Sample Regularly (Every Month!)

Alcohol wash
The most accurate way to determine Varroa levels in your hives

Materials
+ Pint jar
+ Original solid lid + Mesh lid*
+ 1/2 cup measure
+ Dishpan
+ Rubbing alcohol (50-70%)

* 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 >3, 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 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

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

- **Re-Queen**: Select mite resistant stock when available.
- **Brood Interruption**: Split hive or allow to swarm (capture swarm!).
- **Drone Brood Trapping/Removal**: Insert foundation-less or drone frame and leave until capped (2-3 weeks).
- **Screened Bottom Board**: Check mite drop for effectiveness.

### Intervene with Pesticides When Pests Exceed Thresholds (>3 Mites/Sample)

**Table of Miticide Options**

<table>
<thead>
<tr>
<th>Name</th>
<th>Active Ingredient</th>
<th>Season [temp]</th>
<th>Honey super safe?</th>
<th>Treatment Duration</th>
<th>Application Type</th>
<th>Personal Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Apivar® Amitraz</strong></td>
<td>Amitraz</td>
<td>NO</td>
<td>6-8 weeks</td>
<td>PLASTIC STRIP</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ApiGuard® Thymol</strong></td>
<td>Thymol</td>
<td>NO</td>
<td>4-6 weeks</td>
<td>GEL OR GEL TRAY</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Api Life Var® Thymol, Menthol, Eucalyptus Oil</strong></td>
<td>Thymol, Menthol, Eucalyptus Oil</td>
<td>NO</td>
<td>26-32 days</td>
<td>FOAM WAFER</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MAQS®, Formic Pro® Formic Acid</strong></td>
<td>Formic Acid</td>
<td>YES</td>
<td>MAQS: 1-3 weeks</td>
<td>GEL STRIP</td>
<td></td>
<td><strong>Recommended (but not required)</strong></td>
</tr>
<tr>
<td><strong>Oxalic Acid, Api-Bioxal® Oxalic Acid Dihydrate</strong></td>
<td>Oxalic Acid Dihydrate</td>
<td>NO</td>
<td>Immediate (but may need to repeat)</td>
<td>POWDER, 3 options:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HopGuard II/III® Potassium Salt of Hops Beta Acids</strong></td>
<td>Potassium Salt of Hops Beta Acids</td>
<td>YES</td>
<td>1 month</td>
<td>CARDBOARD STRIP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Chemical Types:

- **Synthetic**
  - **Pros**: Targeted toxicity
  - **Cons**: Broad-spectrum toxicity (more harmful to the beekeeper!)
- **Organic**
  - **Pros**: Degradation quickly
  - **Cons**: Last longer in the environment

### Personal Protective Equipment (PPE):

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