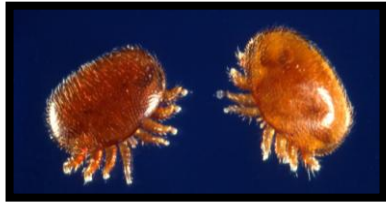


Meet The Varroa Mite...



The Varroa Mite, *Varroa destructor*, is an external parasite that attacks adult and immature stages (brood) of honey bees. These mites weaken bees and can transmit viruses during the feeding process.

Common signs of mite damage include:

- 1) open or damaged pupal cells;
- 2) holes in pupal cappings;
- 3) emerging adult bees with deformed or missing wings; and
- 4) visible mites on bees/brood.

Unmonitored and untreated infestations of Varroa mites can result in colony death. Colonies should be routinely monitored so informed management decisions can be made about population levels, treatment methods and efficacy. To obtain the best results, incorporate a range of the chemical and cultural Integrated Pest Management (IPM) methods listed in this brochure.

10 Steps To Doing An Alcohol Mite Wash

MATERIALS NEEDED:

- dishpan
- ½ cup measuring device
- ½ cup 70% rubbing alcohol
- mite wash jar

DIRECTIONS:

1. Inspect honey bee colony to remove a single frame that contains open brood and adult bees. Make sure the queen is not on the frame.
2. Shake worker bees from this frame into the dishpan.
3. Quickly scoop ½ cup of worker bees (~ 300 bees) from the dishpan and put into provided mite wash jar filled half-way with 70% alcohol.
4. Shake leftover live bees from the dishpan back into the hive.
5. Put the solid and mesh lids on jar and tightly seal.
6. Shake jar vigorously for 1-2 minutes to dislodge mites from submerged bees. Let jar sit for a few minutes to let mites dislodge.
7. Remove solid lid from jar, leaving mesh lid and tightly seal.
8. Pour the mixture of dead bees, mites and alcohol through the mesh lid over the empty dishpan to remove the mites and alcohol. Vigorously shake jar contents while pouring to ensure mites are dislodged.
9. Sift through the liquid debris to count the total mites. If the total number of mites ranges from 3-9, consider treatment options.
10. Discard bees. Alcohol can be re-used if mites are removed. Wash all re-usable materials after use.



Varroa Mite IPM



Integrated Pest Management (IPM) Options for Varroa Mites

NAME	ACTIVE INGREDIENT [CHEMICAL CLASS]	MODE OF ACTION	APPLICATION MATERIAL	APPLICATION SEASON & TEMPERATURE GUIDELINES	TREATMENT DURATION	KEEP HONEY SUPER ON?	NOTES
Apivar®	amitraz [amidine]	contact	plastic strip	Spring, Fall	42-56 days	no	honey supers put on 14 days after strip removal
Apistan®	tau-fluvalinate [pyrethroid]	contact	plastic strip	Spring, Fall [$>50^{\circ}\text{F}$]	42-56 days	no	mite resistance shown; honey supers put on after strip removal
CheckMite+®	coumaphos [organophosphate]	contact	plastic strip	Spring, Summer, Fall	42-45 days	no	mite resistance shown; do not use for queen-producing colonies
Apiguard®	thymol	fumigant	gel or gel tray	Spring, Fall [60°F to 105°F]	28-42 days	no	Restricted Entry Interval (REI) of 48hrs; honey supers put on after gel removal
Api Life Var®	thymol, menthol, eucalyptus oil	fumigant	tablet	Spring, Summer, Fall [64°F to 95°F]	26-32 days	no	honey supers put on 30 days after tablet removal
Mite-Away Quick Strips® (MAQS)	formic acid	fumigant	gel strip	Spring, Summer, Fall [50°F to 85°F]	7 days or 21 days	yes	penetrates wax cappings; check queen vitality after treatment
Formic Pro®	formic acid	fumigant	gel strip	Spring, Summer, Fall [50°F to 85°F]	14 days or 20 days	yes	penetrates wax cappings; check queen vitality after treatment
Oxalic Acid	oxalic acid dihydrate	contact, fumigant	vapor or liquid	Spring, Fall	varies by application type	no	most effective when brood-less
HopGuard®II	potassium salt of hops beta acids	contact	cardboard strip	Spring, Summer, Fall	30 days	yes	most effective when brood-less
Screen Bottom Board	cultural, non-chemical options for management		varies depending on management type	Spring, Summer, Fall, Winter	all year	yes	check mite drop for effectiveness
Drone Brood Trapping/Removal				Spring, Summer, Fall	14-20 days	yes	remove comb/open drone cells before emergence
Brood Interruption				Spring, Summer	14-20 days	yes	split hive or allow to swarm; but capture swarm
Re-Queen/Cage Queen				Spring, Summer	28 days	yes	select mite resistant stock when available

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