A TOXIC EDEN: POISONS IN YOUR GARDEN

AN ANALYSIS OF BEE-HARMING PESTICIDES IN ORNAMENTAL PLANTS SOLD IN EUROPE

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Technical Report

GREENPEACE

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An analysis of bee-harming pesticides in ornamental plants sold in Europe

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SUMMARY AND RECOMMENDATIONS BY GREENPEACE

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Current industrial agriculture relies on diverse synthetic chemical inputs, ranging from synthetic fertilisers through to toxic pesticides. These pesticides are designed to address insect and fungal pests as well as control weed plant species. Very little work appears to have been carried out on the residues of pesticides present in ornamental plants in Europe. It appears likely that plants which are treated with bee-harming pesticides and which are marketed for planting outdoors represent a relevant exposure-path and therefore a significant risk to bees and other pollinators. In fact, usage of various bee-harming pesticides to produce flowers which will eventually be grown in domestic gardens, balconies and public parks is significant. Through such use institutional buyers and private consumers are made unwitting accomplices in contaminating the environment with pesticides and putting bees at risk.

This study reports results from the laboratory analysis of ornamental plants sourced from garden centres, supermarkets and DIY-stores in ten European countries. The samples comprised more than 35 popular varieties like viola, bellflower and lavender which are attractive to bees. Overall, contamination with pesticides was found to be significant and relatively consistent across the samples as a whole. Of the 86 samples analysed, pesticide residues were found in 84 (97,6%) of these flowering plants. Only 2% of the samples contained no detectable residues. Insecticides regarded as of particular toxicological significance to bees were found frequently. In 68 of the 86 tested ornamental plants (79% of the samples) bee-harming pesticides were detected.

The three neonicotinoid pesticides which have been restricted Europe-wide for certain agricultural uses in order to prevent exposure to bees were found in almost half of the samples: 43% of the samples contained Imidacloprid, 8% Thiamethoxam and Clothianidin was found in 7% of the total, partly in high concentrations. While a final conclusion about their impacts on bees cannot be drawn from this study, it is possible that bees and other pollinators could be exposed to toxic concentrations of some of these pesticides. This is of importance because it demonstrates that the imposed EU-ban has

major loopholes and is not adequate in its current form to protect bees. Neonicotinoids (as some other pesticides) are systemic, meaning that the poisonous chemicals are taken up by the entire plant and transported to all the tissues (leaves, flowers, roots and stems, as well as pollen and nectar). Even if grown by professional producers in closed greenhouses in the early growing stages, neonicotinoid-treated plants can be freely purchased by private or institutional users and subsequently planted outdoors in parks, gardens and on balconies where they put flower-visiting bees at risk.

In addition to the insecticides found in the samples, a great variety of fungicides was also recorded. The most commonly detected of these was Boscalid, which was found in 44.2% of the samples. 12 of the 86 ornamental plants analysed contained pesticides not authorized for use in the EU (14%), including two that are toxic to bees. This may be due to illegal applications within Europe or through the imports of the pesticide-treated plants from countries where standards are lower than in the EU. The frequent occurrence of unauthorized pesticide residues in ornamental plants sold in Europe - including some pesticides toxic to bees - demonstrates the urgent need for rigorously improved supply chain management and tracking systems in the horticulture sector. The level of protection for bees and other pollinators should not be undermined by illegal bee-harming pesticides. Considering all the pesticides found, the biggest producer can be identified as Bayer Crop Science, who manufacture 6 of the 18 bee-harming pesticides found - followed closely by Syngenta with five pesticides.

These results can be regarded as a "snapshot" of the current horticulture sector in Europe which highlight the significant use of pesticides in the supply chains of ornamental plant production across Europe. Even though no meaningful comparison can be made between different plant varieties or different countries, the findings are significant. They show clearly that the existing restrictions on the use of certain neonicotinoids are not adequate to protect bees and other pollinators. The tested plants were all known to be attractive to bees and, therefore, a possible food-source for bees and other pollinating insects. Accordingly, there is an urgent need to close the loopholes in the existing EU-restrictions on imidacloprid, thiamethoxam and clothianidin and to explicitly ban their use in greenhouses too. Additionally, European policy makers need to ensure that all pesticides identified as harmful to bees are not used in horticulture.

In order to ensure protection for bees and other pollinators a fundamental change towards ecological farming in both agriculture and horticulture is urgently needed. Ecological farming is not based on the use of bee-harming chemicals, but benefits bees by providing healthy and safe environments within farms and gardens where insects and biodiversity can thrive.

1. INTRODUCTION

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In Europe as a whole, about 300,000 tons of pesticides are used in agriculture annually, with over 80% used in the EU 15 countries. Of the total, around 40.000 tons are insecticides (ECPA 2014). Assuming that the production of ornamental plants uses around 6%[1], then it can be estimated that total amount of pesticides used in this sector is around 18.000 tons, of which 2.400 tons are insecticides.

In many European countries, including Germany, no data appear to have been produced specifically on the use of pesticides in the cultivation of ornamental plants[2] and it seems that even the trade association, the German Federal Association of Ornamental Plants (BVZ) has no further information on this topic (BVZ pers. comm)[3].

As an example of pesticide use in a single European country, in 2012, a total of 45.527 tons of pesticides were reported as being used in Germany; 1.117 tons of which were insecticides[4]. The total share of sales of pesticides in the areas of retail, garden and ornamental plants for the year 2000 was estimated at around 17% [5]. Assuming the proportion of this used in ornamental plant cultivation was about a third; this would imply a usage of about 64 tons in the German ornamental plant sector alone.

Some limited data do exist. A study carried out under the auspices of the German Ministry of Food and Agriculture, involved testing of Poinsettia spp. The most frequently found insecticide was the systemic chemical imidacloprid.[6]

1 Based on the data from Germany, see below

2 Telephone conversation with the German Federal Office of Consumer Protection and Food Safety and the Julius Kühn Institute from the 26th of march 2014.

3 Email from BVZ from the 1st of april 2014

4 sales of crop protection products in the Federal Republic of Germany - Results of the messages according to § 64 Plant Protection Act for the year 2012; Federal Office of Consumer Protection and Food Saf

5 Roland Dittmeyer, Wilhelm Keim, Gerhard Kreysa, Karl Winnacker, Leopold Küchler: Chemische Technik. Band 8, Ernährung, Gesundheit, Konsumgüter. 5. Auflage. Wiley-VCH, 2004 ISBN 3527307737, S. 218–223.

6 NEPTUN 2005 - Zierpflanzenbau. Erhebung von Daten zur Anwendung chemischer Pflanzenschutzmittel unter http://papa.jki.bund.de/index.php?menuid=41

2. MATERIALS & METHODS

Samples of ornamental plants were obtained from ten European countries (Austria, France, Germany, Greece, Hungary, Italy, Netherlands, Poland, Spain and Switzerland). In total 86 samples of plants considered to be attractive to bees (see www.bluehende-landschaften.de) were bought in garden centres. The garden centres from which samples were purchased represented a mix of nationally based enterprises together with multi-national companies, both with potentially complex and international supply chains.

Samples were sent to an independent accredited laboratory in Germany, where they were analysed using a common analytical protocol (QuEChERS) designed for the analysis of food materials and suitably adapted. The neonicotinoid pesticides clothianidin, thiamethoxam and imidacloprid were analysed using a targeted LCMS/MS analysis with a detection limit (LOD) of 0.3 µg/kg and a limit of quantitation (LOQ) of 1 µg/kg. All other pesticides were analysed using a multiresidue GC-MS/MS and LC-MS/MS method covering 300 different substances with a detection limit (LOD) of 3 µg/kg and an LOQ of 10 µg/kg in most cases.

2.1 Overview of Results

Of the 86 ornamental plant samples analysed, pesticide residues were found in 84 (97.6%). Insecticides regarded as of particular significance to bees were found frequently. The neonicotinoids currently restricted for certain uses in the EU were all detected. Imidacloprid was found 37 times (43% of samples), Thiamethoxam 7 times (8% of samples) and Clothianidin 6 times (7% of samples).The pesticides Chlorpyrifos, Cypermethrin and Deltamathrin were found in 14 cases (see table 1). A report published by Greenpeace International in 2013, Bees in Decline (see www.sos-bees.org/reports), identified seven bee-killing pesticides produced by Syngenta, Bayer, BASF and other companies, which need to be removed from the market as a priority. Previously in 2010 Greenpeace Germany made an evaluation of pesticide toxicity and identified some as being toxic to bees. 12 substances from this Greenpeace Germany "Blacklist"[7] were found in the course of this assessment of ornamental plants (further information can be found in Section 4.2).

All of the samples obtained from France and from Switzerland (100%) were contaminated with bee-harming pesticides, in comparison to the plants obtained from Italy where almost half (43%) were found to be contaminated. Differences in the numbers of samples showing overt contamination in different countries may reflect differences in pesticide use, but alternatively may reflect plant-specific differences in treatment. These results can be regarded as a "snapshot" of the current horticulture sector in Europe, highlighting the significant use of pesticides in the supply chains of ornamental plant production across Europe. Even though no meaningful comparison can be made between different plant varieties or different countries, the findings are, nonetheless, highly significant.

7 http://www.greenpeace.de/sites/www.greenpeace.de/files/Schwarze_Liste_der_Pestizide_II_2010_0.pdf

Table 1: Overview of bee-harming pesticides found in ornamental plants.

Country	No. of samples analyzed	No. of samples with pesticide residues	Samples with bee-harming pesticides	Key pesticides found (Partially banned neonicotinoids % other bee-killing pesticides*); (No. of samples in which found) [concentration range in µg/kg]
Austria	10	10	7 (70%)	Chlorpyrifos (-methyl) (1) [211] Deltamethrin (2) [46 – 118] Imidacloprid (4) [11,5 – 1116]
France	3	3	3 (100%)	Deltamethrin (1) [21] Imidacloprid (1) [2936]
Germany	19	19	17 (89%)	Clothianidin (2) [73,4 – 107,8] Imidacloprid (9) [1,6 - 4018] Thiamethoxam (1) [542]
Greece	9	8	7 (78%)	Deltamethrin (2) [25 – 1118] Imidacloprid (5) [4,9 – 109,7] Chlorpyrifos-Ethyl (1) [94]
Hungary	10	9	8 (80%)	Clothianidin (2) [5,8 – 156,2] Chlorpyrifos-Ethyl (1) [8841] Imidacloprid (5) [4,5 – 8891] Thiamethoxam (2) [8,4 – 1536]
Italy	7	7	3 (43%)	Clothianidin (1) [445,2] Cypermethrin (1) [1190] Deltamethrin (1) [67] Imidacloprid (2) [3,9 – 455] Thiamethoxam (2) [130 – 718,2]
Netherlands	10	10	7 (70%)	Deltamethrin (2) [22 – 34] Imidacloprid (4) [1,2 – 17]
Poland	5	5	4 (80%)	Clothianidin (1) [56,2] Deltamethrin (2) [50 – 55] Imidacloprid (1) [124,5] Thiamethoxam (1) [46,7]
Spain	3	3	2 (67%)	Imidacloprid (2) [4 – 10]
Switzerland	10	10	10 (100%)	Imidacloprid (4) [16,7 – 2608]
Total	86	84	68 (79%)	Chlorpyrifos (3) Clothianidin (6) Cypermethrin (3) Deltamethrin (1) Imidacloprid (37) Thiamethoxam (7)

*see GPI 2013: Bees in Decline-report (Clothianidin, Imidacloprid,Thiamethoxam, Fipronil, Chlorpyrifos, Cypermethrin, Deltamethrin to be fully banned as a priority).

2.2 Bee-harming pesticides

Overall in the ornamental plant samples, 76 different pesticide residues were detected and of these 18 are rated as being of particular concern to bees, including seven that need to be fully banned as a priority (see table 2):

Table 2: Bee-harming pesticides and criteria (GPI priority bee-killing pesticides; GPGE Blacklist bee-toxic pesticides).[8]

Red = Not authorized in EU

Pesticide	GPI priority bee-killing pesticide	GPGE blacklist highly bee-toxic	GPGE blacklist moderately bee-toxic
Clothianidin	X	X	
Imidacloprid	X	X	
Thiamethoxam	X	X	
Cyhalothrin, lambda-		X	
Pirimiphos-methyl		X	
Paclobutrazol			X
Cypermethrin	X	X	
Chlorpyrifos(-ethyl)	X	X	
Etofenprox		X	
Deltamethrin	X	X	
Dichlorvos		X	
Chlorantraniliprole			X
Chlorothalonil			X
Indoxacarb		X	
Pyridaben		X	
Spinosad		X	
Acetamiprid			X
Methamidophos		X	

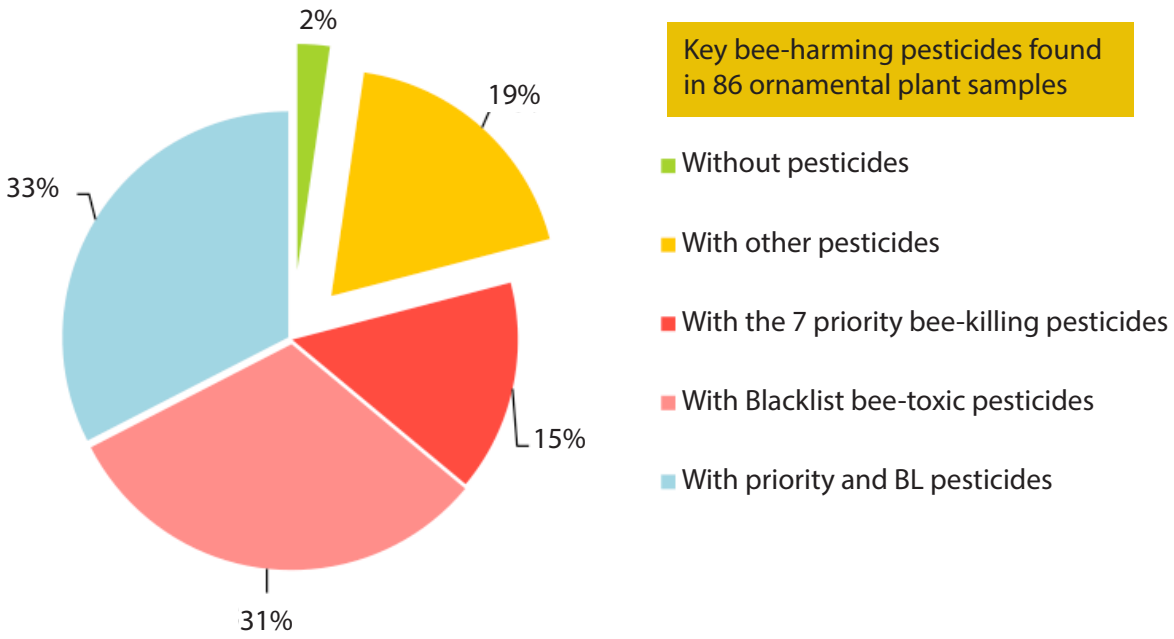
In 68 of the 86 tested ornamental plants (79% of samples) bee-harming pesticides were detected as noted in table 3. 13 samples contained 'priority bee-harming pesticides', 27 samples contained 'blacklisted bee-toxic pesticides' and 28 samples contained both priority and blacklisted bee-harming compounds. Other pesticides (not classified as bee-toxic) were found in 16 samples and only two samples contained no detectable pesticides.

8 moderate: LD50 >= 2µg/bee <= 11µg/bee in 48 h; highly: LD50 < 2µg/bee in 48 h according to USEPA: US EPA (2007b): Technical Overview of Ecological Risk Assessment Analysis Phase: Ecological Effects Characterization, U.S. Environmental Protection Agency, Washington, DC, www.epa.gov/oppefed1/ecorisk_ders/toera_analysis_eco.htm

Table 3: Samples with bee-harming pesticides

Sample properties	No. of samples	%
With priority and blacklist pesticides	28	33
With blacklist bee-toxic pesticides	27	31
With the 7 priority bee-killing pesticides	13	15
With other pesticides	16	19
Without detectable pesticides	2	2
Total	86	100

Pic. 1: Bee-harming pesticides.



2.3 The maximum concentrations of bee-harming pesticides detected

Bee-harming pesticides were found in concentrations up to 9 mg/kg wet weight (Imidacloprid in a Bellflower from Hungary). The highest concentrations of pesticides found are shown in table 4.

Table 4: Highest concentrations of bee-harming pesticides found.

Red = Not authorized in EU

Pesticide	Max. Concentration [µg/kg]	Country
Clothianidin	445	Italy
Imidacloprid	8891	Hungary
Thiamethoxam	542	Germany
Cyhalothrin, lambda-	1400	Germany
Pirimiphos-methyl	400	Switzerland
Paclobutrazol	4100	Switzerland
Cypermethrin	1190	Italy
Chlorpyrifos(-ethyl)	8841	Hungary
Etofenprox	1100	Italy
Deltamethrin	1118	Greece
Dichlorvos	153	Netherlands
Chlorantraniliprole	1300	Netherlands
Chlorothalonil	5061	Switzerland
Indoxacarb	370	Poland
Pyridaben	2758	Greece
Spinosad	6640	Switzerland
Acetamiprid	1270	Germany
Methamidophos	247	Greece

2.4 Most frequently detected pesticides

76 different pesticides in total were detected in the ornamental plants.[9] The five most frequently detected were Boscalid (38 detections), Imidacloprid (37 detections), Iprodion (32 detections), Pyraclostrobin (31 detections) and Propiconazole (31 detections); (see table 5).

Table 5: Pesticides found in ornamental plants; type and frequency.

Range	Pesticide	Type*	No. of detections	Percentage
1	Boscalid	F	38	44,2%
2	Imidacloprid	I	37	43,0%
3	Iprodion	F	32	37,2%
4	Pyraclostrobin	F	31	36,0%
5	Propiconazole	F	31	36,0%
6	Daminozide	PG	23	26,7%
7	Paclobutrazol	PG	21	24,4%
8	Propamocarb	F	18	20,9%
9	Cyprodinil	F	16	18,6%
10	Azoxystrobin	F	16	18,6%
11	Fenhexamid	F	15	17,4%
12	Carbendazim	F	14	16,3%
13	Spinosad	I	13	15,1%
14	Cyhalothrin, lambda-	I	11	12,8%
15	Thiophanat-metyl	F	11	12,8%
16	Fludioxonil	F	10	11,6%
17	Difenoconazole	F	10	11,6%
18	Deltamethrin	I	10	11,6%
19	Metalaxyl/Metalaxyl-M	F	9	10,5%
20	Fluopyram	F	9	10,5%
21	Dimethomorph	F	9	10,5%
22	Chlorothalonil	F	8	9,3%
23	Fluazinam	F	8	9,3%
24	Thiamethoxam	I	7	8,1%
25	Thiacloprid	I	7	8,1%
26	Tolclofos-methyl	F	7	8,1%
27	Clothianidin	I	6	7,0%
28	Metconazole	F, PG	6	7,0%
29	Pirimicarb	I	5	5,8%
30	Tridemorph	F	5	5,8%
31	Indoxacarb	I	5	5,8%
32	Prothioconazol	F	4	4,7%
33	Pyridaben	A, I	4	4,7%
34	Teflubenzuron	I	4	4,7%

Yellow = Bee-harming pesticides among them:
Banned Neonicotinoids
Other bee-endangering pesticides
Blacklist bee-toxics
Red = Not authorized in EU

*Fungicides, Insecticides, I+A, Herbicides, Plant Growth Regulators, F+PG, Acaricides, Synergists

9 Chlorpyrifos-ethyl and –methyl are counted as Chlorpyrifos; Methiocarb and Methiocarb-sulfoxid are counted as Methiocarb; Endosulfan (total), Endosulfan-alpha, Endosulfan-beta and Endosulfan-sulfat are counted as Endosulfan; Chlorthalonil and Chlorothalonil are counted as Chlorothalonil

Range	Pesticide	Type*	No. of detections	Percentage
35	Prochloraz	F	3	3,5%
36	Pirimiphos-methyl	I	3	3,5%
37	Dithianon	F	3	3,5%
38	Methiocarb	I	3	3,5%
39	Piperonyl butoxide (synergist)	S	3	3,5%
40	Chlorantraniliprole	I	3	3,5%
41	Folpet	F	3	3,5%
42	Hexythiazox	A, I	3	3,5%
43	Acetamiprid	I	3	3,5%
44	Tebuconazol	F	3	3,5%
45	Bupirimate	F	2	2,3%
46	THPI (Metabolit Captan/Captafol)	F	2	2,3%
47	Endosulfan	I, A	2	2,3%
48	Chlorpyrifos	I	3	3,5%
49	Fenamidone	F	2	2,3%
50	Kresoxim-methyl	F	2	2,3%
51	Mandipropamide	F	2	2,3%
52	Myclobutanil	F	2	2,3%
53	Triforin	F	1	1,2%
54	Bromopropylate	A	1	1,2%
55	Cypermethrin	I	1	1,2%
56	Procymidone	F	1	1,2%
57	Etofenprox	I	1	1,2%
58	DEET		1	1,2%
59	Dichlorvos	I	1	1,2%
60	Lenacil	H	1	1,2%
61	Penconazol	F	1	1,2%
62	Captan	F	1	1,2%
63	Propyzamid	H	1	1,2%
64	Methoxyfenozide	I	1	1,2%
65	Lufenuron	I	1	1,2%
66	Metazachlor	H	1	1,2%
67	tau-Fluvalinate	I	1	1,2%
68	Trifloxystrobin	F	1	1,2%
69	Pencycuron	F	1	1,2%
70	Diflubenzuron	I	1	1,2%
71	Iprovalicarb	F	1	1,2%
72	Mepanipyrim	F	1	1,2%
73	Propargite	A	1	1,2%
74	Methamidophos	I, A	1	1,2%
75	Vinclozolin	F	1	1,2%
76	Spiroxamine	F	1	1,2%

In Europe as a whole, about 300,000 tons of pesticides are used in agriculture annually, with over 80% used in the EU 15 countries.

2.5 Authorization status of the detected pesticides

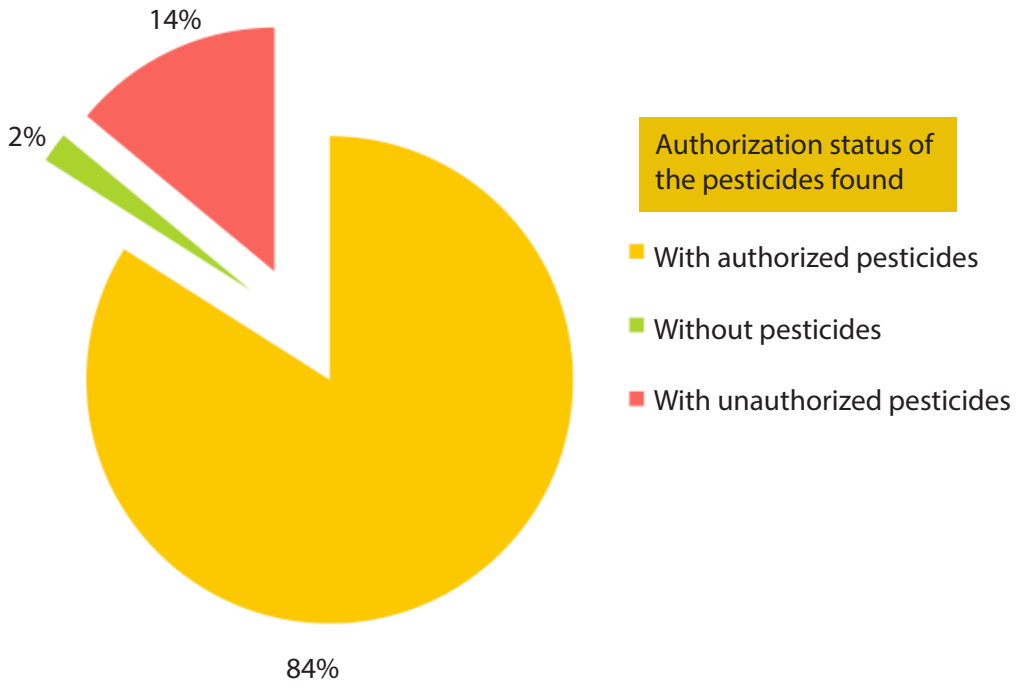
The current authorization status of the pesticides within the EU was investigated. Ten (8,6%) of the detected 86 active substances in the ornamental plants are currently not registered for use in the EU (EU PD 2014), and are shown in red in table 5.

12 of the 86 ornamental plants analysed were found to contain pesticides not authorized for use in the EU (14%), 72 samples were found to contain authorized pesticides (84%) and only 2 samples (2%) did not contain any detectable at all (see picture 2).

This may be due to illegal applications within Europe or due to the complex and international supply chains in the horticulture market, i.e. through the imports of the pesticide-treated plants from countries where standards are lower than in EU.

Pesticides products and their permitted applications including their use in the

Pic. 2: Detected pesticides and their authorization status within the EU.



cultivation of ornamental plants are approved by individual EU Member States. Due to insufficient available data relating to many countries, the example of the situation in Germany is considered here as an illustration: Currently in Germany 133 substances are authorized for use on ornamental plants (BVL 2014a).

Considering the results reported here: 36 different residues were detected in the 19 samples obtained from Germany, 13 of these are not authorized for uses in the production of ornamental plants in Germany (36%), see table 6 (BVL 2014b). A possible explanation for these findings might be that not all of them were actually grown within Germany as indicated above, but it is not possible to verify this. In application testing analyses carried out in Germany in 2012 nearly one in five ornamental plants was rejected, because unauthorized pesticides were detected (BVL 2013).

Table 6: pesticides which are not allowed to be used on ornamental plants in Germany but which were detected in samples of plants sourced in Germany.

2.6 Pesticide residue categories

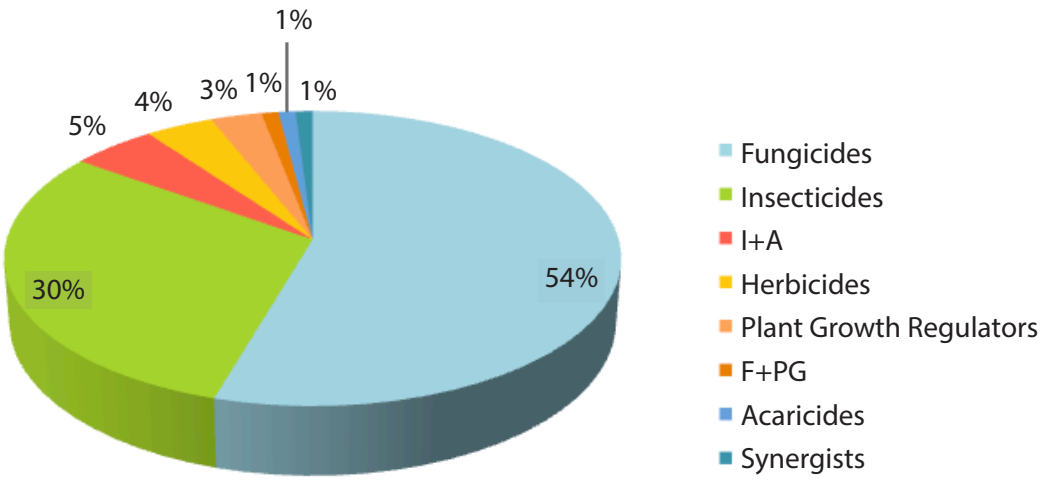
Pesticide	Type*	No. of detections
Carbendazim	F	3
Chlorantraniliprole	I	1
Chlorothalonil	F	3
Fluazinam	F	1
Fluopyram	F	2
Iprovalicarb	F	1
Mandipropamide	F	1
Mepanipyrim	F	1
Paclobutrazol	F	8
Propargite	A	1
Prothioconazol	PG	1
Thiamethoxam	I	1
Thiophanat-metyl	F	1

*Fungicides, Insecticides, Herbicides, Plant Growth Regulators, Acaricides

Most of the substances detected in the ornamental plant samples were fungicides (40) followed by insecticides (22). In addition four substances found are classified as insecticides and acaricides (I+A). This means that, altogether 26 of the substances found were classified as insecticides (34%) by the EU (EU 2014), see picture 3.

Pic. 3: Categories of pesticides found in ornamental plants.

2.7 Manufacturer/Authorization Holder of the bee-harming pesticides



The 18 bee-toxic pesticides detected are produced by at least 18 different companies, or the authorization was requested by one of these companies[10]; Bayer is represented with 6 different substances, followed by Syngenta with 5 different substances, see table 7.

Table 7: Manufacturer/Authorization Holder of the bee-harming pesticides found in ornamental plants

Manufacturer/ Authorization hozlder	Number of bee-harming pesticides found
Bayer CropScience Deutschland GmbH	6
Syngenta Agro GmbH	5
Cheminova A/S	3
DuPont de Nemours	3
Scotts Celaflor GmbH	2
Spiess-Urania Chemicals	2
BASF SE	2
W. Neudorff GmbH KG	1
Feinchemie Schwebda GmbH	1
OXON Italia SpA	1
Sparta Research Ltd.	1
GAT Microencapsulation AG	1
Nufarm Deutschland GmbH	1
FMC Chemical,sprl	1
AGRIPHAR S.A.	1
Nissan Chemical Europe vS.A.R.L.	1
Dow AgroSciences GmbH	1
Nisso Chemical Europe GmbH	1

Two of the 18 bee-toxic pesticides are not allowed in the EU: dichlorvos and methamidophos. Bayer produces both and Cheminova just produces methamidophos.

10 According to BVL 2014b (for not-allowed substances: Internet-research); no claim to completeness

3. ANNEX

all neonicotinoid- residues in ug/kg / all other pesticides in mg/kg								
Country of origin	sample number	sample identification	name	Shop	number of residues	Boscalid	Imidacloprid	Iprodion
Austria	Austria 01	PI1403200204	Hahnenfuss	OBI	10	6,229	n.d.	0,022
Austria	Austria 02	PI1403240065	Lavender	ÖBAU	3		n.d.	0,692
Austria	Austria 03	PI1403210086	Lavender	STARKL	15	0,019	1116	5,087
Austria	Austria 04	PI1403210121	Primel	BAUHAUS	7	0,017	98,6	1,26
Austria	Austria 05	PI1403210091	Primrose	DEHNER	10	4,456	n.d.	
Austria	Austria 06	PI1403210158	Primrose	BELLAFLORA	3		n.d.	
Austria	Austria 07	PI1403210074	Primrose	HORNBACH	6	3,653	n.d.	
Austria	Austria 08	PI1403210159	Primrose	BAUMAX	6		46,6	3,34
Austria	Austria 09	PI1403210128	Lavender	HOLLAND BLUMEN MARK	10	0,134	11,5	
Austria	Austria 10	PI1403210132	Narcissus	LAGERHAUS	2		n.d.	
France	FR 01	PI1403210102	Bellflower	Gamm Vert	7		2936	0,014
France	FR 02	PI1403210103	Iberis	Gamm Vert	1		n.d.	
France	FR 03	PI1403210104	Buttercup	Gamm Vert	8	3,967	n.d.	
Germany	DE_West_2	PI1403210139	Nelke	HORNBACH	7		n.d.	0,758
Germany	DE_West_3	PI1403210215	Hortensie	TOOM	11	5,34	n.d.	0,818
Germany	DE_West_4	PI1403210214	Glockenblume Blue "GET MEE"	TOOM	6	6,162	n.d.	0,016
Germany	DE_North_1	PI1403250125	Vergißmeinnicht	Obi	10	8,96	n.d.	0,025
Germany	DE_North_2	PI1403250126	Steinkraut "Berggold"	Obi	2	0,034	n.d.	
Germany	DE_ Middle_1	PI1403240001	Glockenblumen blue and white	Bauhaus	12	1,772	14,1	
Germany	DE_ Middle_2	PI1403240003	Nelke	Bauhaus	4		4018	2,548
Germany	DE__ Middel_3	PI1403240002	Stiefmütterchen	Obi	6		n.d.	
Germany	DE_ Middle_4	PI1403240004	Primel	Obi	2		n.d.	
Germany	DE_East_1	PI1403210224	Schlüsselblume	Bauhaus	9	12,4	1182	10,7
Germany	DE_East_2	PI1403280051	Stiefmütterchen	Bauhaus	8	0,025	1,5	0,023
Germany	DE_East_3	PI1403210226	Schlüsselblume	HORNBACH	6	0,098	273,4	
Germany	DE_East_4	PI1403210227	Hornveilchen	HORNBACH	12		18,4	
Germany	DE_ South_1	PI1403200195	Glockenblume "White GET MEE"	Toom	5	7,953	n.d.	
Germany	DE_ South_1.1	PI1403200196	Glockenblume "BLUE GET MEE" MIX COLLI	Toom	5	6,052	n.d.	
Germany	DE_ South_1.2	PI1403200197	Glockenblime "Blue GET MEE" Campanu.Port.	Toom	5	2,494	n.d.	
Germany	DE_ South_2	PI1403200198	Hortensie	Toom	7	0,101	533,7	
Germany	DE_ South_3	PI1403200199	Nelke	Hagebaumarkt	13	4,422	3	0,025

all Neonix- residues in ug/kg / all other pesticides in mg/kg								
Country of origin	sample number	sample identification	name	Shop	number of residues	Boscalid	Imidacloprid	Iprodion
Germany	DE_ South_4	PI1403200200	Primel	Hagebaumarkt	6		1,6	
Greece	Greece 01	PI1403200174	Paper Floower, Lesser Bougoinvillea	G. Xenoulis	5		109,7	0,018
Greece	Greece 02	PI1403200175	Dahlia	Nisiotis plants	1		n.d.	
Greece	Greece 03	PI1403200176	Azalea	Parisis Garden Center	7		43,4	2,45
Greece	Greece 04	PI1403200177	Camelia	Kostas Tsakiris	1		n.d.	
Greece	Greece 05	PI1403200178	Myrtle-leaf milkwort	Kostas Tsakiris	1		4,9	
Greece	Greece 06	PI1403280013	Hydrangea of Hortensia	Garden Center Syniolakis	3		n.d.	
Greece	Greece 07	PI1403200180	Freesia	Nisiotis plants	1		41	
Greece	Greece 08	PI1403200181	Viola	Parisis Garden Center	0		n.d.	
Greece	Greece 09	PI1403200182	Cineraria	G. Xenoulis	6		7,7	0,012
Hungary	HU 1	PI1403260094	Bellflower	OBI	8	11,3	8,3	0,026
Hungary	HU 2	PI1403260095	Rose	OBI	9	0,67	n.d.	
Hungary	HU 3	PI1403260096	Rose	Praktiker	9		87,5	
Hungary	HU 4	PI1403260097	Narcissus	Baumax	0		n.d.	
Hungary	HU 5	PI1403260098	Bellflower	Baumax	8	12,1	n.d.	
Hungary	HU 6	PI1403260099	Buttercup	Baumax	6	0,036	4,5	
Hungary	HU 7	PI1403260100	Buttercup	OBI	8	8,6	33,8	
Hungary	HU 8	PI1403310033	Bellflower	Praktiker	5	0,03	8891	
Hungary	HU 9	PI1403260102	Crocus	OBI	6	0,044	n.d.	
Hungary	HU 10	PI1403260103	Hyacinth	OBI	5	0,118	n.d.	
Italy	ITALY 01	PI1403180156	Campanula	OBI - Brico Business Cooperation Srl	5	3,832	n.d.	0,011
Italy	ITALY 02	PI1403180155	Erica africana	OBI - Brico Business Cooperation Srl	12		3,9	30,8
Italy	ITALY 03	PI1403180157	Dalia	Giardineria Srl	11		455	0,034
Italy	ITALY 04	PI1403180158	Narciso	Giardineria Srl	1		n.d.	
Italy	ITALY 05	PI1403180159	Crocus	Giardineria Srl	3		n.d.	
Italy	ITALY 06	PI1403180160	Rosmarino	Giardineria Srl	4		n.d.	
Italy	ITALY 07	PI1403180161	Viola Cornuta	Viridea Srl	4	2,176	n.d.	
Netherlands	NL52	PI1403190183	Dahlia (tubers)	Welkoop Dalfsen	1		n.d.	
Netherlands	NL54	PI1403190182	Gladiolus (bulbs)	Welkoop Dalfsen	3	0,054	3	
Netherlands	NL04	PI1403190190	Lavender	Intratuin Hoorn	9	0,225	n.d.	8,238
Netherlands	NL06	PI1403190191	Primrose	Intratuin Hoorn	3		n.d.	
Netherlands	NL53	PI1403190184	Dense Blasing Star (bulbs)	Welkoop Dalfsen	8		n.d.	

all Neonix- residues in ug/kg / all other pesticides in mg/kg								
Country of origin	sample number	sample identification	name	Shop	number of residues	Boscalid	Imidacloprid	Iprodion
Netherlands	NL30	PI1403190185	Camelia	Intratuin Zoetermeer	14		17	0,275
Netherlands	NL38	PI1403190186	Skimmia	Groenrijk Zuidoostbeemster	6		n.d.	
Netherlands	NL36	PI1403190187	Hellebore/ Christmas rose	Groenrijk Zuidoostbeemster	6		n.d.	4,857
Netherlands	NL37	PI1403190188	Laurustinus	Groenrijk Zuidoostbeemster	7		7	
Netherlands	NL71	PI1403190189	Rhododendron	Intratuin Arnhem	3		1,2	
Poland	Poland 01	PI1403210162	Common lavender	Obi	2		n.d.	
Poland	Poland 02	PI1403210163	Winter health	Obi	10	0,292	n.d.	
Poland	Poland 03	PI1403210164	Pansy	Obi	9		124,5	0,055
Poland	Poland 04	PI1403210165	Muscari	PSB Mrówka	5		n.d.	
Poland	Poland 05	PI1403210166	Campanula	Praktiker	15	5,38	n.d.	0,591
Spain	Flower 01	PI1403190130	Chrysanthemum	Verdecora	8		10	0,073
Spain	Flower 02	PI1403190131	Calendula	Verdecora	7		4	0,051
Spain	Flower 03	PI1403190132	Calendula	Verdecora	1		n.d.	
Switzerland	CH4	PI403060031	Myosotis	Jumbo	12		1026,8	0,02
Switzerland	CH1	PI1403060028	Narzisse	Migros	5		n.d.	
Switzerland	CH2	PI1403060029	Campanula	Coop	6	6,055	n.d.	0,032
Switzerland	CH3	PI1403060030	Krokus	Jumbo	6		n.d.	
Switzerland	CH-5	PI1403250162	Lavender	Obi	5	0,015	n.d.	0,052
Switzerland	CH-6	PI1403310024	Blühpflanze, unbenannt	Obi	5		2608	
Switzerland	CH-8	PI1403250164	Vergißmeinnicht	Coop	15	0,57	36,7	
Switzerland	CH-9	PI1403250161	Blühpflanze, unbenannt	Migros	3	0,01	n.d.	
Switzerland	CH-7	PI1403250160	Blume mit Zwiebel	Hauenstein AG	2		n.d.	
Switzerland	CH-10	PI1403250159	Winterhardy cam. Bali Multi	Bauhaus	7		16,7	0,02

all Neonix- residues in ug/kg / all other pesticides in mg/kg											
sample number	Fludioxonil	Bupirimate	Difenoconazole	Fluazinam	Daminozide	Imidacloprid	Triforin	Metalaxyl/ Metalaxyl-M	Cyprodinil	Iprodion	Cyhalothrin, lambda-
Austria 01			0,155		13,04					0,022	0,137
Austria 02										0,692	0,04
Austria 03	0,025		0,448			1,252			0,142	5,087	0,02
Austria 04						0,117			0,093	1,26	
Austria 05			0,132					0,179	0,02		2
Austria 06				1,041				0,037			
Austria 07					0,522						
Austria 08				0,136		0,047				3,34	
Austria 09			0,091					0,011			0,123
Austria 10											
FR 01						2,749				0,014	
FR 02											
FR 03					0,446						
DE_ West_2				0,039						0,758	
DE_ West_3					13,71				0,056	0,818	
DE_ West_4					0,23					0,016	
DE_ North_1					4,08			0,04		0,025	
DE_ North_2											
DE_ Middle_1					0,211	0,012					
DE_ Middle_2						3,439				2,548	
DE__ Middel_3											
DE_ Middle_4											1,405
DE_East_1			0,15		2,239	1,09				10,7	
DE_East_2	4,505		0,524					0,016	2,087	0,023	
DE_East_3	1,207					0,268			2,487		0,358
DE_East_4			0,049			0,015					
DE_ South_1					0,871						
DE_ South_1.1					0,198						
DE_ South_1.2					0,165						
DE_ South_2					6,704	0,508					
DE_ South_3			0,711						0,01	0,025	

all Neonix- residues in ug/kg / all other pesticides in mg/kg											
sample number	Fludioxonil	Bupirimate	Difenoconazole	Fluazinam	Daminozide	Imidacloprid	Triforin	Metalaxyl/ Metalaxyl-M	Cyprodinil	Iprodion	Cyhalothrin, lambda-
DE_ South_4											
Greece 01						0,075				0,018	
Greece 02											
Greece 03										2,45	0,341
Greece 04											
Greece 05											
Greece 06											
Greece 07						0,023					
Greece 08											
Greece 09		0,485			2,702					0,012	
HU 1					0,811					0,026	
HU 2	0,052								0,055		
HU 3	0,3					0,088			0,425		
HU 4											
HU 5					124,8						
HU 6				0,032							
HU 7						0,039					
HU 8						7,5					
HU 9											
HU 10											
ITALY 01					0,409					0,011	
ITALY 02									0,02	30,8	
ITALY 03					16,694	0,55				0,034	
ITALY 04											
ITALY 05											
ITALY 06											
ITALY 07					0,054						
NL52											
NL54											
NL04										8,238	0,121
NL06											
NL53				1,277							
NL30	0,062					0,013			0,154	0,275	
NL38								0,011			
NL36	1,313								0,436	4,857	
NL37									0,077		
NL71											
Poland 01											
Poland 02	0,563								1,37		
Poland 03						0,121		0,3		0,055	
Poland 04											

all Neonix- residues in ug/kg / all other pesticides in mg/kg											
sample number	Fludioxonil	Bupirimate	Difenoconazole	Fluazinam	Daminozide	Imidacloprid	Triforin	Metalaxyl/ Metalaxyl-M	Cyprodinil	Iprodion	Cyhalothrin, lambda-
Poland 05				0,038				0,012		0,591	
Flower 01					1,844	0,01				0,073	
Flower 02					0,183					0,051	
Flower 03											
CH4	1,443	0,014	0,031	6,963	0,089	0,969	0,813	0,146	2,231	0,02	0,922
CH1											
CH2					0,068					0,032	
CH3											
CH-5										0,052	
CH-6				0,527		2,53					
CH-8	0,174		0,511		2,3	0,037			0,026		0,18
CH-9											
CH-7											
CH-10										0,02	

all Neonix- residues in ug/kg / all other pesticides in mg/kg									
sample number	other pesticides	Prochloraz	Carbendazim	Thiophanat-metyl	Pirimiphos-methyl	THPI (Metabolit Captan/ Captafol)	Boscalid	Paclobutrazol	Pyraclostrobin
Austria 01	n.d.						6,229		0,312
Austria 02	n.d.								
Austria 03	n.d.		0,976	0,317			0,019	0,048	0,014
Austria 04	n.d.						0,017		
Austria 05	n.d.						4,456		0,748
Austria 06	n.d.								
Austria 07	n.d.						3,653		0,341
Austria 08	n.d.								
Austria 09	n.d.						0,134		0,097
Austria 10	n.d.		0,04	0,036					
FR 01	n.d.							0,059	
FR 02	n.d.								
FR 03	n.d.						3,967	0,111	0,954
DE_ West_2	n.d.							0,261	
DE_ West_3	n.d.						5,34	0,011	0,656
DE_ West_4	n.d.						6,162	0,403	1,296
DE_Nor-th_1	n.d.		0,023				8,96	0,02	0,368
DE_Nor-th_2	n.d.						0,034		

all Neonix- residues in ug/kg / all other pesticides in mg/kg									
sample number	other pesticides	Prochloraz	Carbendazim	Thiophanat-metyl	Pirimiphos-methyl	THPI (Metabolit Captan/ Captafol)	Boscalid	Paclobutrazol	Pyraclostrobin
DE_Middle_1	n.d.						1,772	2,373	0,289
DE_Middle_2	n.d.								
DE__ Middel_3	n.d.							0,012	
DE_Middle_4	n.d.								
DE_East_1	n.d.						12,4		1,88
DE_East_2	n.d.						0,025		
DE_East_3	n.d.						0,098		
DE_East_4	n.d.								
DE_ South_1	n.d.						7,953		1,471
DE_ South_1.1							6,052	0,154	0,991
DE_ South_1.2	n.d.						2,494	0,301	0,446
DE_ South_2	n.d.						0,101		
DE_ South_3	n.d.		5,401	10,738			4,422		0,781
DE_ South_4	n.d.		0,052						
Greece 01	n.d.								
Greece 02	n.d.								
Greece 03	n.d.								
Greece 04	n.d.								
Greece 05	n.d.								
Greece 06	n.d.								
Greece 07	n.d.								
Greece 08	n.d.								
Greece 09	n.d.								
HU 1	n.d.						11,3	1,49	1,92
HU 2	n.d.						0,67	0,98	
HU 3	n.d.								
HU 4	n.d.								
HU 5	n.d.						12,1	0,033	3,92
HU 6	n.d.						0,036		
HU 7	n.d.						8,6		1,45
HU 8	n.d.						0,03	0,096	
HU 9	n.d.	0,121	0,568	49,9			0,044		0,014
HU 10	n.d.		0,011	2,35			0,118		0,092
ITALY 01	n.d.						3,832	0,784	0,682

all Neonix- residues in ug/kg / all other pesticides in mg/kg									
sample number	other pesticides	Prochloraz	Carbendazim	Thiophanat-metyl	Pirimiphos-methyl	THPI (Metabolit Captan/ Captafol)	Boscalid	Paclobutrazol	Pyraclostrobin
ITALY 02	n.d.							0,818	
ITALY 03	n.d.								
ITALY 04	n.d.								
ITALY 05	n.d.		0,049	0,356					
ITALY 06	n.d.			0,026					
ITALY 07	n.d.						2,176		0,504
NL52	n.d.								
NL54	n.d.						0,054		
NL04	n.d.						0,225		0,069
NL06	n.d.								
NL53	n.d.		0,847	0,147					0,011
NL30	n.d.								
NL38	n.d.								
NL36	n.d.								
NL37	n.d.								
NL71	n.d.								
Poland 01	n.d.		0,233						
Poland 02	n.d.						0,292		0,029
Poland 03	n.d.								
Poland 04	n.d.		0,014	0,053	0,013				0,369
Poland 05	n.d.						5,38		0,736
Flower 01	n.d.								
Flower 02	n.d.								
Flower 03	n.d.								
CH4	n.d.								
CH1	n.d.	0,029	0,057	1,716	0,019	0,039			
CH2	n.d.						6,055	0,488	1,062
CH3	n.d.	0,014	0,027	0,127	0,04	0,01			0,035
CH-5	n.d.						0,015	0,011	
CH-6	n.d.							4,14	
CH-8	n.d.		0,043				0,57		0,065
CH-9	n.d.						0,01		
CH-7	n.d.								0,161
CH-10	n.d.							0,401	

all Neonix- residues in ug/kg / all other pesticides in mg/kg									
sample number	Fenhexamid	Dithianon	Thiamethoxam	Endosulfan-alpha	Endosulfan-beta	Endosulfan-sulfat	Endosulfan (total)	Bromopropylate	Cypermethrin
Austria 01									
Austria 02									
Austria 03	0,112	0,683							
Austria 04									
Austria 05									
Austria 06									
Austria 07									
Austria 08									
Austria 09		0,917							
Austria 10									
FR 01									
FR 02									
FR 03									
DE_ West_2									
DE_ West_3	23,5								
DE_ West_4									
DE_Nor-th_1									
DE_Nor-th_2									
DE_Midd-le_1	2,92		0,796						
DE_Midd-le_2									
DE__ Middel_3									
DE_Midd-le_4									
DE_ East_1									
DE_ East_2									
DE_ East_3									
DE_ East_4	0,15								
DE_ South_1	7,33								
DE_ South_1.1									
DE_ South_1.2									
DE_ South_2									
DE_ South_3	4,011								

all Neonix- residues in ug/kg / all other pesticides in mg/kg									
sample number	Fenhexamid	Dithianon	Thiamethoxam	Endosulfan-alpha	Endosulfan-beta	Endosulfan-sulfat	Endosulfan (total)	Bromopropylate	Cypermethrin
DE_ South_4									
Greece 01									
Greece 02									
Greece 03				0,025	0,114	0,047	0,045		
Greece 04									
Greece 05									
Greece 06									
Greece 07									
Greece 08									
Greece 09									
HU 1	0,021								
HU 2			0,027						
HU 3			1,32						
HU 4									
HU 5									
HU 6	0,3								
HU 7	0,352								
HU 8									
HU 9									
HU 10	0,064								
ITALY 01									
ITALY 02		0,375	0,093			0,016		0,049	1,19
ITALY 03	0,419		0,766						
ITALY 04									
ITALY 05									
ITALY 06									
ITALY 07									
NL52									
NL54									
NL04									
NL06									
NL53									
NL30									
NL38	0,026								
NL36									
NL37									
NL71									
Poland 01									
Poland 02									
Poland 03									
Poland 04	0,079								

all Neonix- residues in ug/kg / all other pesticides in mg/kg									
sample number	Fenhexamid	Dithianon	Thiamethoxam	Endosulfan-alpha	Endosulfan-beta	Endosulfan-sulfat	Endosulfan (total)	Bromopropylate	Cypermethrin
Poland 05			0,062						
Flower 01	0,614								
Flower 02									
Flower 03									
CH4									
CH1									
CH2	6,468								
CH3									
CH-5									
CH-6									
CH-8									
CH-9									
CH-7									
CH-10									

all Neonix- residues in ug/kg / all other pesticides in mg/kg										
sample number	Chlorpyrifos (-ethyl)	Procymidone	Etofenprox	Methiocarb	Clothianidin	Methiiocarb sulfoxid	Propiconazole	Deltamethrin	Piperonyl butoxide (synergist)	DEET
Austria 01							0,057			
Austria 02										
Austria 03										
Austria 04							0,1			
Austria 05							0,069			
Austria 06							3,484			
Austria 07							0,429	0,118		
Austria 08							0,145			
Austria 09								0,046		
Austria 10										
FR 01										
FR 02										
FR 03							0,322	0,021		
DE_ West_2				0,742			0,035			
DE_ West_3										
DE_ West_4										
DE_North_1							0,232			
DE_North_2										
DE_Middle_1					0,167					

all Neonix- residues in ug/kg / all other pesticides in mg/kg										
sample number	Chlorpyrifos (-ethyl)	Procymidone	Etofenprox	Methiocarb	Clothianidin	Methiiocarb sulfoxid	Propiconazole	Deltamethrin	Piperonyl butoxide (synergist)	DEET
DE_Middle_2				0,018			0,124			
DE__Middel_3							0,046			
DE_Middle_4							1,674			
DE_East_1							0,37			
DE_East_2							0,039			
DE_East_3							0,355			
DE_East_4					0,098		0,236			
DE_South_1										
DE_South_1.1										
DE_South_1.2										
DE_South_2										
DE_South_3										
DE_South_4							0,265			
Greece 01								0,025		
Greece 02										
Greece 03										
Greece 04	0,094									
Greece 05										
Greece 06										
Greece 07										
Greece 08										
Greece 09								1,118		
HU 1										
HU 2										
HU 3					0,28					
HU 4										
HU 5										
HU 6							0,242			
HU 7							0,11			
HU 8										
HU 9										
HU 10										
ITALY 01										

all Neonix- residues in ug/kg / all other pesticides in mg/kg										
sample number	Chlorpyrifos (-ethyl)	Procymidone	Etofenprox	Methiocarb	Clothianidin	Methiiocarb sulfoxid	Propiconazole	Deltamethrin	Piperonyl butoxide (synergist)	DEET
ITALY 02	8,841	0,036	1,039							
ITALY 03				0,021	0,445	0,02	0,783	0,067		
ITALY 04									0,11	
ITALY 05									0,012	
ITALY 06									0,094	0,015
ITALY 07							0,502			
NL52										
NL54										
NL04										
NL06							3,838			
NL53										
NL30							1,328	0,034		
NL38							0,278			
NL36										
NL37								0,022		
NL71										
Poland 01										
Poland 02							0,134			
Poland 03							0,222	0,05		
Poland 04										
Poland 05					0,06		0,549	0,055		
Flower 01							7,513			
Flower 02							0,077			
Flower 03										
CH4										
CH1										
CH2										
CH3										
CH-5							0,054			
CH-6										
CH-8							0,092			
CH-9										
CH-7										
CH-10										

all Neonix- residues in ug/kg / all other pesticides in mg/kg										
sample number	Azoxystrobin	Pirimicarb	Fluopyram	Dichlorvos	Tridemorph	Lenacil	Chlorantraniliprole	Prothioconazol	Chlorothalonil	Penconazol
Austria 01	0,255									
Austria 02					0,428					
Austria 03	0,01									
Austria 04										
Austria 05	5,346									
Austria 06										
Austria 07										
Austria 08										
Austria 09	0,049				0,563					
Austria 10										
FR 01										
FR 02										
FR 03	0,031									
DE_ West_2									0,163	
DE_ West_3		0,331								
DE_ West_4										
DE_Nor-th_1		0,161								
DE_Nor-th_2										
DE_Midd-le_1			0,081						0,194	
DE_Midd-le_2										
DE__ Middel_3	0,538						0,013		0,041	
DE_Midd-le_4										
DE_East_1	0,09									
DE_East_2										
DE_East_3										
DE_East_4	0,078									
DE_ South_1										
DE_ South_1.1										
DE_ South_1.2										
DE_ South_2		2,135	1,414						0,05	
DE_ South_3	0,45	0,07								
DE_ South_4								0,125		
Greece 01										
Greece 02										

all Neonix- residues in ug/kg / all other pesticides in mg/kg										
sample number	Azoxystrobin	Pirimicarb	Fluopyram	Dichlorvos	Tridemorph	Lenacil	Chlorantraniliprole	Prothioconazol	Chlorothalonil	Penconazol
Greece 03										
Greece 04										
Greece 05										
Greece 06										
Greece 07										
Greece 08										
Greece 09										
HU 1			0,014							
HU 2			23,6							
HU 3			0,091							
HU 4										
HU 5			0,013							
HU 6										
HU 7										
HU 8										
HU 9										
HU 10										
ITALY 01										
ITALY 02										
ITALY 03										
ITALY 04										
ITALY 05										
ITALY 06	0,012									
ITALY 07										
NL52		0,065								
NL54			0,01							
NL04	0,016			0,153	0,372	0,026	1,279			
NL06								0,925	0,034	
NL53	0,031									0,036
NL30								0,261		
NL38										
NL36			0,022							
NL37										
NL71									0,118	
Poland 01										
Poland 02										
Poland 03									1,544	
Poland 04										
Poland 05			1,512							
Flower 01					0,167			2,007		
Flower 02	1,55						0,2			
Flower 03	0,048									

all Neonix- residues in ug/kg / all other pesticides in mg/kg										
sample number	Azoxystrobin	Pirimicarb	Fluopyram	Dichlorvos	Tridemorph	Lenacil	Chlorantraniliprole	Prothioconazol	Chlorothalonil	Penconazol
CH4									5,061	
CH1										
CH2										
CH3										
CH-5					0,784					
CH-6										
CH-8	0,228									
CH-9										
CH-7										
CH-10	0,013									

all Neonix- residues in ug/kg / all other pesticides in mg/kg										
sample number	Captan	Folpet	Indoxacarb	Propyzamid	Hexythiazox	Pyridaben	Fenamidone	Dimethomorph	Methoxyfenozide	Propamocarb
Austria 01										0,087
Austria 02										
Austria 03										
Austria 04								0,038		0,026
Austria 05										10,3
Austria 06										
Austria 07										0,363
Austria 08										0,014
Austria 09										
Austria 10										
FR 01										0,063
FR 02										
FR 03										
DE_West_2										0,04
DE_West_3										
DE_West_4										
DE_North_1										4,74
DE_North_2										0,095
DE_Middle_1										
DE_Middle_2										
DE__Middel_3										0,075
DE_Middle_4										
DE_East_1										0,038
DE_East_2										

all Neonix- residues in ug/kg / all other pesticides in mg/kg										
sample number	Captan	Folpet	Indoxacarb	Propyzamid	Hexythiazox	Pyridaben	Fenamidone	Dimethomorph	Methoxyfenozide	Propamocarb
DE_East_3										
DE_East_4			0,012					0,25		0,708
DE_ South_1										
DE_ South_1.1										
DE_ South_1.2										
DE_ South_2										
DE_ South_3										
DE_ South_4										
Greece 01										0,031
Greece 02										0,072
Greece 03										
Greece 04										
Greece 05										
Greece 06						2,758				
Greece 07										
Greece 08										
Greece 09										
HU 1										
HU 2										
HU 3					0,034					
HU 4										
HU 5										
HU 6										
HU 7										
HU 8										
HU 9										
HU 10										
ITALY 01										
ITALY 02										
ITALY 03										
ITALY 04										
ITALY 05										
ITALY 06										
ITALY 07										
NL52										
NL54										
NL04										
NL06										
NL53	1,845	0,011								

all Neonix- residues in ug/kg / all other pesticides in mg/kg										
sample number	Captan	Folpet	Indoxacarb	Propyzamid	Hexythiazox	Pyridaben	Fenamidone	Dimethomorph	Methoxyfenozide	Propamocarb
NL30		0,295	0,017	0,052	0,1	0,219	0,013	0,015		
NL38			0,02			0,173			0,01	
NL36										0,404
NL37					0,018	0,019		0,054		0,105
NL71		0,037								
Poland 01								0,039		
Poland 02			0,37				0,042	0,038		
Poland 03								1,916		0,019
Poland 04										
Poland 05			0,066							1,258
Flower 01										
Flower 02										
Flower 03										
CH4										
CH1										
CH2										
CH3										
CH-5										
CH-6										
CH-8								0,055		
CH-9										
CH-7										
CH-10								1,31		

all Neonix- residues in ug/kg / all other pesticides in mg/kg											
sample number	Teflubenzuron	Lufenuron	Metazachlor	Kresoxim-methyl	Tau-Fluvalinate	Trifloxystrobin	Metconazole	Spinosad	Thiacloprid	Chlorpyrifos (-methyl)	Pencycuron
Austria 01							0,049				
Austria 02											
Austria 03										0,211	
Austria 04											
Austria 05											0,024
Austria 06											
Austria 07											
Austria 08								0,034			
Austria 09											
Austria 10											
FR 01							0,652	1,343	2,514		
FR 02								0,022			
FR 03	0,058										
DE_ West_2											

all Neonix- residues in ug/kg / all other pesticides in mg/kg											
sample number	Teflubenzuron	Lufenuron	Metazachlor	Kresoxim-methyl	Tau-Fluvalinate	Trifloxystrobin	Metconazole	Spinosad	Thiacloprid	Chlorpyrifos (-methyl)	Pencycuron
DE_ West_3									0,059		
DE_ West_4											
DE_Nor-th_1											
DE_Nor-th_2											
DE_Midd-le_1								0,213			
DE_Midd-le_2											
DE__ Middel_3											
DE_Midd-le_4											
DE_ East_1											
DE_ East_2											
DE_ East_3											
DE_ East_4							0,014				
DE_ South_1											
DE_ South_1.1											
DE_ South_1.2											
DE_ South_2											
DE_ South_3									0,073		
DE_ South_4											
Greece 01											
Greece 02											
Greece 03											
Greece 04											
Greece 05											
Greece 06									1,307		
Greece 07											
Greece 08											
Greece 09											
HU 1											
HU 2				0,153				1			
HU 3								0,41			
HU 4											
HU 5								0,54			

all Neonix- residues in ug/kg / all other pesticides in mg/kg											
sample number	Teflubenzuron	Lufenuron	Metazachlor	Kresoxim-methyl	Tau-Fluvalinate	Trifloxystrobin	Metconazole	Spinosad	Thiacloprid	Chlorpyrifos (-methyl)	Pencycuron
HU 6								0,013			
HU 7									0,011		
HU 8								5,44	0,03		
HU 9								0,096			
HU 10											
ITALY 01											
ITALY 02											
ITALY 03											
ITALY 04											
ITALY 05											
ITALY 06											
ITALY 07											
NL52											
NL54											
NL04											
NL06											
NL53											
NL30											
NL38											
NL36	0,048										
NL37											
NL71											
Poland 01											
Poland 02			0,025	0,016							
Poland 03					0,029						
Poland 04											
Poland 05	0,05					0,349	0,056				
Flower 01	0,069										
Flower 02											
Flower 03		0,078									
CH4											
CH1											
CH2											
CH3											
CH-5											
CH-6							0,037				
CH-8							0,054				
CH-9								0,016			
CH-7								0,136			
CH-10								6,64	0,51		

all Neonix- residues in ug/kg / all other pesticides in mg/kg												
sample number	Acetamiprid	Diflubenzuron	Tolclofos-methyl	Mandipropamide	Tebuconazol	Iprovalicarb	Mepanipyrim	Propargite	Methamidophos	Myclobutanil	Vinclozolin	Spiroxamine
Austria 01												
Austria 02												
Austria 03												
Austria 04												
Austria 05												
Austria 06												
Austria 07												
Austria 08												
Austria 09												
Austria 10												
FR 01												
FR 02												
FR 03												
DE_ West_2												
DE_ West_3	1,27	0,012										
DE_ West_4			0,016									
DE_Nor-th_1												
DE_Nor-th_2												
DE_Midd-le_1			0,017									
DE_Midd-le_2												
DE__ Middel_3												
DE_Midd-le_4												
DE_ East_1												
DE_ East_2												
DE_ East_3												
DE_ East_4				0,067	0,02							
DE_ South_1			0,016									
DE_ South_1.1			0,01									
DE_ South_1.2			0,014									
DE_ South_2						0,01						
DE_ South_3			0,088									
DE_ South_4							0,369	0,032				
Greece 01									0,247			

	all Neonix- residues in ug/kg / all other pesticides in mg/kg											
sample number	Acetamiprid	Diflubenzuron	Tolclofos-methyl	Mandipropamide	Tebuconazol	Iprovalicarb	Mepanipyrim	Propargite	Methamidophos	Myclobutanil	Vinclozolin	Spiroxamine
Greece 02												
Greece 03												
Greece 04												
Greece 05												
Greece 06										0,28		
Greece 07												
Greece 08												
Greece 09										0,379		
HU 1												
HU 2												
HU 3												0,33
HU 4												
HU 5			0,09									
HU 6												
HU 7	0,018				0,147							
HU 8												
HU 9												
HU 10												
ITALY 01												
ITALY 02												
ITALY 03												
ITALY 04												
ITALY 05												
ITALY 06												
ITALY 07												
NL52												
NL54												
NL04												
NL06												
NL53												
NL30												
NL38												
NL36												
NL37												
NL71												
Poland 01												
Poland 02												
Poland 03												
Poland 04												
Poland 05												
Flower 01												

all Neonix- residues in ug/kg / all other pesticides in mg/kg												
sample number	Acetamiprid	Diflubenzuron	Tolclofos-methyl	Mandipropamide	Tebuconazol	Iprovalicarb	Mepanipyrim	Propargite	Methamidophos	Myclobutanil	Vinclozolin	Spiroxamine
Flower 02												
Flower 03												
CH4												
CH1												
CH2												
CH3												
CH-5												
CH-6					0,199							
CH-8	0,01			0,053								
CH-9											0,042	
CH-7												
CH-10												

4.LITERATURE

BVL 2013: BVL-Report · 8.1 Berichte zu Pflanzenschutzmitteln, Jahresbericht Pflanzenschutz-Kontrollprogramm 2012 unter http://www.bvl.bund.de/DE/04_Pflanzenschutzmittel/01_Aufgaben/06_Pflanzenschutzkontrollprogramm/psm_Pflanzenschutzkontrollprogramm_node.html

BVL 2014a: Wirkstoffe in zugelassenen PSM nach Kulturen (Januar 2014) http://www.bvl.bund.de/DE/04_Pflanzenschutzmittel/01_Aufgaben/02_ZulassungPSM/01_ZugelPSM/psm_ZugelPSM_node.html

BVL 2014b: Verzeichnis zugelassener Pflanzenschutzmittel unter https://portal.bvl.bund.de/psm/jsp/, Zugriff am 09. April 2014

ECPA 2014: European Crop Protection Association, Active Ingredients in '000 kilos Agricultural and Horticultural use, under http://www.ecpa.eu/information-page/industry-statistics-ecpa-total, Zugriff am 14.April 2014

EU 2014: List of Active Substances - Web Version (File created on 08/04/2014 - 09:09), http://ec.europa.eu/sanco_pesticides/public/?event=homepage

EU PD 2014: EU Pesticides Database, http://ec.europa.eu/sanco_pesticides/public/?event=homepage, Zugriff am 08.04.2014

GPGE BL 2010: Die Schwarze Liste der Pestizide II, Greenpeace Germany, Hamburg 2010.

GPI 2013: Bees in Decline, Greenpeace International, Amsterdam 2013. (http://www.sos-bees.org/reports)

* Not all flowers and plants featured in the pictures of this report were tested by Greenpeace.

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