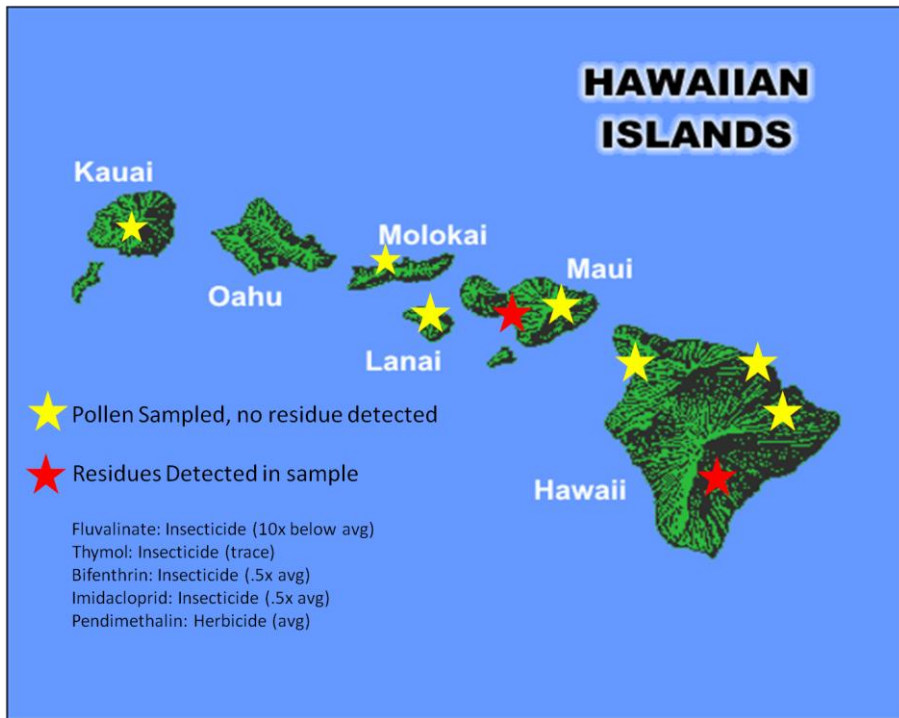


The pollen collected for pesticide residue analysis is part of the USDA-APHIS Honey Bee National Survey, conducted by the Hawaii Department of Agriculture Apiary Program. Pollen samples are sent to the USDA-AMS lab, where they are tested for over two hundred pesticide residues. Beekeepers can have samples analyzed for these residues for a fee, details can be found on website [here](#).

The map below shows general locations where Hawaii's 9 pollen samples were collected.



The chart below contains information about pollen samples analyzed to date for the US Honey Bee National Survey (376 samples). As an example, the residue DMPF is highlighted in purple. For each residue the data includes level of detection (LOD), which is the sensitivity level of the test used in parts per billion (ppb). This means if DMPF were present above 4ppb, this test would detect it. The prevalence (second column) shows DMPF was found in 22.3 percent of all samples analyzed. The range of detection is given for all positive samples; for DMPF-positive samples, the lowest was 8.8ppb and the highest detection was 12700 ppb. The average level in DMPF-positive samples was 228.1 ppb.

Pesticide	LOD (ppb)	Prevalence (%)	Average Detection if positive for target	Range if positive for target
			(ppb)	(ppb)
1-Naphthol	10	0.3	52.1	52.1*
2,4 Dimethylphenyl formamide (DMPF)	4	22.3	228.1	8.8 - 12700
Acephate	50	0.5	238.9	67.8 - 410
Acetamiprid	8	0.3	9.4	9.4*
Alachlor	10	0.3	93.4	93.4*
Aldicarb sulfone	3	0.3	14.0	14*
Aldicarb sulfoxide	20	0.3	35.9	35.9*
Atrazine	6	4.8	87.0	10 - 996
Azoxystrobin	2	9.3	25.9	4.6 - 280
Bifenthrin	1	7.2	19.4	1.2 - 130
Boscalid	4	5.6	734.0	16.2 - 3510
Captan	10	1.9	255.2	18.3 - 395
Carbaryl	30	0.8	230.7	120 - 442
Carbendazim (MBC)	5	4.0	54.1	7.3 - 233
Chlorferone	50	0.3	192.0	192*
Chlorothalonil	1	2.1	1073.9	111 - 4900
Chlorpyrifos	1	18.4	21.4	1.1 - 303
Chlothianidin	1	0.8	7.2	5.5 - 8.3
Coumaphos	1	40.7	81.6	1.1 - 6260
Coumaphos oxon	1	2.9	28.3	5.5 - 180
Cyfluthrin	4	0.8	37.8	3.9 - 58.8
Cyhalothrin total	1	8.0	9.5	1.9 - 54.2
Cypermethrin	4	1.1	36.4	7.2 - 100
Cyprodinil	4	5.6	200.0	4.3 - 2800
Diazinon	1	0.8	15.2	6.6 - 21.1
Dichlorvos (DDVP)	10	0.3	205.0	205*
Dicloran	1	0.3	25.0	25.0*
Dicofol	1	0.5	18.5	15.9 - 21
Dieldrin	10	0.3	12.4	12.4*
Diflubenzuron	20	0.8	145.3	84.3 - 252
Endosulfan I	2	2.1	37.7	2.2 - 124

Pesticide	LOD	Prevalence	Average Detection if	Range if
	(ppb)	%	positive for target (ppb)	positive for target (ppb)
Endosulfan II	2	1.6	19.6	2.1 - 54.9
Endosulfan sulfate	2	2.1	12.3	1.6 - 50.4
Esfenvalerate	2	2.9	15.5	3.7 - 77.4
Fenbuconazole	2	2.1	504.4	9.2 - 3470
Fenpropathrin	1	1.6	43.2	20.7 - 93.6
Fenpyroximate	5	5.9	24.3	2.1 - 114
Fonicamid	8	0.3	11.3	11.3*
Fludioxonil	20	0.5	51.9	30.5 - 73.3
Fluridone	10	1.1	1173.8	108 - 4220
Fluvalinate	1	47.6	58.6	2.2 - 1700
Imidacloprid	1	3.5	23.3	2.8 - 216
Metalaxyl	2	0.5	25.7	13.4 - 37.9
Methamidophos	4	1.1	15.0	5 - 36.5
Methomyl	10	0.3	23.6	23.6*
Methoxyfenozide	2	2.4	31.7	5.7 - 84.6
Metolachlor	6	0.5	17.9	14.7 - 21.1
MGK-326	10	0.5	142.9	95.7 - 190
Myclobutanil	15	1.6	503.2	30.1 - 1330
Oxyfluorfen	1	4.0	7.7	1.7 - 13.7
Paradichlorobenzene	10	1.1	247.5	166 - 469
Parathion methyl	2	0.3	6.6	6.6*
Pendimethalin	6	6.6	29.4	5.1 - 92.8
Permethrin total	10	0.8	206.3	20 - 421
Phosmet	10	1.3	194.5	7.3 - 785
Propazine	4	0.3	34.3	34.3*
Pyriproxyfen	2	0.5	10.5	8.6 - 12.4
Pyraclostrobin	15	5.1	248.4	2.6 - 1400
Pyridaben	1	0.5	1.5	1.2 - 1.8
Pyrimethanil	3	1.6	10.2	3.2 - 18.4
Tebuconazole	8	2.9	53.4	9.9 - 276
Tebufenozide	5	0.3	22.7	22.7*
Tebuthiuron	2	1.1	4.8	2.2 - 12.1

Pesticide	LOD	Prevalence	Average Detection if positive for target	Range if positive for target
	(ppb)	%	(ppb)	(ppb)
Thiabendazole	1	0.3	4.7	4.7*
Thiacloprid	1	0.8	151.2	49.1 - 326
Thiamethoxam	1	1.3	14.3	1.2 - 39.6
THPI	50	1.6	2360.2	37.6 - 7060
Thymol	50	20.2	1736.7	37.5 - 39700
Trifloxystrobin	1	1.1	238.4	61.5 - 638
Trifluralin	1	0.5	1.3	1 - 1.5
Vinclozolin	1	0.3	3.3	3.3*

Table 3: Pesticide Description

Pesticide	Description	Type
Azoxystrobin	An experimental compound used on cereals, vegetables, fruit crops, peanuts, turf, ornamentals, stone fruit, bananas, rice, apples, grapes, and potatoes. This chemical does not leach and is unlikely to contaminate water bodies. It is found to exhibit very low ecological risks to aquatic life, birds, and mammals. Other names include Abound, Amistar, Bankit, Heritage, and Quadris.	Fungicide
Boscalid	Fungicide used on specialty crops such as strawberries, beans, stone fruit, tree nuts, root vegetables, carrots, grapes, Brassica vegetables, and sunflowers (http://www.epa.gov/opp00001/chem_search/reg_actions/registration/fs_PC-128008_01-Jul-03.pdf).	Fungicide
Captan	Captan is a nonsystemic phthalimide fungicide used to control diseases of many fruits, and ornamental and vegetable crops. It improves fruit finish by giving it a healthy, bright colored appearance. It is used in agricultural production as well as by the home gardener. A major use of captan is in apple production. Captan is not toxic to bees when used as directed. http://extoxnet.orst.edu/pips/captan.htm	Fungicide
Carbendazim (MBC)	Found to be acutely toxic to honeybees, having an effect on long term survival of colonies. Foods with Carbendazim residues include: strawberries, green beans, apple sauce, blueberries, sweet bell peppers, apples, cherries, green onions, spinach, bananas, honey, lettuce, water, celery, cauliflower, celery, and broccoli.	Fungicide
Chlorothalonil	General use insecticide used on trees, small fruits, turf, ornamentals, and vegetables. Found to be non-toxic to honey bees (http://pmep.cce.cornell.edu/profiles/extoxnet/carbaryl-dicrotophos/chlorothalonil-ext.html).	Fungicide
Cyprodinil	Used as a foliar fungicide on cereals, grapes, pome fruit, stone fruit, strawberries, vegetables, field crops, and ornamentals; and as a seed dressing on barley.	Fungicide
Dicloran	Widely used fungicide used on a variety of ornamentals, fruit and vegetable crops such as pricots, snap beans, carrots, celery, cherries, cucumber, endive, fennel, garlic, grapes, lettuce, nectarines, onions, peaches, plums, potatoes, prunes, rhubarb, shallots, sweet potatoes, and tomatoes (http://www.epa.gov/opp00001/REDs/factsheets/dca_fs.htm).	Fungicide
Fenbuconazole	Systemic fungicide intended for use as an agricultural and horticultural fungicide spray for the control of leaf spot, yellow and brown rust, powdery mildew, and net blotch on wheat, barley, and apple scab, pear scab, and apple powdery mildew on apples and pears. Residues are also found on cherries, apricots, plums, peaches, grapes, oranges, grapefruits, and numerous vegetables.	Fungicide
Fludioxonil	A fungicide used to control fungal disease, making it a useful seed treatment as well as a post-harvest treatment for fruit such as apples, bilberries, blackberries, blackcurrants, blueberries, broad beans, combining peas, crab apples, cranberries, dwarf french beans, edible podded peas, forest nursery, gooseberries, ornamental plant production, pears, quinces, raspberries, redcurrants, runner beans, strawberries, vining peas, and whitecurrants (http://www.agchemaccess.com/Fludioxonil).	Fungicide
Metalaxyl	A fungicide used in mixtures as a foliar spray for tropical and subtropical crops, as a soil treatment for control of soil-borne pathogens, and as a seed treatment to control downy mildews. Its average half-life in soil is about 70 days. At pH's of 5 to 9 and temperatures of 20 to 30 degrees C, the half- life in water was greater than four weeks. Metalaxyl is non-toxic to honeybees.	Fungicide
Myclobutanil	A fungicide registered for use on a wide range of food crops. It is used heavily to control fungi affecting wine and table grapes, especially in California. California accounts for roughly 50% or all myclobutanil use in the US. 60% of myclobutanil use in CA is applied to grapes. It also has a number of other food crop and commercial or residential landscaping applications. Found to be non-toxic to honey bees. (http://toxipedia.org/display/toxipedia/Myclobutanil).	Fungicide
Pyraclostrobin	Controls foliar fungal diseases. Residues are found on a variety of fruits including melons, apples, brassicae family, sunflowers, beans, peppers, lettuces, kale, and cucumbers.	Fungicide
Pyrimethanil	Scala Brand SC Fungicide for foliar use to control certain diseases on almonds, pistachios, bulb, tuberous, corn vegetables, grapes, stone fruits (except cherries), pome fruits, potatoes, strawberries, and tomatoes (http://pmep.cce.cornell.edu/profiles/fung-nemat/febuconazole-sulfur/pyrimethanil/pyrimethanil_let_405.html).	Fungicide
Tebuconazole	A powder used to treat pathogenic and foliar plant fungi on food and feed crops.	Fungicide
Thiabendazole	Fungicide used to control mold, rot, blight, and stain on fruits and vegetables. It is found to be non-toxic to honey bees.	Fungicide

Trifloxystrobin	A long-term effective pesticide used to treat fungal turf infections such as brown patch, red thread, rust, anthracnose, fusarium patch, and dollar spot (http://www.rigbytaylor.com/Glossary+-+Trifloxystrobin.htm).	Fungicide
Pesticide	Description	Type
THPI	Major metabolite of Captan, a fungicide. Used to control diseases on a number of fruits and vegetables as well as ornamental plants. It also improves the outward appearance of many fruits, making them brighter and healthier-looking. Captan is utilized by both home and agricultural growers and is often applied during apple production. Captan is cited as Group B2, a probable human carcinogen by the EPA.	Fungicide
Vinclozolin	General use fungicide used on raspberries, chicory, lettuce, kiwi, canola, snap beans, dry bulb onions, ornamentals, and turf (http://pmep.cce.cornell.edu/profiles/extoxnet/pyrethrins-ziram/vinclozolin-ext.html).	Fungicide
Alachlor	Herbicide used to control the growth of annual grasses, broadleaf weeds in corn, soybeans, and peanuts. Found to be non-toxic to bees (http://pmep.cce.cornell.edu/profiles/extoxnet/24d-captan/alachlor-ext.html)	Herbicide
Atrazine	A commonly used, effective, and inexpensive herbicide used to eliminate noxious weeds in major crops. It frequently contaminates groundwater and can cause male amphibians (frogs) to change gender. It is restricted in Europe.	Herbicide
Fluridone	Herbicide used to control aquatic weeds in freshwater ponds whether floating, submerged, or emersed (http://csetompkins.org/environment/invasive-species/fluridone-herbicide-treatment-faq).	Herbicide
Metolachlor	Applied to soil to control weeds in corn, soybeans, peanuts, grain sorghum, potatoes, pod crops, cotton, safflower, stone fruits, nut trees, highway right-of-ways, and woody ornamental fields. Rapid degradation in sunny soil. (http://pmep.cce.cornell.edu/profiles/extoxnet/metiram-propoxur/metolachlor-ext.html).	Herbicide
Oxyfluorfen	Herbicide used to control broadleaf and grassy weeds in fruit and vegetable crops as well as ornamentals. It is also used for weed control on patios and driveways. The largest agricultural markets in terms of total pounds active ingredient are wine grapes and almonds. It does not appear to have an effect on honey bees.	Herbicide
Pendimethalin	Herbicide used to control annual grasses and certain broadleaf weeds. Usually used to protect crops such as wheat, corn, soybeans potatoes, cabbage, peas, carrots, and asparagus. Found to be not toxic to bees or mammals, but highly toxic to aquatic invertebrates and fish.	Herbicide
Propazine	Herbicide found to be non-toxic to honey bees. Applied to broadleaf weeds and annual grasses in sweet sorghum in the form of a spray or powder (http://pmep.cce.cornell.edu/profiles/extoxnet/metiram-propoxur/propazine-ext.html).	Herbicide
Tebuthiuron	Herbicide used to control weeds in non-cropland areas, rangelands, rights-of-way, and industrial sites. Weeds that are controlled by tebuthiuron include alfalfa, bluegrasses, chickweed, clover, dock, goldenrod, mullein, etc. If used correctly, it should not pose a threat to bees (http://pmep.cce.cornell.edu/profiles/extoxnet/pyrethrins-ziram/tebuthiuron-ext.html).	Herbicide
Trifluralin	Herbicide used on grass to control broadleaf weeds. Found on some fruit and vegetable crops, flowers, and shrubs such as cotton, alfalfa, sunflowers, and soybeans. Insoluble in water, but does not leave residues on crops so residues only occur in root tissues. Considered a pre-emergence herbicide	Herbicide
2,4 Dimethylphenyl formamide (DMPF)	Amitraz is a non-systemic acaricide and insecticide. Amitraz is among many other purposes best known as an insecticide against mite- or tick-infestation of dogs.	Insecticide
Acephate	General use insecticide commonly used to treat fruits, vegetables (e.g. potatoes and sugar beets), vine, hop cultivation, and in horticulture to protect from biting and sucking insects. Considered toxic to bees at 1.2 ug/bee (Kidd, H. and James, D. R., Eds. The Agrochemicals Handbook, Third Edition. Royal Society of Chemistry Information Services, Cambridge, UK, 1991 (as updated).5-14).	Insecticide
Acetamiprid	Contact neonicotinoid insecticide targeting sucking-type insects. Can be applied to soil or as a foliar spray on apples, cherries, lettuce, pears, peppers, house and garden plants, potatoes, plums and tomatoes (http://www.agchemaccess.com/Acetamiprid).	Insecticide

Aldicarb sulfone	Active ingredient in pesticide, Temik. It is effective against thrips, aphids, spider mites, lygus, fleahoppers, and leafminers, but is primarily used as a nematocide in potato crops. Its weakness is its high level of solubility, which restricts its use in certain areas where the water table is close to the surface.	Insecticide
Aldicarb sulfoxide	See above.	Insecticide
Pesticide	Description	Type
Bifenthrin	Insecticide used mainly against red fire ants, but also used to control aphids, worms, ants, gnats, moths, beetles, grasshoppers, mites, midges, spiders, ticks, yellow jackets, maggots, thrips, caterpillars, flies, and fleas. It is mostly used on orchards, nurseries, and homes. Also seen in large amounts on corn. It is highly toxic to aquatic organisms and has one of the longest known residual times in soil on the market. "In bees, the lethal concentration (LC50) of bifenthrin is about 17 mg/L. At sub lethal concentrations, bifenthrin reduces the fecundity of bees, decreases the rate at which bees develop into adulthood, and increases their immature periods. Dai, Ping-Li; Wang, Qiang; Sun, Ji-Hu; Liu, Feng; Wang, Xing; Wu, Yan-Yan; Zhou, Ting (2010). "Effects of sub lethal concentrations of bifenthrin and deltamethrin on fecundity, growth, and development of the honeybee <i>Apis mellifera</i> logistical". <i>Environmental Toxicology and Chemistry</i> 29 (3): 644–9." A Pyrethroid insecticide.	Insecticide
Chlorpyrifos	Insecticide effective in controlling cutworms, corn rootworms, cockroaches, grubs, flea beetles, flies, termites, fire ants, and lice. Mainly used as an insecticide on grain, cotton, field, fruit, nut and vegetable crops, and well as on lawns and ornamental plants. "Aquatic and general agricultural uses of chlorpyrifos pose a serious hazard to wildlife and honeybees" (Kidd, H. and James, D. R., Eds. <i>The Agrochemicals Handbook</i> , Third Edition. Royal Society of Chemistry Information Services, Cambridge, UK, 1991, 5-14)	Insecticide
Coumaphos	A widely used insecticide found to be moderately toxic to bees. It is used to control livestock insects such as cattle grubs, screw worms, lice, scabies, flies, and ticks. Coumaphos is an organophosphate which affects the activity of naturally occurring enzymes called cholinesterases in humans and insects that are essential for the proper functioning of the nervous system (http://pmep.cce.cornell.edu/profiles/extoxnet/carbaryl-dicrotophos/coumaphos-ext.html).	Insecticide
Coumaphos oxon	Coumaphos degraded to its first coroxon (a metabolite of Coumaphos).	Insecticide
Cyfluthrin	Insecticide used to control cutworms, ants, silverfish, cockroaches, termites, grain beetles, weevils, mosquitoes, fleas, flies, corn earworms, tobacco budworm, codling moth, European corn borer, cabbageworm, loopers, armyworms, boll weevil, alfalfa weevil, Colorado potato beetle, and many others. Its primary agricultural uses have been for control of chewing and sucking insects on crops such as cotton, turf, ornamentals, hops, cereal, corn, deciduous fruit, peanuts, potatoes, and other vegetables. Cyfluthrin is also used in public health situations and for structural pest control. Cyfluthrin is the active ingredient in many insecticide products including Baythroid, Baythroid H, Attatox, Contur, Laser, Responsar, Solfac, Tempo and Tempo H. Cyfluthrin is highly toxic to bees with an LD50 of 0.037 mg/bee. A Synthetic pyrethroid derivative that is used as an insecticide and a common household pesticide.	Insecticide
Cyhalothrin total	Synthetic pyrethroid.	Insecticide
Cypermethrin	Cypermethrin is a synthetic pyrethroid used as an insecticide in large-scale commercial agricultural applications as well as in consumer products for domestic purposes. Lasts 2-8 weeks in the soil and is unlikely to contaminate groundwater.	Insecticide
Diazinon	In 1994, the EPA phased out the residential use of Diazinon and in 1988, cancelled the registration for use on golf courses and sod farms. It is currently used on rice, fruit trees, sugarcane, corn, tobacco, potatoes, and other horticultural plants (http://pmep.cce.cornell.edu/profiles/extoxnet/carbaryl-dicrotophos/diazinon-ext.html).	Insecticide
Dichlorvos	An organophosphate insecticide used to control mushroom flies, aphids, spider mites, caterpillars, thrips, and white flies in fruit and vegetable crops. It is also fed to livestock to control botfly larvae in manure as well as parasitic worm infections in humans, livestock, and dogs. Many plants tolerate the pesticide very well, but it is toxic to bees (http://pmep.cce.cornell.edu/profiles/extoxnet/carbaryl-dicrotophos/dichlorvos-ext.html).	Insecticide

Dicofol	A miticide used on fruit, vegetable, ornamental and field crops. It is found to be non-toxic to honey bees (http://pmep.cce.cornell.edu/profiles/extoxnet/carbaryl-dicrotophos/dicofol-ext.html)	Insecticide
Dieldrin	Banned insecticide as of 1987 and no longer produced in the US. It is used to control insects on cotton, corn, and citrus crops. Also used to control locusts and mosquitoes as a wood preserve, and for termite control. (EPA)	Insecticide
Diflubenzuron	Insecticide used to control many leaf eating larvae of insects feeding on agricultural, forest, and ornamental plants (e.g. gypsy moths, mosquito larvae, rust mites). Diflubenzuron is used primarily on cattle, citrus, cotton, mushrooms, ornamentals, standing water, forestry trees, and in programs to control mosquito larvae and gypsy moth populations. (EPA) Insecticide used in controlling insect pests in forests and on field crops. It inhibits the production of chitin used by an insect to build its exoskeleton.	Insecticide
Pesticide	Description	Type
Endosulfan I	Controversial insecticide that is globally being phased out by mid 2012. Endosulfan has been used in agriculture around the world to control insect pests including whiteflies, aphids, leafhoppers, Colorado potato beetles, and cabbage worms. However, it can negatively effect populations of beneficial insects and is moderately toxic to honey bees (Oregon State University). It is an endocrine disruptor and is acutely neurotoxic to both insects and mammals.	Insecticide
Endosulfan II	Endosulfan metabolite	Insecticide
Endosulfan sulfate	Endosulfan metabolite	Insecticide
Esfenvalerate	Insecticide used on a wide range of pests such as moths, flies, beetles, and other insects. It is used on vegetable crops, tree fruits, and nut crops. "Esfenvalerate is also highly toxic to bees. The compound tends to repel bees for a day or two after application, causing bee visitations to drop during that time . Since most intoxicated bees die in the field before they can return to contaminate the hive, the brood is not exposed except by direct spray. Dried spray residues are not expected to pose a significant threat to bees" (Asana XL Technical Bulletin. (no date). Du Pont Chemical Corp). Synthetic pyrethroid insecticide.	Insecticide
Fenprothrin	Insecticide used in agriculture and on ornamentals. Used to control mites in fruits and vegetables.	Insecticide
Fenpyroximate	Acaricide (insecticide targeting mites) used to control varroa mites.	Insecticide
Fonicamid	Insecticide used to control hemipterous, or sucking insects such as aphids and whiteflies on fruit, cereal, and root/tuber crops, by inhibiting feeding behavior. No honey bee toxicity information is currently available for this insecticide (http://www.efsa.europa.eu/en/efsajournal/doc/1445.pdf).	Insecticide
Fluvalinate	Insecticide mainly used to treat honey bees for Varroa mites.	Insecticide
Imidacloprid	The most widely used insecticide in the world to control beetles, fleas, aphids, stink bugs, termites, locusts, thrips, carpenter ants, and cockroaches. It is one of the most toxic insecticides to honey bees (Suchail, Séverine; Guez, David; Belzunces, Luc P. (November 2011)). "Discrepancy between acute and chronic toxicity induced by imidacloprid and its metabolites in Apis mellifera". Environmental Toxicology and Chemistry 20: 2482-2486.)	Insecticide
Methoxyfenozide	Insecticide used to target lepidopterous insects (moths) causing premature molting. Not believed to be toxic to honey bees.	Insecticide
Methamidophos	A highly active, systemic, residual organophosphate insecticide. It is used on crops such as broccoli, brussel sprouts, cauliflower, grapes, celery, sugar beets, cotton, tobacco, and potatoes to protect them against aphids, flea beetles, worms, whiteflies, thrips, cabbage loopers, Colorado potato beetles, potato tubeworms, armyworms, mites, and leafhoppers. Toxic to honey bees as one study found it greatly reduces the foraging activity of bees for a prolonged period of time after application (Gary, N.E. and K. Lorenzen. 1989. Effect of Methamidophos on Honey Bees (Hymenoptera: Apidae) During Alfalfa Pollination. J. Econ. Entomol. 82(4): 1067-1072.)	Insecticide

Methomyl	Broad spectrum insecticide used to control spiders and ticks as well as applications to agricultural crops. It is considered highly toxic to honey bees through direct contact and ingestion (http://pmep.cce.cornell.edu/profiles/extoxnet/haloxypop-methylparathion/methomyl-ext.html).	Insecticide
Paradichlorobenzene	A fumigant insecticide used to control moths and moth larvae. In 2010, 30 known products on the market contained paradichlorobenzene according to the EPA. Hives can be fumigated with this chemical to starve off wax moth infestation (http://npic.orst.edu/factsheets/PDBgen.pdf).	Insecticide
Permethrin total	The majority of permethrin, over 70%, is used in non-agricultural settings. It is used on many food and feed crops. A pyrethroid.	Insecticide
Phosmet	Insecticide mainly used on apple trees for the control of codling moth. However, it is used on other fruit crops and ornamentals and vines for aphids, suckers, mites and fruit flies control.	Insecticide
Pesticide	Description	Type
Pyridaben	An insecticide applied to fruit and nut crops such as apples, pears, and almonds. Per package instructions, the insecticide should not to be sprayed when honey bees are in close proximity to a treatment area as it is toxic to honey bees (http://pmep.cce.cornell.edu/profiles/insect-mite/mevinphos-propargite/pyridaben/pyramite_mcl_0398.pdf).	Insecticide
Tebufenozide	Molt-inducing pesticide used on cabbage, cauliflower, beet, soybean, cotton, mealie, tea, tobacco, and fruit trees. Found to be not acutely toxic to honey bees (http://www.pesticideinfo.org/Detail_Chemical.jsp?Rec_Id=PC36018).	Insecticide
Thiacloprid	Neonicotinoid insecticide that is mainly for chewing insects.	Insecticide
Thymol	Used as an antifungal or anti fermentation agent in producing sugar syrup and as an aromatic material for use against the Varroa mite in special evaporator frames. Essential oil, active ingredient in Apiguard.	Insecticide
Thiamethoxam	Insecticide classified as a neonicatoid. Used to deter insect feeding from aphids, thrips, beetles, centipedes, millipedes, sawflies, leaf miners, stem borers, and termites.	Insecticide