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Pesticides and Honey Bees

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Use Pesticides Safely
FOLLOW THE LABEL

U.S. DEPARTMENT OF AGRICULTURE

PESTICIDES AND HONEY BEES

By L. N. Standifer¹

Honey bees produce honey and beeswax valued between \$130 and \$140 million annually. Much of this honey comes from cultivated crops. The annual value of crops benefited by insect pollination, most of which is performed by honey bees, exceeds \$10 billion. The farmer and the beekeeper are, therefore, dependent upon each other.

Honey bees may be killed when crops are treated with pesticides. When this occurs, both the farmer and the beekeeper suffer a loss. For this reason, they need to cooperate fully in protecting the bees from pesticide damage.

Observing the precautions recommended in this publication can greatly reduce bee losses from pesticide poisoning.

Precautions for the Farmer

- Use biological or other non-chemical control methods if at all possible.
- If chemical control is essential, use the proper dosage of the safest material (on bees) that will give good pest control.
- If you intend to treat the crop, tell the beekeeper what material

will be used and when it will be applied. However, notification of the beekeeper does not relieve the grower of all responsibility for damage incurred.

- Read the label and follow approved local, State, and Federal recommendations.
- Remember that the time the pesticide is applied, depending on the blooming period and attractiveness of the crop, makes a big difference in the damage to the bees; so, treat the field when the plants are least attractive to bees.
- Do not spray or dust chemicals over colonies, especially in hot weather when the bees cluster outside the hive.
- Apply chemicals at night or during early morning hours before bees forage.
- Do not spray or dust bee-visited plants in bloom, and do not let insecticides drift to plants in bloom.
- Remember that treating a non-blooming crop, when weeds and wildflowers are in bloom in the field or close by, can cause bee losses.
- Make as few treatments as possible, because repeated applications greatly increase the damage to colonies.
- Do not treat an entire field or area if local spot treatments will control the harmful pests.
- Sprays do not drift as far as dusts and, consequently, are less likely to harm bees.
- Granules are usually the safest and least likely to harm bees.
- Airplane applications are more hazardous to bees than ground-equipment applications.

¹ARS entomologist and Laboratory Director, Carl Hayden Bee Research Center, Agricultural Research Service, U.S. Department of Agriculture, Tucson, Ariz. 85719. A. Stoner and W. T. Wilson, ARS entomologists, Honey Bee Pesticides/Diseases Research Laboratory, Laramie, Wyo. 82071 (and A. S. Michael and S. E. McGregor, ARS entomologists, now deceased) assisted in manuscript review and preparation.

Precautions for the Beekeeper

- Identify your colonies. Post your name, address, and telephone number in a conspicuous place in the apiary. In some States, this is required. Let the farmers in the area know where the bees are located so they will not be unknowingly poisoned.

- If practicable, do not place colonies near fields that are routinely treated with pesticides.

- Know the pesticides commonly used in your area.

- Be prepared to remove the bees from the area if you are notified that a hazardous material is likely to be applied. Pesticides are grouped according to their relative hazards to bees in the next section.

- You can protect small numbers of colonies from pesticides by covering them with wet burlap for a day or more. Cover colonies at night when all the bees are in the hives, and keep the burlap wet throughout the time of confinement. This is not practical where repeated applications of pesticides are made or where large numbers of colonies are involved.

- If the colonies are likely to be repeatedly exposed to hazardous pesticides listed in group 1, move the colonies to another site.

- If the colonies must be moved, move them at night when all the bees are in the hive.

- Learn as much as you can about the value of pollinating insects to crops as well as to wildflowers, ornamentals, and forests. Pass this information along to the farmers and others in your area. In this way, they learn about the value of bees as pollinators and will be encouraged to protect your bees.

Use of Pesticides

Pesticide use is governed by a Federal law administered by the Environmental Protection Agency (EPA). This law requires manufacturers to register pesticides, and makes it illegal for people to use them except in accordance with the instructions on the label.

Follow label instructions carefully. You may, if you wish, use less of a pesticide than the amount permitted. Apply pesticides uniformly and be sure they come in contact **ONLY** with plants or areas you intend to treat.

Registrations of pesticides are under constant review by EPA. As new information is developed and evaluated, registrations may be changed or withdrawn. For the latest information on pesticides and how to use them, consult the Cooperative Extension Service or Agricultural Experiment Station in your State.

**Pesticides Grouped According to Their
Relative Hazards to Honey Bees^{1 2}**

(Arranged in Alphabetical Order within Groups)

*Group 1—**Hazardous***

Acephate (Orthene*)
Aldicarb (Temik*)³
Aminocarb (Matacil*)
Arsenicals
Azinphosethyl (Ethyl Guthion*)
Azinphosmethyl (Guthion*)
Benzene hexachloride (BHC)⁴
Bufencarb (Bux*)
Carbaryl (Sevin*)
Carbofuran (Furadan*)
Chlorpyrifos (Lorsban*, Dursban*)
Crotonamide (Azodrin*)
Diazinon (Spectracide*)
Dichlorvos (DDVP)
Dicrotophos (Bidrin*)
Dimethoate (Cygon*, DE-FEND*)
EPN
Famphur (Famaphos*)
Fenitrothion (Sumithion*)
Fensulfothion (Dasanit*)
Fenthion (Baytex*)
Heptachlor
Lindane
Malathion (Cythion*)
Malathion ULV
Methyl parathion^{5,6}
Methamidophos (Monitor*,
Tamaron*)
Methidathion (Supracide*)
Methiocarb (Mesurol*)
Methomyl (Lannate*, Nudrin*)
Mevinphos (Phosdrin*)⁷
Monocrotophos (Azodrin*)
Naled (Dibrom*)⁷

Parathion
Phosmet (Imidan*)
Phosphamidon (Dimecron*)
Propoxur (Baygon*)
Resmethrin (Pyrethroid)
Tepp⁷
Tetrachlorvinphos (Gardona*)

*Group 2—**Moderately Hazardous***

Carbophenothion (Trithion*)
Carbanolate (Banol*)
Chlordane
Coumaphos (Co-Ral*)
Counter*
Demeton (Systox*)
Disulfoton (Di-Syston*)³
Endosulfan (Thiodan*)
Endrin
Ethoprop (Mocap*)
Formetanate (Carzol*)
Hexaflurate⁴
Leptophos (Phosvel*)⁴
MAA
Oxamyl (Vydate*)
Oxydemeton Methyl (Metasystox-R*)
Perthane*
Phorate (Thimet*)³
Phosalone (Zolone*)
Pyramat*⁴
Pyrazophos (Afugan*)⁴
Ronnel
Temephos (Abate*, Biothion*)
Terbufos (Counter*)
Trichloronate (Agritox*)⁴

See footnotes at end of table.

Group 3—**Relatively Nonhazardous**

Alachlor (Lasso*)
Allethrin
Amitrole
AMS (Ammate*)
Anilazine (Dyrene*)
Atrazine (AAtrex*)
Bacillus thuringiensis
Benomyl (Benlate*)
Bifenox (Modown*)
Binapacryl (Morocide*)⁴
Bordeaux mixture
Bromacil (Hyvar*)
Cacodylic acid (Phytar 138*)
Captafol (Difolatan*)
Captan
Carboxin (Vitavax*)
Chlorfenvinphos (Birlane*)
CDAA (Randox*)
CDEC (Vegadex*)
Chloramben (Amiben*)
Chlorbenside (Chlorparacide*)⁴
Chlorbromuron (Maloran*)
Chlordecone (Kepone*)⁴
Chlordimeform (Fundal*, Galecron*)
Chlorobenzilate (Acaraben*)
Copper oxychloride sulfate
Copper 8-quinolinolate
Copper sulfate (monohydrated)
Cryolite
Cuprous oxide
Cyanazine (Bladex*)
2,4-D
2,4-DB
Dalapon
Dazomet (Mylone*)
DEF*
Dibromochloropropane (Nemagon*)
Dicamba (Banvel*)
Dichlobenil (Casoron*)
Dichlone (Phygon*)
Dichlorprop (2,4-DP)
Dicofol (Kelthane*)
Dimilin*

Dinitrocyclohexylphenol (DNOCHP)⁴
Dinobuton (Dessin*)⁴
Dinocap (Karathane*)
Dioxathion (Delnav*)
Diquat
Dithianon (Delan*)
Diuron (Karmex*)
DMTT (Mylone*)
Dodine (Cyprex*)
DSMA (Methar*)
Endothall (Endothal*)
EPTC (Eptam*)
Ethion
EXD (Herbisan*)
Fenaminosulf (Dexon*)
Fenson⁴
Fentin hydroxide (Du-Ter*)
Ferbam
Fluometuron (Cotoran*)
Fluorodifen (Preforan*)
Folex*
Folpet (Phaltan*)
Glyodin (Glyoxide*)
Heliothis polyhedrosis virus
Linuron (Lorox*)
Mancozeb (Dithane M-45*, Fore*)
Maneb (Dithane* M-22)
MCPA (Weedar*)
Menazon (Sayfos*)⁴
Methazole (Probe*)
Methoxychlor
Metiram (Polyram*)
Metribuzin (Sencor*)
Monuron (Telvar*)
MSMA (Daconate*)
Nabam (Dithane* D-14), (Parzate*)
Nabam (Dithane* A40)
Naptalam (Alanap*)
Neotran*⁴
Nitrofen (TOK*)
Oxycarboxin (Plantvax*)
Oxythioquinox (Morestan*)
Paraquat
Pentac*

See footnotes at end of table.

Phenmedipham (Betanal*)	Sesamin
Picloram (Tordon*)	Silvex
Plictran*	Simazine (Princep*)
Prometon (Pramitol*)	Sulfur
Prometryn (Caparol*)	Terbacil (Sinbar*)
Pronamide (Kerb*)	Tetradifon (Tedion*)
Propachlor (Ramrod*)	2,4,5-T
Propanil (Rogue*)	2,3,6-TBA (Trysben*)
Propargite (Omite*, Comite*)	Terbutryn (Igran*)
Propazine (Milogard*)	Tetram* ⁴
Propham (IPC*)	Thioquinox (Eradex*) ⁴
Pyrethrins (natural)	Thiram (Arasan*)
Rotenone	Toxaphene
Ryania	Trichlorfon (Dylox*, Dipterex*)
Sabadilla ⁸	Zineb
	Ziram

¹Terms followed by an asterisk (*) are trade names of proprietary products.

²Information supplied by E. L. Atkins, University of California, in cooperation with the U.S. Department of Agriculture.

³These pesticides, although toxic to bees as foliage residues or contact poisons, are not toxic to honey bees when applied as granules on or in the soil.

⁴This pesticide is not registered for use in the United States.

⁵Field dosages have caused brood damage.

⁶The microencapsulated formulation of methyl parathion, known as Penncap-M[®], is highly toxic to foraging bees, young hive bees, and brood. Overall, it is 13 times more hazardous to honey bees than emulsifiable concentrate (EC) formulation.

⁷Mevinphos (Phosdrin*), naled (Dibrom*), and tepp have short residual activity and kill only the bees contacted at the time of treatment or shortly thereafter. They are usually safe to use when bees are not in flight; they are not safe to use around colonies.

⁸Dosages of sabadilla are usually low enough to be no problem. Do not apply sabadilla to open flowers that are visited by bees.

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