

## Common Diseases and How to Diagnose Them

If you suspect or confirm any of the following diseases, report your findings to the MDAR apiary program ([bees@mass.gov](mailto:bees@mass.gov)).

For videos showing how to identify abnormal brood and take a disease sample, visit <https://ag.umass.edu/resources/pollinators/resources-for-veterinarians>, or click [HERE](#).

### Varroa

Learn more about managing Varroa here: <http://ag.umass.edu/resources/pollinators/varroa>

- *Varroa* levels cannot be diagnosed by sight. In order to accurately assess infestation levels, use an alcohol wash.
- **How to conduct an alcohol wash** [[VIDEO](#)]: Identify a frame with open brood. Shake bees off of the frame into a bin. Scoop a ¼ cup of bees and place in a jar with 50-80% ethanol. Return remaining bees to hive. Shake jar for 1 min and replace solid lid with mesh lid. Shake jar upside-down over bin to release mites. If there are over 6-9 mites in the bin, the hive is over the treatment threshold for *Varroa*.
- **If you want to double-check *Varroa* counts, gather a sample for the Beltsville Bee lab:** Identify a frame with open brood. Shake bees off of frame into a bin. Scoop a ¼ cup of bees into a sealed container (plastic bag, plastic jar, or glass jar) and cover with 50-80% ethanol.
- **Fill out a [Sample Identification Form](#)**, with contact information for you and the beekeeper (indicate that you would like the sample tested for *Varroa*)
- **Mail the sample** using standard ground shipping to the [USDA Bee Lab in Maryland](#):

Bee Disease Diagnosis  
Bee Research Laboratory  
10300 Baltimore Ave. BARC-East  
Bldg. 306 Room 316  
Beltsville Agricultural Research Center - East  
Beltsville, MD 20705

- **TIP:** The same adult-bee sample can be analyzed for both *Varroa* and *Nosema*.

## Parasitic Mite Syndrome

- Parasitic Mite Syndrome (PMS) has a number of symptoms, including punctured pupal cappings, chewed-down pupa, and “melty” dead larvae which remain pearly white. For photos, visit <https://beeinformed.org/2013/10/15/parasitic-mite-syndrome-pms/>
- *Basic prevention/treatment:* PMS is caused by *Varroa* mites. The only way to treat/prevent PMS is to make sure that *Varroa* populations are under control. Conduct an alcohol wash (more info above), and recommend treatment if mites are above the treatment threshold. Find treatment info at: <http://ag.umass.edu/resources/pollinators/varroa>

## Nosema

See this fact sheet for info about *Nosema* biology, symptoms and treatment:

<https://www.mass.gov/doc/nosema-fact-sheet/download>

- *Nosema* cannot be easily diagnosed by eye. For common symptoms, consult a disease guide or <https://www.mass.gov/doc/nosema-fact-sheet/download>. If *Nosema* is suspected, submit a sample to the USDA bee lab.
- **How to take a sample** [VIDEO]: Gather ~50 adult bees from the top of the hive using a ¼ or ½ cup measuring cup. Alternatively, use leftover dead bees from an alcohol wash. Place bees in a sealed container (ideally a 50ml plastic tube, but you could also use a plastic bag, plastic jar, or glass jar) and cover with 50-80% ethanol or rubbing alcohol.
- **Fill out a [Sample Identification Form](#)**, with contact information for you and the beekeeper (indicate that you would like the sample tested for *Nosema*)
- **Mail the sample** using standard ground shipping to the [USDA Bee Lab in Maryland](#):

Bee Disease Diagnosis  
Bee Research Laboratory  
10300 Baltimore Ave. BARC-East  
Bldg. 306 Room 316  
Beltsville Agricultural Research Center - East  
Beltsville, MD 20705

- *Basic prevention/treatment:*
  - Mild infections may clear up with a good nectar flow and/or feeding
  - Replace contaminated equipment
  - Replace the queen

# European Foulbrood

See this fact sheet for info about EFB biology, symptoms and treatment:

<https://www.mass.gov/doc/european-foulbrood-fact-sheet/download>

- European foulbrood causes open larvae to become yellowed and twisted along the sides of the cell. Consult a bee disease field guide or <https://www.mass.gov/doc/european-foulbrood-fact-sheet/download> for photos. If you suspect EFB, submit a sample to the USDA lab
- **How to take a sample** [\[VIDEO\]](#):
  - Remove a discolored larva using a Q-tip or toothpick and place it in a paper bag.
  - Place the paper bag in a cardboard mailer
  - Fill out a [Sample Identification Form](#) and include it in the mailer. The sample form should include contact information for you and the beekeeper, and indicate that you would like the sample tested for EFB/AFB)
- **Mail the sample** using standard ground shipping to the [USDA Bee Lab in Maryland](#):

Bee Disease Diagnosis  
Bee Research Laboratory  
10300 Baltimore Ave. BARC-East  
Bldg. 306 Room 316  
Beltsville Agricultural Research Center - East  
Beltsville, MD 20705

- Inform the beekeeper. Sanitize all equipment. EFB can be spread between hives by contaminated equipment, but is not nearly as contagious or damaging as AFB (below)
- *Basic prevention/treatment*:
  - Feeding/nutrition
  - Re-queening
  - Terramycin

# American Foulbrood

See this fact sheet for info about AFB biology, symptoms and treatment:

<https://www.mass.gov/doc/american-foulbrood-fact-sheet/download>

- American foulbrood causes young bees to die in the pupal stage. It causes pupal cappings to sink and break. If you insert a toothpick into the cell and remove it, AFB-killed larvae will “rope out”. It has a distinctive “sweaty foot” smell. Consult a bee disease field guide or <https://www.mass.gov/doc/american-foulbrood-fact-sheet/download> for photos. If you suspect EFB, submit a sample to the USDA lab. This is the most serious disease that you could encounter, so make sure to take adequate biosecurity precautions (link).
- **How to take a sample [VIDEO]:**
  - Remove a discolored larva using a Q-tip or toothpick and place it in a paper bag.
  - Place the paper bag in a cardboard mailer
  - Fill out the [Sample Identification Form](#) and include it in the mailer
- **Mail the sample** using standard ground shipping to the [USDA Bee Lab in Maryland](#):

Bee Disease Diagnosis  
Bee Research Laboratory  
10300 Baltimore Ave. BARC-East  
Bldg. 306 Room 316  
Beltsville Agricultural Research Center - East  
Beltsville, MD 20705

- **Immediately inform the beekeeper, and instruct them to leave the hive closed until you receive results**
- **Immediately inform MDAR ([bees@mass.gov](mailto:bees@mass.gov))**
- **If the hive is positive for AFB, it must be burned as soon as possible. Inform MDAR immediately, and they will contact the beekeeper and take care of hive disposal.**

## Chalkbrood

For info about chalkbrood biology, symptoms and treatment, visit:

<https://beeinformed.org/2013/11/01/chalkbrood/>

- Chalkbrood is identifiable by sight. For photos, consult a bee disease field guide, or <https://beeinformed.org/2013/11/01/chalkbrood/>
- *Basic prevention/treatment:*
  - Moving the hive to a drier location
  - Increasing ventilation (for instance, by installing a screened bottom board)
  - Feeding
  - Re-queening

## Sacbrood

For information about sacbrood, visit:

<https://beeinformed.org/2013/10/29/sacbrood-virus-sbv/>

- Sacbrood is identifiable by sight. For photos, consult a bee disease field guide or <https://beeinformed.org/2013/10/29/sacbrood-virus-sbv/>
- *Basic prevention/treatment:* Sacbrood is a virus, which is transmitted by *Varroa*. The only way to treat/prevent sacbrood is to make sure that *Varroa* populations are under control. Conduct an alcohol wash (more info above), and recommend treatment if mites are above the treatment threshold.

*This resource was created by UMass Extension, in collaboration with the Massachusetts Department of Agriculture and The Cummings School of Veterinary Medicine at Tufts University.*

**For more honey bee veterinary resources visit:**

<https://aq.umass.edu/resources/pollinators/resources-for-veterinarians>

**To learn more about the project visit:**

<https://aq.umass.edu/resources/pollinators/research-projects-at-umass/ma-bee-veterinarian-project>