

Summer Colony Management: Mite treatments and Dealing with Hot Weather



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How to handle the Heat...

- Colonies that can't manage their internal hive temperature will first suffer brood kill starting at 113F+, adult bee death starting at 122F+, then wax and honey melting at 140F+
- Brood kill will massively set back if not ultimately kill a hive in the long run
- Honey and wax melting usually kills the colony outright by drowning most of the bees and the queen
- Possible sub-lethal affects on brood when exposed to high temps which lower lifespan or quality of workers

How to handle the Heat...

- Honey bees naturally exist in some very hot climates (Middle East, Northern Africa) and are able to evaporatively cool their hive
- This is accomplished by hauling water (from a nearby water source) to the colony. Depositing the water inside the hive and fanning the entrance(s) of the hive to create air circulation.
- Heat from the air warms the water until it evaporates and circulates out of the hive, cooling the air temperature.

How to handle the Heat...

Water Source

- Provide a water source that is near but not right next to your hive
- Make sure water source has easy and safe access for bees to collect water without falling in and drowning.
- Water source should never go dry otherwise bees will go looking for another source

How to handle the Heat...

Water Source



How to handle the Heat...

Water Source

- One major conflict with neighbors regarding backyard bees has to do with large numbers of bees at a water source (like a pool) in your neighbors yard



How to handle the Heat...

Shade

- Hives placed in direct mid day and afternoon sun will struggle to keep themselves cool on hot days
- Provide a shaded location for your hives during the hottest months of the year
- Avoid placing hives along west or south facing walls as they will radiate heat that your hive has to deal with

How to handle the Heat...

Shade

- If you don't have shade trees or structures to place hives under you can provide shade by placing a piece of scrap plywood, pallet, real estate or campaign sign, ect. On top and west facing sides of your hive
- Anything that can keep the direct sunlight off of your hive during the hottest part of the day can drastically help the bees regulate their temperature

How to handle the Heat...

Population

- A colony will need a sizeable work force dedicated to hauling water and fanning the hive to stay cool.
- Weaker colonies with smaller populations are susceptible to heat stress because they don't have enough workers to stay cool
- Give hives addition space/supers so there is room for bees to move around and not be too crowded

Mid Summer Mite treatment

- Testing for mites...
- <https://www.youtube.com/watch?v=k95CrnTSTCY> (Alcohol wash)
- <https://www.youtube.com/watch?v=fDAErFAIneY> (sugar shake) (*featuring a familiar face)

Mid Summer Mite treatment

- Testing for mites...
- A half cup of bees is ~300 bees which is the appropriate sample size to get an accurate reading of mite infestation
- Bees can be shaken into a container then scooped up or you can gently brush down the backs of bees on a frame and they will fall into your container

Mid Summer Mite treatment

- Testing for mites...
- Make sure to test nurse bees off of brood frames to get an accurate measure. Taking older workers from honey frames/ lid for the test will underestimate your infestation level.
- Make sure that you DO NOT collect your queen when gathering bees for a mite test. Check and double check a frame for the queen before taking a bee sample.

Mid Summer Mite treatment

- Testing for mites...

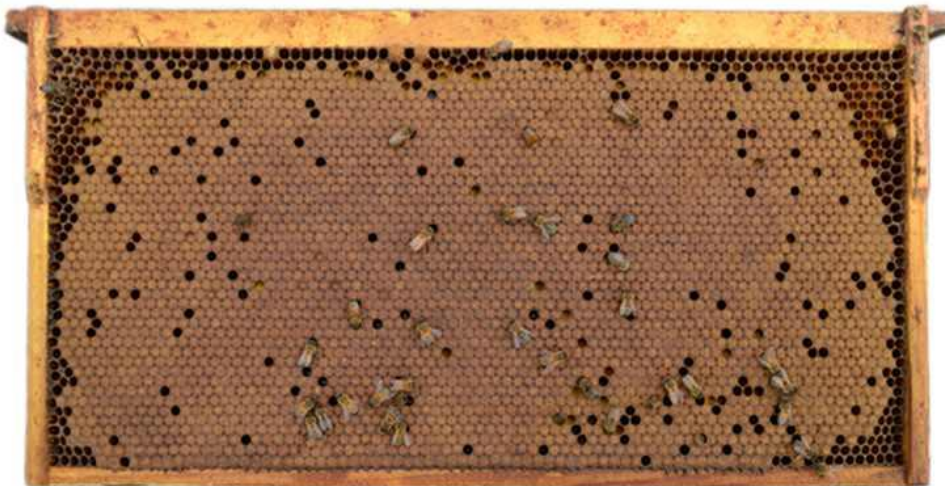


Mid Summer Mite treatment

- Testing for mites...
- How many Mites in a test means I should treat?
 - 6 total mites in an alcohol shake (or 2/100 bees, 2% infection) is considered a conservative threshold for mite treatment. More than 6 treat, 6 or less don't treat. Some beekeepers have different treatment thresholds based on their experience.

Mid Summer Mite treatment

- Other ways to tell if you have a mite problem...

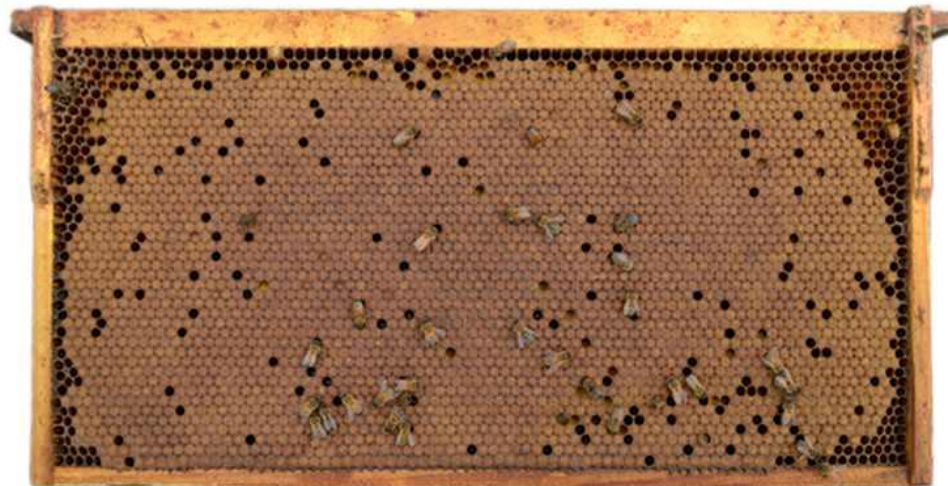


Mid Summer Mite treatment

- What treatments to use for mid summer mite treatment?
- Apiguard
- Apivar
- Oxalic acid dribble/vapor
- Brood break

Mid Summer Mite treatment

- A note about mite treatments...
- Most mite treatments do not penetrate pupal cappings meaning mites inside capped pupae are not affected by the treatment and will survive, treatments have to be extended release or have multiple carefully timed applications to overcome this.



Mid Summer Mite treatment

- Apiguard

- Thymol crystal gel applied inside the hive

- can be applied when temperatures are 85-105F

- Requires multiple applications of the treatment 7 days apart

- Will contaminate honey but won't contaminate comb

- Might cause the queen to stop laying for several days to a week

Mid Summer Mite treatment

- Apiguard



Mid Summer Mite treatment

- Apiguard

- This has been my preferred method for summer treatment

- Randy Oliver has done some experiments on how to apply apiguard in hot weather with minimal negative effects:

- <https://scientificbeekeeping.com/thymol-a-new-application-method-part-1/>

- Can purchase as individual doses or as a larger tub that contains 60 doses

Mid Summer Mite treatment

- Apivar

- Synthetic pesticide Amitraz in a specially designed slow release plastic wafer

- No temperature constraints to it's use

- One single application which has to be removed after 6 weeks (42 days)

- Will contaminate comb and honey (comb cant be used for honey production ever again)

- Expensive relative to Apiguard or OA

Mid Summer Mite treatment

- Apivar



Mid Summer Mite treatment

- Oxalic Acid
 - Naturally occurring acid which is highly toxic to mites while being very benign to bees
 - Contaminates honey mildly and does not contaminate comb
 - No heat limitations to its application
 - Very cheap per hive treatment costs

Mid Summer Mite treatment

- Oxalic Acid
 - Can be applied via sugar syrup solution inside hive (dribble), applied to a blue shop towel and placed in a hive, vaporized into the hive
 - OA vaporization is highly effective when there is no capped brood in the hive but is NOT effective during normal periods with lots of capped brood
 - Other applications (dribble, towel) of OA may be more effective with brood present

Mid Summer Mite treatment

- Oxalic Acid
- I vaporize my hives with OA around Christmas every year as one form of mite treatment
- Must wear a respirator with appropriate filters when dealing with OA vapor

Mid Summer Mite treatment

- Brood Break
- Mites reproduce inside of pupating bee cells. If you disrupt brood production in a colony you can also disrupt mite reproduction
- A colony can be made broodless by caging the queen for 2-3 weeks then releasing her back into the colony
- This can be a chemical free way to try to manage mite numbers by simulating a natural brood break like a colony would get when swarming

Mid Summer Mite treatment

- Brood Break + Treatment
- A brood break or hive manipulation can be used to make a hive absent of capped brood
- When a hive has no capped brood present mite treatments are more effective and it opens up the possibility to use OA vaporization during the warm season

Mid Summer Mite treatment

- Brood Break + Treatment
 - A hive could be split by pulling all frames containing capped brood for the split leaving behind the queen and only frames with open brood and resources in the original hive. This would mean the original hive would be free of capped brood and ready to be treated.

Mid Summer Mite treatment

- Thank you For Listening!
- Questions?
- If we have extra time I can talk a bit about summer splits...