

PROTECTING POLLINATORS FROM PESTICIDES -

- Apply pesticides only when and where necessary. Use Integrated Pest Management, incorporating cultural, mechanical, and biological control methods wherever possible.
- Read and follow all product label instructions and requirements. Pay particular attention to the label precautions that indicate specific hazards to bees and other pollinators.
- Be aware of any bee hives in the area that could be affected by application. When spraying is necessary, notify beekeepers in advance, so that they can adequately protect bee hives.
- Use ground equipment instead of aircraft, especially near bee hives.

Arkansas Pollinator Stewardship Program

This program seeks to minimize economic loss for both farmers and beekeepers by adequately managing row crop pests while minimizing impact of pesticides on honey bee colonies.

Cooperation and communication is encouraged among beekeepers, farmers and pesticide applicators.

The presence of the yellow and black Bee Aware flags will help to clearly identify locations where honey bees are located near crop areas.

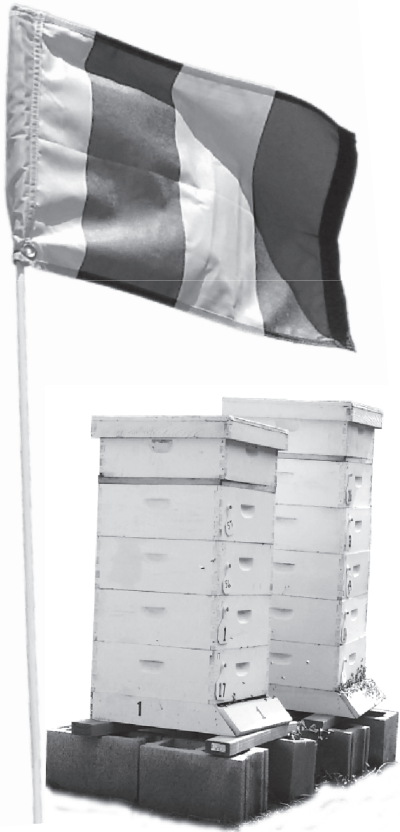
For more information about this program or to obtain flags, contact:

Jon Zawislak, UA Extension Apiculturist
(501) 671-2222, jzawislak@uaex.edu

Gus Lorenz, UA Extension Entomologist
(501) 676-3124, glorenz@uaex.edu

Glenn Studebaker, UA Extension Entomologist/IPM Coordinator
(870) 526-2199, gstudebaker@uaex.edu

Nick Seiter, UA Extension Entomologist
(870) 460-1091, nseiter@uaex.edu



- Avoid application to crops in bloom where possible. If application is necessary, apply when bees are least likely to be actively foraging (after 3:00 p.m.).
- Reduce drift and avoid spraying onto non-target areas, including adjacent vegetation that may contain flowers attractive to bees.
- Where possible, leave a border of untreated vegetation between treated areas and areas where wildlife may be present.
- Store and dispose of all pesticides properly.
- If more than one pesticide can provide control, choose the least toxic product and formulation available.

**MORE
HAZARDOUS
FOR BEES**



**LESS
HAZARDOUS
FOR BEES**

Insecticidal Dusts

- particles cling to bees with pollen grains, may be carried back to the hive and stored with food

ULV Formulations

- highly concentrated, dangerous to bees

Wettable Powders

- often have longer residual activity than other spray formulations; longer REI for humans typically results in greater hazard for bees

Emulsifiable Concentrates

- usually have shorter residual toxicity for bees than wettable powders, safer for bees

Water Soluble Compounds

- generally safest type of spray, dries quickly leaving little residue to be picked up by bees; fine sprays are less dangerous than coarse droplets

Granules

- safest formulation for bees, not always suitable for all pest control situations

Relative Toxicity of Pesticides to Honeybees -

Group 1 – HIGHLY TOXIC. Severe bee losses should be expected if the following pesticides are used when bees are present, if the product is applied near bee hives or if bees forage in the application area within a day after treatment.

Abamectin (Avermectin, Agri-Mek)	Cypermethrin (Ammo, Cymbush)	Imidacloprid (Admire, Advise, Alias, Couraze, Trimax, Wrangler)	Oxamyl (Vydate)
Acephate (Orthene)	Deltamethrin (Battalion, Centynal)	Indoxacarb (Steward, Avaunt)	Permethrin (Ambush, Pounce)
Aldicarb (AgLogic)	Diazinon (Spectracide)	Lambda-cyhalothrin (Karate, Silencer, Warrior, Voliam)	Phorate (Thimet)
Alpha-cypermethrin (Fastac)	Dicrotophos (Bidrin)	Malathion (Fyfanon)	Phosmet (Imidan)
Azinphos-methyl (Guthion)	Dimethoate (Dimate)	Methidathion (Supracide)	Pyrethrin
Beta-cyfluthrin (Baythroid XL, Tempo, Leverage)	Dinotefuran (Safari)	Methiocarb (Mesurol)	Resmethrin (Scourge)
Bifenthrin (Brigade, Capture, Discipline)	Emamectin benzoate (Denim)	Methomyl (Lannate)	Sulfoxaflor (Transform, Closer)
Carbaryl (Sevin)	Esfenvalerate (Asana XL, Adjourn)	Methoprene	Thiamethoxam (Adage, Centric, Endigo, Voliam)
Carbofuran (Furadan)	Fenpropathrin (Danitol, Tame)	Methyl parathion (PennCap-M)	Zeta-cypermethrin (Mustang Maxx, Hero, Stallion)
Chlorpyrifos (Dursban, Lorsban, Warhawk)	Fipronil (Regent, Taurus)	Naled (Dibrom, Trumpet)	
Clothianidin (Belay, Poncho)	Gamma-cyhalothrin (Declare, Proaxis)		
Cyfluthrin (Decathlon, Tombstone)			

Group 2 – MODERATELY TOXIC. These pesticides can be used in the vicinity of bees as long as dosage, timing, method of application and conditions are correct. These products should NEVER be applied directly on bees in the field or near bee colony locations (apiaries).

Acetamiprid (Assail, Intruder, Strafer)	Cyromazine (Trigard)	Novaluron (Diamond)	Temephos (Abate)
Azadirachtin (Neemix, Ecozin)	Diatomaceous earth	Primicarb	Terbufos (Counter)
<i>Beauveria bassiana</i>	Disulfoton (Di-Syston)	Pymetrozine (Fulfill)	Thiacloprid (Calypso)
Bifenazate (Acramite, Floramite)	Endosulfan (Thionex)	Pyrethrum	Thiodicarb (Larvin)
Chlorfenapyr (Phantom, Pylon)	Ethoprop (Mocap)	Spinetoram (Radiant)	
Copper hydroxide (Kocide)(FUNGICIDE)	Fluvalinate (Mavrik)	Spinosad (Blackhawk, Spintor, Tracer)	
Coumphaos (Co-Ral)	Horticultural oil	Spirotetramat (Movento)	

Group 3 – RELATIVELY NONTOXIC. These pesticides can generally be used around bees with a minimum of injury provided that dosage, timing, and method are correct. NEVER apply pesticides directly to bee hives.

Acaricides, Diseases, IGRs and Insecticides

Aldoxycarb (Standak)	Dicofol (Keltthane)	Flubendiamide (Belt, Synapse)	Nucleopolyhedrovirus (Heligen)
Amitraz (Mitac)	Diiflubenzuron (Dimlin)	Hexythiazox (Onager, Savey)	Propargite (Comite, Omite)
<i>Bacillus thuringiensis</i> (Biotrol, Javelin)	Etoxazole (Zeal)	Lime sulfur	Pyriproxyfen (Esteem, Knack)
<i>B.t. tenebrionis</i>	Fenbutatin-oxide (Vendex)	Metaldehyde bait	Rotenone
Chlorantraniliprole (Altacor, Coragen, Prevathon)	Fenproximate (Fujimite)	Methoxyfenozide (Intrepid)	Spiromesifen (Oberon)
Clofentezine (Apollo)	Fonicamid (Carbine, Beleaf)	<i>Nosema locustae</i> fungus (Canning)	Tebufenozide (Confirm)

Fungicides

Acibenzolar-S-methyl (Actigard)	Copper sulfate monohydrated	Mancozeb	Triphenyltin hydroxide (Super Tin)
Azoxystrobin (Quadris)	Cuprous oxide	Maneb (Manzate)	Ziram (Vancide)
Benomyl (Benlate)	Cymoxanil (Curzate 60DF)	Nabam (Parzate)	Zoxamide (Gavel, Zing)
Bordeaux mixture	Cyrodinil (Vanguard WP)	Sulfur	
Captan	Fenhexamid (Elevate 50 WDG)	Thiram	
Copper 8-quinolate	Fluazinam (Omega 500F)	Trifloxystrobin (Flint, Stratego, Compass)	

Relative Toxicity of Pesticides to Honeybees -

Group 3 — RELATIVELY NONTOXIC. These pesticides can generally be used around bees with a minimum of injury provided that dosage, timing, and method are correct. NEVER apply pesticides directly to bee hives.

Herbicides, Defoliants, Desiccants and PGRs

2,4-D	Cyhalofop-butyl (Clincher)	Fluthiacet-methly (Athem, Cadet)	Prohexadone calcium (Apogee PGR, Baseline)
2,4-DB (Butyrac)	Dicamba (Banvel)	Foramsulfuron (Option)	Prometryn (Caparol)
Acetochlor	Dichlobenil (Casoron)	Glyphosate (Roundup)	Pronamide (Kerb)
Alachlor (Lasso)	Diflufenzopyr (Distinct)	Imazapyr (Arsenal)	Propanil (Stam F-34)
Ammonium sulfate	EPTC (Eptam)	Imazamox (Raptor)	Quinclorac (Facet)
Atrazine (Aatrex)	Ethephon (Prep)	Isoxaflutole (Balance)	S-metolachlor (Dual)
Bentazon (Basagran)	Ethalfuralin (Sonalan)	Linuron (Lorox)	Simazine (Princep)
Bromacil (Hyvar)	Flufenacet (Axiom DF)	MCPA (Bonide)	Sodium chlorate (Defol)
Clodinafop-propargyl (Discover)	Fluometuron (Cotoran)	Metribuzin (Sencor, Cloak)	Terbacil (Sinbar)
Cloproxydim (Select)	Flumioxazin (Valor)	Mesotrione (Callisto)	Tribufos (Def, Folex)
Cloransulam-methyl (First-Rate)	Fluridone (Brake, Sonar)	Paraquat	Trifluralin (Treflan)
Cyanazine (Bladex)	Fluroxypyr (Starane EC)	Picloram (Tordon)	