Supplementary material

Table S1. Pesticide residues included in the GC-QqQ-MS analysis, together with CAS numbers, chemical formulas, precursor ions, and diagnostic ions.

Pesticide residue	CAS Number	Chemical Formula	Precursor Ions	Diagnostic Ions
Alfa-Cypermethrin	67375-30-8	C22H19Cl2NO3	181	127;152
Aldrin	309-00-2	C12H8Cl6	262.9	190.9; 192.9
Atrazine	1912-24-9	C8H14ClN5	200; 215.1	122.1; 132; 58.1
Azinphos-ethyl	2642-71-9	C12H16N3O3PS2	132	51; 77
Azinphos-methyl	86-50-0	C10H12N3O3PS2	132; 160	77
Azoxystrobin	131860-33-8	C22H17N3O5	344.1	156; 171.9; 329
Beta, cyflutrin	1820573-27-0	C22H18Cl2FNO3	206	151; 177; 179
Bifenthrin	82657-04-3	C23H22ClF3O2	165.1; 181	163.6; 165.9; 179
Boscalid	188425-85-6	C18H12Cl2N2O	112; 139.9	76; 112
Chlordane, cis-	5103-71-9	C10H6Cl8	271.7; 372.8	236.8; 265.9
Chlordane, trans-	5103-74-2	C10H6Cl8	271.7; 372.8	236.8; 265.9
Chlorfenvinphos	470-90-6	C12H14Cl3O4P	266.9	159; 203
Chlorobenzilate	510-15-6	C16H14Cl2O3	111; 139	75.1; 74.9; 111
Chlorpyrifos-ethyl	2921-88-2	C9H11Cl3NO3PS	314	258; 286
Chlorpyrifos-methyl	5598-13-0	C7H7Cl3NO3PS	125; 286	79; 93
Coumaphos	56-72-4	C14H16ClO5PS	209.9	119; 182
Cypermethrin	52315-07-8	C22H19Cl2NO3	181	127; 152
Cyproconazole	94361-06-5	C15H18ClN3O	222	82.1; 89.3; 125
Cyprodinil	121552-61-2	C14H15N3	224.1; 225.1	196.9; 208; 209.7
Deltamethrin	52918-63-5	C22H19Br2NO3	181.1; 252.8	152; 92.9
Diazinon	333-41-5	C12H21N2O3PS	137.1	54.1; 84.1
Dicloran (Bortran)	99-30-9	C6H4Cl2N2O2	160; 176; 206	124.1; 148; 176
Dieldrin	60-57-1	C12H8Cl6O	262.8; 262.9; 277	227.8; 192.9; 241
Difenoconazole	119446-68-3	C19H17Cl2N3O3	265; 323	139; 265
Alpha-Endosulfan	959-98-8	C9H6Cl6O3S	195; 240.9	160; 206
Beta-Endosulfan	33213-65-9	C9H6Cl6O3S	195; 241	159; 206
Endosulfan sulphate	1031-07-8	C9H6Cl6O4S	238.7; 271.8	203.9; 234.9
Endrin	72-20-8	C12H8Cl6O	245; 262.9	173; 193
Ethion	563-12-2	C9H22O4P2S4	153; 230.9	97; 128.9; 174.9
Fenbuconazole	114369-43-6	C19H17ClN4	129; 198.1	77.8; 102; 129.1
Fenoxycarb	72490-01-8	C17H19NO4	116; 255.1	44.1; 88; 186.1
Fenpropathrin	39515-41-8	C22H23NO3	97.1; 181	55.1; 126.8; 151.9
Fenpropimorph	67564-91-4	C20H33NO	128.1	41.7; 110.1; 70.1
Fenthion	55-38-9	C10H15O3PS2	278	109; 169
Fenthion-oxon	6552-12-1	C10H15O4PS	262	109; 247
Fenthion-sulfoxide	3761-41-9	C10H15O4PS2	109; 125	79; 47; 79
Fenvalerate	51630-58-1	C25H22ClNO3	125; 167	89.3; 125
Fipronil	120068-37-3	C12H4Cl2F6N4OS	366.9; 368.8	212.9; 244.9; 214.9
Fipronil-sulfone	120068-36-2	C12H4Cl2F6N4O2S	383; 452	255; 383
Fluazifop-p-butyl	79241-46-6	C19H20F3NO4	282; 383.1	91.1; 238.1; 282.1
Fluquinconazole	136426-54-5	C16H8Cl2FN5O	340	108.1; 298; 313
Alpha-HCH	319-84-6	C6H6Cl6	181; 219	145; 183
Beta-HCH	319-85-7	C6H6Cl6	181; 219	145; 183
Delta-HCH	319-86-8	C6H6Cl6	180.9; 218.9	144.9; 182.9

Gamma-HCH	58-89-9	C6H6Cl6	181; 219	145; 183
Heptachlor	76-44-8	C10H5Cl7	99.8; 272	65; 237
Heptachlor epoxide, cis-	1024-57-3	C10H5Cl7O	262.9; 352.8	192.9; 262.9
Heptachlor epoxide, trans-	28044-83-9	C10H5Cl7O	183	119; 155
Hexachlorobenzene	118-74-1	C6Cl6	283.8; 285.8	213.8; 248.8; 250.8
Hexaconazole	79983-71-4	C14H17Cl2N3O	213.9; 231	123.5; 159; 175
Imazalil	35554-44-0	C14H14Cl2N2O	172.8; 174.7; 215	109; 147; 173
Iprodione	36734-19-7	C13H13Cl2N3O3	314; 315.7	245; 247; 273
Kresoxim-methyl	143390-89-0	C18H19NO4	116; 130.9	62.9; 89; 130.1
Lambda-cyhalothrin	91465-08-6	C23H19ClF3NO3	180.9; 197.1; 207.9	152; 141.1; 108.9
Malathion	121-75-5	C10H19O6PS2	158; 173.1	125; 99
Metconazole	125116-23-6	C17H22ClN3O	125	63; 89; 99
Methidathion	950-37-8	C6H11N2O4PS3	145; 302.6	58; 85; 284.9
Methoxychlor	72-43-5	C16H15Cl3O2	227.1	141.1; 169.1; 212.1
Metribuzin	21087-64-9	C8H14N4OS	198	55; 82.1; 110
Nitrofen	1836-75-5	C12H7Cl2NO3	202; 283	139; 202; 253
o,p′-DDD	53-19-0	C15H12Cl4O	235; 237	165
o,p′-DDE	3424-82-6	C14H8Cl4	246; 318	176; 248
o,p′-DDT	789-02-6	C14H9Cl5	235; 237	165
Ortho-phenylphenol	90-43-7	C12H10O	141.1; 170.1	115.1; 115; 1411.1
p,p′-DDD	72-54-8	C14H10Cl4	235; 237	165
p,p′-DDE	72-55-9	C14H8Cl4	246; 318	176; 248
p,p′-DDT	50-29-3	C14H9Cl5	235; 237	165
Paclobutrazol	76738-62-0	C15H20ClN3O	125; 236	89; 125; 167
Parathion	56-38-2	C10H14NO5PS	109; 291	81; 109
Parathion-methyl	298-00-0	C8H10NO5PS	125; 263	79; 109
Penconazole	66246-88-6	C13H15Cl2N3	158.9; 248	89; 157; 192
Pendimethalin	40487-42-1	C13H19N3O4	252.1	161; 162; 191.3
Permethrin	52645-53-1	C21H20Cl2O3	183	128; 152; 168
Phenothrin	26002-80-2	C23H26O3	183	115; 128
Pirimicarb	23103-98-2	C11H18N4O2	166.1; 238.1	55; 96; 166.1
Procymidone	32809-16-8	C13H11Cl2NO2	95.9; 283	53; 67.1; 96.1
Profenofos	41198-08-7	C11H15BrClO3PS	296.7; 336.9	268.9; 266.9
Propiconazole	60207-90-1	C15H17Cl2N3O2	172.9	74; 109; 145
Pyrazophos	13457-18-6	C14H20N3O5PS	221	148.7; 193.1
Pyrimethanil	53112-28-0	C12H13N3	198.1	117.9; 157.6; 182.9
Pirimiphos-ethyl	23505-41-1	C13H24N3O3PS	304; 318.1	168.1; 166.1
Pirimiphos-methyl	29232-93-7	C11H20N3O3PS	290.1	125; 233
Quinoxyfen	124495-18-7	C15H8Cl2FNO	237; 271.8; 307	208; 237.1; 237
Quintozene	82-68-8	C6Cl5NO2	213.8	141.9; 178.9
Resmethrin	10453-86-8	C22H26O3	123.1; 143; 171	81.1; 128.1; 127.9; 128
Tebuconazole	107534-96-3	C16H22ClN3O	125; 250	89; 99; 125
Tecnazene	117-18-0	C6HCl4NO2	214.8	143.6; 178.7
Tefluthrin	79538-32-2	C17H14ClF7O2	177; 197	127; 137; 141.1
Terbutylazine	5915-41-3	C9H16ClN5	214.1; 229.1	104; 132; 200.1
Tolchlofos-methyl	57018-04-9	C9H11Cl2O3PS	265; 266.8	219.9; 250; 252
Triadimefon	43121-43-3	C14H16ClN3O2	208	111; 126.7; 180.8
Triadimenol	55219-65-3	C14H18ClN3O2	128; 168.2	65; 70
Triazophos	24017-47-8	C12H16N3O3PS	161	105.7; 134.1
Trifluralin	1582-09-8	C13H16F3N3O4	306.1	159.7; 206; 264.1
Triticonazole	131983-72-7	C17H20ClN3O	217; 235.1	167; 181.9; 217.1
Vinclozolin	50471-44-8	C12H9Cl2NO3	186.8; 198; 212	124; 145; 172

Table S2. Pesticide residues included in the UHPLC-HESI-Q-Orbitrap-MS analysis, together with CAS numbers, chemical formulas, selected m/z values and the relative adducts ions.

Pesticide residue	CAS number	Chemical Formula	Mass [m/z]	Species
Acephate	30560-19-1	C4H10NO3PS	184.01918	$[M + H]^+$
Acetamiprid	135410-20-7	C10H11ClN4	223.07450	$[M + H]^+$
Acibenzolar-S-methyl	135158-54-2	C8H6N2OS2	210.99943	$[M + H]^+$
Acrinathrin	101007-06-1	C26H21F6NO5	559.16622	$[M + NH4]^+$
Aldicarb	116-06-3	C7H14N2O2S	208.11142	$[M - C2H4NO2]^+$
Aldicarb-sulfone	1646-88-4	C7H14N2O4S	240.10125	$[M + NH4]^+$
Aldicarb-sulfoxide	1646-87-3	C7H14N2O3S	132.04776	$[M - C2H4NO2]^+$

Ametoctradin	865318-97-4	C15H25N5	276.21827	$[M+H]^+$
Aminocarb	2032-59-9	C11H16N2O2	209.12845	$[M+H]^+$
Azinphos-ethyl	2642-71-9	C12H16N3O3PS2	346.04435	$[M+H]^+$
Azinphos-methyl	86-50-0	C10H12N3O3PS2	318.01305	$[M+H]^+$
Azoxystrobin	131860-33-8	C22H17N3O5	404.12410	$[M+H]^+$
Benalaxyl	71626-11-4	C20H23NO3	326.17507	$[M+H]^+$
Benfuracarb	82560-54-1	C20H30N2O5S	411.19482	$[M+H]^+$
Benodanil	15310-01-7	C13H10INO	323.98798	$[M+H]^+$
Benthiavalicarb-isopropyl	177406-68-7	C18H24FN3O3S	382.15952	$[M+H]^+$
Bifenthrin	82657-04-3	C23H22ClF3O2	440.15987	$[M+NH4]$
Bitertanol	55179-31-2	C20H23N3O2	338.1863	$[M+H]^+$
Boscalid	188425-85-6	C18H12Cl2N2O	343.03994	$[M+H]^+$
Bromuconazole, cis-	116255-48-2	C13H12BrCl2N3O	375.96136	$[M+H]^+$
Bromuconazole, trans-	116255-48-2	C13H12BrCl2N3O	375.96136	$[M+H]^+$
Bupirimate	41483-43-6	C13H24N4O3S	317.16419	$[M+H]^+$
Buprofezin	69327-76-0	C16H23N3OS	306.16346	$[M+H]^+$
Buturon	3766-60-7	C12H13ClN2O	237.07892	$[M+H]^+$
Cadusafos	95465-99-9	C10H23O2PS2	271.09498	$[M+H]^+$
Carbaryl	63-25-2	C12H11NO2	202.08626	$[M+H]^+$
Carbofuran	1563-66-2	C12H15NO3	222.11247	$[M+H]^+$
Carbofuran-3-hydroxy	16655-82-6	C12H15NO4	194.11756	$[M+H]^+$
Carbophenothion	786-19-6	C11H16ClO2PS3	342.98113	$[M+H]^+$
Carbosulfan	55285-14-8	C20H32N2O3S	381.22064	$[M+H]^+$
Carfentrazone-ethyl	128639-02-1	C15H14Cl2F3N3O3	412.04371	$[M+H]^+$
Chlorantraniliprole	500008-45-7	C18H14BrCl2N5O2	481.97807	$[M+H]^+$
Chlorfenapyr	122453-73-0	C15H11BrClF3N2O	406.97681	$[M+H]^+$
Chlorfenvinphos	470-90-6	C12H14Cl3O4P	358.97681	$[M+H]^+$
Chlorpropham	101-21-3	C10H12ClNO2	172.01598	$[M-C3H5]^+$
Chlorpyrifos-ethyl	2921-88-2	C9H11Cl3NO3PS	349.93356	$[M+H]^+$
Chlorpyrifos-methyl	5598-13-0	C7H7Cl3NO3PS	321.90226	$[M+H]^+$
Clofentezine	74115-24-5	C14H8Cl2N4	303.01988	$[M+H]^+$
Clomazone	81777-89-1	C12H14ClNO2	240.07858	$[M+H]^+$
Clothianidin	210880-92-5	C6H8ClN5O2S	250.01600	$[M+H]^+$
Coumaphos	56-72-4	C14H16ClO5PS	363.02174	$[M+H]^+$
Cyantraniliprole	736994-63-1	C19H14BrClN6O2	473.01229	$[M+H]^+$
Cyazofamid	120116-88-3	C13H13ClN4O2S	325.05205	$[M+H]^+$
Cycloate	1134-23-2	C11H21NOS	216.14166	$[M+H]^+$
Cycloxydim	101205-02-1	C17H27NO3S	326.17844	$[M+H]^+$
Cyflufenamid	180409-60-3	C20H17F5N2O2	413.1283	$[M+H]^+$
Cyflumetofen	400882-07-7	C24H24F3NO4	448.17302	$[M+H]^+$
Cymiazole	61676-87-7	C12H14N2S	219.09505	$[M+H]^+$
Cymoxanil	57966-95-7	C7H10N4O3	199.08257	$[M+H]^+$
Cypermethrin	52315-07-8	C22H19Cl2NO3	433.10802	$[M+Na]^+$
Cyproconazole	94361-06-5	C15H18ClN3O	292.12112	$[M+H]^+$
Cyprodinil	121552-61-2	C14H15N3	226.13387	$[M+H]^+$
Cyprosulfamide	221667-31-8	C18H18N2O5S	375.10092	$[M+H]^+$
Cyromazine	66215-27-8	C6H10N6	167.10397	$[M+H]^+$
Deltamethrin	52918-63-5	C22H19Br2NO3	521.00699	$[M+Na]^+$
Demeton-S-methylsulfone	17040-19-6	C6H15O5PS2	263.01713	$[M+H]^+$
Desmedipham	13684-56-5	C16H16N2O4	301.11828	$[M+H]^+$
Desmethyl chlorpyrifos-methyl	58997-13-0	C6H5Cl3NO3PS	307.88661	$[M+H]^+$
Diazinon	333-41-5	C12H21N2O3PS	305.10833	$[M+H]^+$
Dichlofenthion	97-17-6	C10H13Cl2O3PS	314.97728	$[M+H]^+$
Dichlofluanid	1085-98-9	C9H11Cl2FN2O2S2	332.96958	$[M+H]^+$
Dichlorvos	62-73-7	C4H7Cl2O4P	220.95318	$[M+H]^+$
Diethofencarb	87130-20-9	C14H21NO4	268.15433	$[M+H]^+$
Diethyl-m-toluamid, N,N-	134-62-3	C12H17NO	192.13829	$[M+H]^+$
Difenoconazole	119446-68-3	C19H17Cl2N3O3	406.07197	$[M+H]^+$
Diflovidazin	162320-67-4	C14H7ClF2N4	305.04001	$[M+H]^+$
Diflubenzuron	35367-38-5	C14H9ClF2N2O2	311.03934	$[M+H]^+$
Dimethenamid	87674-68-8	C12H18ClNO2S	276.08195	$[M+H]^+$
Dimethoate	60-51-5	C5H12NO3PS2	230.00690	$[M+H]^+$
Dimethomorph	110488-70-5	C21H22ClNO4	388.13101	$[M+H]^+$
Dimoxystrobin	149961-52-4	C19H22N2O3	327.17032	$[M+H]^+$

Diniconazole	83657-24-3	C15H17Cl2N3O	326.08214	$[M+H]^+$
Dinotefuran	165252-70-0	C7H14N4O3	203.11387	$[M+H]^+$
Diphenylamine	122-39-4	C12H11N	170.09643	$[M+H]^+$
Diuron	330-54-1	C9H10Cl2N2O	233.02429	$[M+H]^+$
Dodine	161050-58-4	C13H29N3	228.24342	$[M+H]^+$
Emamectin B1a	121124-29-6	C49H75NO13	886.53112	$[M+H]^+$
Emamectin-benzoate	155569-91-8	C49H75NO13	886.53112	$[M+H]^+$
EPN	2104-64-5	C14H14NO4PS	324.04539	$[M+H]^+$
Epoxiconazole	133855-98-8	C17H13ClFN3O	330.08039	$[M+H]^+$
EPTC	759-94-4	C9H19NOS	190.12601	$[M+H]^+$
Esfenvalerate	66230-04-4	C25H22ClNO3	437.16265	$[M+Na]^+$
Ethiofencarb	29973-13-5	C11H15NO2S	226.08963	$[M+H]^+$
Ethion	563-12-2	C9H22O4P2S4	384.99489	$[M+H]^+$
Ethirimol	23947-60-6	C11H19N3O	210.16009	$[M+H]^+$
Ethoprophos	13194-48-4	C8H19O2PS2	243.06368	$[M+H]^+$
Etofenprox	80844-07-1	C25H28O3	394.23767	$[M+Na]^+$
Etoxazole	153233-91-1	C21H23F2NO2	360.17696	$[M+H]^+$
Famoxadone	131807-57-3	C22H18N2O4	392.16048	$[M+Na]^+$
Fenamidone	161326-34-7	C17H17N3OS	312.11651	$[M+H]^+$
Fenamiphos	22224-92-6	C13H22NO3PS	304.11308	$[M+H]^+$
Fenamiphos-sulfone	31972-44-8	C13H22NO5PS	336.10291	$[M+H]^+$
Fenamiphos-sulfoxide	31972-43-7	C13H22NO4PS	320.10799	$[M+H]^+$
Fenarimol	60168-88-9	C17H12Cl2N2O	331.03994	$[M+H]^+$
Fenazaquin	120928-09-8	C20H22N2O	307.18049	$[M+H]^+$
Fenbuconazole	114369-43-6	C19H17ClN4	337.12145	$[M+H]^+$
Fenhexamid	126833-17-8	C14H17Cl2NO2	302.07091	$[M+H]^+$
Fenitrothion	122-14-5	C9H12NO5PS	278.02466	$[M+H]^+$
Fenoxycarb	72490-01-8	C17H19NO4	302.13868	$[M+H]^+$
Fenpropathrin	39515-41-8	C22H23NO3	367.20162	$[M+Na]^+$
Fenpropidin	67306-00-7	C19H31N	274.25293	$[M+H]^+$
Fenpropimorph	67564-91-4	C20H33NO	304.26349	$[M+H]^+$
Fenpyrazamine	473798-59-3	C17H21N3O2S	332.14272	$[M+H]^+$
Fenpyroximate	111812-58-9	C24H27N3O4	422.20743	$[M+H]^+$
Fenthion	55-38-9	C10H15O3PS2	279.02730	$[M+H]^+$
Fenthion-oxon	6552-12-1	C10H15O4PS	263.05014	$[M+H]^+$
Fenthion-oxon sulfone	14086-35-2	C10H15O6PS	295.03997	$[M+H]^+$
Fenthion-oxon sulfoxide	6552-13-2	C10H15O5PS2	311.01713	$[M+H]^+$
Fenthion-sulfone	3761-42-0	C10H15O5PS	279.04506	$[M+H]^+$
Fenthion-sulfoxide	3761-41-9	C10H15O4PS2	295.02221	$[M+H]^+$
Fenvalerate	51630-58-1	C25H22ClNO3	437.16265	$[M+Na]^+$
Fipronil	120068-37-3	C12H4Cl2F6N4OS	453.97253	$[M+Na]^+$
Fipronil-sulfone	120068-36-2	C12H4Cl2F6N4O2S	469.96745	$[M+Na]^+$
Flonicamid	158062-67-0	C9H6F3N3O	230.05357	$[M+H]^+$
Fluazifop	69335-91-7	C15H12F3NO4	328.07912	$[M+H]^+$
Fluazifop-butyl	69806-50-4	C19H20F3NO4	384.14227	$[M+H]^+$
Flubendiamide	272451-65-7	C23H22F7IN2O4S	683.03059	$[M+H]^+$
Flucythrinate	70124-77-5	C26H23F2NO4	469.19334	$[M+Na]^+$
Fludioxonil	131341-86-1	C12H6F2N2O2	266.07356	$[M+Na]^+$
Flufenoxuron	101463-69-8	C21H11ClF6N2O3	489.04352	$[M+H]^+$
Fluopicolide	239110-15-7	C14H8Cl3F3N2O	382.97271	$[M+H]^+$
Fluopyram	658066-35-4	C16H11ClF6N2O	397.05369	$[M+H]^+$
Fluoxastrobin	361377-29-9	C21H16ClFN4O5	459.08660	$[M+H]^+$
Flupyradifurone	951659-40-8	C12H11ClF2N2O2	289.05499	$[M+H]^+$
Fluquinconazole	136426-54-5	C16H8Cl2FN5O	376.01627	$[M+H]^+$
Flusilazole	85509-19-9	C16H15F2N3Si	316.10761	$[M+H]^+$
Flutolanil	66332-96-5	C17H16F3NO2	324.12059	$[M+H]^+$
Flutriafol	76674-21-0	C16H13F2N3O	302.10995	$[M+H]^+$
Fluvalinate, tau-	102851-06-9	C26H22ClF3N2O3	503.13438	$[M+H]^+$
Fluxapyroxad	907204-31-3	C18H12F5N3O	382.09733	$[M+H]^+$
Fosthiazate	98886-44-3	C9H18NO3PS2	284.05385	$[M+H]^+$
Furathiocarb	65907-30-4	C18H26N2O5S	383.16352	$[M+H]^+$
Haloxyfop	69806-34-4	C15H11ClF3NO4	362.04015	$[M+H]^+$
Haloxyfop-2-ethoxyethyl	87237-48-7	C19H19ClF3NO5	434.09766	$[M+H]^+$
Hexaconazole	79983-71-4	C14H17Cl2N3O	314.08214	$[M+H]^+$
Hexythiazox	78587-05-0	C17H21ClN2O2S	353.10850	$[M+H]^+$

Imazalil	35554-44-0	C14H14Cl2N2O	297.05560	$[M + H]^+$
Imazamethabenz-methyl	81405-85-8	C16H20N2O3	289.15467	$[M + H]^+$
Imidacloprid	138261-41-3	C9H10ClN5O2	256.05958	$[M + H]^+$
Indoxacarb	144171-61-9	C22H17ClF3N3O7	528.07799	$[M + H]^+$
Iprodione	36734-19-7	C13H13Cl2N3O3	330.04067	$[M + H]^+$
Iprovalicarb	140923-17-7	C18H28N2O3	321.21727	$[M + H]^+$
Isocarbophos	24353-61-5	C11H16NO4PS	312.04299	$[M + Na]^+$
Isofenphos	25311-71-1	C15H24NO4PS	368.10559	$[M + Na]^+$
Isofenphos-methyl	99675-03-3	C14H22NO4PS	332.10799	$[M + H]^+$
Isoprothiolane	50512-35-1	C12H18O4S2	291.07247	$[M + H]^+$
Isoproturon	34123-59-6	C12H18N2O	207.14919	$[M + H]^+$
Kresoxim-methyl	143390-89-0	C18H19NO4	314.13868	$[M + H]^+$
Lambda-cyhalothrin	91465-08-6	C23H19ClF3NO3	467.13438	$[M + NH4]^+$
Linuron	330-55-2	C9H10Cl2N2O2	249.01921	$[M + H]^+$
Lufenuron	103055-07-8	C17H8Cl2F8N2O3	532.96764	$[M + Na]^+$
Malathion	121-75-5	C10H19O6PS2	331.04334	$[M + H]^+$
Malathion-oxon (Malaoxon)	1634-78-2	C10H19O7PS	315.06619	$[M + H]^+$
Mandipropamid	374726-62-2	C23H22ClNO4	412.13101	$[M + H]^+$
Mecarbam	2595-54-2	C10H20NO5PS2	330.05933	$[M + H]^+$
Mepanipyrim	110235-47-7	C14H13N3	224.11822	$[M + H]^+$
Metaflumizone	139968-49-3	C24H16F6N4O2	507.12502	$[M + H]^+$
Metalaxyl	57837-19-1	C15H21NO4	280.15433	$[M + H]^+$
Metamitron	41394-05-2	C10H10N4O	203.09274	$[M + H]^+$
Metconazole	125116-23-6	C17H22ClN3O	320.15242	$[M + H]^+$
Methacrifos	62610-77-9	C7H13O5PS	209.00319	$[M - CH3O]^+$
Methamidophos	10265-92-6	C2H8NO2PS	142.00861	$[M + H]^+$
Methidathion	950-37-8	C6H11N2O4PS3	302.96913	$[M + H]^+$
Methiocarb	2032-65-7	C11H15NO2S	226.08963	$[M + H]^+$
Methiocarb-sulfone	2179-25-1	C11H15NO4S	258.07946	$[M + H]^+$
Methiocarb-sulfoxide	2635-10-1	C11H15NO3S	242.08454	$[M + H]^+$
Methomyl	16752-77-5	C5H10N2O2S	163.05357	$[M + H]^+$
Methoxyfenozide	161050-58-4	C22H28N2O3	369.21727	$[M + H]^+$
Metrafenone	220899-03-6	C19H21BrO5	409.06451	$[M + H]^+$
Mevinphos	7786-34-7	C7H13O6P	225.05225	$[M + H]^+$
Monocrotophos	6923-22-4	C7H14NO5P	224.06824	$[M + H]^+$
Monolinuron	1746-81-2	C9H11ClN2O2	215.05818	$[M + H]^+$
Myclobutanil	88671-89-0	C15H17ClN4	289.12145	$[M + H]^+$
Omethoate	1113-02-6	C5H12NO4PS	214.02974	$[M + H]^+$
Oxadixyl	77732-09-3	C14H18N2O4	279.13393	$[M + H]^+$
Ortho-phenylphenol	90-43-7	C12H10O	171.080989	$[M + H]^+$
Oxamyl	23135-22-0	C7H13N3O3S	237.10159	$[M + NH4]^+$
Oxydemeton-methyl	301-12-2	C6H15O4PS2	247.02276	$[M + H]^+$
Paclobutrazol	76738-62-0	C15H20ClN3O	294.13677	$[M + H]^+$
Paraoxon-ethyl	311-45-5	C10H14NO6P	276.06315	$[M + H]^+$
Paraoxon-methyl	950-35-6	C8H10NO6P	248.03185	$[M + H]^+$
Penconazole	66246-88-6	C13H15Cl2N3	284.07158	$[M + H]^+$
Pencycuron	66063-05-6	C19H21ClN2O	329.14152	$[M + H]^+$
Pencycuron-PB-amine	66063-15-8	C12H16ClN	210.1044	$[M + H]^+$
Pendimethalin	40487-42-1	C13H19N3O4	282.14483	$[M + H]^+$
Penthiopyrad	183675-82-3	C16H20F3N3OS	360.13519	$[M + H]^+$
Permethrin	61949-76-6	C21H20Cl2O3	408.11278	$[M + NH4]^+$
Phenthoate	2597-03-7	C12H17O4PS2	321.03786	$[M + H]^+$
Phosalone	2310-17-0	C12H15ClNO4PS2	385.02069	$[M + NH4]^+$
Phosmet	732-11-6	C11H12NO4PS2	318.00181	$[M + H]^+$
Phosmet oxon	3735-33-9	C11H12NO5PS	302.02466	$[M + H]^+$
Phoxim	14816-18-3	C12H15N2O3PS	299.06138	$[M + H]^+$
Piperonyl butoxide	51-03-6	C19H30O5	356.24315	$[M + NH4]^+$
Pirimicarb	23103-98-2	C11H18N4O2	239.15025	$[M + H]^+$
Pirimicarb, desmethyl-	30614-22-3	C10H16N4O2	225.1346	$[M + H]^+$
Pirimiphos-ethyl	23505-41-1	C13H24N3O3PS	334.13488	$[M + H]^+$
Pirimiphos-methyl	29232-93-7	C11H20N3O3PS	306.10358	$[M + H]^+$
Prochloraz	67747-09-5	C15H16Cl3N3O2	376.03809	$[M + H]^+$
Profenofos	41198-08-7	C11H15BrClO3PS	372.94242	$[M + H]^+$
Propamocarb	24579-73-5	C9H20N2O2	189.16030	$[M + H]^+$
Propargite	2312-35-8	C19H26O4S	368.18901	$[M + NH4]^+$

Propham	122-42-9	C10H13NO2	180.10191	$[M+H]^+$
Propiconazole	60207-90-1	C15H17Cl2N3O2	342.07706	$[M+H]^+$
Propoxur	114-26-1	C11H15NO3	210.11247	$[M+H]^+$
Propyzamide	23950-58-5	C12H11Cl2NO	256.02905	$[M+H]^+$
Proquinazid	189278-12-4	C14H17IN2O2	373.04075	$[M+H]^+$
Prosulfocarb	52888-80-9	C14H21NOS	252.14166	$[M+H]^+$
Prothioconazole	178928-70-6	C14H15Cl2N3OS	344.03856	$[M+H]^+$
Prothioconazole-desthio	120983-64-4	C14H15Cl2N3O	312.06649	$[M+H]^+$
Pyraclostrobin	175013-18-0	C19H18ClN3O4	388.10586	$[M+H]^+$
Pyrazophos	13457-18-6	C14H20N3O5PS	374.0934	$[M+H]^+$
Pyridaben	96489-71-3	C19H25ClN2OS	365.14489	$[M+H]^+$
Pyridafol	40020-01-7	C10H7ClN2O	207.03197	$[M+H]^+$
Pyridalyl	179101-81-6	C18H14Cl4F3NO3	489.97527	$[M+H]^+$
Pyridate	55512-33-9	C19H23ClN2O2S	379.12415	$[M+H]^+$
Pyrimethanil	53112-28-0	C12H13N3	200.11822	$[M+H]^+$
Pyriproxyfen	95737-68-1	C20H19NO3	322.14377	$[M+H]^+$
Quinalphos	13593-03-8	C12H15N2O3PS	299.06138	$[M+H]^+$
Quinoxyfen	124495-18-7	C15H8Cl2FNO	308.00397	$[M+H]^+$
Quizalofop-ethyl	76578-14-8	C19H17ClN2O4	373.09496	$[M+H]^+$
Resmethrin	10453-86-8	C22H26O3	339.19547	$[M+H]^+$
Rimsulfuron	122931-48-0	C14H17N5O7S2	432.06422	$[M+H]^+$
Rotenone	83-79-4	C23H22O6	395.14891	$[M+H]^+$
Siduron	1982-49-6	C14H20N2O	233.16484	$[M+H]^+$
Simazine	122-34-9	C7H12ClN5	202.0854	$[M+H]^+$
Spinetoram	935545-74-7	C42H69NO10	748.49942	$[M+H]^+$
Spinosyn A	131929-60-7	C41H65NO10	732.46812	$[M+H]^+$
Spinosyn D	131929-63-0	C42H67NO10	746.48377	$[M+H]^+$
Spirodiclofen	148477-71-8	C21H24Cl2O4	411.11244	$[M+H]^+$
Spiromesifen	283594-90-1	C23H30O4	371.22169	$[M+H]^+$
Spirotetramat	203313-25-1	C21H27NO5	374.1962	$[M+H]^+$
Spirotetramatenol	203312-38-3	C18H23NO3	302.17507	$[M+H]^+$
Spiroxamine	118134-30-8	C18H35NO2	298.27406	$[M+H]^+$
Sulfoxaflor	946578-00-3	C10H10F3N3OS	278.05694	$[M+H]^+$
Tebuconazole	107534-96-3	C16H22ClN3O	308.15242	$[M+H]^+$
Tebufenozide	112410-23-8	C22H28N2O2	353.22235	$[M+H]^+$
Tebufenpyrad	119168-77-3	C18H24ClN3O	334.16807	$[M+H]^+$
Terbuthylazine	5915-41-3	C9H16ClN5	230.1167	$[M+H]^+$
Terbutryn	886-50-0	C10H19N5S	242.14339	$[M+H]^+$
Tetraconazole	112281-77-3	C13H11Cl2F4N3O	372.02881	$[M+H]^+$
Thiabendazole	148-79-8	C10H7N3S	202.04334	$[M+H]^+$
Thiacloprid	111988-49-9	C10H9ClN4S	253.03092	$[M+H]^+$
Thiamethoxam	153719-23-4	C8H10ClN5O3S	292.02656	$[M+H]^+$
Thifensulfuron-methyl	79277-27-3	C12H13N5O6S2	388.038	$[M+H]^+$
Thiodicarb	59669-26-0	C10H18N4O4S3	355.05629	$[M+H]^+$
Thiophanate-methyl	23564-05-8	C12H14N4O4S2	343.05292	$[M+H]^+$
Thiram	137-26-8	C6H12N2S4	240.99561	$[M+H]^+$
Tolfenpyrad	129558-76-5	C21H22ClN3O2	384.14733	$[M+H]^+$
Tolylfluanid	731-27-1	C10H13Cl2FN2O2S2	346.98523	$[M+H]^+$
Triadimefon	43121-43-3	C14H16ClN3O2	294.10038	$[M+H]^+$
Triadimenol	55219-65-3	C14H18ClN3O2	296.11603	$[M+H]^+$
Triazophos	24017-47-8	C12H16N3O3PS	314.07228	$[M+H]^+$
Tribenuron-methyl	101200-48-0	C15H17N5O6S	396.09723	$[M+H]^+$
Trichlorfon	52-68-6	C4H8Cl3O4P	256.92985	$[M+H]^+$
Tricyclazole	41814-78-2	C9H7N3S	190.04334	$[M+H]^+$
Trifloxystrobin	141517-21-7	C20H19F3N2O4	409.13697	$[M+H]^+$
Triflumizole	68694-11-1	C15H15ClF3N3O	346.09285	$[M+H]^+$
Triflumizole metabolite FM 6-1	131549-75-2	C12H14ClF3N2O	295.08195	$[M+H]^+$
Triflumuron	64628-44-0	C15H10ClF3N2O3	359.04048	$[M+H]^+$
Triforine	26644-46-2	C10H14Cl6N4O2	454.91401	$[M+Na]^+$
Triticonazole	131983-72-7	C17H20ClN3O	318.13677	$[M+H]^+$
Zoxamide	156052-68-5	C14H16Cl3NO2	336.03194	$[M+H]^+$

Table S3. Distribution of samples analyzed during the monitoring period (2022-2025) by product category and year.

Year	Category	Product	Count
2022	Fruit	Apple	1
2022	Fruit	Banana	3
2022	Fruit	Orange	1
2022	Fruit	Pear	2
2022	Fruit	Strawberry	4
2022	Fruit	Tomato	1
2023	Fruit	Apricot	1
2023	Fruit	Orange	6
2023	Fruit	Banana	1
2023	Fruit	Strawberry	5
2023	Fruit	Kiwi	5
2023	Fruit	Lemon	1
2023	Fruit	Mandarin	1
2023	Fruit	Apple	3
2023	Fruit	Melon	1
2023	Fruit	Tomato	10
2023	Fruit	Ready-to-eat olive	1
2023	Fruit	Plum	1
2024	Fruit	Apricot	4
2024	Fruit	Banana	3
2024	Fruit	Cherry	3
2024	Fruit	Mandarin	1
2024	Fruit	Melon	1
2024	Fruit	Kiwi	4
2024	Fruit	Orange	1
2024	Fruit	Apple	1
2024	Fruit	Strawberry	2
2024	Fruit	Pear	2
2024	Fruit	Tomato	8
2024	Fruit	Plum	3
2025	Fruit	Apricot	1
2025	Fruit	Orange	2
2025	Fruit	Banana	1
2025	Fruit	Persimmon	1
2025	Fruit	Watermelon	1
2025	Fruit	Fig	1
2025	Fruit	Strawberry	3
2025	Fruit	Apple	1
2025	Fruit	Mandarin	1
2025	Fruit	Tomato	7
2025	Fruit	Plum	2

2022	Vegetable	Chard	1
2022	Vegetable	Cabbage	2
2022	Vegetable	Pepper	1
2022	Vegetable	Turnip	1
2022	Vegetable	Courgetti	2
2023	Vegetable	Carrot	4
2023	Vegetable	Flowering cabbage (broccoli/cauliflower)	9
2023	Vegetable	Cucumber	2
2023	Vegetable	Eggplant	1
2023	Vegetable	Pepper	4
2023	Vegetable	Fresh peas	1
2023	Vegetable	Turnip	1
2023	Vegetable	Courgetti	3
2024	Vegetable	Flowering cabbage (broccoli/cauliflower)	3
2024	Vegetable	Fennel	1
2024	Vegetable	Cucumber	3
2024	Vegetable	Green bean	1
2024	Vegetable	Turnip top	1
2024	Vegetable	Eggplant	1
2024	Vegetable	Pepper	5
2024	Vegetable	Turnip	1
2024	Vegetable	Courgetti	4
2025	Vegetable	Beetroot	1
2025	Vegetable	Cabbage	1
2025	Vegetable	Carrot	1
2025	Vegetable	Cucumber	5
2025	Vegetable	Fennel	1
2025	Vegetable	Iceberg lettuce	1
2025	Vegetable	Eggplant	1
2025	Vegetable	Spinach	1
2025	Vegetable	Courgetti	5
2023	Processed	Groundnut (peanut) oil	1
2023	Processed	Sunflower oil	1
2023	Processed	Palm oil	1
2023	Processed	Pomace oil	1
2023	Processed	Virgin olive oil	1
2023	Processed	Extra virgin olive oil	3
2023	Processed	Concentrated tomato juice	4
2024	Processed	Groundnut (peanut) oil	1
2024	Processed	Sunflower oil	3
2024	Processed	Soybean oil	1
2024	Processed	Extra virgin olive oil	1
2024	Processed	Dried tomato	1
2024	Processed	Concentrated tomato juice	5
2025	Processed	Virgin olive oil	1

2025	Processed	Extra virgin olive oil	3

Table S4. Demographic characteristics and mean fruit and vegetable daily intakes of the population groups used for dietary exposure calculations reported by the IV SCAI 2017–2020 survey [31, 34].

Population division	Age (years)	Body weight (Kg)	Fruit average daily intakes (Kg day^{-1})	Vegetables average daily intakes (Kg day^{-1})
Infant	3-11 months	5	0.029	0.005
Toddler	1-2	12	0.139	0.086
Other Children	3-9	12	0.139	0.086
Adolescents	10-17	50-60 (55)	0.146	0.086
Adults	18–64	70	0.194	0.213
Elderly	65–74	70	0.310	0.241

Table S5. Validation parameters (R^2, LOD, LOQ, t sb/b, recovery % at 0.010 mg kg^{-1}, and RSD_r) obtained for pesticide residues determined by GC-QqQ-MS/MS using MMC curve of apple samples.

Pesticide residue	R^2	LOD	LOQ	t s_b/b	Recovery (%)	RSD_r (%)
Alfa-Cypermethrin	0.99683	0.0053	0.0159	0.0601	87.3	11.6
Aldrin	0.98782	0.0275	0.0834	0.0835	87.7	4.8
Atrazine	0.99727	0.0129	0.0392	0.0392	95.3	9.7
Azinphos-ethyl	0.98980	0.0356	0.1080	0.1082	97.3	12.9
Azinphos-methyl	0.98355	0.0321	0.0972	0.0973	130.0	16.6
Azoxystrobin	0.99401	0.0180	0.0545	0.0630	111.3	5.5
Beta, cyflutrin	0.99630	0.0151	0.0457	0.0457	94.0	12.6
Bifenthrin	0.99509	0.0174	0.0527	0.0527	107.9	6.1
Boscalid	0.98158	0.0340	0.1030	0.1166	82.7	16.7
Chlordane, cis-	0.99763	0.0121	0.0365	0.0366	99.4	4.9
Chlordane, trans-	0.99797	0.0112	0.0338	0.0339	99.3	4.5
Chlorfenvinphos	0.99416	0.0190	0.0574	0.0575	105.8	3.5
Chlorobenzilate	0.99332	0.0203	0.0615	0.0616	115.0	15.1
Chlorpyrifos-ethyl	0.99644	0.0148	0.0448	0.0448	89.3	8.3
Chlorpyrifos-methyl	0.99144	0.0230	0.0697	0.0698	90.7	19.1
Coumaphos	0.98981	0.0254	0.0769	0.0862	98.0	14.3
Cypermethrin	0.99624	0.0152	0.0460	0.0461	94.0	13.9
Cyproconazole	0.99268	0.0212	0.0644	0.0645	94.0	10.6
Cyprodinil	0.99880	0.0086	0.0260	0.0260	100.7	12.7
Deltamethrin	0.98969	0.0636	0.1926	0.1929	96.7	5.1
Diazinon	0.98106	0.0430	0.1302	0.1304	92.9	4.8
Dicloran (Bortran)	0.99030	0.0245	0.0742	0.0744	120.0	20.4
Dieldrin	0.99855	0.0094	0.0285	0.0285	97.2	4.5
Difenoconazole	0.98903	0.0749	0.2270	0.2273	84.7	10.1
Alpha-Endosulfan	0.99816	0.0106	0.0322	0.0322	98.2	5.8
Beta-Endosulfan	0.99324	0.0204	0.0618	0.0619	92.7	11.4
Endosulfan Sulphate	0.99863	0.0092	0.0278	0.0278	99.7	3.2
Endrin	0.99835	0.0100	0.0304	0.0305	101.6	6.3
Ethion	0.99547	0.0167	0.0506	0.0506	109.0	4.2
Fenbuconazole	0.99218	0.0884	0.2679	0.2683	78.8	13.7
Fenoxycarb	0.99438	0.0186	0.0563	0.0564	120.0	10.1

Fenpropathrin	0.99505	0.0174	0.0528	0.0529	96.5	5.8
Fenpropimorph	0.99296	0.0208	0.0631	0.0632	96.6	7.6
Fenthion	0.99816	0.0106	0.0322	0.0322	89.1	9.4
Fenthion-oxon	0.98073	0.0348	0.1054	0.1056	111.3	17.5
Fenthion-sulfoxide	0.98496	0.0475	0.1439	0.1441	120.0	13.0
Fenvalerate	0.98018	0.0436	0.1322	0.1324	88.0	13.8
Fipronil	0.99425	0.0188	0.0570	0.0571	95.3	11.7
Fipronil-sulfone	0.99544	0.0167	0.0507	0.0508	73.4	12.4
Fluazifop-p-butyl	0.99808	0.0108	0.0328	0.0329	104.0	10.9
Fluquinconazole	0.98943	0.0256	0.0776	0.0777	62.7	18.7
Alpha-HCH	0.98799	0.0453	0.1372	0.1374	89.3	16.4
Beta-HCH	0.99826	0.0103	0.0313	0.0313	92.0	13.2
Delta-HCH	0.99487	0.0178	0.0538	0.0539	110.0	19.8
Gamma-HCH	0.98804	0.0273	0.0826	0.0827	78.0	19.6
Heptachlor	0.98605	0.0389	0.1179	0.1181	85.3	18.2
Heptachlor epoxide, cis-	0.99368	0.0197	0.0598	0.0599	94.0	5.2
Heptachlor epoxide, trans-	0.99688	0.0138	0.0419	0.0420	96.1	6.1
Hexachlorobenzene	0.98470	0.0401	0.1214	0.1215	62.8	11.6
Hexaconazole	0.98820	0.0329	0.0997	0.0929	101.0	8.5
Imazalil	0.98403	0.0316	0.0957	0.0959	86.4	7.7
Iprodione	0.98588	0.0391	0.1184	0.1186	95.0	13.6
Kresoxim-methyl	0.99805	0.0109	0.0331	0.0331	102.6	5.1
Lambda-cyhalothrin	0.99455	0.0183	0.0555	0.0555	100.0	8.2
Malathion	0.99272	0.0212	0.0642	0.0643	122.0	10.7
Metconazole	0.98867	0.0265	0.0804	0.0805	92.6	6.5
Methidathion	0.99014	0.0247	0.0749	0.0750	70.0	12.4
Methoxychlor	0.99523	0.0171	0.0519	0.0520	90.7	12.1
Metribuzin	0.99823	0.0104	0.0315	0.0316	87.0	9.9
Nitrofen	0.99125	0.0233	0.0705	0.0706	120.7	12.8
o,p′-DDD	0.99818	0.0106	0.0320	0.0320	117.6	7.1
o,p′-DDE	0.99874	0.0088	0.0266	0.0266	103.2	5.8
o,p′-DDT	0.99629	0.0151	0.0457	0.0458	66.9	8.3
Ortho-phenylphenol	0.98869	0.0265	0.0803	0.0804	92.5	13.6
p,p′-DDD	0.99310	0.0206	0.0625	0.0626	108.0	10.5
p,p′-DDE	0.99821	0.0105	0.0317	0.0318	103.2	7.9
p,p′-DDT	0.99658	0.0145	0.0439	0.0439	81.3	12.3
Paclobutrazol	0.99117	0.0234	0.0708	0.0709	94.8	10.0
Parathion (Ethyl)	0.99465	0.0181	0.0550	0.0550	103.4	5.9
Parathion-methyl	0.98995	0.0250	0.0756	0.0757	116.0	18.6
Penconazole	0.99487	0.0178	0.0538	0.0539	101.8	7.9
Pendimethalin	0.99619	0.0153	0.0464	0.0464	101.4	4.2
Permethrin	0.99816	0.0106	0.0322	0.0322	95.7	1.7
Phenothrin	0.99376	0.0196	0.0594	0.0595	117.3	14.9
Pirimicarb	0.99420	0.0189	0.0573	0.0573	92.0	9.5
Procymidone	0.99743	0.0125	0.0380	0.0380	96.4	6.3
Profenofos	0.99823	0.0126	0.0383	0.0357	128.7	10.8
Propiconazole	0.99270	0.0212	0.0643	0.0644	97.2	7.3
Pyrazophos	0.99055	0.0242	0.0733	0.0734	101.3	7.8
Pyrimethanil	0.99565	0.0163	0.0495	0.0496	88.7	15.2
Pirimiphos-ethyl	0.99647	0.0147	0.0446	0.0446	101.1	3.3
Pirimiphos-methyl	0.99220	0.0219	0.0665	0.0666	97.4	6.5
Quinoxyfen	0.99250	0.0215	0.0652	0.0653	100.7	6.3

Quintozene	0.98430	0.0313	0.0949	0.0950	97.3	20.2
Resmethrin	0.99705	0.0134	0.0408	0.0408	99.0	4.7
Tebuconazole	0.98885	0.0263	0.0797	0.0798	91.5	6.2
Tecnazene	0.98753	0.0526	0.1593	0.1596	89.3	19.5
Tefluthrin	0.98451	0.0402	0.1218	0.1220	82.5	11.6
Terbutylazine	0.99490	0.0177	0.0537	0.0537	99.4	5.2
Tolchlofos-methyl	0.99296	0.0208	0.0631	0.0632	91.4	4.1
Triadimefon	0.99819	0.0105	0.0319	0.0320	97.6	8.0
Triadimenol	0.99055	0.0242	0.0733	0.0734	112.5	13.3
Triazophos	0.98876	0.0264	0.0800	0.0801	116.7	10.9
Trifluralin	0.98195	0.0622	0.1886	0.1889	87.1	11.2
Triticonazole	0.98837	0.0369	0.1119	0.1121	86.1	8.5
Vinclozolin	0.99691	0.0138	0.0417	0.0418	102.3	6.0

R^2 = coefficient of determination of the matrix-matched calibration (MMC) curve; Limit of detection (LOD) = 3.3 × s_a/b, where s_a is the standard deviation of the intercept and b is the slope of the MMC curve, expressed as mg kg^{-1}; Limit of quantification (LOQ) = 10 × s_a/b, where s_a is the standard deviation of the intercept and b is the slope of the MMC curve, expressed as mg kg^{-1}; Recovery (%) = mean values obtained from blank apple matrices fortified at 0.010 mg kg^{-1} for each pesticide (n = 6); Relative standard deviation (RSD_r) = repeatability, expressed as the relative standard deviation of six replicate determinations under the same operating conditions.

Table S6. Validation parameters (R^2, LOD, LOQ, t s_b/b, recovery % at 0.015 mg kg^{-1}, and RSD_r) obtained for pesticide residues determined by UHPLC-HESI-Q-Orbitrap-MS in apple samples.

Pesticide residue	R^2	LOD	LOQ	t s_b/b	Recovery %	RSD_r (%)
Acephate	0.99831	0.0030	0.0090	0.0217	104.3	12.9
Acetamiprid	0.99081	0.0043	0.0131	0.0336	80.1	4.4
Acibenzolar-S-methyl	0.99349	0.0041	0.0125	0.0302	87.7	14.3
Acrinathrin	0.99716	0.0027	0.0082	0.0199	107.7	4.7
Aldicarb	0.99734	0.0023	0.0071	0.0180	85.2	14.9
Aldicarb-sulfone	0.99674	0.0036	0.0110	0.0282	95.1	14.9
Aldicarb-sulfoxide	0.99604	0.0045	0.0138	0.0333	95.9	14.8
Ametoctradin	0.99755	0.0022	0.0068	0.0173	70.1	17.9
Aminocarb	0.98804	0.0051	0.0155	0.0390	74.9	19.0
Azinphos-ethyl	0.99447	0.0034	0.0102	0.0260	81.4	5.8
Azinphos-methyl	0.99817	0.0019	0.0058	0.0149	83.2	14.7
Azoxystrobin	0.99732	0.0023	0.0071	0.0181	80.0	3.0
Benalaxyl	0.99848	0.0018	0.0053	0.0136	76.3	2.6
Benfuracarb	0.99823	0.0019	0.0057	0.0147	78.0	6.6
Benodanil	0.99589	0.0029	0.0088	0.0224	79.7	3.2
Benthiavalicarb-isopropyl	0.99892	0.0015	0.0045	0.0115	82.4	9.1
Bifenthrin	0.99588	0.0035	0.0106	0.0249	98.8	13.3
Bitertanol	0.99892	0.0015	0.0046	0.0117	93.3	6.7
Boscalid	0.99804	0.0020	0.0060	0.0154	82.5	13.4
Bromuconazole, cis-	0.99794	0.0023	0.0070	0.0170	95.8	13.5
Bromuconazole, trans-	0.99716	0.0027	0.0082	0.0199	94.3	16.3
Bupirimate	0.99620	0.0028	0.0084	0.0215	80.7	2.3
Buprofezin	0.99858	0.0017	0.0051	0.0131	73.9	13.5
Buturon	0.99674	0.0026	0.0078	0.0199	80.1	5.0
Cadusafos	0.99825	0.0019	0.0057	0.0146	78.1	7.8
Carbaryl	0.99593	0.0029	0.0087	0.0223	67.5	3.8
Carbofuran	0.99873	0.0016	0.0049	0.0124	96.0	6.1
Carbofuran-3-hydroxy	0.99558	0.0030	0.0091	0.0232	65.1	6.3
Carbophenothion	0.98459	0.0157	0.0477	0.1016	90.2	19.6
Carbosulfan	0.99800	0.0020	0.0061	0.0156	98.3	7.6

Carfentrazone-ethyl	0.99244	0.0044	0.0134	0.0325	90.4	13.3
Chlorantraniliprole	0.99908	0.0015	0.0047	0.0113	88.7	16.4
Chlorfenapyr	0.99272	0.0050	0.0152	0.0345	98.3	6.9
Chlorfenvinphos	0.99559	0.0030	0.0091	0.0232	85.1	10.4
Chlorpropham	0.99110	0.0055	0.0168	0.0382	85.9	6.1
Chlorpyrifos-ethyl	0.99594	0.0029	0.0087	0.0223	82.4	16.3
Chlorpyrifos-methyl	0.99463	0.0041	0.0125	0.0290	91.8	10.0
Clofentezine	0.99438	0.0038	0.0116	0.0280	94.4	12.8
Clomazone	0.99900	0.0014	0.0043	0.0110	78.6	4.2
Clothianidin	0.98826	0.0049	0.0149	0.0380	92.7	8.0
Coumaphos	0.99591	0.0029	0.0087	0.0223	76.1	6.5
Cyantraniliprole	0.99686	0.0029	0.0087	0.0209	101.6	13.8
Cyazofamid	0.99503	0.0032	0.0096	0.0246	79.5	9.1
Cycloate	0.99861	0.0017	0.0051	0.0130	88.6	12.4
Cycloxydim	0.99904	0.0014	0.0042	0.0108	88.8	16.5
Cyflufenamid	0.99448	0.0034	0.0102	0.0260	85.6	14.2
Cyflumetofen	0.98288	0.0155	0.0469	0.0928	120.0	3.9
Cymiazole	0.99461	0.0033	0.0100	0.0256	65.3	10.4
Cymoxanil	0.99691	0.0040	0.0120	0.0290	101.0	9.5
Cypermethrin	0.99457	0.0040	0.0122	0.0286	85.3	8.3
Cyproconazole	0.99312	0.0037	0.0114	0.0290	77.1	13.0
Cyprodinil	0.99710	0.0024	0.0074	0.0188	76.2	9.6
Cyprosulfamide	0.99694	0.0025	0.0076	0.0193	72.2	3.5
Cyromazine	0.99789	0.0021	0.0063	0.0160	89.9	2.1
Deltamethrin	0.99820	0.0022	0.0068	0.0161	88.3	13.6
Demeton-S-methylsulfone	0.99724	0.0036	0.0102	0.0260	77.0	5.2
Desmedipham	0.99761	0.0025	0.0075	0.0182	111.5	7.0
Desmethyl chlorpyrifos-methyl	0.99527	0.0037	0.0114	0.0267	84.2	8.8
Diazinon	0.99905	0.0014	0.0042	0.0107	66.4	13.9
Dichlofenthion	0.98710	0.0250	0.0757	0.1499	119.2	2.8
Dichlofluanid	0.98401	0.0210	0.0637	0.1542	86.9	13.2
Dichlorvos	0.99907	0.0014	0.0042	0.0107	69.7	4.9
Diethofencarb	0.99838	0.0018	0.0055	0.0140	76.7	2.5
Diethyl-m-toluamid, N,N-	0.99568	0.0030	0.0090	0.0230	81.5	5.6
Difenoconazole	0.99692	0.0025	0.0076	0.0194	83.3	12.6
Diflovidazin	0.99423	0.0039	0.0117	0.0284	97.3	10.3
Diflubenzuron	0.99407	0.0038	0.0115	0.0283	113.8	11.6
Dimethenamid	0.99883	0.0015	0.0047	0.0119	84.1	18.4
Dimethoate	0.99595	0.0029	0.0087	0.0222	74.7	6.6
Dimethomorph	0.99736	0.0023	0.0070	0.0179	84.2	10.0
Dimoxystrobin	0.99856	0.0017	0.0052	0.0132	73.5	4.0
Diniconazole	0.99803	0.0020	0.0061	0.0155	94.1	19.1
Dinotefuran	0.98201	0.0063	0.0190	0.0479	107.5	10.7
Diphenylamine	0.99692	0.0025	0.0076	0.0194	69.3	12.9
Diuron	0.99547	0.0030	0.0092	0.0235	83.0	3.0
Dodine	0.99902	0.0014	0.0043	0.0109	73.3	15.0
Emamectin B1a	0.99854	0.0017	0.0052	0.0133	73.6	7.7
Emamectin benzoate	0.99854	0.0017	0.0052	0.0133	75.2	7.3
EPN	0.98973	0.0345	0.0847	0.2082	81.4	8.8
Epoxiconazole	0.99730	0.0023	0.0071	0.0181	73.5	14.2
EPTC	0.99710	0.0024	0.0074	0.0188	72.8	8.9
Esfenvalerate	0.99629	0.0031	0.0094	0.0227	101.7	7.2

Ethiofencarb	0.99807	0.0020	0.0060	0.0153	68.6	12.4
Ethion	0.99915	0.0013	0.0040	0.0101	108.1	17.3
Ethirimol	0.99507	0.0032	0.0096	0.0245	68.8	9.6
Ethoprophos	0.99616	0.0028	0.0085	0.0216	80.9	3.3
Etofenprox	0.99908	0.0014	0.0044	0.0109	108.9	18.9
Etoxazole	0.99903	0.0014	0.0043	0.0109	74.3	10.8
Famoxadone	0.99663	0.0029	0.0087	0.0213	66.4	17.7
Fenamidone	0.99941	0.0011	0.0033	0.0085	71.5	12.4
Fenamiphos	0.99657	0.0026	0.0080	0.0204	76.4	2.3
Fenamiphos-sulfone	0.99754	0.0022	0.0068	0.0173	79.4	5.3
Fenamiphos-sulfoxide	0.99824	0.0019	0.0057	0.0146	82.3	3.7
Fenarimol	0.99559	0.0030	0.0091	0.0232	77.6	5.7
Fenazaquin	0.99854	0.0017	0.0052	0.0133	86.1	17.0
Fenbuconazole	0.99775	0.0021	0.0065	0.0166	85.4	11.8
Fenhexamid	0.99689	0.0025	0.0076	0.0195	82.8	11.7
Fenitrothion	0.98545	0.0124	0.0376	0.0816	79.1	6.7
Fenoxycarb	0.99629	0.0027	0.0083	0.0213	86.8	13.4
Fenpropathrin	0.99733	0.0025	0.0077	0.0190	80.0	19.7
Fenpropidin	0.99757	0.0022	0.0067	0.0172	69.7	11.0
Fenpropimorph	0.99760	0.0022	0.0067	0.0171	70.4	7.6
Fenpyrazamine	0.99811	0.0020	0.0059	0.0152	76.8	10.1
Fenpyroximate	0.99715	0.0024	0.0073	0.0186	81.7	8.5
Fenthion	0.99538	0.0034	0.0102	0.0250	64.3	12.0
Fenthion-oxon	0.99809	0.0020	0.0060	0.0152	76.9	4.7
Fenthion-oxon sulfone	0.99891	0.0015	0.0045	0.0115	76.8	6.9
Fenthion-oxon sulfoxide	0.99623	0.0028	0.0084	0.0214	79.6	4.8
Fenthion-sulfone	0.99796	0.0020	0.0062	0.0157	82.7	3.4
Fenthion-sulfoxide	0.99716	0.0024	0.0073	0.0186	83.8	11.9
Fenvalerate	0.99633	0.0031	0.0094	0.0226	88.8	12.6
Fipronil	0.99493	0.0036	0.0110	0.0266	88.6	17.1
Fipronil-sulfone	0.99555	0.0034	0.0103	0.0249	103.8	9.9
Flonicamid	0.98532	0.0081	0.0245	0.0593	96.3	18.5
Fluazifop	0.99943	0.0011	0.0033	0.0084	75.1	11.2
Fluazifop-butyl	0.98987	0.0057	0.0173	0.0399	92.8	18.9
Flubendiamide	0.99219	0.0044	0.0132	0.0325	98.5	14.3
Flucythrinate	0.99567	0.0034	0.0102	0.0246	65.7	4.3
Fludioxonil	0.99428	0.0034	0.0104	0.0264	88.1	11.7
Flufenoxuron	0.99534	0.0035	0.0105	0.0255	110.6	17.4
Fluopicolide	0.99358	0.0036	0.0110	0.0280	84.7	7.9
Fluopyram	0.99652	0.0027	0.0081	0.0206	83.1	4.6
Fluoxastrobin	0.99681	0.0025	0.0077	0.0197	77.3	4.5
Flupyradifurone	0.99888	0.0015	0.0046	0.0117	82.7	4.1
Fluquinconazole	0.98539	0.0062	0.0188	0.0454	102.0	18.8
Flusilazole	0.99771	0.0022	0.0065	0.0167	73.2	10.8
Flutolanil	0.99642	0.0027	0.0082	0.0209	82.7	3.6
Flutriafol	0.99845	0.0018	0.0054	0.0137	77.7	5.6
Fluvalinate, tau-	0.98856	0.0071	0.0214	0.0464	95.1	19.1
Fluxapyroxad	0.99501	0.0032	0.0097	0.0247	82.8	7.3
Fosthiazate	0.99585	0.0029	0.0088	0.0225	84.8	2.6
Furathiocarb	0.99860	0.0017	0.0051	0.0131	71.3	15.0
Haloxyfop	0.99841	0.0020	0.0060	0.0146	101.5	16.3
Haloxyfop-2-ethoxyethyl	0.99917	0.0013	0.0039	0.0101	75.9	5.5

Hexaconazole	0.99900	0.0014	0.0043	0.0110	68.4	13.7
Hexythiazox	0.99076	0.0045	0.0136	0.0342	93.1	13.4
Imazalil	0.99540	0.0031	0.0093	0.0237	62.7	16.1
Imazamethabenz-methyl	0.99742	0.0023	0.0069	0.0177	65.9	7.1
Imidacloprid	0.99263	0.0039	0.0118	0.0300	82.1	5.0
Indoxacarb	0.99769	0.0022	0.0066	0.0168	91.0	16.0
Iprodione	0.99519	0.0035	0.0107	0.0259	97.1	11.9
Iprovalicarb	0.99692	0.0025	0.0076	0.0194	83.3	6.9
Isocarbophos	0.99468	0.0037	0.0113	0.0273	103.1	12.7
Isofenphos	0.98198	0.0086	0.0262	0.0633	90.1	16.5
Isofenphos-methyl	0.98996	0.0051	0.0155	0.0375	99.1	15.9
Isoprothiolane	0.99824	0.0019	0.0057	0.0146	78.2	6.1
Isoproturon	0.99622	0.0028	0.0084	0.0215	83.5	3.9
Kresoxim-methyl	0.99634	0.0027	0.0083	0.0211	81.3	10.8
Lambda-cyhalothrin	0.99827	0.0020	0.0060	0.0150	80.9	9.1
Linuron	0.99729	0.0023	0.0071	0.0182	78.3	4.1
Lufenuron	0.98878	0.0086	0.0261	0.0594	106.9	17.2
Malathion	0.99753	0.0022	0.0068	0.0173	78.3	4.8
Malathion-oxon (Malaoxon)	0.99775	0.0021	0.0065	0.0166	78.6	7.3
Mandipropamid	0.99569	0.0030	0.0090	0.0229	80.5	2.2
Mecarbam	0.99636	0.0027	0.0083	0.0211	78.7	2.8
Mepanipyrim	0.99600	0.0029	0.0086	0.0221	78.9	5.8
Metaflumizone	0.99634	0.0031	0.0093	0.0226	82.6	16.9
Metalaxyl	0.99416	0.0035	0.0105	0.0267	82.5	4.2
Metamitron	0.99655	0.0026	0.0080	0.0205	69.9	6.5
Metconazole	0.99868	0.0016	0.0050	0.0127	84.1	11.0
Methacrifos	0.99757	0.0023	0.0069	0.0175	81.8	8.9
Methamidophos	0.99319	0.0041	0.0124	0.0303	105.8	10.1
Methidathion	0.99844	0.0018	0.0054	0.0138	98.2	14.8
Methiocarb	0.99529	0.0031	0.0094	0.0240	85.7	10.8
Methiocarb-sulfone	0.99269	0.0041	0.0124	0.0309	108.1	18.8
Methiocarb-sulfoxide	0.99771	0.0022	0.0065	0.0167	77.1	3.2
Methomyl	0.99093	0.0049	0.0147	0.0357	92.9	11.6
Methoxyfenozide	0.99658	0.0026	0.0080	0.0204	81.2	7.8
Metrafenone	0.99442	0.0034	0.0102	0.0261	87.3	13.6
Mevinphos	0.99743	0.0023	0.0069	0.0177	65.8	6.7
Monocrotophos	0.98907	0.0047	0.0143	0.0366	81.8	12.4
Monolinuron	0.99833	0.0018	0.0056	0.0142	80.0	5.2
Myclobutanil	0.99558	0.0030	0.0091	0.0232	82.1	6.7
Omethoate	0.98517	0.0078	0.0235	0.0600	78.2	13.8
Ortho-phenylphenol	0.99399	0.0045	0.0138	0.0313	84.1	13.6
Oxadixyl	0.99860	0.0017	0.0051	0.0131	74.2	9.5
Oxamyl	0.98949	0.0052	0.0159	0.0384	106.7	10.1
Oxydemeton-methyl	0.99066	0.0044	0.0133	0.0338	67.9	9.9
Paclobutrazol	0.99887	0.0015	0.0046	0.0117	80.4	5.7
Paraoxon-ethyl	0.99726	0.0024	0.0072	0.0183	72.7	5.0
Paraoxon-methyl	0.99793	0.0022	0.0068	0.0167	107.9	9.4
Penconazole	0.99851	0.0017	0.0053	0.0135	93.3	18.8
Pencycuron	0.99403	0.0035	0.0106	0.0270	81.9	5.7
Pencycuron-PB-amine	0.99175	0.0041	0.0125	0.0318	62.4	13.5
Pendimethalin	0.99548	0.0030	0.0092	0.0235	74.1	9.1
Penthiopyrad	0.99636	0.0027	0.0083	0.0211	83.2	3.1

Permethrin	0.99088	0.0060	0.0183	0.0404	110.9	12.2
Phenthoate	0.99709	0.0024	0.0074	0.0188	83.0	5.5
Phosalone	0.99642	0.0027	0.0082	0.0209	79.0	5.3
Phosmet	0.99819	0.0019	0.0058	0.0148	80.5	3.0
Phosmet oxon	0.99929	0.0012	0.0036	0.0093	68.6	7.4
Phoxim	0.99718	0.0024	0.0073	0.0185	80.4	6.8
Piperonyl butoxide	0.99829	0.0019	0.0056	0.0144	78.7	5.4
Pirimicarb	0.99625	0.0028	0.0084	0.0214	65.5	4.1
Pirimicarb, desmethyl-	0.99464	0.0033	0.0100	0.0256	69.3	7.5
Pirimiphos-ethyl	0.99910	0.0014	0.0041	0.0105	84.1	15.7
Pirimiphos-methyl	0.99898	0.0014	0.0044	0.0111	75.9	6.5
Prochloraz	0.99603	0.0028	0.0086	0.0220	112.5	16.4
Profenofos	0.99717	0.0024	0.0073	0.0186	77.6	6.8
Propamocarb	0.98299	0.0059	0.0180	0.0459	62.5	17.1
Propargite	0.99633	0.0027	0.0083	0.0212	78.3	16.5
Propham	0.99165	0.0041	0.0125	0.0320	88.8	16.2
Propiconazole	0.99837	0.0018	0.0055	0.0141	71.1	16.5
Propoxur	0.99776	0.0021	0.0065	0.0165	77.0	5.3
Propyzamide	0.99605	0.0028	0.0086	0.0219	77.0	8.9
Proquinazid	0.99873	0.0016	0.0049	0.0124	92.1	18.2
Prosulfocarb	0.99834	0.0018	0.0056	0.0142	79.0	9.2
Prothioconazole	0.98578	0.0086	0.0260	0.0610	87.9	6.0
Prothioconazole-desthio	0.99862	0.0017	0.0051	0.0130	76.3	5.4
Pyraclostrobin	0.99758	0.0022	0.0067	0.0172	80.7	3.3
Pyrazophos	0.99303	0.0038	0.0114	0.0292	89.0	6.7
Pyridaben	0.99735	0.0023	0.0070	0.0180	82.9	18.0
Pyridafol	0.99907	0.0014	0.0042	0.0107	115.3	2.8
Pyridalyl	0.99757	0.0024	0.0074	0.0181	80.3	3.3
Pyridate	0.98245	0.0124	0.0487	0.0356	97.0	17.1
Pyrimethanil	0.99828	0.0019	0.0057	0.0145	71.0	7.9
Pyriproxyfen	0.99855	0.0017	0.0052	0.0133	62.5	8.8
Quinalphos	0.99547	0.0030	0.0092	0.0235	76.9	17.8
Quinoxyfen	0.99902	0.0014	0.0043	0.0109	62.9	9.5
Quizalofop-ethyl	0.99800	0.0020	0.0061	0.0156	73.3	16.3
Resmethrin	0.99912	0.0013	0.0040	0.0103	98.4	19.6
Rimsulfuron	0.99803	0.0021	0.0062	0.0157	62.9	15.2
Rotenone	0.99764	0.0022	0.0066	0.0170	78.6	5.3
Siduron	0.99462	0.0033	0.0100	0.0256	76.0	9.0
Simazine	0.99631	0.0027	0.0083	0.0212	66.7	4.8
Spinetoram	0.99839	0.0020	0.0060	0.0147	68.9	19.9
Spinosyn A	0.99777	0.0021	0.0064	0.0165	68.4	6.9
Spinosyn D	0.99755	0.0027	0.0082	0.0192	66.0	11.1
Spirodiclofen	0.99837	0.0018	0.0055	0.0141	72.8	13.4
Spiromesifen	0.99864	0.0017	0.0050	0.0129	66.2	15.4
Spirotetramat	0.99686	0.0025	0.0077	0.0195	88.6	10.4
Spirotetramatenol	0.99349	0.0041	0.0125	0.0302	79.1	17.6
Spiroxamine	0.99684	0.0025	0.0077	0.0196	73.9	16.3
Sulfoxaflor	0.99757	0.0022	0.0067	0.0172	76.6	6.3
Tebuconazole	0.99883	0.0015	0.0047	0.0119	81.6	19.6
Tebufenozide	0.99717	0.0024	0.0073	0.0186	74.6	5.8
Tebufenpyrad	0.99678	0.0026	0.0078	0.0198	85.6	10.6
Terbuthylazine	0.99902	0.0014	0.0043	0.0109	74.2	4.8

Terbutryn	0.99908	0.0014	0.0041	0.0106	75.0	3.7
Tetraconazole	0.99667	0.0026	0.0079	0.0202	80.9	3.3
Thiabendazole	0.99544	0.0030	0.0092	0.0236	114.8	18.3
Thiacloprid	0.99639	0.0027	0.0082	0.0210	76.3	8.3
Thiamethoxam	0.98834	0.0049	0.0148	0.0379	83.0	10.0
Thifensulfuron-methyl	0.99787	0.0021	0.0065	0.0164	71.8	17.6
Thiodicarb	0.99700	0.0025	0.0075	0.0191	120.1	3.6
Thiophanate-methyl	0.99603	0.0028	0.0086	0.0220	105.8	8.2
Thiram	0.99941	0.0276	0.0437	0.0179	73.8	7.0
Tolfenpyrad	0.99356	0.0036	0.0110	0.0281	89.9	16.8
Tolylfluanid	0.98762	0.0120	0.0362	0.0877	102.1	18.0
Triadimefon	0.99641	0.0027	0.0082	0.0209	88.4	11.8
Triadimenol	0.99754	0.0022	0.0068	0.0173	79.0	6.9
Triazophos	0.99707	0.0024	0.0074	0.0189	83.5	4.9
Tribenuron-methyl	0.99674	0.0026	0.0078	0.0199	117.6	11.9
Trichlorfon	0.99134	0.0068	0.0204	0.0494	66.9	13.4
Tricyclazole	0.99884	0.0015	0.0046	0.0119	65.0	5.6
Trifloxystrobin	0.99922	0.0013	0.0038	0.0098	74.7	14.5
Triflumizole	0.99881	0.0016	0.0047	0.0120	71.8	13.0
Triflumizole metabolite FM 6-1	0.99647	0.0027	0.0081	0.0207	69.7	5.3
Triflumuron	0.99188	0.0045	0.0135	0.0331	60.3	13.3
Triforine	0.99825	0.0183	0.0355	0.1164	100.3	10.3
Triticonazole	0.99831	0.0019	0.0056	0.0143	80.7	3.3
Zoxamide	0.99774	0.0021	0.0065	0.0166	77.7	13.9

R^2 = coefficient of determination of the matrix-matched calibration (MMC) curve; Limit of detection (LOD) = 3.3 × s_a/b, where s_a is the standard deviation of the intercept and b is the slope of the MMC curve, expressed as mg kg^{-1}; Limit of quantification (LOQ) = 10 × sa/b, where sa is the standard deviation of the intercept and b is the slope of the MMC curve, expressed as mg kg^{-1}; Recovery (%) = mean values obtained from blank apple matrices fortified at 0.015 mg kg^{-1} for each pesticide (n = 6); Relative standard deviation (RSD_r) = repeatability, expressed as the relative standard deviation of six replicate determinations under the same operating conditions.

Table S7. The estimated daily intake (EDI, mg kg^{-1} per day) for the FVs samples, was calculated by multiplying the measured pesticide concentration (Ci, mg kg^{-1}) by the food consumption rate (c, kg day^{-1}) and dividing by the consumer's body weights for each age group [34-36].

Commodities	Pesticide residue	EDI Infants	EDI Toddlers	EDI Other children	EDI Adolescents	EDI Adults	EDI Elderly
Fruit							
Strawberry	Tebuconazole	0.000075	0.000151	0.000151	0.000035	0.000036	0.000058
Banana	Azoxystrobin	0.000296	0.000591	0.000591	0.000135	0.000141	0.000226
Apple	Cypermethrin	0.000064	0.000127	0.000127	0.000029	0.000030	0.000049
Apple	Boscalid	0.000145	0.000290	0.000290	0.000066	0.000069	0.000111
Apple	Tebuconazole	0.000307	0.000614	0.000614	0.000141	0.000147	0.000235
Apple	Pendimethalin	0.000052	0.000104	0.000104	0.000024	0.000025	0.000040
Pear	Cyprodinil	0.000061	0.000123	0.000123	0.000028	0.000029	0.000047
Pear	Difenoconazole	0.000060	0.000119	0.000119	0.000027	0.000029	0.000046
Strawberry	Tebuconazole	0.000075	0.000151	0.000151	0.000035	0.000036	0.000058
Tomato	Boscalid	0.000046	0.000093	0.000093	0.000021	0.000022	0.000035
Tomato	Cyprodinil	0.000052	0.000104	0.000104	0.000024	0.000025	0.000040
Strawberry	Difenoconazole	0.000058	0.000116	0.000116	0.000027	0.000028	0.000044
Strawberry	Boscalid	0.000139	0.000278	0.000278	0.000064	0.000067	0.000106
Strawberry	Deltamethrin	0.000035	0.000070	0.000070	0.000016	0.000017	0.000027
Apricot	Cyprodinil	0.000394	0.000788	0.000788	0.000181	0.000188	0.000301
Cherrie	Cypermethrin	0.000296	0.000591	0.000591	0.000135	0.000141	0.000226
Tomato	Difenoconazole	0.000035	0.000070	0.000070	0.000016	0.000017	0.000027
Table grapes	Cyprodinil	0.000505	0.001008	0.001008	0.000231	0.000241	0.000385
Apricot	Boscalid	0.001206	0.002409	0.002409	0.000552	0.000576	0.000921
Apricot	Tebuconazole	0.000075	0.000151	0.000151	0.000035	0.000036	0.000058
Cherrie	Cypermethrin	0.000186	0.000371	0.000371	0.000085	0.000089	0.000142
Cherrie	Cyprodinil	0.000087	0.000174	0.000174	0.000040	0.000042	0.000066
Apricot	Boscalid	0.000093	0.000185	0.000185	0.000042	0.000044	0.000071
Banana	Azoxystrobin	0.000023	0.000046	0.000046	0.000011	0.000011	0.000018
Peach	Difenoconazole	0.000075	0.000151	0.000151	0.000035	0.000036	0.000058
Peach	Tebuconazole	0.000209	0.000417	0.000417	0.000096	0.000100	0.000159
Strawberry	Boscalid	0.000023	0.000046	0.000046	0.000011	0.000011	0.000018
Peach	Cypermethrin	0.000226	0.000452	0.000452	0.000104	0.000108	0.000173

Peach	Deltamethrin	0.000110	0.000220	0.000220	0.000050	0.000053	0.000084
Peach	Boscalid	0.001682	0.003359	0.003359	0.000770	0.000804	0.001284
Tomato	Azoxystrobin	0.000070	0.000139	0.000139	0.000032	0.000033	0.000053
Cherrie	Cypermethrin	0.000023	0.000046	0.000046	0.000011	0.000011	0.000018
Cherrie	Deltamethrin	0.000041	0.000081	0.000081	0.000019	0.000019	0.000031
Plum	Metconazole	0.000099	0.000197	0.000197	0.000045	0.000047	0.000075
Plum	Tebuconazole	0.000099	0.000197	0.000197	0.000045	0.000047	0.000075
Kiwi	Malathion	0.000052	0.000104	0.000104	0.000024	0.000025	0.000040
Strawberry	Difenoconazole	0.002187	0.004367	0.004367	0.001001	0.001045	0.001670
Strawberry	Boscalid	0.000035	0.000070	0.000070	0.000016	0.000017	0.000027
Strawberry	Azoxystrobin	0.000313	0.000626	0.000626	0.000143	0.000150	0.000239
Tomato	Boscalid	0.000249	0.000498	0.000498	0.000114	0.000119	0.000190
Tomato	Difenoconazole	0.000800	0.001599	0.001599	0.000366	0.000382	0.000611
Peach	Boscalid	0.000104	0.000209	0.000209	0.000048	0.000050	0.000080
Peach	Boscalid	0.000070	0.000139	0.000139	0.000032	0.000033	0.000053
Banana	Azoxystrobin	0.000174	0.000348	0.000348	0.000080	0.000083	0.000133
Tomato	Azoxystrobin	0.000232	0.000463	0.000463	0.000106	0.000111	0.000177
Tomato	Difenoconazole	0.000162	0.000324	0.000324	0.000074	0.000078	0.000124
Tomato	Difenoconazole	0.000319	0.000637	0.000637	0.000146	0.000152	0.000244
Vegetables							
Carrot	Azoxystrobin	0.000063	0.000125	0.000125	0.000029	0.000030	0.000048
Courgette	Cyprodinil	0.000400	0.000799	0.000799	0.000183	0.000191	0.000306
Courgette	Azoxystrobin	0.000075	0.000151	0.000151	0.000035	0.000036	0.000058
Sweet pepper	Azoxystrobin	0.000481	0.000961	0.000961	0.000220	0.000230	0.000368
Sweet pepper	Difenoconazole	0.000075	0.000151	0.000151	0.000035	0.000036	0.000058
Sweet pepper	Metconazole	0.000041	0.000081	0.000081	0.000019	0.000019	0.000031
Sweet pepper	Tebuconazole	0.000041	0.000081	0.000081	0.000019	0.000019	0.000031
Courgette	Cyprodinil	0.000766	0.001529	0.001529	0.000350	0.000366	0.000585
Beans with pods	Deltamethrin	0.000232	0.000463	0.000463	0.000106	0.000111	0.000177
Courgette	Azoxystrobin	0.000122	0.000243	0.000243	0.000056	0.000058	0.000093
Turnips	Azoxystrobin	0.000615	0.001228	0.001228	0.000281	0.000294	0.000469
Cauliflower	Azoxystrobin	0.006281	0.012545	0.012545	0.002875	0.003001	0.004796
Cauliflower	Difenoconazole	0.003260	0.006510	0.006510	0.001492	0.001558	0.002489

Sweet pepper	Azoxystrobin	0.000035	0.000070	0.000070	0.000016	0.000017	0.000027
Fennel	Cyprodinil	0.000522	0.001043	0.001043	0.000239	0.000249	0.000399
Spinach	Difenoconazole	0.000452	0.000904	0.000904	0.000207	0.000216	0.000345
Spinach	Deltamethrin	0.000041	0.000081	0.000081	0.000019	0.000019	0.000031
Carrot	Difenoconazole	0.000075	0.000151	0.000151	0.000035	0.000036	0.000058
Carrot	Pendimethalin	0.000081	0.000162	0.000162	0.000037	0.000039	0.000062

Table S8. Chronic Hazard Index (cHI, %) for samples in which multiple pesticide residues were detected (2022–2025) [39], shown for each age group.

Commodities and detected pesticide residues	cHI Infants	cHI Toddler	cHI Other children	cHI Adolescents	cHI Adults	cHI Elderly
Fruit samples (2022-2025)						
Apple (Cypermethrin, Boscalid, Tebuconazole and Pendimethalin	2.7049	5.4021	5.4021	1.2380	1.2925	2.0653
Pear (Cyprodinil and Difenoconazole)	0.8023	1.6024	1.6024	0.3672	0.3834	0.6126
Tomato (Boscalid and Cyprodinil)	0.2852	0.5695	0.5695	0.1305	0.1363	0.2177
Strawberry (Difenoconazole, Boscalid and Deltamethrin)	1.2760	2.5483	2.5483	0.5840	0.6097	0.9743
Apricot (Boscalid and Tebuconazole)	4.2727	8.5331	8.5331	1.9555	2.0416	3.2624
Cherry (Cypermethrin and Cyprodinil)	4.0020	7.9925	7.9925	1.8316	1.9123	3.0557
Peach (Difenoconazole and Tebuconazole)	1.4500	2.8958	2.8958	0.6636	0.6929	1.1071
Peach (Cypermethrin, Deltamethrin and Boscalid	3.0015	5.9944	5.9944	1.3737	1.4342	2.2918
Cherry (Cypermethrin and Deltamethrin)	0.8700	1.7375	1.7375	0.3982	0.4157	0.6643
Plum (Metconazole and Tebuconazole)	1.3147	2.6256	2.6256	0.6017	0.6282	1.0038
Strawberry (Difenoconazole, Boscalid and Azoxystrobin	22.1096	44.1557	44.1557	10.1191	10.5647	16.8817
Tomato (Boscalid and Difenoconazole	8.6275	17.2302	17.2302	3.9486	4.1225	6.5875
Tomato (Azoxystrobin and Difenoconazole	2.7840	5.5600	5.5600	1.2742	1.3303	2.1257
Vegetables samples (2022-2025)						
Sweet pepper (Difenoconazole, Metconazole and Tebuconazole)	5.7033	11.3903	11.3903	2.6103	2.7252	4.3548
Spinach (Difenoconazole and Deltamethrin	4.9300	9.8458	9.8458	2.2564	2.3557	3.7643
Carrot (Difenoconazole and Pendimethalin	1.9511	3.8966	3.8966	0.8930	0.9323	1.4898

Table S9. The maximum daily consumption (MDC, kg day^{-1}) of fruit and vegetable commodities for each age groups [31, 34, 41].

Commodities and detected pesticide residues	MDC Infants	MDC Toddler	MDC Other children	MDC Adolescents	MDC Adults	MDC Elderly
Fruit samples (2022-2025)						
Apple (Cypermethrin, Boscalid, Tebuconazole and Pendimethalin	0.0107	0.0257	0.0257	0.1179	0.1501	0.1501
Pear (Cyprodinil and Difenoconazole)	0.0361	0.0867	0.0867	0.3976	0.5060	0.5060
Tomato (Boscalid and Cyprodinil)	0.1017	0.2441	0.2441	1.1186	1.4237	1.4237
Strawberry (Difenoconazole, Boscalid and Deltamethrin)	0.0227	0.0545	0.0545	0.2500	0.3182	0.3182
Apricot (Boscalid and Tebuconazole)	0.0068	0.0163	0.0163	0.0747	0.0950	0.0950
Cherry (Cypermethrin and Cyprodinil)	0.007246	0.017391	0.017391	0.07971	0.101449	0.101449
Peach (Difenoconazole and Tebuconazole)	0.0200	0.0480	0.0480	0.2200	0.2800	0.2800
Peach (Cypermethrin, Deltamethrin and Boscalid	0.0097	0.0232	0.0232	0.1063	0.1353	0.1353
Cherry (Cypermethrin and Deltamethrin)	0.0333	0.0800	0.0800	0.3667	0.4667	0.4667
Plum (Metconazole and Tebuconazole)	0.0221	0.0529	0.0529	0.2426	0.3088	0.3088
Strawberry (Difenoconazole, Boscalid and Azoxystrobin	0.0013	0.0031	0.0031	0.0144	0.0184	0.0184
Tomato (Boscalid and Difenoconazole	0.0034	0.0081	0.0081	0.0370	0.0471	0.0471
Tomato (Azoxystrobin and Difenoconazole	0.0104	0.0250	0.0250	0.1146	0.1458	0.1458
Vegetables samples (2022-2025)						
Sweet pepper (Difenoconazole,	5.7033	11.3903	11.3903	2.6103	2.7252	4.3548

Metconazole and Tebuconazole)						
Spinach (Difenoconazole and Deltamethrin	4.9300	9.8458	9.8458	2.2564	2.3557	3.7643
Carrot (Difenoconazole and Pendimethalin	1.9511	3.8966	3.8966	0.8930	0.9323	1.4898

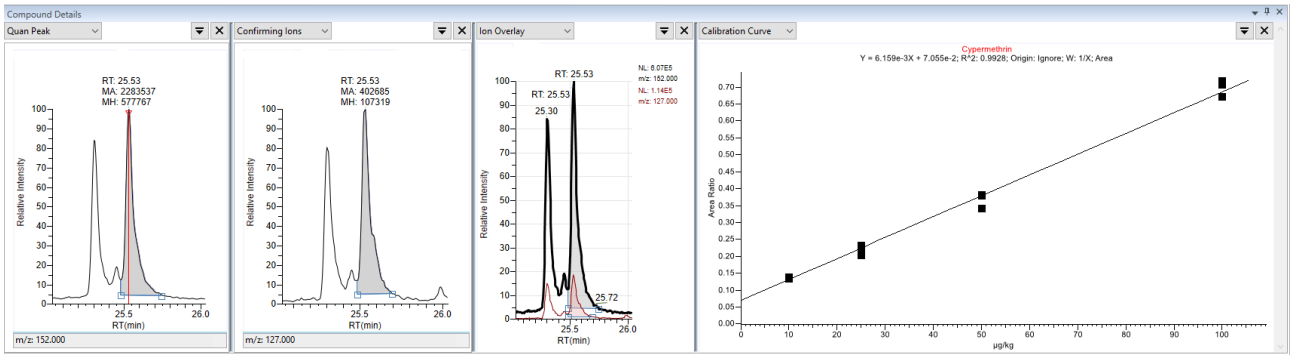


Figure S1. Cypermethrin measured in apple spiked sample (mean concentration: 0.025 mg kg^{-1}), showing relative quantifier and qualifier ion peaks, and chromatographic resolution. Quantification was performed by interpolation of an external MMC curve prepared in blank apple sample (0.010-0.100 mg kg^{-1}) using GC-QqQ-MS/MS.

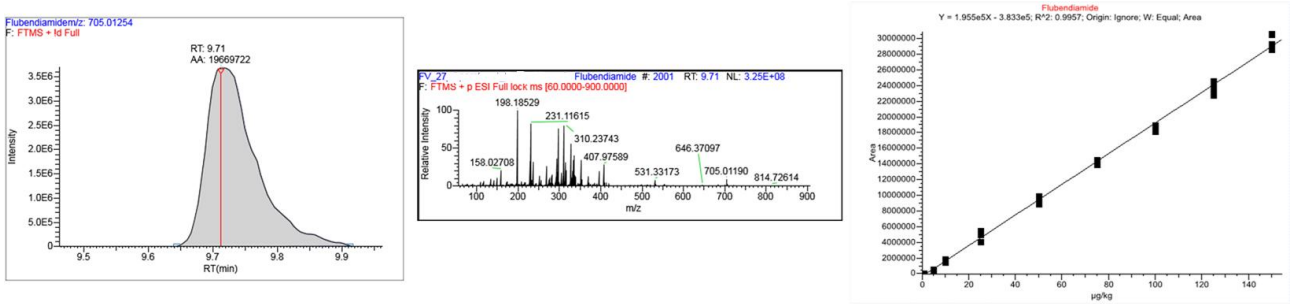


Figure S2. Quantifier ion peak and spectrum of the analyte Flubendiamide found in sample FV-27 (mean concentration: 0.146 mg kg^{-1}; z-score: 0.0). Quantification was performed by interpolation of an external MMC prepared in blank kiwi sample (0.001-0.150 mg kg^{-1}) using UHPLC-HESI-Q-Orbitrap-MS analysis.

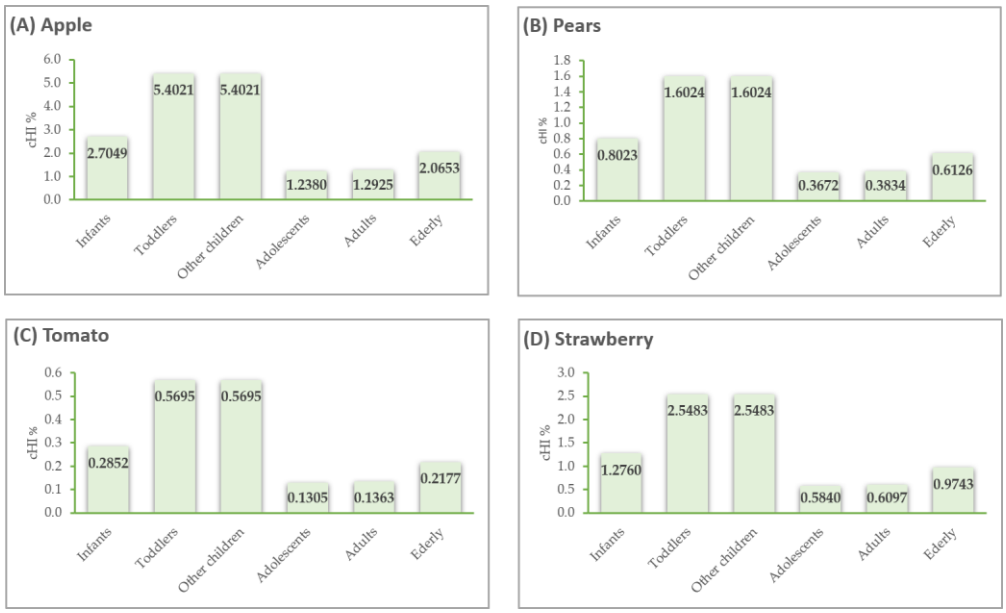


Figure S3. Chronic Hazard Index (cHI, %) for fruit samples with multiple pesticide residues detected in 2022-2023.

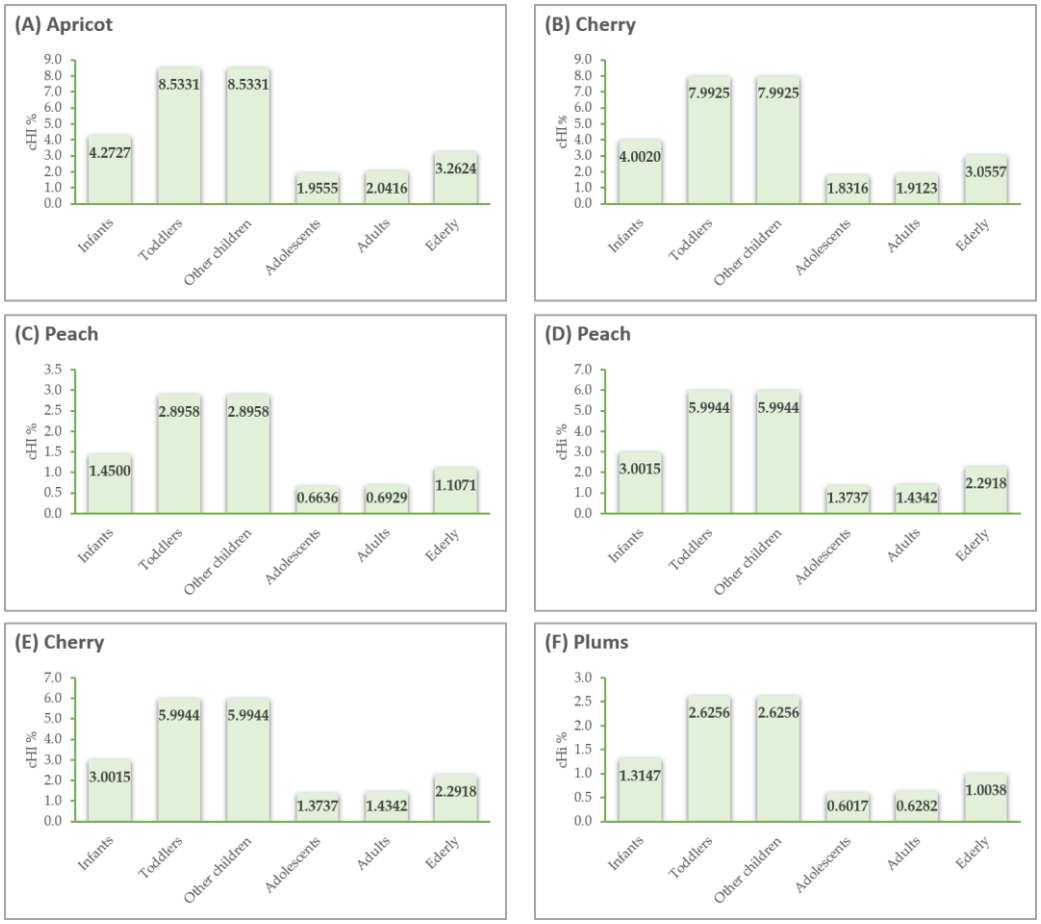


Figure S4. Chronic Hazard Index (cHI, %) for fruit samples with multiple pesticide residues detected in 2024.