



**CHEMICALS & DRUGS APPROVED FOR LEGAL USE
IN HONEY BEE COLONIES
FOR THE CONTROL OF PARASITES AND PESTS OF HONEY BEES**

All pesticides listed here are registered for use in honey bee colonies as of January 2000. If any material listed should lose or change its registration, or if new materials become available, a notice will be posted on the MAAREC web site at: <http://MAAREC.cas.psu.edu>. If you do not have access to the world wide web and are unsure about the registration status of a pesticide or chemical, contact your state apiary inspector or your extension specialist for the most up-to-date information on materials registered for use in honey bee colonies. It is illegal to use unregistered materials in honey bee colonies. Use only registered materials and follow label directions at all times!

Note: In the following list, chemicals in boldface type are active ingredients. Common brand names are italicized and are followed, in parentheses, by the name of the company holding the product registration.

AMERICAN FOULBROOD

oxytetracycline

Terramycin[®]

Terramycin Soluble Powder is used for the prevention of European and American foulbrood. This product is available in a 6.4-oz packet. The package directions can be confusing; to determine the correct application amounts, follow these directions:

- The legal dose is 200 mg, three times, at 4-5 day intervals.
- One package contains 10 grams (10,000 mg) of Terramycin.
- $10,000 \text{ mg} \div 200 = 50$ treatments per package.
- $50 \text{ treatments} \div 3 = 17$, so one 6.4-oz package treats 17 colonies three times each.

The package calls for one teaspoon of Terramycin Soluble Powder per ounce of powdered sugar. Use the following calculations:

- One level teaspoon of Terramycin = 200 mg, or one treatment.
- Each 6.4-oz package contains 50 treatments, so mix one package with 50 oz (just over 3 lbs) of powdered sugar. Store in a tightly sealed container. (Exposure to air or moisture will break down Terramycin.)
- The dosage per colony is 2 tablespoons of this mixture, given three times, 4-5 days apart (for a total of 600 mg per colony). Spread two tablespoons of the Terramycin mixture over the end of the top bars in the hive body with the most brood.

Preventative treatments can be applied to colonies in the fall after honey supers are off and again in the spring **45 days** before putting honey supers on.

Premixed Terramycin formulations:

- Terra Brood Mix*[®] (Mid-Con)
- Tetra Bee Mix*[®] (Dadant)
- Terra Patties*[®] (Mann Lake)
- Terra Pro*[®] (Mann Lake)

Terra Brood Mix or *Tetra Bee Mix*. These products are identical. This is premixed Terramycin and is used in the prevention of American and European Foulbrood. It takes the guesswork out of how much Terramycin and sugar to mix together. For both products, the dosage is 2 tablespoons, three times, 4-5 days apart. Spread the Terramycin mixture over the end of the top bars in the hive body with the most brood in it. Treat colonies in the fall after honey supers are off and again in the spring at least 45 days before putting honey supers on.

The U.S. Food and Drug Administration (FDA) has approved TYLAN (tylosin tartrate) Soluble for the control of American foulbrood (*Paenibacillus larvae*) in honey bees. **This drug is used only in cases of AFB that has been identified as resistant to Terramycin by the state apiary inspection service.**

EUROPEAN FOULBROOD

Follow the directions for American Foulbrood.

NOSEMA

fumagillin

Fumidil-B[®] (Mid-Con)

The dosage is 1 teaspoon of Fumidil-B per gallon of syrup. Fumidil-B is available in three sizes:

- 0.5 gm—makes 5-6 gallons of medicated syrup (follow mixing instructions below).

- 2 gm—makes 20–24 gallons.
- 9.5 gm—makes 100–120 gallons.

The fall treatment is 2 gallons of medicated syrup per hive given after the honey supers have been removed. The spring treatment is 1 gallon of medicated syrup per hive, given at least 30 days before the honey flow.

Mixing instructions. Fumidil-B mixes best when added to warm water. Use 4 ounces of water per teaspoon of Fumidil-B, let it set for a few minutes until the water is absorbed, shake it, then add it to 1 gallon of prepared syrup. For a larger quantity (the 9.5-gm jar), mix with approximately one gallon of warm water and add to 100–120 gallons of prepared syrup.

VARROA MITES

fluvalinate

Apistan Strips® (Zoecon)

Apistan Queen Tabs® (Zoecon)

Apistan Strips:

- Wear rubber dishwashing or chemical gloves when handling the strips.
- If the honey is to be used for human consumption, do not treat colonies with surplus honey supers.
- Use one strip for each five frames of bees (deep frames or the equivalent).
- Treat all colonies within the yard at the same time; treatment is most effective when brood rearing is lowest.
- Leave the treatment in the colony for at least 42 but not more than 45 days.

coumaphos

CheckMite+® (Bayer)—**section 18 only, emergency use registration**

- Wear rubber dishwashing or chemical gloves when handling strips
- Remove honey supers before application, and do not replace super until 14 days after the strips are removed.
- Use one strip for each five frames of bees (deep frames or the equivalent).
- Treat all colonies within the yard at the same time; treatment is most effective when brood rearing is lowest.
- Leave the treatment in the colony for at least 42 but not more than 45 days.
- Do not treat for varroa more than twice per year.
- Sale of **comb** honey from hives treated with coumaphos is prohibited.

formic acid

Mite Away II®

- Wear acid resistant gloves at all times when handling pads (PVC or neoprene).
- Use ventilating mask
- Do not set pads on any metal surfaces due to corrosive nature of formic acid.
- Remove entrance reducers and screen bottom boards from hives during application of this product. Remove any supers. Colony must be reduced to 1-2 deep hive bodies or the equivalent. All holes in the hive should be sealed except the bottom hive entrance which must remain fully open.
- Outside daytime temperature highs should be between 50–79°F at the time of application.
- It is highly recommended that the pads be removed from the hives in the event of a heat wave (if daily

temperature highs exceed 82°F) within the first 7 days of treatment.

- Remove the Mite-Away II™ from the outer pouch. **DO NOT REMOVE THE PAD FROM THE INNER PERFORATED POUCH**.
- Place one Mite-Away II™ with the HOLES DOWN on two 4 inch x 0.5 inch x 0.5 inch spacer sticks placed 4 inches apart on the frame top bars.
- Place a 1.5 inch rim on the top box to accommodate the pad, the spacer sticks, and an additional 0.5 inch space between the pad and inner cover.
- Leave the Mite-Away II™ pad in place for 21 days.

essential oils

ApiLife VAR®

- Remove any supers. Colony size must be reduced to 1-2 deep hive bodies or the equivalent.
- Use when average daily temperatures are between 59°F and 69°F. Do not apply the treatment when bees are robbing.
- Remove ApiLife VAR tablets from hives at least 1 month (30 days) prior to harvesting the honey.
- Do not use ApiLife VAR at temperatures above 90°F.
- Take one tablet and break into four equal pieces.
- Place pieces on the top corners of the top hive body as close in to the brood nest as possible without placing directly above brood nest.
- After 7-10 days, replace with a fresh tablet broken into pieces as above.
- Repeat procedure again, 7-10 days later and leave last tablet for 12 days. After 12 days remove residuals from colony.

TRACHEAL MITES

menthol

Mite-A-Thol® (Mann Lake)

- Remove all surplus honey and empty supers. Honey for bee food may remain.
- Menthol treatment is 50 grams or 1/3 cup of menthol pellets or crystals, in a 7- by 7-inch screen packet.
- Place the menthol packet on the top bars immediately above the broodnest and below any winter stores. Position the packet in a back corner of the hive so it is not directly above a lot of brood. If the daily temperatures are above 80°F for more than a day or two, place menthol in a back corner of the bottom board to avoid driving the bees out of the hive.
- Menthol requires warm temperatures to vaporize and kill mites. The label says to apply treatment when temperatures reach at least 60°F. Penn State research, however, has shown that daytime high temperatures above 70°F for at least 7 consecutive days are required for good treatment.
- The recommended treatment period is 30 to 45 days.

formic acid

(See *formic acid* on previous page)

WAX MOTHS

paradichlorobenzene*

Fumigator® (Dadant)

Para-moth® (Mann-Lake)

SMALL HIVE BEETLES

coumaphos

CheckMite+[®] (Bayer) - **section 18 only; emergency use registration**

- Wear rubber dishwashing gloves when handling the strips.
- Remove honey supers before application of *CheckMite+* and do not replace supers until 14 days after the strips are removed.
- Remove the paper from one side of a 6- by 6-inch piece of corrugated cardboard. Cut the *CheckMite+* strip in half and staple both pieces to the corrugated side of the cardboard. Place the cardboard in the center of the bottom board with the strips facing down.
- The treatment should remain on the colony for at least 3 days, but no more than 45 days.
- Do not treat for small hive beetles more than four times per year.
- Sale of **comb** honey from hives treated with coumaphos is prohibited.

MAAREC, the Mid-Atlantic Apiculture Research and Extension Consortium, is an official activity of five land grant universities and the U. S. Department of Agriculture. The following are cooperating members:

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University of Maryland
College Park, Maryland

Rutgers University
New Brunswick, New Jersey

The Pennsylvania State University
University Park, Pennsylvania

West Virginia University
Morgantown, West Virginia

USDA/ARS
Bee Research Lab
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Participants in MAAREC also include state beekeeper associations, and State Departments of Agriculture from Delaware, Maryland, New Jersey, Pennsylvania and West Virginia.

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