

HONEY BEE HIVE MANAGEMENT

All chemical information provided below is given with the understanding that no endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Before purchasing or using any pesticide, always read and carefully follow the label directions. Products listed below are identified by common chemical name. A trade name in parentheses may also be listed as a convenience for the reader. Additional trade names may be available.

Pest/Disease	Treatment	Rate	Application	Precautions and Remarks
Varroa Mites	Formic Acid 46.7% (Mite Away Quick Strip)	2 strips per colony	Hive entrance should be fully open during application; seal other holes and close screen bottom board. Lay strips across top of brood frames (or between brood frames if 2 brood boxes present). Leave at least 2 inches between strips and at least 4 inches from outside edge of hive. Apply only when daytime high temperatures are between 50°F and 92°F during week of application.	Material is extremely caustic. Applicators should wear coveralls, long sleeves, long pants, acid-resistant gloves (PVC, neoprene, nitrile) and protective eyewear. Wear approved respirator with organic vapor cartridge. DO NOT open hives without PPE for 72 hours after application. Safe to apply during the honey flow.
	Thymol (ApiGuard, Thymovar, ApilifeVar)	Dosage prepackaged by manufacturer; follow label directions for bulk packaging.	Follow label directions for specific product.	DO NOT use during honey flow. Remove product at least 30 days prior to honey harvest. Treatments are most effective during broodless periods. Use when daytime high temperatures are between 68°F and 86°F. DO NOT use when temperatures are above 90°F.
	Oxalic Acid Dihydrate	Liquid: up to 50 mL medicated syrup per hive body	Dissolve 35 g of oxalic acid dihydrate in 1 liter of 1:1 sugar syrup (warm syrup to completely dissolve crystals). Use syringe to trickle 5 mL of solution directly onto adult bees in each occupied bee space in each brood box.	DO NOT apply as liquid to any colony more than once per year during broodless period; this method may cause some bee mortality or overwintering bee loss.
		Vapor: 2 grams crystals per hive body	Seal all upper entrances, ventilation and cracks; smoke bees up from the bottom board; place 2 grams oxalic acid crystals into vaporizer; insert the vaporizer apparatus through the bottom entrance and cover entrance with towel; apply heat until all oxalic acid has sublimated.	Follow vaporizer manufacturer's directions for use. Oxalic acid can damage bee brood and will not control varroa mites in capped cells. Use only in late fall or early spring when little or no brood is present. DO NOT use when honey supers are in place.
Potassium Salt of Hop Beta Acids (HopGuard II)	1 strip per 5 frames of bee brood	Open folded strips and place over top bars of brood frames, hanging within colony cluster. Apply up to 6 strips per year per hive, based on need. Bees will destroy and remove cardboard strips.	For best results, apply when little or no brood is present in the colony. If used while brood is present, application may need to be repeated 3 times at 2-week intervals. DO NOT apply to frames in honey supers; safe to use during honey flow if all label guidelines are followed.	

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Varroa Mites	Amitraz (Apivar)	1 strip/5 frames of bees in brood chamber	Hang strip between frames in brood nest. Treat for minimum of 42 days and maximum of 56 days. Remove strips and discard. DO NOT reuse strips. Use chemical-resistant gloves to handle strips.	If hives are treated in the spring, prior to the first honey flow, strips must be removed at least 14 days prior to adding honey supers. Fall treatment can be applied as soon as honey supers are removed.
	Fluvalinate (Apistan)	1 strip/5 frames of bees in brood chamber	Hang strip between frames in brood nest. Treat for minimum of 42 days and maximum of 56 days. Remove strips and discard. DO NOT reuse strips. Use chemical-resistant gloves to handle strips.	Treat hives in the spring before first honey flow or in late summer or fall after surplus honey has been removed. Supers may be returned to hive following treatment. Never consume or sell contaminated honey. Many mite populations are resistant to this product.
	Coumaphos (Checkmite+)	1 strip/5 frames of bees in brood chamber	Hang strip between frames in brood nest. Treat for minimum of 42 days and maximum of 56 days. Remove strips and discard. DO NOT reuse strips. Use chemical-resistant gloves to handle strips.	Treat hives in spring before first honey flow or in late summer or fall after surplus honey has been removed. Supers may not be placed on hives for 14 days after removal of strips. Never consume or sell honey that has been treated. DO NOT treat any hive with coumaphos more than two times in one year. Many mite populations are resistant to this product.
Tracheal Mites	Menthol 99.94% granules in packet (Menthol, Mite-A-Thol)	1.8 ounces (50 grams)/colony	Place packet on top bars when daytime high temperature is above 70°F and below 80°F; place on bottom board if temperature is above 80°F. Remove packet after 10 to 12 weeks and discard.	Remove product at least 4 weeks prior to spring honey flow to prevent honey contamination. In the fall, remove surplus honey prior to treatment. DO NOT use product when temperature is below 60°F. Use of fumigants for varroa mites (formic acid, thymol) is effective against tracheal mites as well.
	1:2 Shortening-sugar patties	1 patty (thoroughly mix 1 part vegetable shortening with 2 parts granulated sugar)	Place 1 flattened patty (approximately 1/3 cup) on top bars above brood nest when brood is being reared in hive.	Grease patties do not kill tracheal mites, but slow their spread within a hive by interfering with mite host-finding ability. Check often, as patties are extremely attractive to small hive beetles.
Nosema	Bioclohexylammonium fumagillin (Fumadil-B, Fumagilin-B)	Mix with syrup according to manufacturer's product label directions for number of hives needing treatment.	Mix with sugar syrup and feed to honey bees. Feed 2 gallons of syrup for fall treatment; 1 gallon syrup for spring treatment.	DO NOT use during honey flow. Stop treatment at least 4 weeks prior to addition of any honey supers.
	Nozevit	1 mL (20 drops) per 12 fluid ounces of light syrup	Feed medicated syrup to each hive 2 times, 10 days apart, in the spring and/or the fall.	DO NOT use during honey flow. Stop treatment at least 4 weeks prior to addition of any honey supers. [Nozevit is NOT a medication or an antibiotic; it is a feeding supplement which, in some cases, appears to lower the overall spore count in Nosema-infected bees.]

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Small Hive Beetles	Coumaphos (Checkmite+)	1 strip per hive	Place 1" square of strip in center of plastic Beetle Barn trap, or prepare a 5" × 5" square of corrugated cardboard by removing the paper from one side. Cover smooth side with duct tape or packing tape to prevent bees from tearing up and removing cardboard. Cut one strip in half and staple both pieces to the corrugated side of cardboard. Place strip-side-down on bottom board of hive. Use chemical-resistant gloves to handle strips. DO NOT USE LEATHER BEE GLOVES.	DO NOT USE DURING HONEY FLOW. Remove strip 14 days before honey supers are added in spring, or remove surplus honey prior to fall treatment. Never consume or sell honey that has been treated. DO NOT treat any hive with coumaphos more than two times in one year. <i>Chemical control has limited effect on small hive beetles; keep colonies strong, do not over-super and manage adult beetle populations using mechanical traps to prevent damage from beetle larvae.</i>
	Under-hive beetle traps (Freeman Beetle Trap, IPK Trap, West Beetle Trap)	1 trap per hive	Level hive in all directions. Replace or modify bottom board to hold plastic or metal tray. Fill tray with vegetable oil, mineral oil or soapy water.	Trap will accumulate hive debris (dust, wax, pollen, mites) in addition to beetles; check tray regularly and replace liquid as needed.
	In-hive beetle traps (Beetle Jail, Beetle Blaster, Beetle Eaters, Hood Trap)	Up to 2 per hive body	For traps with one chamber, fill reservoir one-half to three-quarters full with vegetable or mineral oil. Place between top bars of frames near outside walls of hive body. For traps with multiple chambers, add apple cider vinegar or other bait in addition to oil.	Oils coat and suffocate beetles but are not attractive; baits attract beetles but do not kill them. Baitable traps are recommended. Inspect traps frequently and replace oil/bait. Bees may cover trap openings with propolis. Beetle Bait Recipe: Combine 1 cup water, 1/2 cup apple cider vinegar, 1/4 cup sugar and the peel of 1 ripe banana (chopped in small pieces). Allow to ferment one to two days.
	Permethrin (Gardstar 40% EC)	5 mL per gallon of water	Thoroughly drench soil in area 18 to 24 inches wide in front of each hive. Apply late in evening when few bees are active.	Mow grass/vegetation around hives prior to application. Apply only after high numbers of beetle larvae have been found in a hive. Soil drench kills only adult beetles emerging from soil; does not prevent adults flying from other areas. Permethrin is HIGHLY TOXIC TO HONEY BEES; do not contaminate hives or other surfaces that bees may contact. Apply with a sprinkler can, never with a pressure sprayer.
American Foulbrood	Oxytetracycline hydrochloride (Terramycin Pre-Mix, Tetra Bee Mix, Tetroxy)	Mix 8.75 grams of Oxytetracycline powder with 1 pound of powdered sugar, or use pre-mixed product.	Apply 1 ounce (2 tablespoons), 3 times, at 4- to 5-day intervals to the tops of the frames in the brood chamber. Dust the mixture onto the tops of frames, around the edges of the brood chamber to avoid powder killing uncapped brood.	DO NOT use during honey flow. Stop treatment at least 6 weeks prior to addition of any honey supers. Requeening hive, or caging queen for 10 days, to break brood cycle at time of application will increase effectiveness of treatment.
	Tylosin (Tylan)	Mix 2 teaspoons product with 1/4 cup powdered sugar.	Apply approximately 3 tablespoons, 3 times, at 4- to 5-day intervals to the top of the frames in the brood chamber. Dust the mixture onto the tops of frames, around the edges of the brood chamber to avoid powder killing uncapped brood.	Tylosin is recommended for use when foulbrood is found to be resistant to other treatments. Use only under the supervision of a state apiary inspector. NOTE: AFB is extremely contagious. Antibiotics cannot cure AFB-infected honey bees. Destruction of infected colonies (bees and hives) by burning is mandatory. Apiary should be quarantined; all other colonies in the apiary should be treated with antibiotic, then inspected again in 4 weeks. If AFB is suspected, contact state apiary inspector.

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European Foulbrood	Oxytetracycline hydrochloride (Terramycin Pre-Mix, Tetra Bee Mix, Tetroxy)	Mix 8.75 grams of Oxytetracycline powder with 1 pound of powdered sugar, or use pre-mixed product.	Apply 1 ounce (2 tablespoons), 3 times, at 4- to 5-day intervals to the tops of the frames in the brood chamber. Dust the mixture onto the tops of frames, around the edges of the brood chamber to avoid powder killing uncapped brood.	DO NOT use during honey flow. Stop treatment at least 6 weeks prior to addition of any honey supers. Requeening hive, or caging queen for 10 days, to break brood cycle at time of application will increase effectiveness of treatment.
	Tylosin (Tylan)	Mix 2 teaspoons product with 1/4 cup powdered sugar.	Apply approximately 3 tablespoons, 3 times, at 4- to 5-day intervals to the top of the frames in the brood chamber. Dust the mixture onto the tops of frames, around the edges of the brood chamber to avoid powder killing uncapped brood.	Tylosin is recommended for use when foulbrood is found to be resistant to other treatments. Use only under the supervision of a state apiary inspector.
Greater Wax Moth (Fumigation of Stored Bee Hive Supers and Other Beekeeping Equipment)	Paradichlorobenzene 100% (Para Moth)	3 ounces crystals for a stack of up to 5 hive bodies	Sprinkle crystals on paper or cardboard placed on top bars of the uppermost hive body in stack. Cover tightly, using tape to seal gaps between hive bodies if necessary. Stacks should be inspected every 2 to 3 weeks; add more crystals if needed.	Use in well-ventilated area. Never use on a live colony of honey bees or on combs of un-extracted honey. Not usually necessary after first freeze of fall season. Unstack supers and allow to thoroughly air out for at least 2 weeks prior to placing back on hive.
	Glacial acetic acid (80%)	150 mL (2/3 cup) per stack of up to 5 hive bodies	Soak an absorbent pad (such as cotton wool) with acetic acid and place on top bars of topmost super; cover tightly. Use tape to seal gaps between hive bodies if necessary. Stacks should be inspected every 2 to 3 weeks and treatment repeated if necessary.	Never use on a live colony of honey bees. Repeated use of acetic acid can cause corrosion of metal parts such as wires, nails and frame rests.
	Aluminum phosphide (Phostoxin)	150-225 pellets/1,000 cu ft 30-40 tablets/1,000 cu ft	NOTE: Special license, training and precautions are needed for purchase or use of aluminum phosphide. Read and follow all label directions. Wear proper PPE at all times.	Honey from treated hives or supers may only be used for bee food.