

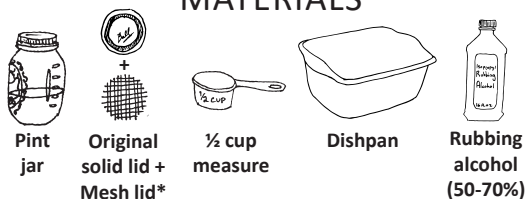
## SAMPLE REGULARLY

(AT LEAST ONCE A MONTH)

### Alcohol wash

The most accurate way to determine *Varroa* levels in your hives

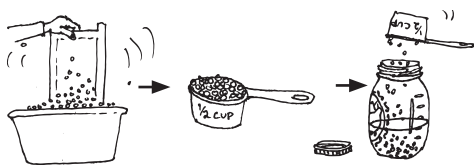
#### MATERIALS



\*1/8 inch hardware cloth, cut to match solid lid

#### 10 STEPS

- 1) Pour alcohol into jar. Set materials in easy reach
- 2) Find a frame of **open brood**  
*Check that the queen is not on frame!*
- 3) **Shake adult bees from frame into dishpan**  
**Scoop ½ cup (~300) bees and pour into jar**



- 4) Shake remaining bees from bin into colony
- 5) Seal solid lid on jar and **shake for 1-2 min**
- 6) Let jar sit for 1-2 minutes
- 7) Replace solid lid with mesh lid
- 8) **Shake jar contents into empty dishpan**
- 9) **Count the total # mites.**  
*If there are 4+, it is time to apply a chemical treatment (see inside of brochure)*



- 10) Discard bees and mites  
Wash all materials; can reuse alcohol

→ email [bees@mass.gov](mailto:bees@mass.gov) for a free kit!

## KNOW YOUR PEST

Meet the *Varroa* mite...

The Varroa Mite, *Varroa destructor*, is an external parasite that feeds on honey bee adults and brood. **They weaken bees and transmit viruses.**



**Unmonitored and unmanaged infestations of Varroa mites will result in colony death.**

#### COMMON SIGNS OF MITE DAMAGE:



- Open or damaged pupal cells
- Chewed-down pupae
- Emerging adult bees with deformed or missing wings

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United States Department of Agriculture    National Institute of Food and Agriculture



# Integrated Pest Management (IPM) for *Varroa* mites



**IPM** is a decades-old farm strategy for mitigating pests while minimizing chemical use. Experts now recommend IPM for *Varroa*.

Rather than relying on a “silver bullet”, good IPM incorporates multiple practices throughout the season, based on pest levels and pest biology.

#### IPM PRINCIPLES:

- **KNOW YOUR PEST**
- **PREVENT** pest build up using non-chemical practices
- **SAMPLE REGULARLY** to track pest population levels
- **INTERVENE** with pesticides when populations reach damaging thresholds (*vary products to prevent pest resistance*)



*This pamphlet will help you to use IPM principles to manage Varroa mites.*

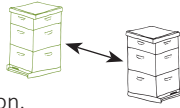


## PREVENT PEST BUILD-UP USING NON-CHEMICAL PRACTICES

### ALL YEAR

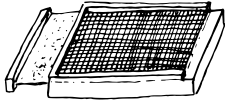
#### Hive Differentiation

Reduce mite transmission via bee drift by maximizing hive spacing and varying hive color and orientation.



#### Screened Bottom Board

Studies show mixed results on varroa but can also be used to increase hive ventilation.



### SPRING AND SUMMER

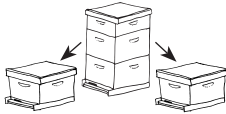
#### Re-Queen

Select mite resistant stock when available.



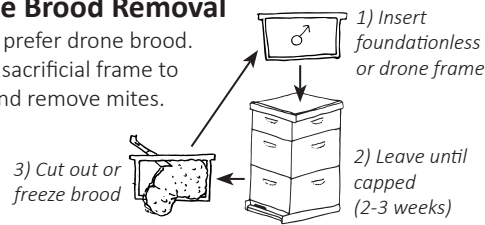
#### Brood Interruption

Split hive or allow to swarm (capture swarm!) to interrupt mite reproduction.



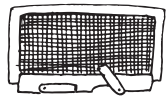
#### Drone Brood Removal

Mites prefer drone brood. Use a sacrificial frame to bait and remove mites.



#### Robber Screens

Install screens to reduce mite transmission via drift and robbing.



### \*PERSONAL PROTECTIVE EQUIPMENT (PPE):

- 1 Chemical-resistant gloves
- 2 Safety goggles
- 3 Respirator with an organic particulate filter

## INTERVENE WITH PESTICIDES IF PESTS EXCEED THRESHOLDS (4+ MITES/SAMPLE)

**MITICIDES AT-A-GLANCE** Always follow the label! The label is the law. Find full labels on the [EPA database](#):



	Product Name <i>Active Ingredient</i> [mode of action]	Season [temp] = less effective when brood is present	Honey super safe?	Treatment Duration	Application Type for full video instructions, visit the <a href="#">Honey Bee Health Coalition</a>	Personal Protective Equipment
Synthetics	<b>Apivar®</b> <i>Amitraz</i> [contact]	[Not Temp Dependent]	<b>NO</b> 	6-8 weeks  wait 2 weeks to add honey supers	PLASTIC STRIP 	
	<b>Apiguard®</b> <i>Thymol</i> [fumigant]	[60-105°F]	<b>NO</b> 	4-8 weeks  Can add supers immediately	GEL OR GEL TRAY 	
Essential Oils	<b>Api Life Var®</b> <i>Thymol, Menthol, Eucalyptus oil</i> [fumigant]	[64-95°F]	<b>NO</b> 	26-32 days  wait 4 weeks to add honey supers	FOAM WAFER 	
	<b>Formic Pro®</b> <i>Formic acid</i> [fumigant]	[50-85°F] <i>Kills mites in brood!</i>	<b>YES</b> 	2-3 weeks 	GEL STRIP 	 Recommended (not required)
Organic Acids	<b>Api-Bioxal®, Ex-Ox Tablets®</b> <i>Oxalic acid dihydrate</i> [contact, fumigant]	[No Temp Restriction]	<b>YES</b> 	Immediate (but may need to repeat)	POWDER, TABLET:  Spray (liquid) Dribble (liquid) Fumigation (vapor)	
	<b>Varroxxan®</b> <i>Oxalic acid dihydrate</i> [contact]	[No Temp Restriction]	<b>YES</b> 	6-8 weeks  Pesticide must be separated by at least one chamber from any honey to be extracted	FIBER STRIP 	
	<b>HopGuard III®</b> <i>Potassium salt of hops beta acids</i> [contact]	[55-99°F]	<b>YES</b> 	2-4 weeks 	CARDBOARD STRIP 	

Miticides can harm people too!! Protect yourself with proper PPE\*