

## Supplementary Information

- Experimental procedures.

### *Quality control*

In order to guarantee the lack of contamination during the preparation of samples and the absence of carryover in the UHPLC system, every batch of samples injected included a workup sample at the beginning of the HPLC-MS/MS run and solvent samples between batches. The pesticides detected were identified after the comparison of multiple reaction monitoring (MRM) transition ratios in pure standards and samples. Instrumental performance and sensitivity changes were assessed by injecting quality control samples (standard solutions) every 10 samples, and the standard calibration mixture at the beginning and the end of all sample batches.

- Tables and Figures

Table S1. Sampling locations and GPS coordinates of the urban sites where wild bumblebees samples were collected, surveying circa 100 m radius around these points. Bumblebees collected in farmland were sampled on private land for which research permission was granted by the owners. Private landowners who granted access in this study wish to remain anonymous and specific GPS coordinates cannot be provided as part of that confidentiality.

Sampling site	Latitude	Longitude	Location	Distance to nearest arable crop
<b>URBAN 1</b>	50°49'25.11" N	0°18'45.34" W	Lancing	1,822 m
<b>URBAN 2</b>	50°50'7.71" N	0°15'30.99" W	Shoreham-by-Sea	1,397 m
<b>URBAN 3</b>	50°50'14.30" N	0°12'53.47" W	Portsdale	2,295 m
<b>URBAN 4</b>	50°50'41.53" N	0°10'28.52" W	Hove	1,591 m
<b>URBAN 5</b>	50°50'12.61" N	0°7'12.32" W	Brighton	2,435 m

Tables S2a-S2c. Concentrations (ng/g bee body weight) of neonicotinoid insecticides and fungicides detected in all the wild bumblebee specimens collected in this study in arable and urban habitats during three sampling periods (late spring: 27/04/14 – 14/05/14 - Table S2a; early summer: 5/06/14 – 23/06/14 - Table S2b; and midsummer: 15/07/14 – 2/08/14 - Table S2c). The residues that were found at detectable levels are highlighted in bold. Abbreviations: TMX = thiamethoxam, CLO = clothianidin, IMC = imidacloprid, ACT = acetamiprid, THC = thiacloprid.







Table S3. Estimated usage data in 2014 (FERA, 2015) for the pesticides analysed. Total arable land area in the UK in 2014 was 6,233,500 Ha (data provided by FAOSTAT: <http://www.fao.org/faostat/en/#data/RL>).

\*Usage data from 2013, no data available for this formulation in 2014

PESTICIDES	FORMULATION	AREA TREATED (Ha)	WEIGHT OF A.S. APPLIED (Kg)
<b>Neonicotinoid insecticides</b>			
Thiamethoxam	Thiamethoxam	43,255	2,595
	Thiamethoxam/Fluodioxonil/Metalaxyl-M	311,897	8,744
Clothianidin	Clothianidin	68,034	5,941
	Clothianidin/Prothioconazole	769,688	81,514
	Clothianidin/Beta-cyfluthrin	223,664	8,398
Imidacloprid	Imidacloprid/Beta-cyfluthrin	1,904	83
Thiacloprid	Thiacloprid	30,453	2,855
Acetamiprid	Acetamiprid	2,777	ND
<b>MBC-Fungicide</b>			
Carbendazim	Carbendazim	152,497	33,193
	Carbendazim/Flusilazole	128,961	21,231
<b>SDHI-Fungicides</b>			
Carboxin	Carboxin/Thiram	56,780*	ND
Boscalid	Boscalid	724,496	130,000
<b>Amine fungicide</b>			
Spiroxamine	Spiroxamine	711,931	132,000
<b>DMI fungicides</b>			
Triticonazole	Triticonazole/Prochloraz	567,042	16,694
Epoxiconazole	Epoxiconazole	3,783,354	227,000
Tebuconazole	Tebuconazole	3,586,689	385,000
Flusilazole	Flusilazole	108,920	11,965
	Flusilazole/Carbendazim	128,961	21,231
Prochloraz	Prochloraz	684,227	130,000
Metconazole	Metconazole	233,499	10,923
	Metconazole/Boscalid	75,629	11,031
	Metconazole/Epoxiconazole	512,811	35,758
	Metconazole/Fluxapyroxad	158,849	16,654
	Metconazole/Mepiquat chloride	53,114	11,696
<b>QoI-fungicides</b>			
Pyraclostrobin	Pyraclostrobin	988,505	74,000
Trifloxystrobin	Trifloxystrobin/Cyproconazole	135,476	24,134
	Trifloxystrobin/Fluoxastrobin/Prothioconazole	200,158	27,267
	Trifloxystrobin/Prothioconazole	212,054	31,955
Fluoxastrobin	Fluoxastrobin/Bixafen/Prothioconazole	97,996	23,132
	Fluoxastrobin/Prothioconazole	262,384	40,059
	Fluoxastrobin/Prothioconazole/Trifloxystrobin	200,158	27,267
<b>Synergist</b>			
Piperonyl butoxide		ND	ND

Table S4. Method detection limits (MDL) and method quantification limits (MQL) of neonicotinoid and fungicide calculated from spiked bumblebee samples.

	MDL ng/g <i>bee body weight</i>	MQL ng/g <i>bee body weight</i>
Thiamethoxam	0.30	0.90
Clothianidin	0.48	1.4
Imidacloprid	0.72	2.2
Acetamiprid	0.01	0.04
Thiacloprid	0.02	0.07
Carbendazim	0.05	0.14
Carboxin	0.24	0.72
Spiroxamine	0.05	0.14
Triticonazole	0.48	1.4
Epoxiconazole	0.96	2.9
Boscalid	0.24	0.72
Tebuconazole	0.12	0.36
Flusilazole	0.12	0.36
Prochloraz	0.30	0.90
Metconazole	0.24	0.72
Fluoxastrobin	0.24	0.72
Pyraclostrobin	0.24	0.72
Trifloxystrobin	0.01	0.04
Piperonyl butoxide	0.24	0.72