

**Table S1.** Active ingredients from pesticides in *Humulus lupulus* 'Dana' white hop shoots and the soil collected from the same hop-growing location in the spring of 2010 (0-25 cm), as potential residues from the previous years of hop cultivation

Number	Name	Method	w(mg/kg)	
			Soil	Hop shoots
1	Abamectin	IM/LC-MS-MS/SOP (181)	<0.010	<0.010
2	Aclonifen	IM/GC-MSD/SOP (104)	<0.02	<0.02
3	Acrinathrin	IM/GC-MSD/SOP (104)	<0.02	<0.02
4	Aminocarb	IM/GC-MSD/SOP (104)	<0.01	<0.01
5	Atrazine	IM/GC-MSD/SOP (104)	<0.02	<0.02
6	Azaconazole	IM/GC-MSD/SOP (104)	<0.01	<0.01
7	Azinphos-ethyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
8	Azinphos-methyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
9	Azoxystrobin	IM/GC-MSD/SOP (104)	<0.02	<0.02
10	Beflubutamid	IM/GC-MSD/SOP (104)	<0.01	<0.01
11	Benalaxyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
12	Benfuracarb	IM/GC-MSD/SOP (104)	<0.02	<0.02
13	Bifenazate	IM/GC-MSD/SOP (104)	<0.01	<0.01
14	Bifenthrin	IM/GC-MSD/SOP (104)	<0.02	<0.02
15	Biphenyl	IM/GC-MSD/SOP (104)	<0.01	<0.01
16	Bitertanol	IM/GC-MSD/SOP (104)	<0.02	<0.02
17	Boscalid	IM/GC-MSD/SOP (104)	<0.02	<0.02
18	Bromophos-methyl	IM/GC-MSD/SOP (104)	<0.01	<0.01
19	Bromopropylate	IM/GC-MSD/SOP (104)	<0.02	<0.02
20	Bromuconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
21	Bupirimate	IM/GC-MSD/SOP (104)	<0.02	<0.02
22	Buprofezin	IM/GC-MSD/SOP (104)	<0.02	<0.02
23	Captan	IM/GC-MSD/SOP (104)	<0.02	<0.02
24	Carbaryl	IM/GC-MSD/SOP (104)	<0.02	<0.02
25	Chlorfenapyr	IM/GC-MSD/SOP (104)	<0.02	<0.02
26	Chlorfenvinphos	IM/GC-MSD/SOP (104)	<0.02	<0.02
27	Chlorobenzilate	IM/GC-MSD/SOP (104)	<0.02	<0.02
28	Chlorothalonil	IM/GC-MSD/SOP (104)	<0.01	<0.01
29	Chlorpropham	IM/GC-MSD/SOP (104)	<0.02	<0.02
30	Chlorpyrifos-ethyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
31	Chlorpyrifos-methyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
32	Chlorthal-dimethyl	IM/GC-MSD/SOP (104)	<0.01	<0.01
33	Chlozolinate	IM/GC-MSD/SOP (104)	<0.02	<0.02
34	Cinidon-ethyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
35	Clomazone	IM/GC-MSD/SOP (104)	<0.01	<0.01
36	Coumaphos	IM/GC-MSD/SOP (104)	<0.01	<0.01
37	Cyfluthrin	IM/GC-MSD/SOP (104)	<0.02	<0.02
38	Cypermethrin	IM/GC-MSD/SOP (104)	<0.02	<0.02
39	Cyproconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
40	Cyprodinil	IM/GC-MSD/SOP (104)	<0.02	<0.02
41	Deltamethrin	IM/GC-MSD/SOP (104)	<0.02	<0.02
42	Diazinon	IM/GC-MSD/SOP (104)	<0.01	<0.01
43	Dichlobenil	IM/GC-MSD/SOP (104)	<0.02	<0.02
44	Dichlofluanid	IM/GC-MSD/SOP (104)	<0.01	<0.01
45	Dichlorfos	IM/GC-MSD/SOP (104)	<0.01	<0.01
46	Dicloran	IM/GC-MSD/SOP (104)	<0.01	<0.01
47	Dicofol	IM/GC-MSD/SOP (104)	<0.02	<0.02
48	Difenoconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
49	Diflufenican	IM/GC-MSD/SOP (104)	<0.02	<0.02
50	Dimethenamid	IM/GC-MSD/SOP (104)	<0.01	<0.01
51	Diniconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
52	Diphenylamine	IM/GC-MSD/SOP (104)	<0.02	<0.02
53*	Dithiocarbamates (as CS <sub>2</sub> )	EN 12396-2	n.a.	<0.5

Table S1. continued

Number	Name	Method	w(mg/kg)	
			Soil	Hop shoots
54	Endosulfan	IM/GC-MSD/SOP (104)	<0.02	<0.02
55	EPN	IM/GC-MSD/SOP (104)	<0.01	<0.01
56	Epoxyconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
57	Ethion	IM/GC-MSD/SOP (104)	<0.01	<0.01
58	Ethofenprox	IM/GC-MSD/SOP (104)	<0.01	<0.01
59	Ethofumesate	IM/GC-MSD/SOP (104)	<0.02	<0.02
60	Ethoprophos	IM/GC-MSD/SOP (104)	<0.02	<0.02
61	Ethoxyquin	IM/GC-MSD/SOP (104)	<0.02	<0.02
62	Etoxazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
63	Etridiazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
64	Famoxadone	IM/GC-MSD/SOP (104)	<0.02	<0.02
65	Fenamidone	IM/GC-MSD/SOP (104)	<0.02	<0.02
66	Fenarimol	IM/GC-MSD/SOP (104)	<0.02	<0.02
67	Fenazaquin	IM/GC-MSD/SOP (104)	<0.01	<0.01
68	Fenbuconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
69	Fenchlorphos	IM/GC-MSD/SOP (104)	<0.01	<0.01
70	Fenitrothion	IM/GC-MSD/SOP (104)	<0.01	<0.01
71	Fenothiocarb	IM/GC-MSD/SOP (104)	<0.01	<0.01
72	Fenpropathrin	IM/GC-MSD/SOP (104)	<0.01	<0.01
73	Fenpropimorph	IM/GC-MSD/SOP (104)	<0.02	<0.02
74	Fenpyroximate	IM/LC-MS-MS/SOP (165)	<0.010	<0.010
75	Fenvalerate + Esfenvalerate <sup>1</sup>	IM/GC-MSD/SOP (104)	<0.02	<0.02
76	Fenvalerate + Esfenvalerate <sup>2</sup>	IM/GC-MSD/SOP (104)	<0.02	<0.02
77	Fipronil	IM/GC-MSD/SOP (104)	<0.005	<0.005
78	Flonicamid	IM/LC-MS-MS/SOP (165)	<0.010	<0.010
79	Fludioxonil	IM/GC-MSD/SOP (104)	<0.02	<0.02
80	Flufenacet	IM/GC-MSD/SOP (104)	<0.02	<0.02
81	Fluopicolide	IM/GC-MSD/SOP (104)	<0.01	<0.01
82	Fluquinconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
83	Flurochloridone	IM/GC-MSD/SOP (104)	<0.02	<0.02
84	Flutolanil	IM/GC-MSD/SOP (104)	<0.02	<0.02
85	Flutriafol	IM/GC-MSD/SOP (104)	<0.02	<0.02
86	Folpet	IM/GC-MSD/SOP (104)	<0.02	<0.02
87	Fonofos	IM/GC-MSD/SOP (104)	<0.01	<0.01
88	Formothion	IM/GC-MSD/SOP (104)	<0.02	<0.02
89	Fosthiazate	IM/GC-MSD/SOP (104)	<0.02	<0.02
90	Heptenophos	IM/GC-MSD/SOP (104)	<0.01	<0.01
91	Hexaconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
92	Hexythiazox	IM/GC-MSD/SOP (104)	<0.05	<0.05
93	Imidacloprid	IM/LC-MS-MS/SOP (165)	0.024	<0.010
94	Indoxacarb	IM/GC-MSD/SOP (104)	<0.02	<0.02
95	Iprobenfos	IM/GC-MSD/SOP (104)	<0.01	<0.01
96	Iprodione	IM/GC-MSD/SOP (104)	<0.02	<0.02
97	Iprovalicarb	IM/GC-MSD/SOP (104)	<0.02	<0.02
98	Isocarbofos	IM/GC-MSD/SOP (104)	<0.01	<0.01
99	Isofenphos-ethyl	IM/GC-MSD/SOP (104)	<0.01	<0.01
100	Isofenphos-methyl	IM/GC-MSD/SOP (104)	<0.01	<0.01
101	Kresoxim-methyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
102	Lambda-cyhalothrin	IM/GC-MSD/SOP (104)	<0.02	<0.02
103	Lindane	IM/GC-MSD/SOP (104)	<0.01	<0.01
104*	Malaoxon	IM/GC-MSD/SOP (104)	n.a.	<0.01
105	Malathion	IM/GC-MSD/SOP (104)	<0.02	<0.02
106	Mecarbam	IM/GC-MSD/SOP (104)	<0.02	<0.02
107	Mepanipyrim	IM/GC-MSD/SOP (104)	<0.01	<0.01
108	Mepronil	IM/GC-MSD/SOP (104)	<0.02	<0.02

**Table S1.** continued

Number	Name	Method	w(mg/kg)	
			Soil	Hop shoots
109	Metalaxyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
110	Metconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
111	Methacrifos	IM/GC-MSD/SOP (104)	<0.02	<0.02
112	Methidathion	IM/GC-MSD/SOP (104)	<0.02	<0.02
113	Metolachlor	IM/GC-MSD/SOP (104)	<0.02	<0.02
114	Metrafenone	IM/GC-MSD/SOP (104)	<0.02	<0.02
115	Mevinphos	IM/GC-MSD/SOP (104)	<0.01	<0.01
116	Myclobutanil	IM/GC-MSD/SOP (104)	<0.02	<0.02
117	Nitralin	IM/GC-MSD/SOP (104)	<0.01	<0.01
118	Nitrofen	IM/GC-MSD/SOP (104)	<0.01	<0.01
119	Nuarimol	IM/GC-MSD/SOP (104)	<0.01	<0.01
120	Oxadixyl	IM/GC-MSD/SOP (104)	<0.01	<0.01
121	Oxyfluorfen	IM/GC-MSD/SOP (104)	<0.02	<0.02
122	Paclobutrazol	IM/GC-MSD/SOP (104)	<0.02	<0.02
123	Parathion-ethyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
124	Parathion-methyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
125	Penconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
126	Pendimethalin	IM/GC-MSD/SOP (104)	<0.02	<0.02
127	Permethrin	IM/GC-MSD/SOP (104)	<0.02	<0.02
128	Pethoxamid	IM/GC-MSD/SOP (104)	<0.01	<0.01
129	Phenthoate	IM/GC-MSD/SOP (104)	<0.01	<0.01
130	2-Phenylphenol	IM/GC-MSD/SOP (104)	<0.01	<0.01
131	Phosalone	IM/GC-MSD/SOP (104)	<0.02	<0.02
132	Phosmet	IM/GC-MSD/SOP (104)	<0.02	<0.02
133	Phosphamidon	IM/GC-MSD/SOP (104)	<0.01	<0.01
134	Piperonyl butoxide	IM/GC-MSD/SOP (104)	<0.01	<0.01
135	Pirimicarb	IM/GC-MSD/SOP (104)	<0.02	<0.02
136	Pirimiphos-ethyl	IM/GC-MSD/SOP (104)	<0.01	<0.01
137	Pirimiphos-methyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
138	Procymidone	IM/GC-MSD/SOP (104)	<0.02	<0.02
139	Profenofos	IM/GC-MSD/SOP (104)	<0.02	<0.02
140	Prometryn	IM/GC-MSD/SOP (104)	<0.01	<0.01
141	Propargite	IM/GC-MSD/SOP (104)	<0.01	<0.01
142	Propetamphos	IM/GC-MSD/SOP (104)	<0.01	<0.01
143	Propham	IM/GC-MSD/SOP (104)	<0.02	<0.02
144	Propiconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
145	Propyzamide	IM/GC-MSD/SOP (104)	<0.02	<0.02
146	Prothioconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
147	Prothiofos	IM/GC-MSD/SOP (104)	<0.01	<0.01
148	Pymetrozine	IM/LC-MS-MS/SOP (165)	<0.010	<0.010
149	Pyraclostrobin	IM/GC-MSD/SOP (104)	<0.02	<0.02
150	Pyrazophos	IM/GC-MSD/SOP (104)	<0.02	<0.02
151	Pyridaben	IM/GC-MSD/SOP (104)	<0.02	<0.02
152	Pyridafenthion	IM/GC-MSD/SOP (104)	<0.01	<0.01
153	Pyrifenox	IM/GC-MSD/SOP (104)	<0.01	<0.01
154	Pyrimethanil	IM/GC-MSD/SOP (104)	<0.02	<0.02
155	Pyriproxyfen	IM/GC-MSD/SOP (104)	<0.02	<0.02
156	Quinalphos	IM/GC-MSD/SOP (104)	<0.02	<0.02
157	Quinoxifen	IM/GC-MSD/SOP (104)	<0.02	<0.02
158	Quintozene	IM/GC-MSD/SOP (104)	<0.02	<0.02
159	Resmethrin	IM/GC-MSD/SOP (104)	<0.02	<0.02
160	Spirodiclofen	IM/GC-MSD/SOP (104)	<0.02	<0.02
161	Spiromesifen	IM/GC-MSD/SOP (104)	<0.01	<0.01
162	Tau-fluvalinate	IM/GC-MSD/SOP (104)	<0.01	<0.01
163	Tecnazene	IM/GC-MSD/SOP (104)	<0.02	<0.02

Table S1. continued

Number	Name	Method	w(mg/kg)	
			Soil	Hop shoots
164	Tefluthrin	IM/GC-MSD/SOP (104)	<0.02	<0.02
165	Tebuconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
166	Terbutylazine	IM/GC-MSD/SOP (104)	<0.02	<0.02
167	Tetrachlorvinphos	IM/GC-MSD/SOP (104)	<0.01	<0.01
168	Tetraconazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
169	Tetradifon	IM/GC-MSD/SOP (104)	<0.02	<0.02
170	Tetramethrin	IM/GC-MSD/SOP (104)	<0.01	<0.01
171	Trifluralin	IM/GC-MSD/SOP (104)	<0.02	<0.02
172	Thiabendazole	IM/GC-MSD/SOP (104)	<0.02	<0.02
173	Tolclofos-methyl	IM/GC-MSD/SOP (104)	<0.02	<0.02
174	Tolyfluanid	IM/GC-MSD/SOP (104)	<0.02	<0.02
175	Triadimefon	IM/GC-MSD/SOP (104)	<0.02	<0.02
176	Triadimenol	IM/GC-MSD/SOP (104)	<0.02	<0.02
177	Triazophos	IM/GC-MSD/SOP (104)	<0.01	<0.01
178	Trifloxystrobin	IM/GC-MSD/SOP (104)	<0.02	<0.02
179	Triflumizole	IM/GC-MSD/SOP (104)	<0.02	<0.02
180	Triticonazole	IM/GC-MSD/SOP (104)	<0.01	<0.01
181	Vinclozolin	IM/GC-MSD/SOP (104)	<0.02	<0.02
182	Zoxamide	IM/GC-MSD/SOP (104)	<0.02	<0.02

n.a.=not analysed; <sup>1</sup>RR+SS isomers, <sup>2</sup>RS+SR isomers, IM=internal laboratory method, LC-MS-MS=liquid chromatography tandem mass spectrometry, SOP=standard operating procedure with an appropriate internal number of the method, GC-MSD=gas chromatography with mass selective detection, \*the compound was detected in hop shoots only