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Voluntary, Anecdotal Research Released

The preliminary report of winter honey bee losses was released this week (https://beeinformed.org/results/colony-loss-2015-2016-preliminary-results/). From this preliminary report it shows 2015 to be the second year of high summer bee die offs contributing to a troubling annual loss of 44.1% on managed honey bee colonies. This survey entails beekeepers voluntarily submitting their anecdotal information concerning the health of their hives. The surveys are analyzed to *"compare the rates of loss among beekeepers who did or did not use a specific management practice."*

The focus of the preliminary results appears to be directed toward one pest of bees, the Varroa mite. Beekeepers have been coping with this pest since 1987, and yet it is often promoted as the only "scourge" on the bee industry. Thresholds of mites in a bee colony that can cause end of summer or winter losses vary according to researchers and bee experts. Researchers Keith Delaplane, Diana Sammataro, Phil Craft, and others, state there is no *universal* threshold number for Varroa mites in a bee hive. Certainly, the Varroa mite is a pest of honey bees, but according to Clemson Cooperative Extension, *"Treatment thresholds should not be generally accepted outside of the region from which they were developed. Differences in brood rearing levels and possibly unknown genetic differences in bee and mite populations may alter*

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conditions for adoption of treatment threshold guidelines. Treatment thresholds are not valid when used outside the parameters which they were developed, such as time of year (month). Extreme colony conditions, such as swarming or a period following a pesticide kill, may result in erroneous conclusions."

Management of bees varies whether you are a commercial beekeeper, sideliner, or backyard beekeeper. One is not better than the other, just different. Continuing to blame beekeepers for differing Varroa management defies the research. The information that is obvious and definitive through even this preliminary survey report is the resilience of beekeepers, and honey bees to stay in business, and to stay alive. No other area of agriculture could survive with annual losses of an estimated 44.1%. If this occurred in any other industry the uproar to resolve this crisis would be immediate.

There is no question that bees and other pollinators are and have been struggling. Varroa mites have been a part of that struggle: a part-of-it, since 1987.

Regulatory agencies seem to accept a voluntary survey of "what killed your bee hives at the end of summer or over the winter." This annual loss survey is not corroborated by lab analysis of bee losses. No one examined these hives to determine if the winter loss was due to a cold winter, starvation, a few warm days in February where the bees broke their winter cluster and a cold snap took them by surprise, disease, pests- including Varroa, or sublethal effects of pesticides in the hives' food stores that slowly weakened the bees, dwindling their population enough that there were not enough bees left in the hive to generate enough heat to keep the colony warm during the winter.

Beekeepers can pay to have their hive monitored, and lab analysis performed. Beekeepers can be a part of a monitoring project, or they can get a "basic kit" or "emergency kit" to have their bees analyzed for pests and pathogens for $140, or include pesticide analysis for $844 which will test up to "170 known pesticides."

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Beekeepers are spending more time and money to maintain their hives, due to the cumulative effects of pesticides, poor forage, pests, and pathogens. Losses, even anecdotal losses, continue to be staggering for beekeepers.

We need to respect the experience, knowledge, and skill of beekeepers to keep their hives alive against the cumulative impact of pesticides, poor forage, pests, and pathogens. We need more than anecdotal, voluntary surveys from only 15% of a diverse target population.

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Resources--Varroa mite controls

"concerned with more than 1 mite per sample after almonds, try to keep levels below 6 mites during the season, and lower in fall (I allow no more than one mite in a sample for a breeder queen). http://scientificbeekeeping.com/sick-bees-part-11-mite-monitoring-methods/

For my apiaries in the California foothills, I've found that if I keep the mite infestation rate below the 2% level (2 mites per 100 bees) that my colonies thrive. But should that rate reach 5%, then I start seeing the brood fall apart. By the time the rate reaches 15%, the colony is generally seriously on the way downhill, and even with treatment may not recover." http://scientificbeekeeping.com/mite-management-update-2013/

"The hardest part of checking on varroa mites is figuring out how many mites you can have in your hive without worrying. A quick search of the internet and my bookshelf yields up numbers ranging from 50 mites per day to 200 mites per day as the treatment threshold. For a three day mite count like mine, that means I can have somewhere between 150 and 600 mites on my test sheets without taking action."
http://www.waldeneffect.org/blog/How_to_count_varroa_mites_with_a_sticky_board/

Monitoring Method	Number of Varroa Mites in May	Number of Varroa Mites in August
Ether Roll	1 mite / 100 bees	2 mites / 100 bees
Alcohol Wash	2 mites / 100 bees	3 mites / 100 bees
Sticky Board	9 mites / 24 hr drop	12 mites / 24 hr drop

table from Ontario Ministry of Agriculture, Food and Rural Affairs,
http://www.omafra.gov.on.ca/english/food/inspection/bees/varroa-sampling.htm

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Sampling Method	Spring	Fall
Corex Sheet	5-10 mites	50-60 mites
Sugar Shake	3-4 mites	10-12 mites

from Brushy Mountain http://www.brushymountainbeefarm.com/Resources/VarroaMites.asp

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"At this time, there is no universal threshold number. Determining a treatment threshold will depend on your tolerance for colony losses, and your willingness to use a miticide. For example, if you have a LOW tolerance for colony loss (and are willing to use a miticide) we suggest a threshold of 20 mites per day. If you have a HIGH tolerance for colony loss (and are reluctant to use a miticide), use 100 mites per day as your threshold."

*Reprinted from an article submitted to American Bee Journal by Diana Sammataro, et. al. Penn. State University 2002

"Economic thresholds vary by region [2], owing to such differences as brood rearing season and possibly unknown genetic differences in bee and mite populations."

Economic threshold for Varroa jacobsoni Oud. in the southeastern USA Keith S. Delaplane 3 *, W. Michael Hood b a Department of Entomology, University of Georgia, Athens, GA 30602, USA b Department of Entomology, Clemson University, Clemson, SC 29634, USA (Received 14 May 1998; revised 20 April 1999; accepted 22 April 1999

"Thresholds are not constants. In recent years, due to increased colony loss, they have become more conservative, meaning revised downward. They also change with the seasons. Spring to early Summer is a time of maximum brood production in honey bee colonies, and therefor an ideal time for the population of Varroa mites, which reproduce in brood cells, to increase rapidly.

Because Varroa can get out of hand so quickly at that time of year, a lower threshold is used in the Spring. The bottom line is that failure to monitor, and to control Varroa when threshold numbers are exceeded, means an increased likelihood of a dead colony later in the season. It's best to monitor twice a year, in Spring and Fall. The following are the thresholds I recommend using for an alcohol wash sample. They are consistent with the numbers suggested by researchers.

Spring – treat if more than 1 mite per 100 bees
Late Summer – early Fall – treat if more than four mites per 100"

From ASK Phil Craft http://www.beeculture.com/ask-phil-monitoring-varroa-swarm-prevention-or-not/

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"A treatment threshold system should identify, for a given region, the mite level and time of year at which acaricide treatments give satisfactory results relative to some future date. This permits a beekeeper to 1) anticipate at what time of year treatment may be necessary and 2) make an informed treatment decision if sampled mite levels at that time meet or exceed an established threshold.

A research based varroa treatment threshold was developed for newly installed (in April) package bees for the piedmont region of Georgia and South Carolina (Delaplane & Hood 1997). A late-season acaricide treatment in the first year colonies was justified at about 15 varroa mites collected with a 300-bee ether roll and overnight adhesive bottom board insert mite level of about 117 mites in mid-August. Using this information, a beekeeper in the piedmont region of South Carolina should take the following actions:

1. if the mite level detected in mid-August is close to the treatment threshold, then treatment with an acaracide is highly recommended to prevent the mite population from reaching the colony collapse level. Treated colonies should winter well with adequate number of bees and a tolerable number of varroa mites.
2. If the mite level is well below the treatment threshold in mid-August, the beekeeper should delay treatment until perhaps the next February.
3. If the mite level is much greater than the treatment threshold or above the colony collapse level in mid-August, the beekeeper may treat but expect to lose the colony.

Other treatment threshold research (Delaplane & Hood 1999) conducted in the piedmont region of Georgia and South Carolina with overwintered colonies yielded very similar thresholds. An ether roll of 15-38 mites and overnight bottom board insert of 59-187 were the varroa treatment threshold levels developed for August.

Treatment Threshold Limitations - Treatment thresholds should not be generally accepted outside of the region from which they were developed. Differences in brood rearing levels and possibly unknown genetic differences in bee and mite populations may alter conditions for adoption of treatment threshold guidelines. Treatment thresholds are not valid when used outside the parameters which they were developed, such as time of year (month). Extreme colony conditions, such as swarming or a period following a pesticide kill, may result in erroneous conclusions.

A research based treatment threshold system is not a long term prescription for good bee health without adequate disease and pests management practices by the beekeeper. Periodic re-validation of thresholds is necessary to maintain the reliability of recommendations." FROM Varroa Mite Control in South Carolina, Clemson Cooperative Extension http://www.clemson.edu/extension/beekeepers/factsheets/varroa_mite_control_in_sc.html

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Our teams conduct and demonstrate the importance of monitoring disease and parasite management while working with beekeepers in the field to collect samples, offer support, and analyze results.

We poll thousands of beekeepers every year to find out as much as we can about their beekeeping management practices. We then compare the rates of loss among beekeepers who did or did not use a specific management practice.

Pesticides and malnutrition caused by changing land use patterns are also likely taking a toll, especially among commercial beekeepers.

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Basic Kit	Pesticide Analysis Kit
Sampling kits for 8 weak and 8 healthy colonies	Sampling kits for 8 weak and 8 healthy colonies
16 samples tested for Nosema	16 samples tested for Nosema
16 samples tested for Varroa	16 samples tested for Varroa
2 samples tested for 7 Viruses each	2 samples tested for 7 Viruses each
—-	Tests 1 healthy and 1 weak pollen sample for 170 known pesticides
Cost = **$140**	Cost = **$844**

From Bee Informed Partnership **https://beeinformed.org/programs/emergency-response-kits-2/**