian, a critical consideration due to the potential pesticide exposure on different parts of the fruit. Sample preparation was performed according to the standard EN procedure, using the Agilent Bond Elut QuEChERS EN extraction followed by cleanup with the Agilent Bond Elut QuEChERS Highly Pigmented dispersive SPE kit. The final extract was reconstituted in acetone/hexane (1:1, v/v) and filtered through a 0.22 µm nylon membrane filter.

Matrix-optimized MRMs

Matrix effects are a well-known challenge in pesticide analysis using multiple reaction monitoring (MRM) acquisition methods. The selectivity of specific MRMs can vary depending on the sample matrix, potentially impacting accuracy and reproducibility. Having access to multiple MRM transitions per compound allows analysts to select the most appropriate ones for each matrix, improving quantitation, method development efficiency, and overall lab productivity. The Agilent G9250AA Rev. A.04.02 Pesticides and Environmental Pollutants (P&EP) MRM Database is the most comprehensive GC MRM database available, featuring over 1,100 compounds and up to 10 MRMs per compound.[2] This extensive resource enables the selection of matrix-optimized MRMs for reliable and robust target compound analysis in durian.

Matrix-matched calibration

Calibration performance was evaluated using a series of matrix-matched calibration standards, ranging from 3 to 100 ppb, including 3, 5, 10, 25, 40, 50, 60, 75, 90, and 100 ppb. Chlorpyrifos-(diethyl-d_{10}) was used as the internal standard for quantification of the target pesticides with a final concentration of 50 ppb in the injected sample.

PAL 3 RTC and 7000E GC/TQ parameters

The analysis parameters are shown in Table 1. The target and ISTD compound MRM parameters are listed in Appendix 1. Figure 1 shows a typical MRM chromatogram of targeted pesticides spiked in durian at a concentration of 100 ppb.

Table 1. Agilent PAL 3 autosampler and GC/TQ parameters for pesticide analysis.

Agilent PAL 3 (Liquid Tool)	
Syringe Type	10 µL (p/n 8010-1307)
Injection Volume	2 µL
Gas Chromatography	
Model	Agilent 8890 GC
GC Column	Agilent HP-5Q, two 15 m × 0.25 mm, 0.25 µm column (p/n 19091S-431Q)
Column Pneumatics	Constant flow
Carrier Gas	Helium
Injector Mode	Cold splitless
Purge Flow to Split Vent	50 mL/min at 1.5 min
Inlet Temperature	60 °C for 0.1 min, then to 280 °C at 900 °C/min
Injector Liner	Agilent Ultra Inert fritted splitless liner (p/n 5190-5112)
Flow Rate	Column 1: 1.28 mL/min Column 2: 1.54 mL/min
Oven Temperature Program	60 °C for 1 min, 40 °C/min to 170 °C, 10 °C/min to 310 °C, hold 3.0 min
Equilibration Time	3 min
Mass Spectrometer	
Model	Agilent 7000E
Acquisition Mode	dMRM
Gain	10
He Quench Gas	2.25 mL/min
N_2 Collision Gas	1.5 mL/min
Transfer Line Temperature	280 °C
Ion Source Temperature	280 °C
Quad Temperature	150 °C

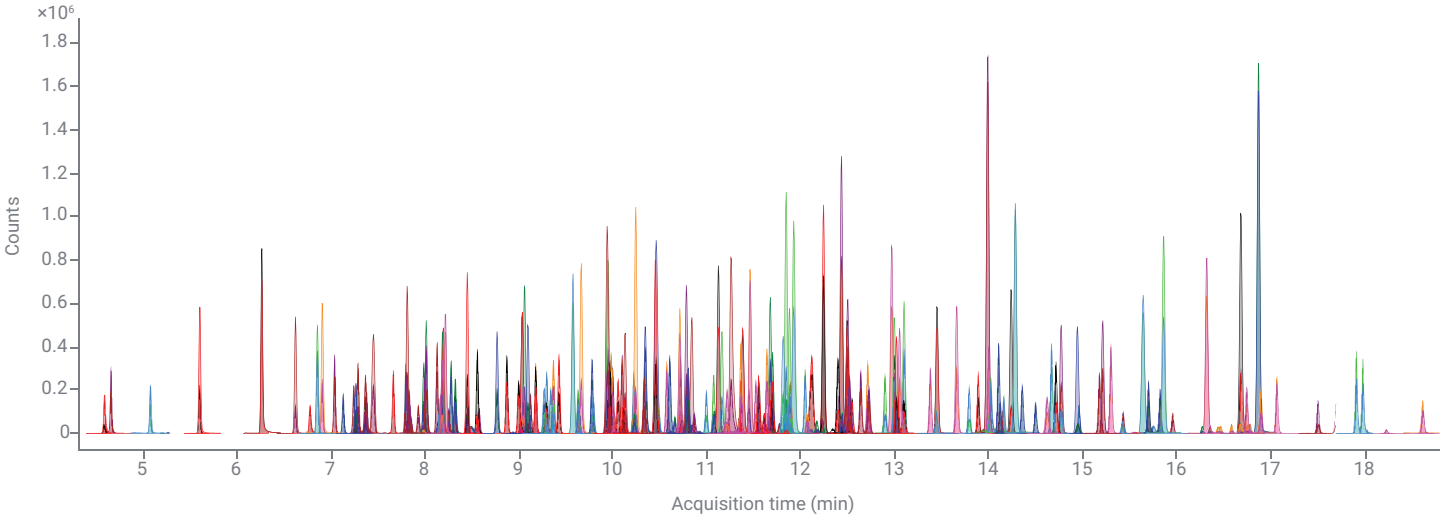


Figure 1. MRM chromatogram of 197 pesticides spiked at 100 ppb in durian.

Results and discussion

Following matrix-matched linearity with an R^2 > 0.995 over a calibration range of 3 to 100 ppb for all target pesticides (three replicate injections at each concentration). The calibration curves are shown in Appendix 2.

A post-spiked concentration of 10 ppb in durian was analyzed to evaluate the accuracy of the calibration curve and analysis precision (n = 10). Quantitation by matrix-matched calibration determined that 100% of the pesticides had analysis accuracy between 80% and 120% at 10 ppb in durian (Figure 2). Excellent RSDs < 10% were observed for all the pesticides (Figure 3).

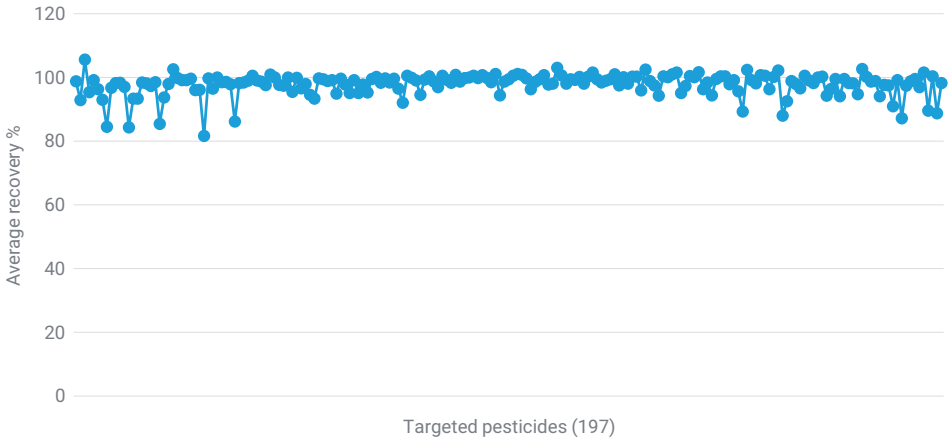


Figure 2. Accuracy (%) of 10 ppb post-spiked pesticides in durian.

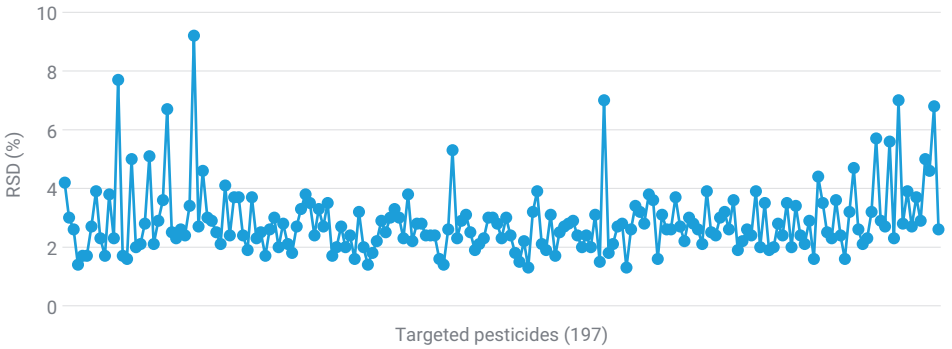


Figure 3. %RSD of 10 ppb post-spiked pesticides in durian.

Conclusion

This study successfully demonstrated a robust and sensitive method for the quantitative analysis of 197 pesticides in durian using an Agilent PAL3 Autosampler combined with an Agilent 7000E Triple Quadrupole GC/MSD system. The optimized workflow, including sample extraction with an Agilent Bond Elut QuEChERS EN kit followed by cleanup with the Highly Pigmented dSPE kit, provided excellent recovery and precision. All target pesticides showed analysis accuracy between 80% and 120% and RSD values below 10% at a spiked level of 10 ppb.

The results confirm the method's suitability for routine high-throughput pesticide quantification in complex matrices such as durian. The use of matrix-matched calibration and matrix-optimized MRMs further ensured accurate and reproducible quantitation, reinforcing the method's applicability for regulatory and food safety testing.

Appendix 1

GC/TQ MRM parameters of target and ISTD compounds and calibration performance

Name	RT (min)	Quantifier		Qualifier		CF R^2
		Transition	CE (ev)	Transition	CE (ev)	
Methamidophos	4.582	141.0 → 95.0	5	141.0 → 64.0	25	0.999
Dichlorvos	4.652	109.0 → 79.0	5	184.9 → 93.0	10	1.000
Disulfoton-sulfoxide	5.069	96.9 → 64.9	20	125.0 → 96.9	5	0.995
Mevinphos, E-	5.592	127.0 → 109.0	10	127.0 → 94.9	15	1.000
2-Phenylphenol	6.253	169.1 → 115.1	30	169.1 → 141.1	15	1.000
Heptenophos	6.613	124.0 → 89.0	10	124.0 → 63.0	35	1.000
Omethoate	6.773	156.0 → 79.0	25	156.0 → 110.0	10	0.998
Propoxur	6.849	110.0 → 63.0	25	110.0 → 64.0	15	0.996
Propachlor	6.897	120.0 → 77.1	20	176.1 → 57.1	5	1.000
Ethoprophos	7.030	157.9 → 97.0	15	157.9 → 114.0	5	1.000
Chlorpropham	7.123	213.0 → 171.1	5	213.0 → 127.1	10	0.999
Chlordimeform	7.232	151.9 → 117.1	10	117.0 → 89.0	30	1.000
Trifluralin	7.257	264.0 → 206.0	5	306.1 → 264.0	5	0.999
Dicrotofos	7.278	127.0 → 109.0	15	193.0 → 127.1	5	0.999
Monocrotophos	7.283	127.1 → 109.0	10	127.1 → 95.0	15	0.999
Dioxabenzofos	7.369	215.9 → 201.0	10	215.9 → 138.0	10	0.999
Cadusafos	7.444	158.8 → 97.0	15	157.9 → 96.9	15	1.000
BHC-alpha (benzene hexachloride)	7.654	216.9 → 181.0	5	218.9 → 183.0	5	0.999
Hexachlorobenzene	7.787	283.8 → 213.9	30	283.8 → 248.8	15	1.000
Trimethacarb, 3,4,5-	7.802	136.0 → 121.1	10	136.0 → 77.1	30	0.998
Dimethoate	7.821	87.0 → 46.0	20	125.0 → 47.0	15	1.000
Prometon	7.823	210.0 → 168.1	5	224.9 → 58.1	15	0.999
Dichloran	7.823	206.1 → 176.0	10	160.1 → 124.1	10	0.998
Simazine	7.846	201.1 → 173.1	5	201.1 → 186.2	5	0.999
Atrazine	7.918	214.9 → 200.2	5	200.0 → 122.1	5	0.999
Propazine	7.981	214.2 → 172.2	10	229.1 → 58.1	10	0.999
Terbumeton	8.005	169.0 → 154.1	5	225.1 → 169.2	0	0.999
Clomazone	8.006	125.0 → 89.0	15	204.1 → 107.1	20	1.000
Propetamphos	8.118	138.0 → 110.0	10	138.0 → 64.0	15	0.999
Profluralin	8.131	318.1 → 55.1	15	318.1 → 199.1	15	0.998
Terbuthylazine	8.156	228.9 → 173.1	5	172.9 → 138.1	5	1.000
BHC-gamma (Lindane, gamma HCH)	8.167	218.9 → 183.1	5	216.9 → 181.0	5	0.999
Trietazine	8.172	229.1 → 200.0	10	229.1 → 186.1	10	0.999
Terbufos	8.178	230.9 → 129.0	20	230.9 → 185.0	5	0.999
Cyanophos	8.189	242.9 → 109.0	10	124.9 → 79.0	5	0.999
Propyzamide	8.208	173.1 → 109.0	30	173.0 → 74.0	45	1.000
Pentachloronitrobenzene	8.244	248.8 → 213.8	15	294.8 → 236.8	15	0.999
Fonofos	8.273	246.1 → 109.0	15	246.1 → 137.0	5	0.999
Diazinon	8.310	137.1 → 84.0	10	199.1 → 93.0	15	0.999
Pyrimethanil	8.314	198.0 → 118.1	35	198.0 → 158.1	20	1.000
Tefluthrin	8.444	177.1 → 127.1	15	177.1 → 87.0	30	0.999
Disulfoton	8.450	142.0 → 80.9	15	186.0 → 97.0	15	1.000

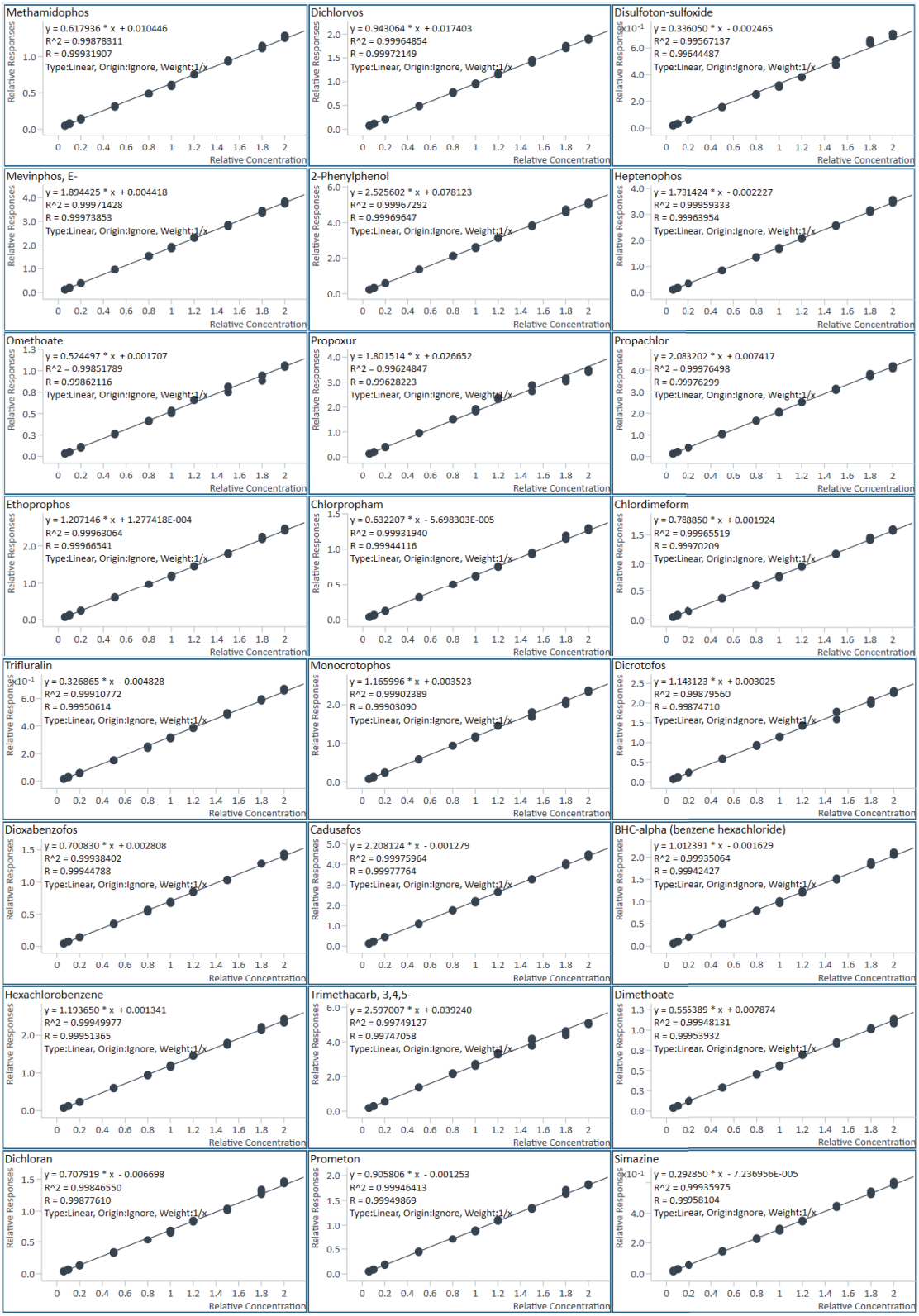
Name	RT (min)	Quantifier		Qualifier		CF R^2
		Transition	CE (ev)	Transition	CE (ev)	
Secbumeton	8.476	196.0 → 85.0	10	196.0 → 94.0	20	0.999
Isazofos	8.551	161.0 → 119.1	5	256.9 → 162.0	5	0.999
Etrimfos	8.568	292.1 → 181.1	5	292.1 → 153.1	25	0.999
Pirimicarb	8.761	238.0 → 166.2	10	166.0 → 96.0	15	0.999
Fenchlorphos oxon	8.865	268.9 → 254.0	15	270.9 → 256.0	15	0.999
Propanil	8.991	161.0 → 99.0	30	217.0 → 160.9	10	0.999
Dimethachlor	9.030	196.9 → 148.2	10	134.1 → 105.1	10	0.999
Metribuzin	9.041	198.0 → 82.0	15	198.0 → 55.0	30	0.999
Dimethenamid	9.051	230.0 → 154.1	10	232.0 → 154.1	10	0.999
Prothoate	9.088	115.0 → 73.0	5	115.0 → 46.0	20	1.000
Acetochlor	9.118	222.9 → 132.2	20	174.0 → 146.1	10	0.999
Parathion-methyl	9.172	125.0 → 47.0	10	262.9 → 109.0	10	0.999
Chlorpyrifos-methyl	9.172	124.9 → 47.0	15	285.9 → 93.0	25	0.999
Tolclofos-methyl	9.258	267.0 → 252.0	15	267.0 → 93.0	30	0.999
Ametryn	9.283	227.0 → 58.1	10	227.0 → 170.1	10	1.000
Alachlor	9.289	188.1 → 160.1	10	188.1 → 132.1	20	1.000
Prometryn	9.334	226.0 → 184.2	10	241.0 → 184.2	10	0.999
Heptachlor	9.359	271.7 → 236.9	15	273.7 → 238.9	15	0.999
Metalaxyl	9.366	234.0 → 146.1	20	248.8 → 190.1	5	1.000
Ronnel	9.420	285.0 → 269.9	15	285.0 → 93.0	25	0.999
Dicofol, o, p'-	9.570	139.0 → 111.0	10	139.0 → 75.0	30	1.000
Pirimiphos-methyl	9.623	290.0 → 125.0	20	304.9 → 180.0	5	1.000
Fenitrothion	9.629	277.0 → 260.1	5	277.0 → 109.0	15	0.997
Pentanochlor	9.659	141.0 → 106.1	15	143.0 → 106.1	15	1.000
Malathion	9.771	172.9 → 99.0	15	157.8 → 125.0	5	1.000
Pentachlorothioanisole	9.784	295.8 → 262.8	15	295.8 → 245.8	40	0.999
Chlorpyrifos-(diethyl-d10) (ISTD)	9.920	324.0 → 260.0	15	199.9 → 172.0	15	
Metolachlor	9.933	238.0 → 162.2	10	238.0 → 133.2	30	0.999
Fenpropimorph	9.940	128.1 → 70.1	10	128.1 → 110.1	5	1.000
Fenthion	9.960	278.0 → 109.0	15	278.0 → 169.0	15	0.999
Aldrin	9.966	262.9 → 192.9	35	264.9 → 192.9	35	0.999
Dimethylvinphos	9.976	294.9 → 108.9	15	296.9 → 108.9	15	0.999
Chlorpyrifos	9.990	196.9 → 169.0	15	313.8 → 257.8	15	0.999
Parathion	10.010	291.0 → 109.0	15	291.0 → 81.0	35	0.998
Triadimefon	10.046	208.0 → 181.1	5	208.0 → 111.0	20	0.999
DCPA (Dacthal, Chlorthal-dimethyl)	10.094	298.9 → 221.0	25	300.9 → 223.0	25	1.000
Tetraconazole	10.110	336.0 → 217.9	20	336.0 → 203.8	30	0.999
Isocarbophos	10.120	135.9 → 108.0	15	135.9 → 69.0	30	0.999
Crufomate	10.220	256.0 → 226.0	25	275.9 → 182.1	5	0.999
Isobenzan	10.225	274.7 → 240.0	15	310.7 → 274.8	5	0.999
Fenson	10.238	141.0 → 77.1	5	267.9 → 141.1	5	1.000
Bromophos	10.323	330.9 → 315.9	20	330.9 → 93.0	30	0.999
Pirimiphos-ethyl	10.330	318.1 → 166.1	10	318.1 → 182.0	10	0.999
4,5,6,7-Tetrachloro phthalide	10.338	242.9 → 214.9	20	240.8 → 212.8	20	1.000
Isofenphos-methyl	10.445	199.0 → 121.0	15	199.0 → 65.0	40	1.000
Cyprodinil	10.456	225.2 → 224.3	10	224.2 → 208.2	20	0.999
Isodrin	10.486	193.0 → 123.0	30	193.0 → 157.0	20	0.999

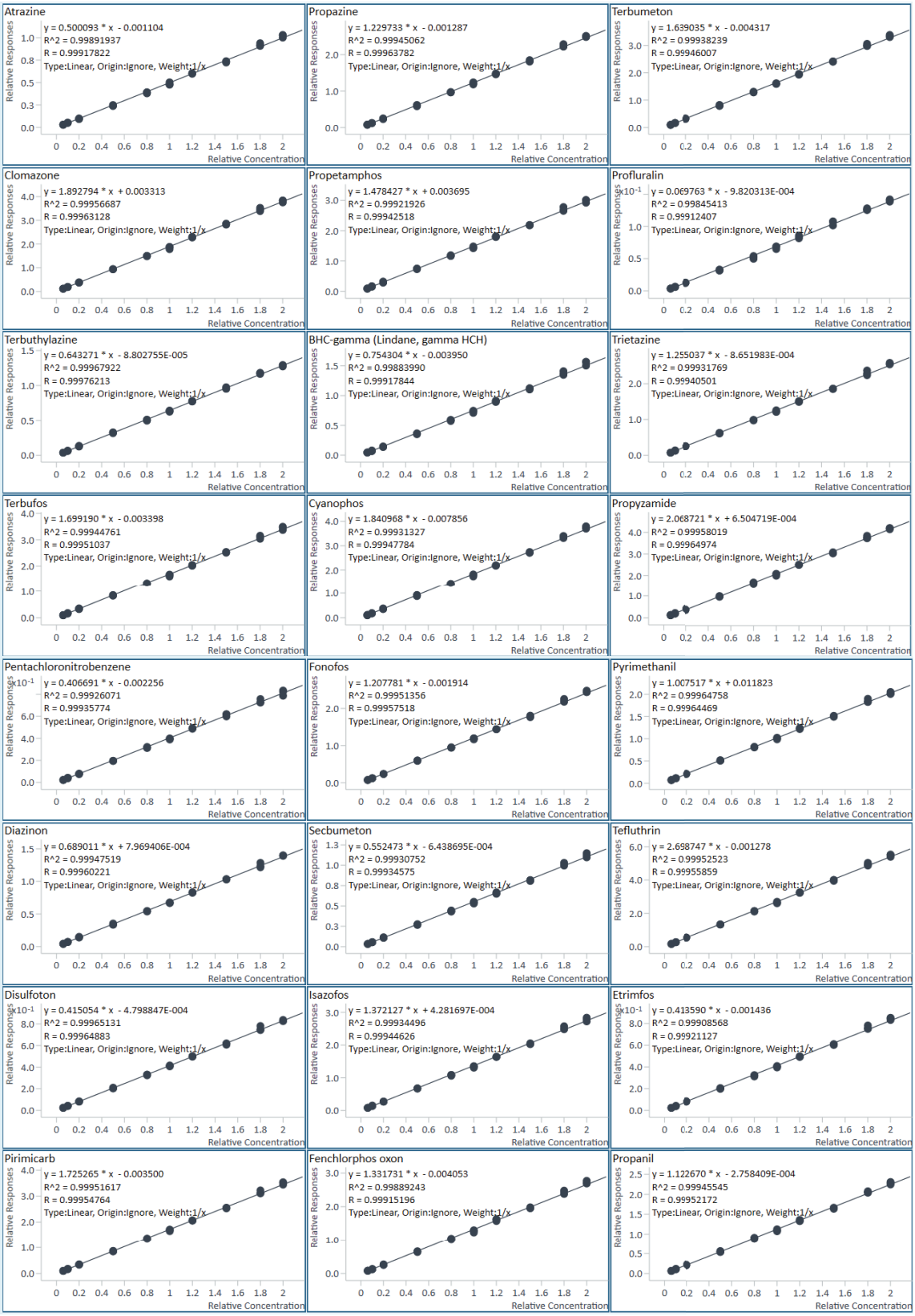
Name	RT (min)	Quantifier		Qualifier		CF R^2
		Transition	CE (ev)	Transition	CE (ev)	
Metazachlor	10.568	209.0 → 132.2	15	209.0 → 133.2	10	0.999
Penconazole	10.600	248.0 → 157.1	25	248.0 → 192.1	15	0.999
Heptachlor exo-epoxide	10.655	352.8 → 262.9	15	354.8 → 264.9	15	0.999
Isofenphos	10.708	212.9 → 121.1	10	212.9 → 185.1	5	0.999
Bromfenvinfos	10.712	266.9 → 159.1	15	322.8 → 266.9	10	0.999
Chlorfenvinphos	10.712	266.9 → 159.0	20	266.9 → 203.0	10	0.999
Heptachlor endo-epoxide	10.732	135.0 → 99.0	15	183.0 → 119.0	30	0.999
Quinalphos	10.777	146.0 → 118.0	10	157.0 → 129.1	15	1.000
Phenthoate	10.779	274.0 → 121.0	10	274.0 → 125.0	15	0.999
Triadimenol	10.793	168.0 → 70.0	10	128.0 → 65.0	25	0.999
Furalaxyl	10.831	242.0 → 95.0	15	152.0 → 59.0	10	0.999
Haloxyfop-methyl	10.991	375.1 → 316.0	10	288.0 → 180.0	25	0.999
Bromophos-ethyl	11.065	358.7 → 302.8	15	358.7 → 330.8	5	0.999
Chlordane-*trans*	11.072	271.7 → 236.9	15	374.8 → 265.8	15	0.999
DDE-o,p'	11.118	246.0 → 176.2	30	248.0 → 176.2	30	1.000
Paclobutrazol	11.152	236.0 → 125.1	10	236.0 → 167.1	10	0.999
Tetrachlorvinphos	11.211	329.0 → 108.9	25	329.0 → 78.9	40	0.999
Mepanipyrim	11.252	223.2 → 222.2	10	222.2 → 207.2	15	0.999
Chlordane-*cis*	11.341	271.8 → 236.9	15	372.8 → 300.9	10	0.999
Picoxystrobin	11.354	145.0 → 102.1	25	145.0 → 117.1	10	1.000
Flutriafol	11.376	219.1 → 123.1	15	123.1 → 75.1	25	0.999
Fenamiphos	11.442	217.0 → 202.1	10	302.9 → 153.9	15	0.999
Flutolanil	11.452	280.9 → 173.0	10	173.0 → 95.0	30	0.999
Iodofenphos	11.518	376.8 → 361.8	15	376.8 → 92.9	30	0.999
Prothiofos	11.547	308.9 → 238.9	15	266.9 → 221.0	20	0.999
Isoprothiolane	11.550	162.1 → 85.0	20	231.0 → 189.1	10	0.999
Profenofos	11.602	338.8 → 268.7	15	207.9 → 63.0	30	0.999
Pretilachlor	11.635	162.1 → 132.2	20	262.0 → 202.2	5	0.999
DDE-p,p'	11.672	246.1 → 176.2	30	315.8 → 246.0	15	1.000
Uniconazole	11.690	234.1 → 165.1	10	234.1 → 137.0	15	0.999
Oxadiazon	11.697	174.9 → 112.0	15	257.8 → 175.1	5	1.000
Dieldrin	11.767	262.9 → 193.0	35	277.0 → 241.0	5	0.999
Myclobutanil	11.809	179.0 → 125.1	10	179.0 → 90.0	30	0.999
Buprofezin	11.832	104.0 → 77.0	10	249.1 → 193.0	10	0.999
DDD-o,p'	11.836	235.0 → 165.1	25	235.0 → 200.1	10	1.000
Kresoxim-methyl	11.872	116.0 → 89.0	15	206.0 → 116.0	5	1.000
Bupirimate	11.885	272.9 → 193.1	5	272.9 → 108.0	15	0.999
Triclopyr-2-butoxyethyl ester	11.887	209.9 → 146.0	15	254.9 → 181.9	5	0.999
Azaconazole	11.921	217.0 → 173.1	15	219.0 → 175.0	15	0.999
Fluazifop-p-butyl	12.042	281.9 → 238.0	15	281.9 → 91.0	15	0.999
Nitrofen	12.062	202.0 → 139.1	20	282.9 → 202.0	10	0.998
Chlorfenapyr	12.103	328.0 → 247.0	20	247.1 → 227.1	20	0.999
Cyproconazole	12.113	138.9 → 111.0	15	222.0 → 124.9	25	1.000
Endrin	12.167	262.8 → 193.0	35	262.8 → 227.9	20	0.999
Carbophenothion-Methyl	12.231	125.0 → 47.0	15	314.0 → 156.9	5	0.999
Chlorobenzilate	12.239	251.1 → 139.1	15	251.1 → 111.1	35	0.999
Diniconazole	12.390	267.9 → 232.1	10	269.9 → 232.0	10	0.999

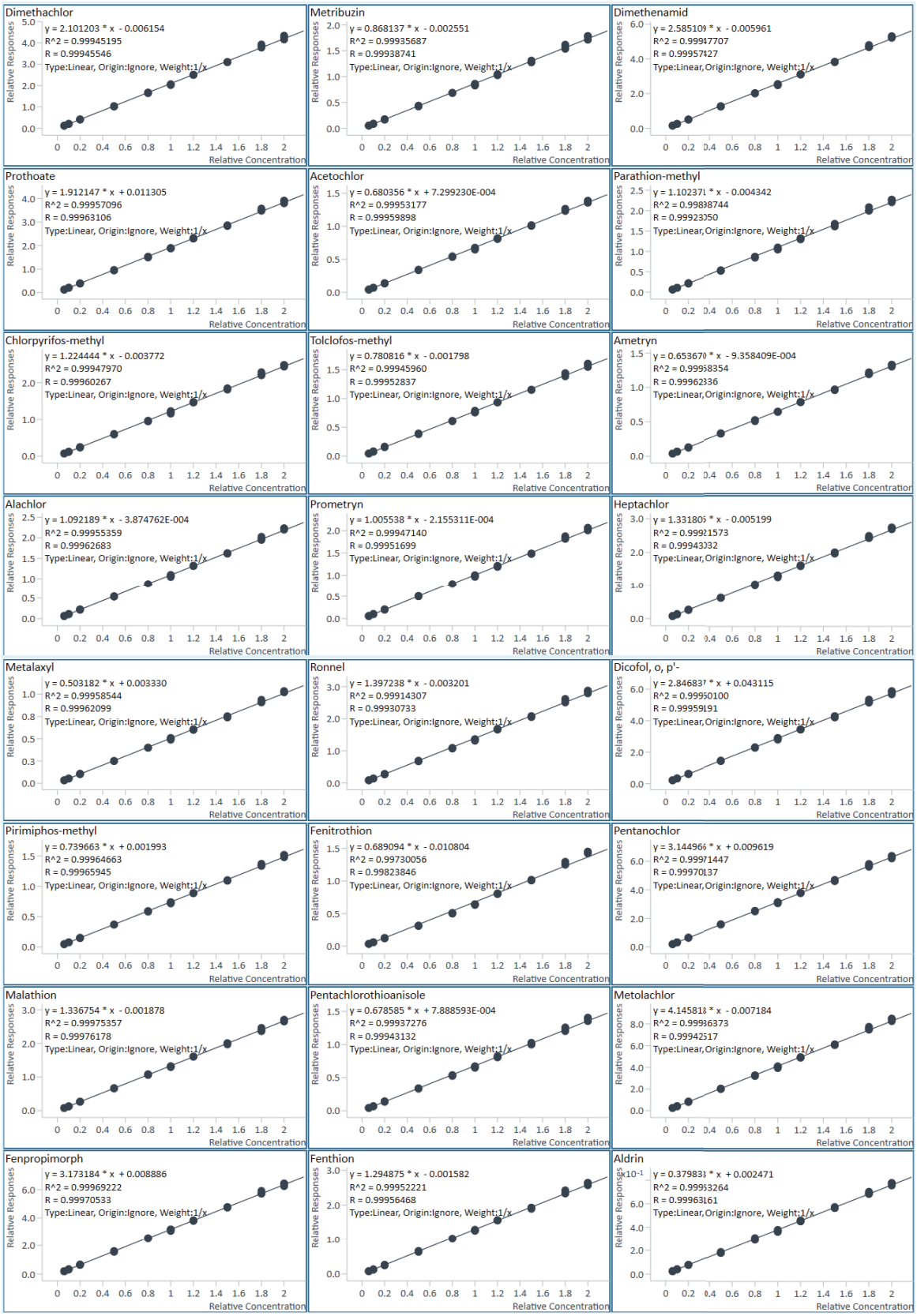
Name	RT (min)	Quantifier		Qualifier		CF R^2
		Transition	CE (ev)	Transition	CE (ev)	
DDD-p,p'	12.431	237.0 → 165.1	25	237.0 → 200.1	15	0.999
DDT-o,p'	12.431	235.0 → 165.2	20	237.0 → 165.2	20	0.999
Fenthion sulfone	12.433	124.9 → 47.0	10	309.9 → 105.0	10	0.999
Ethion	12.488	230.9 → 175.0	10	152.9 → 96.9	10	0.999
Oxadixyl	12.515	163.0 → 132.1	5	232.9 → 146.1	10	0.999
Chlorthiophos	12.539	324.8 → 268.9	10	268.9 → 205.1	15	0.999
Tetrasul	12.636	321.7 → 252.0	15	323.9 → 253.9	15	0.999
Sulprofos	12.707	140.0 → 125.1	15	321.9 → 155.9	10	1.000
Triazophos	12.723	161.2 → 134.2	5	257.0 → 162.1	5	0.999
Carbophenothion	12.891	153.0 → 96.9	10	342.0 → 157.0	10	0.999
Cyanofenphos	12.962	169.0 → 141.1	5	169.0 → 77.1	25	0.999
Quinoxyfen	12.989	237.0 → 208.1	30	306.8 → 237.0	20	1.000
Edifenphos	12.999	309.9 → 172.9	10	309.9 → 108.9	25	0.996
Trifloxystrobin	13.015	116.0 → 89.0	15	116.0 → 63.0	30	1.000
Lenacil	13.047	153.1 → 136.1	15	153.1 → 110.1	20	1.000
Endosulfan sulfate	13.090	271.9 → 237.0	20	273.8 → 238.9	15	0.998
DDT-p,p'	13.097	235.0 → 165.2	20	237.0 → 165.2	20	0.999
Diflufenican	13.373	393.9 → 265.9	10	266.0 → 246.1	15	0.999
Piperonyl butoxide	13.445	176.1 → 103.1	25	176.1 → 131.1	15	1.000
Epoxiconazole	13.654	192.0 → 138.1	10	192.0 → 111.0	25	0.999
Spiromesifen	13.789	272.0 → 254.2	5	272.0 → 209.2	10	0.999
Pyridaphenthion	13.881	340.0 → 199.0	5	204.0 → 203.1	5	0.998
Endrin ketone	13.943	316.9 → 101.0	15	316.9 → 245.0	20	0.999
Bifenthrin	13.990	181.2 → 165.2	25	181.2 → 166.2	10	1.000
Bromopropylate	13.992	340.8 → 182.9	20	340.8 → 184.9	20	0.999
EPN	14.018	169.0 → 77.1	25	141.0 → 77.1	15	0.995
Methoxychlor, p,p'-	14.101	227.0 → 169.1	25	227.0 → 141.1	40	0.999
Fenpropathrin	14.117	264.9 → 210.0	10	207.9 → 181.0	5	0.999
Etoxazole	14.154	141.0 → 63.1	30	141.0 → 113.0	15	1.000
Dicofol, p, p'-	14.155	141.0 → 63.0	32	141.0 → 113.0	15	1.000
Fenamidone	14.234	238.0 → 237.2	10	268.0 → 77.1	35	0.999
Fenazaquin	14.280	160.0 → 145.2	5	145.0 → 117.1	10	0.999
Anilofos	14.352	225.9 → 157.0	10	225.9 → 184.0	5	0.999
Tetradifon	14.498	226.9 → 199.0	15	158.9 → 111.0	20	0.999
Triticonazole	14.620	234.8 → 217.1	5	234.8 → 182.1	10	0.999
Phosalone	14.666	182.0 → 111.0	15	182.0 → 75.0	35	0.999
Leptophos	14.713	171.0 → 77.1	15	376.8 → 361.8	20	0.999
Cyhalothrin (Lambda)	14.767	208.1 → 181.1	10	181.1 → 152.1	30	0.999
Cyhalofop-butyl	14.770	256.2 → 120.1	10	357.1 → 256.1	10	0.999
Mirex	14.943	271.8 → 236.8	20	236.9 → 142.9	30	0.999
Fenarimol	15.176	139.0 → 75.0	30	251.0 → 139.1	10	1.000
Pyrazophos	15.213	221.0 → 193.1	10	232.0 → 204.1	10	0.999
Azinphos-ethyl	15.297	160.0 → 132.1	0	160.0 → 77.1	20	0.998
Metrafenone	15.417	394.8 → 364.8	15	376.9 → 346.8	20	0.999
Isopyrazam	15.427	159.0 → 139.0	10	359.0 → 303.1	5	0.999
Bitertanol I	15.643	170.1 → 141.1	20	170.1 → 115.0	40	0.999
Permethrin, (1R)-*cis*-	15.696	183.1 → 168.1	10	183.1 → 153.1	15	0.999

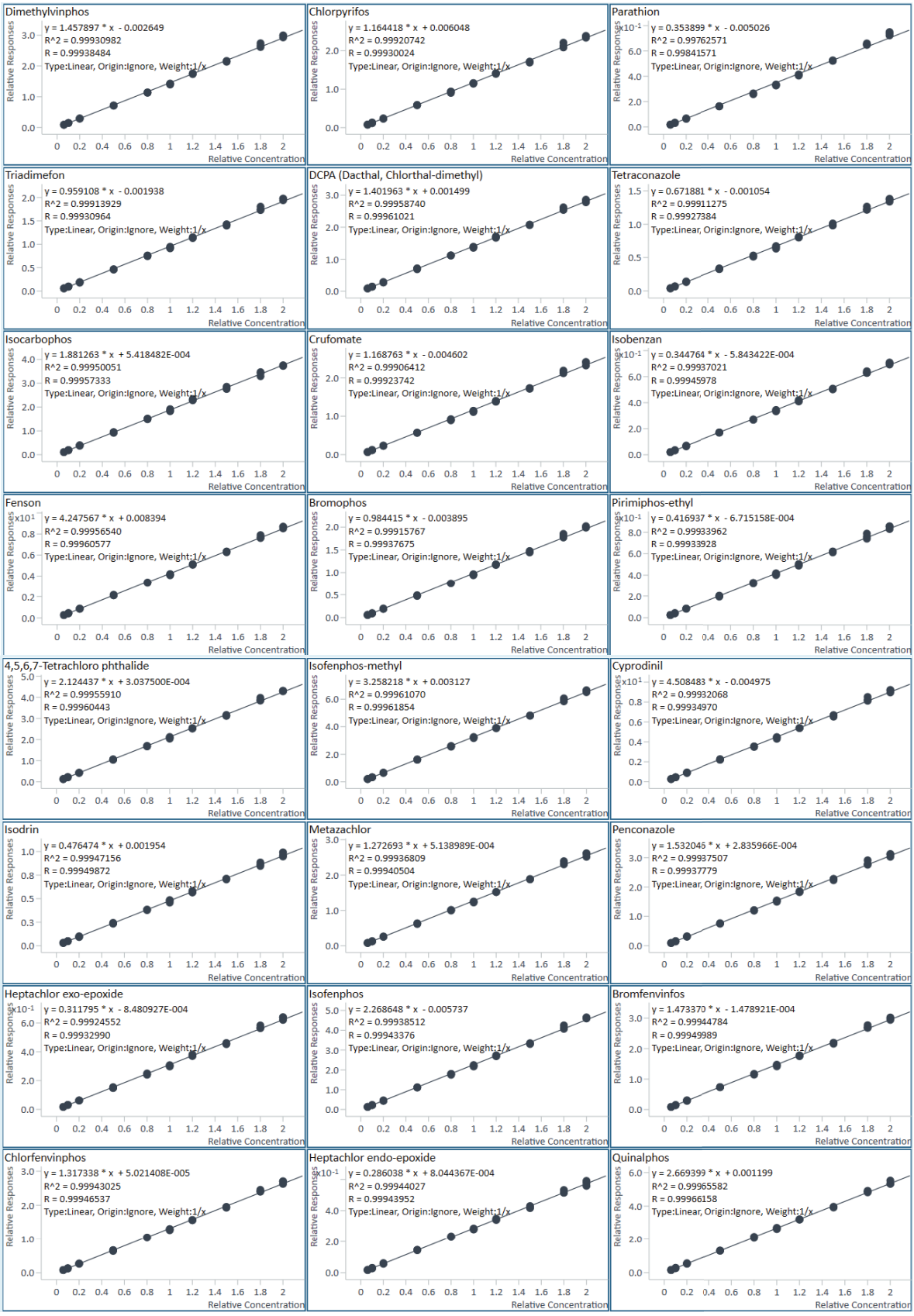
Name	RT (min)	Quantifier		Qualifier		CF R^2
		Transition	CE (ev)	Transition	CE (ev)	
Permethrin, (1R)-*trans*-	15.820	183.1 → 168.1	10	163.0 → 127.0	5	0.997
Pyridaben	15.862	147.2 → 117.1	20	147.2 → 132.2	10	1.000
Coumaphos	15.958	361.9 → 109.0	15	225.9 → 163.1	15	0.999
Cyfluthrin I	16.268	162.9 → 127.0	5	198.9 → 170.1	25	0.999
Fenbuconazole	16.322	197.9 → 129.0	5	128.9 → 102.1	15	0.999
Cypermethrin I	16.578	163.0 → 127.0	5	164.9 → 127.0	5	0.999
Boscalid	16.681	140.0 → 112.0	10	341.9 → 139.9	15	1.000
Quizalofop-ethyl	16.743	371.8 → 298.9	10	163.0 → 100.0	20	0.999
Ethofenprox	16.869	163.0 → 107.1	20	163.0 → 135.1	10	1.000
Pyridalyl	16.895	204.0 → 148.0	25	204.0 → 176.0	10	0.999
Bixafen	17.062	413.0 → 159.0	12	159.0 → 139.0	15	0.999
Fenvalerate I	17.500	167.0 → 125.1	5	224.9 → 119.0	15	0.999
Difenoconazole I	17.910	322.8 → 264.8	15	324.8 → 266.8	15	0.999
Deltamethrin	18.229	250.7 → 172.0	5	252.9 → 174.0	5	0.997
Tolfenpyrad	18.619	197.2 → 91.1	20	383.0 → 171.0	25	0.999

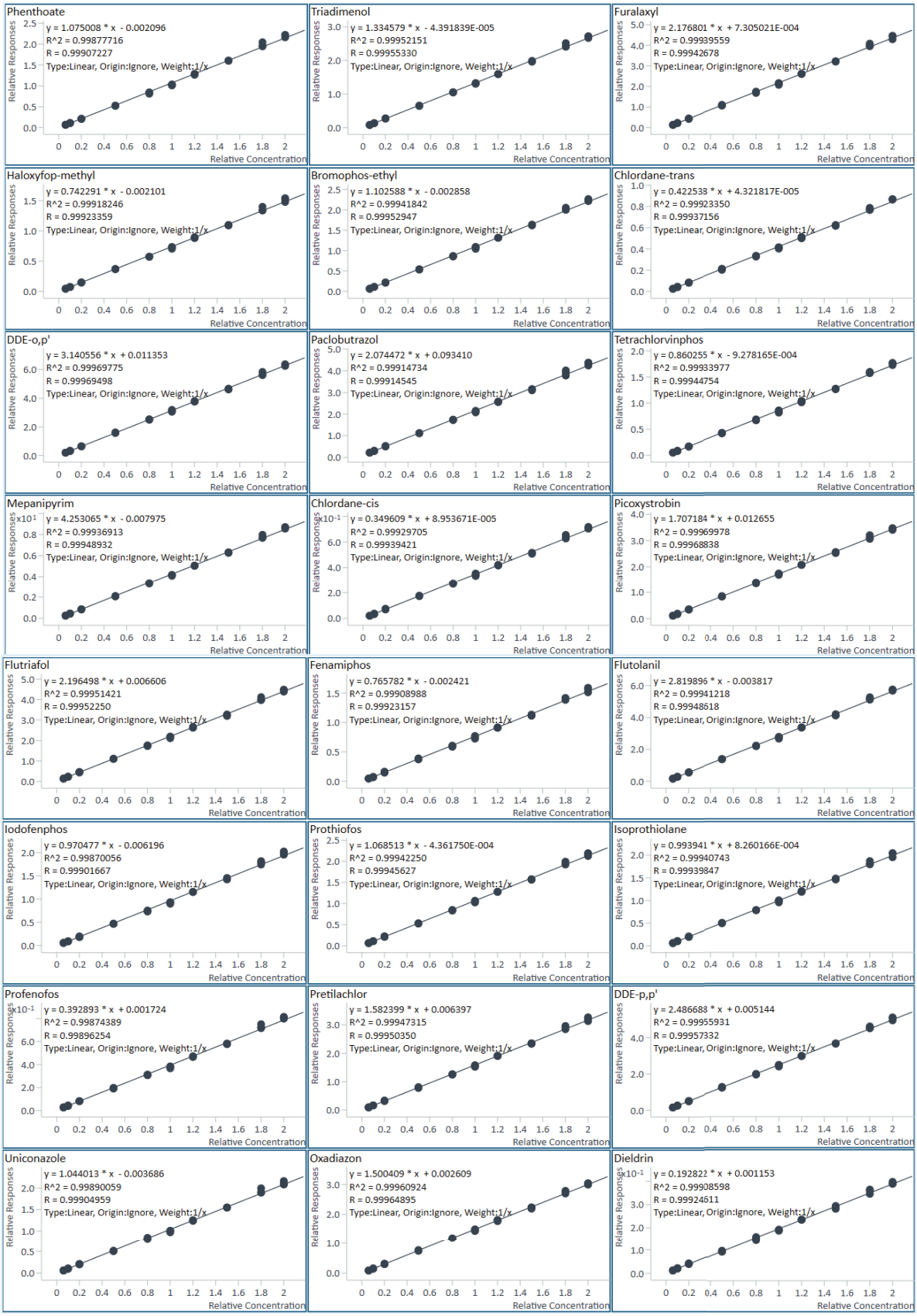
Appendix 2

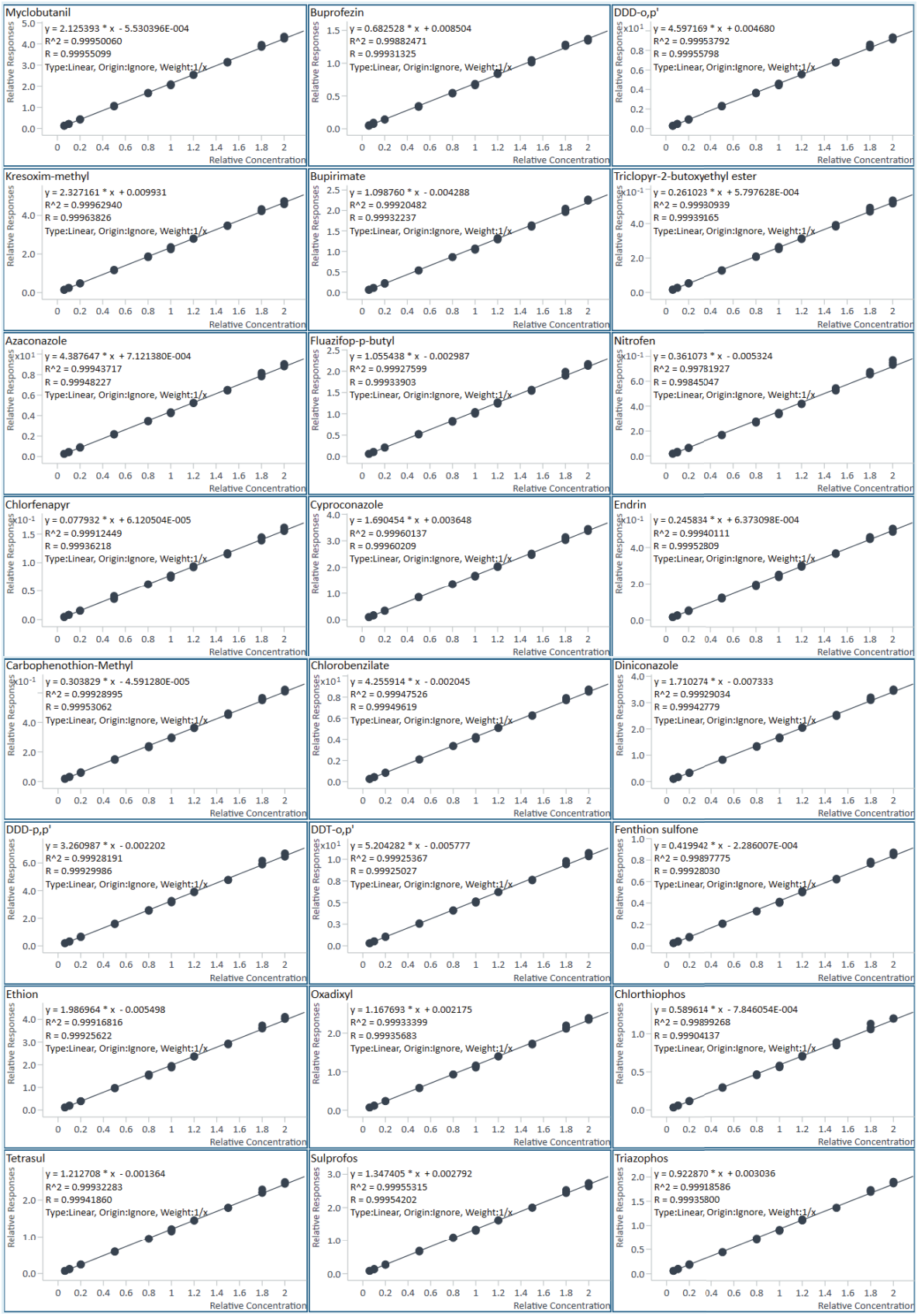

Methamidophos
y = 0.617936 * x + 0.010446
R^2 = 0.99878311
R = 0.99931907
Type:Linear, Origin:Ignore, Weight:1/x
Dichlorvos
y = 0.943064 * x + 0.017403
R^2 = 0.99964854
R = 0.99972149
Type:Linear, Origin:Ignore, Weight:1/x
Disulfoton-sulfoxide
y = 0.336050 * x - 0.002465
R^2 = 0.99567137
R = 0.99644487
Type:Linear, Origin:Ignore, Weight:1/x
Mevinphos, E-
y = 1.894425 * x + 0.004418
R^2 = 0.99971428
R = 0.99973853
Type:Linear, Origin:Ignore, Weight:1/x
2-Phenylphenol
y = 2.525602 * x + 0.078123
R^2 = 0.99967292
R = 0.99969647
Type:Linear, Origin:Ignore, Weight:1/x
Heptenophos
y = 1.731424 * x - 0.002227
R^2 = 0.99959333
R = 0.99963954
Type:Linear, Origin:Ignore, Weight:1/x
Omethoate
y = 0.524497 * x + 0.001707
R^2 = 0.99851789
R = 0.99862116
Type:Linear, Origin:Ignore, Weight:1/x
Propoxur
y = 1.801514 * x + 0.026652
R^2 = 0.99624847
R = 0.99628223
Type:Linear, Origin:Ignore, Weight:1/x
Propachlor
y = 2.083202 * x + 0.007417
R^2 = 0.99976498
R = 0.99976299
Type:Linear, Origin:Ignore, Weight:1/x
Ethoprophos
y = 1.207146 * x + 1.277418E-004
R^2 = 0.99963064
R = 0.99966541
Type:Linear, Origin:Ignore, Weight:1/x
Chlorpropham
y = 0.632207 * x - 5.698303E-005
R^2 = 0.99931940
R = 0.99944116
Type:Linear, Origin:Ignore, Weight:1/x
Chlordimeform
y = 0.788850 * x + 0.001924
R^2 = 0.99965519
R = 0.99970209
Type:Linear, Origin:Ignore, Weight:1/x
Trifluralin
y = 0.326865 * x - 0.004828
R^2 = 0.99910772
R = 0.99950614
Type:Linear, Origin:Ignore, Weight:1/x
Monocrotophos
y = 1.165996 * x + 0.003523
R^2 = 0.99902389
R = 0.99903090
Type:Linear, Origin:Ignore, Weight:1/x
Dicrotofos
y = 1.143123 * x + 0.003025
R^2 = 0.99879560
R = 0.99874710
Type:Linear, Origin:Ignore, Weight:1/x
Dioxabenzofos
y = 0.700830 * x + 0.002808
R^2 = 0.99938402
R = 0.99944788
Type:Linear, Origin:Ignore, Weight:1/x
Cadusafos
y = 2.208124 * x - 0.001279
R^2 = 0.99975964
R = 0.99977764
Type:Linear, Origin:Ignore, Weight:1/x
BHC-alpha (benzene hexachloride)
y = 1.012391 * x - 0.001629
R^2 = 0.99935064
R = 0.99942427
Type:Linear, Origin:Ignore, Weight:1/x
Hexachlorobenzene
y = 1.193650 * x + 0.001341
R^2 = 0.99949977
R = 0.99951365
Type:Linear, Origin:Ignore, Weight:1/x
Trimethacarb, 3,4,5-
y = 2.597007 * x + 0.039240
R^2 = 0.99749127
R = 0.99747058
Type:Linear, Origin:Ignore, Weight:1/x
Dimethoate
y = 0.555389 * x + 0.007874
R^2 = 0.99948131
R = 0.99953932
Type:Linear, Origin:Ignore, Weight:1/x
Dichloran
y = 0.707919 * x - 0.006698
R^2 = 0.99846550
R = 0.99877610
Type:Linear, Origin:Ignore, Weight:1/x
Prometon
y = 0.905806 * x - 0.001253
R^2 = 0.99946413
R = 0.99949869
Type:Linear, Origin:Ignore, Weight:1/x
Simazine
y = 0.292850 * x - 7.236956E-005
R^2 = 0.99935975
R = 0.99958104
Type:Linear, Origin:Ignore, Weight:1/x
Relative Responses
Relative Concentration

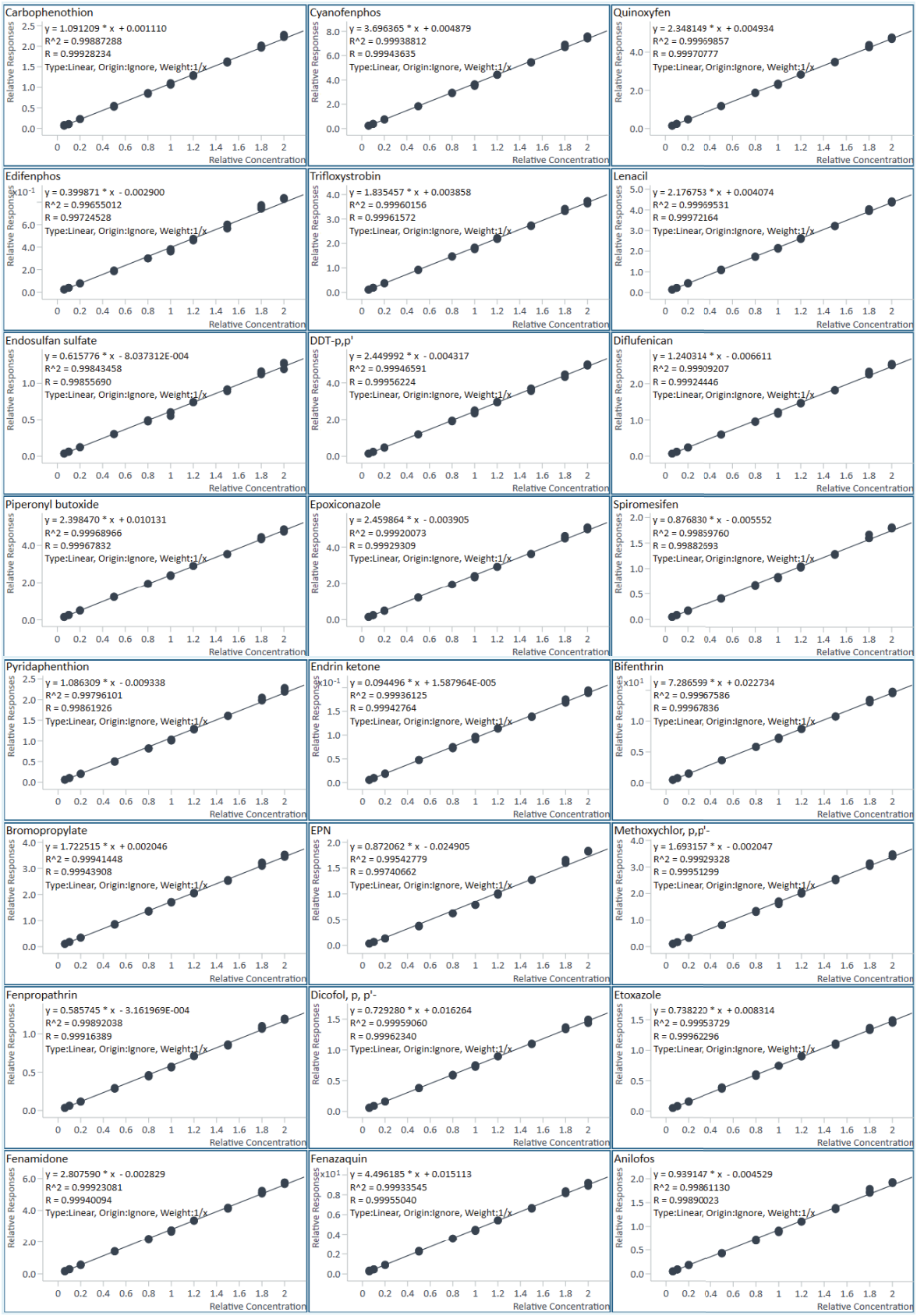

Atrazine
y = 0.500093 * x - 0.001104
R^2 = 0.99891937
R = 0.99917822
Type:Linear, Origin:Ignore, Weight:1/x
Propazine
y = 1.229733 * x - 0.001287
R^2 = 0.99945062
R = 0.99963782
Type:Linear, Origin:Ignore, Weight:1/x
Terbumeton
y = 1.639035 * x - 0.004317
R^2 = 0.99938239
R = 0.99946007
Type:Linear, Origin:Ignore, Weight:1/x
Clomazone
y = 1.892794 * x + 0.003313
R^2 = 0.99956687
R = 0.99963128
Type:Linear, Origin:Ignore, Weight:1/x
Propetamphos
y = 1.478427 * x + 0.003695
R^2 = 0.99921926
R = 0.99942518
Type:Linear, Origin:Ignore, Weight:1/x
Profluralin
y = 0.069763 * x - 9.820313E-004
R^2 = 0.99845413
R = 0.99912407
Type:Linear, Origin:Ignore, Weight:1/x
Terbuthylazine
y = 0.643271 * x - 8.802755E-005
R^2 = 0.99967922
R = 0.99976213
Type:Linear, Origin:Ignore, Weight:1/x
BHC-gamma (Lindane, gamma HCH)
y = 0.754304 * x - 0.003950
R^2 = 0.99883990
R = 0.99917844
Type:Linear, Origin:Ignore, Weight:1/x
Trietazine
y = 1.255037 * x - 8.651983E-004
R^2 = 0.99931769
R = 0.99940501
Type:Linear, Origin:Ignore, Weight:1/x
Terbufos
y = 1.699190 * x - 0.003398
R^2 = 0.99944761
R = 0.99951037
Type:Linear, Origin:Ignore, Weight:1/x
Cyanophos
y = 1.840968 * x - 0.007856
R^2 = 0.99931327
R = 0.99947784
Type:Linear, Origin:Ignore, Weight:1/x
Propyzamide
y = 2.068721 * x + 6.504719E-004
R^2 = 0.99958019
R = 0.99964974
Type:Linear, Origin:Ignore, Weight:1/x
Pentachloronitrobenzene
y = 0.406691 * x - 0.002256
R^2 = 0.99926071
R = 0.99935774
Type:Linear, Origin:Ignore, Weight:1/x
Fonofos
y = 1.207781 * x - 0.001914
R^2 = 0.99951356
R = 0.99957518
Type:Linear, Origin:Ignore, Weight:1/x
Pyrimethanil
y = 1.007517 * x + 0.011823
R^2 = 0.99964758
R = 0.99964469
Type:Linear, Origin:Ignore, Weight:1/x
Diazinon
y = 0.689011 * x + 7.969406E-004
R^2 = 0.99947519
R = 0.99960221
Type:Linear, Origin:Ignore, Weight:1/x
Secbumeton
y = 0.552473 * x - 6.438695E-004
R^2 = 0.99930752
R = 0.99934575
Type:Linear, Origin:Ignore, Weight:1/x
Tefluthrin
y = 2.698747 * x - 0.001278
R^2 = 0.99952523
R = 0.99955859
Type:Linear, Origin:Ignore, Weight:1/x
Disulfoton
y = 0.415054 * x - 4.798847E-004
R^2 = 0.99965131
R = 0.99964883
Type:Linear, Origin:Ignore, Weight:1/x
Isazofos
y = 1.372127 * x + 4.281697E-004
R^2 = 0.99934496
R = 0.99944626
Type:Linear, Origin:Ignore, Weight:1/x
Etrimfos
y = 0.413590 * x - 0.001436
R^2 = 0.99908568
R = 0.99921127
Type:Linear, Origin:Ignore, Weight:1/x
Pirimicarb
y = 1.725265 * x - 0.003500
R^2 = 0.99951617
R = 0.99954764
Type:Linear, Origin:Ignore, Weight:1/x
Fenchlorphos oxon
y = 1.331731 * x - 0.004053
R^2 = 0.99889243
R = 0.99915196
Type:Linear, Origin:Ignore, Weight:1/x
Propanil
y = 1.122670 * x - 2.758409E-004
R^2 = 0.99945545
R = 0.99952172
Type:Linear, Origin:Ignore, Weight:1/x
Relative Responses
Relative Concentration

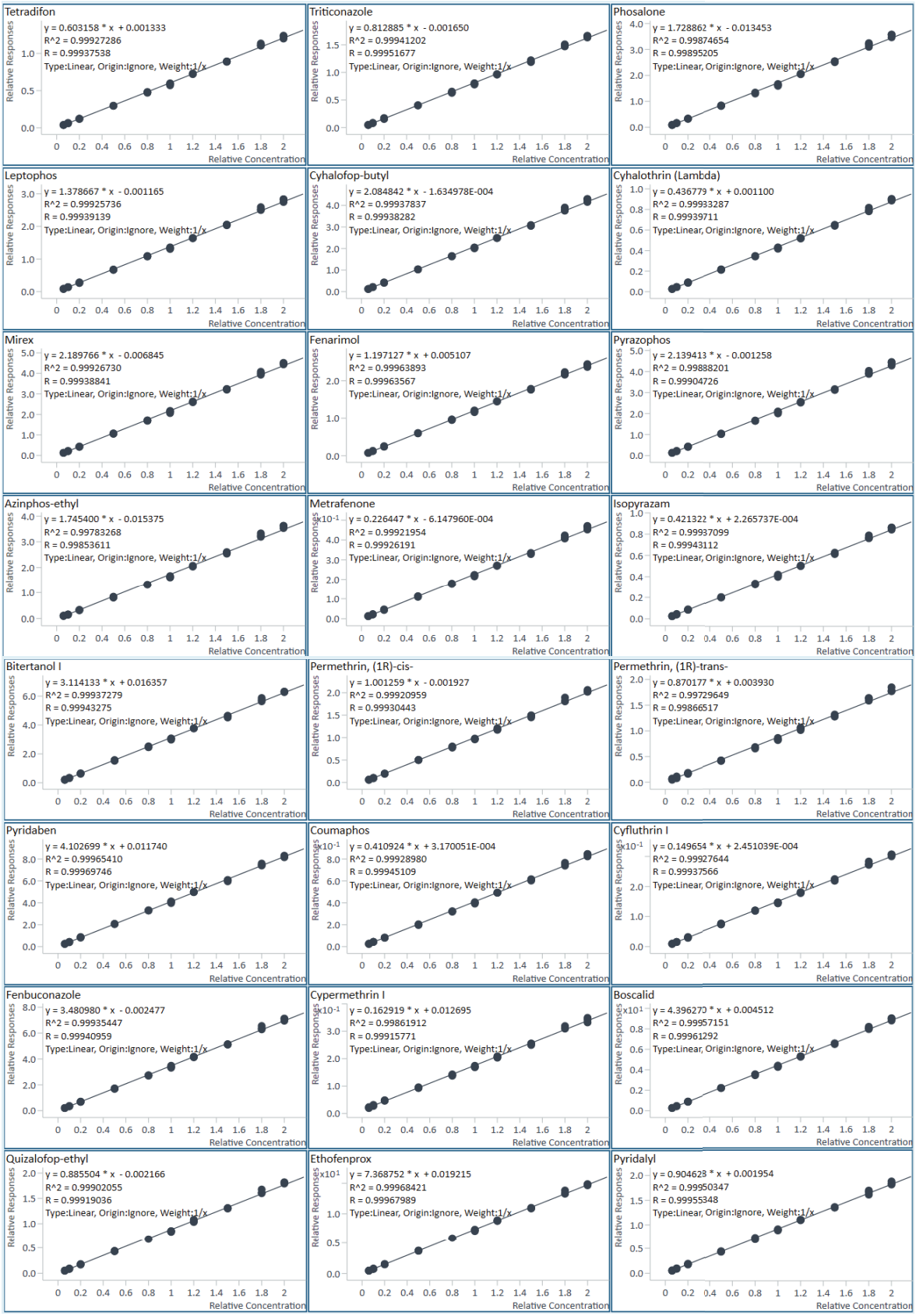

Dimethachlor
y = 2.101203 * x - 0.006154
R^2 = 0.99945195
R = 0.99945546
Type:Linear, Origin:Ignore, Weight:1/x
Metribuzin
y = 0.868137 * x - 0.002551
R^2 = 0.99935687
R = 0.99938741
Type:Linear, Origin:Ignore, Weight:1/x
Dimethenamid
y = 2.585109 * x - 0.005961
R^2 = 0.99947707
R = 0.99957127
Type:Linear, Origin:Ignore, Weight:1/x
Prothoate
y = 1.912147 * x + 0.011305
R^2 = 0.99957096
R = 0.99963106
Type:Linear, Origin:Ignore, Weight:1/x
Acetochlor
y = 0.680356 * x + 7.299230E-004
R^2 = 0.99953177
R = 0.99959898
Type:Linear, Origin:Ignore, Weight:1/x
Parathion-methyl
y = 1.102371 * x - 0.004342
R^2 = 0.99838744
R = 0.99923350
Type:Linear, Origin:Ignore, Weight:1/x
Chlorpyrifos-methyl
y = 1.224444 * x - 0.003772
R^2 = 0.99947970
R = 0.99960267
Type:Linear, Origin:Ignore, Weight:1/x
Tolclofos-methyl
y = 0.780816 * x - 0.001798
R^2 = 0.99945960
R = 0.99952837
Type:Linear, Origin:Ignore, Weight:1/x
Ametryn
y = 0.653670 * x - 9.358409E-004
R^2 = 0.99958354
R = 0.99962336
Type:Linear, Origin:Ignore, Weight:1/x
Alachlor
y = 1.092189 * x - 3.874762E-004
R^2 = 0.99955359
R = 0.99962683
Type:Linear, Origin:Ignore, Weight:1/x
Prometryn
y = 1.005538 * x - 2.155311E-004
R^2 = 0.99947140
R = 0.99951699
Type:Linear, Origin:Ignore, Weight:1/x
Heptachlor
y = 1.331805 * x - 0.005199
R^2 = 0.99921573
R = 0.99943332
Type:Linear, Origin:Ignore, Weight:1/x
Metalaxyl
y = 0.503182 * x + 0.003330
R^2 = 0.99958544
R = 0.99962099
Type:Linear, Origin:Ignore, Weight:1/x
Ronnel
y = 1.397238 * x - 0.003201
R^2 = 0.99914307
R = 0.99930733
Type:Linear, Origin:Ignore, Weight:1/x
Dicofol, o, p'-
y = 2.846837 * x + 0.043115
R^2 = 0.99950100
R = 0.99959191
Type:Linear, Origin:Ignore, Weight:1/x
Pirimiphos-methyl
y = 0.739663 * x + 0.001993
R^2 = 0.99964663
R = 0.99965945
Type:Linear, Origin:Ignore, Weight:1/x
Fenitrothion
y = 0.689094 * x - 0.010804
R^2 = 0.99730056
R = 0.99823846
Type:Linear, Origin:Ignore, Weight:1/x
Pentanochlor
y = 3.144965 * x + 0.009619
R^2 = 0.99971447
R = 0.99970137
Type:Linear, Origin:Ignore, Weight:1/x
Malathion
y = 1.336754 * x - 0.001878
R^2 = 0.99975357
R = 0.99976178
Type:Linear, Origin:Ignore, Weight:1/x
Pentachlorothioanisole
y = 0.678585 * x + 7.888593E-004
R^2 = 0.99937276
R = 0.99943132
Type:Linear, Origin:Ignore, Weight:1/x
Metolachlor
y = 4.145813 * x - 0.007184
R^2 = 0.99936373
R = 0.99942517
Type:Linear, Origin:Ignore, Weight:1/x
Fenpropimorph
y = 3.173184 * x + 0.008886
R^2 = 0.99969222
R = 0.99970533
Type:Linear, Origin:Ignore, Weight:1/x
Fenthion
y = 1.294875 * x - 0.001582
R^2 = 0.99952221
R = 0.99956468
Type:Linear, Origin:Ignore, Weight:1/x
Aldrin
y = 0.379833 * x + 0.002471
R^2 = 0.99953264
R = 0.99963161
Type:Linear, Origin:Ignore, Weight:1/x
Relative Responses
Relative Concentration

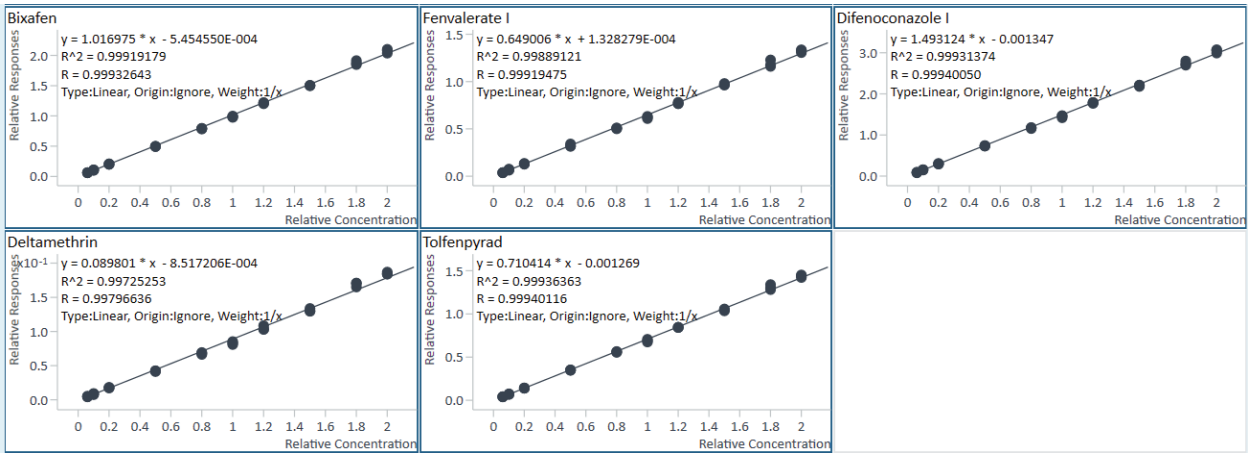

Dimethylvinphos
y = 1.457897 * x - 0.002649
R^2 = 0.99930982
R = 0.99938484
Type:Linear, Origin:Ignore, Weight:1/x
Chlorpyrifos
y = 1.164418 * x + 0.006048
R^2 = 0.99920742
R = 0.99930024
Type:Linear, Origin:Ignore, Weight:1/x
Parathion
y = 0.353899 * x - 0.005026
R^2 = 0.99762571
R = 0.99841571
Type:Linear, Origin:Ignore, Weight:1/x
Triadimefon
y = 0.959108 * x - 0.001938
R^2 = 0.99913929
R = 0.99930964
Type:Linear, Origin:Ignore, Weight:1/x
DCPA (Dacthal, Chlorthal-dimethyl)
y = 1.401963 * x + 0.001499
R^2 = 0.99958740
R = 0.99961021
Type:Linear, Origin:Ignore, Weight:1/x
Tetraconazole
y = 0.671881 * x - 0.001054
R^2 = 0.99911275
R = 0.99927384
Type:Linear, Origin:Ignore, Weight:1/x
Isocarbophos
y = 1.881263 * x + 5.418482E-004
R^2 = 0.99950051
R = 0.99957333
Type:Linear, Origin:Ignore, Weight:1/x
Crufomate
y = 1.168763 * x - 0.004602
R^2 = 0.99906412
R = 0.99923742
Type:Linear, Origin:Ignore, Weight:1/x
Isobenzan
y = 0.344764 * x - 5.843422E-004
R^2 = 0.99937021
R = 0.99945978
Type:Linear, Origin:Ignore, Weight:1/x
Fenson
y = 4.247567 * x + 0.008394
R^2 = 0.99956540
R = 0.99960577
Type:Linear, Origin:Ignore, Weight:1/x
Bromophos
y = 0.984415 * x - 0.003895
R^2 = 0.99915767
R = 0.99937675
Type:Linear, Origin:Ignore, Weight:1/x
Pirimiphos-ethyl
y = 0.416937 * x - 6.715158E-004
R^2 = 0.99933962
R = 0.99933928
Type:Linear, Origin:Ignore, Weight:1/x
4,5,6,7-Tetrachloro phthalide
y = 2.124437 * x + 3.037500E-004
R^2 = 0.99955910
R = 0.99960443
Type:Linear, Origin:Ignore, Weight:1/x
Isofenphos-methyl
y = 3.258218 * x + 0.003127
R^2 = 0.99961070
R = 0.99961854
Type:Linear, Origin:Ignore, Weight:1/x
Cyprodinil
y = 4.508483 * x - 0.004975
R^2 = 0.99932068
R = 0.99934970
Type:Linear, Origin:Ignore, Weight:1/x
Isodrin
y = 0.476474 * x + 0.001954
R^2 = 0.99947156
R = 0.99949872
Type:Linear, Origin:Ignore, Weight:1/x
Metazachlor
y = 1.272693 * x + 5.138989E-004
R^2 = 0.99936809
R = 0.99940504
Type:Linear, Origin:Ignore, Weight:1/x
Penconazole
y = 1.532045 * x + 2.835966E-004
R^2 = 0.99937507
R = 0.99937779
Type:Linear, Origin:Ignore, Weight:1/x
Heptachlor exo-epoxide
y = 0.311795 * x - 8.480927E-004
R^2 = 0.99924552
R = 0.99932990
Type:Linear, Origin:Ignore, Weight:1/x
Isofenphos
y = 2.268648 * x - 0.005737
R^2 = 0.99938512
R = 0.99943376
Type:Linear, Origin:Ignore, Weight:1/x
Bromfenvinfos
y = 1.473370 * x - 1.478921E-004
R^2 = 0.99944784
R = 0.99949989
Type:Linear, Origin:Ignore, Weight:1/x
Chlorfenvinphos
y = 1.317338 * x + 5.021408E-005
R^2 = 0.99943025
R = 0.99946537
Type:Linear, Origin:Ignore, Weight:1/x
Heptachlor endo-epoxide
y = 0.286038 * x + 8.044367E-004
R^2 = 0.99944027
R = 0.99943952
Type:Linear, Origin:Ignore, Weight:1/x
Quinalphos
y = 2.669399 * x + 0.001199
R^2 = 0.99965582
R = 0.99966158
Type:Linear, Origin:Ignore, Weight:1/x
Relative Responses
Relative Concentration


Phenthoate
y = 1.075008 * x - 0.002096
R^2 = 0.99877716
R = 0.99907227
Type:Linear, Origin:Ignore, Weight:1/x
Triadimenol
y = 1.334579 * x - 4.391839E-005
R^2 = 0.99952151
R = 0.99955330
Type:Linear, Origin:Ignore, Weight:1/x
Furalaxyl
y = 2.176801 * x + 7.305021E-004
R^2 = 0.99939559
R = 0.99942678
Type:Linear, Origin:Ignore, Weight:1/x
Haloxyfop-methyl
y = 0.742291 * x - 0.002101
R^2 = 0.99918246
R = 0.99923359
Type:Linear, Origin:Ignore, Weight:1/x
Bromophos-ethyl
y = 1.102588 * x - 0.002858
R^2 = 0.99941842
R = 0.99952947
Type:Linear, Origin:Ignore, Weight:1/x
Chlordane-trans
y = 0.422538 * x + 4.321817E-005
R^2 = 0.99923350
R = 0.99937156
Type:Linear, Origin:Ignore, Weight:1/x
DDE-o,p'
y = 3.140556 * x + 0.011353
R^2 = 0.99969775
R = 0.99969498
Type:Linear, Origin:Ignore, Weight:1/x
Paclobutrazol
y = 2.074472 * x + 0.093410
R^2 = 0.99914734
R = 0.99914545
Type:Linear, Origin:Ignore, Weight:1/x
Tetrachlorvinphos
y = 0.860255 * x - 9.278165E-004
R^2 = 0.99933977
R = 0.99944754
Type:Linear, Origin:Ignore, Weight:1/x
Mepanipyrim
y = 4.253065 * x - 0.007975
R^2 = 0.99936913
R = 0.99948932
Type:Linear, Origin:Ignore, Weight:1/x
Chlordane-cis
y = 0.349609 * x + 8.953671E-005
R^2 = 0.99929705
R = 0.99939421
Type:Linear, Origin:Ignore, Weight:1/x
Picoxystrobin
y = 1.707184 * x + 0.012655
R^2 = 0.99969978
R = 0.99968838
Type:Linear, Origin:Ignore, Weight:1/x
Flutriafol
y = 2.196498 * x + 0.006606
R^2 = 0.99951421
R = 0.99952250
Type:Linear, Origin:Ignore, Weight:1/x
Fenamiphos
y = 0.765782 * x - 0.002421
R^2 = 0.99908988
R = 0.99923157
Type:Linear, Origin:Ignore, Weight:1/x
Flutolanil
y = 2.819896 * x - 0.003817
R^2 = 0.99941218
R = 0.99948618
Type:Linear, Origin:Ignore, Weight:1/x
Iodofenphos
y = 0.970477 * x - 0.006196
R^2 = 0.99870056
R = 0.99901667
Type:Linear, Origin:Ignore, Weight:1/x
Prothiofos
y = 1.068513 * x - 4.361750E-004
R^2 = 0.99942250
R = 0.99945627
Type:Linear, Origin:Ignore, Weight:1/x
Isoprothiolane
y = 0.993941 * x + 8.260166E-004
R^2 = 0.99940743
R = 0.99939847
Type:Linear, Origin:Ignore, Weight:1/x
Profenofos
y = 0.392893 * x + 0.001724
R^2 = 0.99874389
R = 0.99896254
Type:Linear, Origin:Ignore, Weight:1/x
Pretilachlor
y = 1.582399 * x + 0.006397
R^2 = 0.99947315
R = 0.99950350
Type:Linear, Origin:Ignore, Weight:1/x
DDE-p,p'
y = 2.486688 * x + 0.005144
R^2 = 0.99955931
R = 0.99957332
Type:Linear, Origin:Ignore, Weight:1/x
Uniconazole
y = 1.044013 * x - 0.003686
R^2 = 0.99890059
R = 0.99904959
Type:Linear, Origin:Ignore, Weight:1/x
Oxadiazon
y = 1.500409 * x + 0.002609
R^2 = 0.99960924
R = 0.99964895
Type:Linear, Origin:Ignore, Weight:1/x
Dieldrin
y = 0.192822 * x + 0.001153
R^2 = 0.99908598
R = 0.99924611
Type:Linear, Origin:Ignore, Weight:1/x
Relative Responses
Relative Concentration


Myclobutanil
y = 2.125393 * x - 5.530396E-004
R^2 = 0.99950060
R = 0.99955099
Type:Linear, Origin:Ignore, Weight:1/x
Buprofezin
y = 0.682528 * x + 0.008504
R^2 = 0.99882471
R = 0.99931325
Type:Linear, Origin:Ignore, Weight:1/x
DDD-o,p'
y = 4.597169 * x + 0.004680
R^2 = 0.99953792
R = 0.99955798
Type:Linear, Origin:Ignore, Weight:1/x
Kresoxim-methyl
y = 2.327161 * x + 0.009931
R^2 = 0.99962940
R = 0.99963826
Type:Linear, Origin:Ignore, Weight:1/x
Bupirimate
y = 1.098760 * x - 0.004288
R^2 = 0.99920482
R = 0.99932237
Type:Linear, Origin:Ignore, Weight:1/x
Triclopyr-2-butoxyethyl ester
y = 0.261023 * x + 5.797628E-004
R^2 = 0.99930939
R = 0.99939165
Type:Linear, Origin:Ignore, Weight:1/x
Azaconazole
y = 4.387647 * x + 7.121380E-004
R^2 = 0.99943717
R = 0.99948227
Type:Linear, Origin:Ignore, Weight:1/x
Fluazifop-p-butyl
y = 1.055438 * x - 0.002987
R^2 = 0.99927599
R = 0.99933903
Type:Linear, Origin:Ignore, Weight:1/x
Nitrofen
y = 0.361073 * x - 0.005324
R^2 = 0.99781927
R = 0.99845047
Type:Linear, Origin:Ignore, Weight:1/x
Chlorfenapyr
y = 0.077932 * x + 6.120504E-005
R^2 = 0.99912449
R = 0.99936218
Type:Linear, Origin:Ignore, Weight:1/x
Cyproconazole
y = 1.690454 * x + 0.003648
R^2 = 0.99960137
R = 0.99960209
Type:Linear, Origin:Ignore, Weight:1/x
Endrin
y = 0.245834 * x + 6.373098E-004
R^2 = 0.99940111
R = 0.99952809
Type:Linear, Origin:Ignore, Weight:1/x
Carbophenothion-Methyl
y = 0.303829 * x - 4.591280E-005
R^2 = 0.99928995
R = 0.99953062
Type:Linear, Origin:Ignore, Weight:1/x
Chlorobenzilate
y = 4.255914 * x - 0.002045
R^2 = 0.99947526
R = 0.99949619
Type:Linear, Origin:Ignore, Weight:1/x
Diniconazole
y = 1.710274 * x - 0.007333
R^2 = 0.99929034
R = 0.99942779
Type:Linear, Origin:Ignore, Weight:1/x
DDD-p,p'
y = 3.260987 * x - 0.002202
R^2 = 0.99928191
R = 0.99929986
Type:Linear, Origin:Ignore, Weight:1/x
DDT-o,p'
y = 5.204282 * x - 0.005777
R^2 = 0.99925367
R = 0.99925027
Type:Linear, Origin:Ignore, Weight:1/x
Fenthion sulfone
y = 0.419942 * x - 2.286007E-004
R^2 = 0.99897775
R = 0.99928030
Type:Linear, Origin:Ignore, Weight:1/x
Ethion
y = 1.986964 * x - 0.005498
R^2 = 0.99916816
R = 0.99925622
Type:Linear, Origin:Ignore, Weight:1/x
Oxadixyl
y = 1.167693 * x + 0.002175
R^2 = 0.99933399
R = 0.99935683
Type:Linear, Origin:Ignore, Weight:1/x
Chlorthiophos
y = 0.589614 * x - 7.846054E-004
R^2 = 0.99899268
R = 0.99904137
Type:Linear, Origin:Ignore, Weight:1/x
Tetrasul
y = 1.212708 * x - 0.001364
R^2 = 0.99932283
R = 0.99941860
Type:Linear, Origin:Ignore, Weight:1/x
Sulprofos
y = 1.347405 * x + 0.002792
R^2 = 0.99955315
R = 0.99954202
Type:Linear, Origin:Ignore, Weight:1/x
Triazophos
y = 0.922870 * x + 0.003036
R^2 = 0.99918586
R = 0.99935800
Type:Linear, Origin:Ignore, Weight:1/x
Relative Responses
Relative Concentration


Carbophenothion
y = 1.091209 * x + 0.001110
R^2 = 0.99887288
R = 0.99928234
Type:Linear, Origin:Ignore, Weight:1/x
Cyanofenphos
y = 3.696365 * x + 0.004879
R^2 = 0.99938812
R = 0.99943635
Type:Linear, Origin:Ignore, Weight:1/x
Quinoxyfen
y = 2.348149 * x + 0.004934
R^2 = 0.99969857
R = 0.99970777
Type:Linear, Origin:Ignore, Weight:1/x
Edifenphos
x10-1
y = 0.399871 * x - 0.002900
R^2 = 0.99655012
R = 0.99724528
Type:Linear, Origin:Ignore, Weight:1/x
Trifloxystrobin
y = 1.835457 * x + 0.003858
R^2 = 0.99960156
R = 0.99961572
Type:Linear, Origin:Ignore, Weight:1/x
Lenacil
y = 2.176753 * x + 0.004074
R^2 = 0.99969531
R = 0.99972164
Type:Linear, Origin:Ignore, Weight:1/x
Endosulfan sulfate
y = 0.615776 * x - 8.037312E-004
R^2 = 0.99843458
R = 0.99855690
Type:Linear, Origin:Ignore, Weight:1/x
DDT-p,p'
y = 2.449992 * x - 0.004317
R^2 = 0.99946591
R = 0.99956224
Type:Linear, Origin:Ignore, Weight:1/x
Diflufenican
y = 1.240314 * x - 0.006611
R^2 = 0.99909207
R = 0.99924446
Type:Linear, Origin:Ignore, Weight:1/x
Piperonyl butoxide
y = 2.398470 * x + 0.010131
R^2 = 0.99968966
R = 0.99967832
Type:Linear, Origin:Ignore, Weight:1/x
Epoxiconazole
y = 2.459864 * x - 0.003905
R^2 = 0.99920073
R = 0.99929309
Type:Linear, Origin:Ignore, Weight:1/x
Spiromesifen
y = 0.876830 * x - 0.005552
R^2 = 0.99859760
R = 0.99882593
Type:Linear, Origin:Ignore, Weight:1/x
Pyridaphenthion
y = 1.086309 * x - 0.009338
R^2 = 0.99796101
R = 0.99861926
Type:Linear, Origin:Ignore, Weight:1/x
Endrin ketone
x10-1
y = 0.094496 * x + 1.587964E-005
R^2 = 0.99936125
R = 0.99942764
Type:Linear, Origin:Ignore, Weight:1/x
Bifenthrin
x10-1
y = 7.286599 * x + 0.022734
R^2 = 0.99967586
R = 0.99967836
Type:Linear, Origin:Ignore, Weight:1/x
Bromopropylate
y = 1.722515 * x + 0.002046
R^2 = 0.99941448
R = 0.99943908
Type:Linear, Origin:Ignore, Weight:1/x
EPN
y = 0.872062 * x - 0.024905
R^2 = 0.99542779
R = 0.99740662
Type:Linear, Origin:Ignore, Weight:1/x
Methoxychlor, p,p'-
y = 1.693157 * x - 0.002047
R^2 = 0.99929328
R = 0.99951299
Type:Linear, Origin:Ignore, Weight:1/x
Fenpropathrin
y = 0.585745 * x - 3.161969E-004
R^2 = 0.99892038
R = 0.99916389
Type:Linear, Origin:Ignore, Weight:1/x
Dicofol, p, p'-
y = 0.729280 * x + 0.016264
R^2 = 0.99959060
R = 0.99962340
Type:Linear, Origin:Ignore, Weight:1/x
Etoxazole
y = 0.738220 * x + 0.008314
R^2 = 0.99953729
R = 0.99962296
Type:Linear, Origin:Ignore, Weight:1/x
Fenamidone
y = 2.807590 * x - 0.002829
R^2 = 0.99923081
R = 0.99940094
Type:Linear, Origin:Ignore, Weight:1/x
Fenazaquin
x10-1
y = 4.496185 * x + 0.015113
R^2 = 0.99933545
R = 0.99955040
Type:Linear, Origin:Ignore, Weight:1/x
Anilofos
y = 0.939147 * x - 0.004529
R^2 = 0.99861130
R = 0.99890023
Type:Linear, Origin:Ignore, Weight:1/x
Relative Responses
Relative Concentration


Tetradifon
y = 0.603158 * x + 0.001333
R^2 = 0.99927286
R = 0.99937538
Type:Linear, Origin:Ignore, Weight:1/x
Triticonazole
y = 0.812885 * x - 0.001650
R^2 = 0.99941202
R = 0.99951677
Type:Linear, Origin:Ignore, Weight:1/x
Phosalone
y = 1.728862 * x - 0.013453
R^2 = 0.99874654
R = 0.99895205
Type:Linear, Origin:Ignore, Weight:1/x
Leptophos
y = 1.378667 * x - 0.001165
R^2 = 0.99925736
R = 0.99939139
Type:Linear, Origin:Ignore, Weight:1/x
Cyhalofop-butyl
y = 2.084842 * x - 1.634978E-004
R^2 = 0.99937837
R = 0.99938282
Type:Linear, Origin:Ignore, Weight:1/x
Cyhalothrin (Lambda)
y = 0.436779 * x + 0.001100
R^2 = 0.99933287
R = 0.99939711
Type:Linear, Origin:Ignore, Weight:1/x
Mirex
y = 2.189766 * x - 0.006845
R^2 = 0.99926730
R = 0.99938841
Type:Linear, Origin:Ignore, Weight:1/x
Fenarimol
y = 1.197127 * x + 0.005107
R^2 = 0.99963893
R = 0.99963567
Type:Linear, Origin:Ignore, Weight:1/x
Pyrazophos
y = 2.139413 * x - 0.001258
R^2 = 0.99888201
R = 0.99904726
Type:Linear, Origin:Ignore, Weight:1/x
Azinphos-ethyl
y = 1.745400 * x - 0.015375
R^2 = 0.99783268
R = 0.99853611
Type:Linear, Origin:Ignore, Weight:1/x
Metrafenone
y = 0.226447 * x - 6.147960E-004
R^2 = 0.99921954
R = 0.99926191
Type:Linear, Origin:Ignore, Weight:1/x
Isopyrazam
y = 0.421322 * x + 2.265737E-004
R^2 = 0.99937099
R = 0.99943112
Type:Linear, Origin:Ignore, Weight:1/x
Bitertanol I
y = 3.114133 * x + 0.016357
R^2 = 0.99937279
R = 0.99943275
Type:Linear, Origin:Ignore, Weight:1/x
Permethrin, (1R)-cis-
y = 1.001259 * x - 0.001927
R^2 = 0.99920959
R = 0.99930443
Type:Linear, Origin:Ignore, Weight:1/x
Permethrin, (1R)-trans-
y = 0.870177 * x + 0.003930
R^2 = 0.99729649
R = 0.99866517
Type:Linear, Origin:Ignore, Weight:1/x
Pyridaben
y = 4.102699 * x + 0.011740
R^2 = 0.99965410
R = 0.99969746
Type:Linear, Origin:Ignore, Weight:1/x
Coumaphos
y = 0.410924 * x + 3.170051E-004
R^2 = 0.99928980
R = 0.99945109
Type:Linear, Origin:Ignore, Weight:1/x
Cyfluthrin I
y = 0.149654 * x + 2.451039E-004
R^2 = 0.99927644
R = 0.99937566
Type:Linear, Origin:Ignore, Weight:1/x
Fenbuconazole
y = 3.480980 * x - 0.002477
R^2 = 0.99935447
R = 0.99940959
Type:Linear, Origin:Ignore, Weight:1/x
Cypermethrin I
y = 0.162919 * x + 0.012695
R^2 = 0.99861912
R = 0.99915771
Type:Linear, Origin:Ignore, Weight:1/x
Boscalid
y = 4.396270 * x + 0.004512
R^2 = 0.99957151
R = 0.99961292
Type:Linear, Origin:Ignore, Weight:1/x
Quizalofop-ethyl
y = 0.885504 * x - 0.002166
R^2 = 0.99902055
R = 0.99919036
Type:Linear, Origin:Ignore, Weight:1/x
Ethofenprox
y = 7.368752 * x + 0.019215
R^2 = 0.99968421
R = 0.99967989
Type:Linear, Origin:Ignore, Weight:1/x
Pyridalyl
y = 0.904628 * x + 0.001954
R^2 = 0.99950347
R = 0.99955348
Type:Linear, Origin:Ignore, Weight:1/x
Relative Responses
Relative Concentration



References

1. SANTE/11312/2021: Analytical quality control and method validation procedures for pesticide residues analysis in food and feed. https://food.ec.europa.eu/system/files/2023-11/pesticides_mrl_guidelines_wrkdoc_2021-11312.pdf (Accessed 15Sep2025).
2. The Agilent MassHunter Pesticide and Environmental Pollutants MRM Database (P&EP 4.0). G9250AA. https://www.agilent.com/en/product/gas-chromatography-mass-spectrometry-gc-ms/gc-ms-application-solutions/pesticides-environmental-pollutants-4-0-mrm-database (Accessed 15Sep2025).

www.agilent.com

DE-009920

Printed in the USA, October 8, 2025
5994-8702EN

Agilent
Trusted Answers