

Dr. Dennis vanEngelsdorp's (DVE) talk at

Susquehanna Beekeepers Association (SBA) meeting March 9, 2016

Some main points:

Much discussion of bee loss trends: increasing summer losses vs winter losses in 2014, the difference in loss rates between backyard (BY) beekeepers and commercial beekeepers (BY beekeepers have higher winter losses). According to BIP surveys main causes of 2014 colony losses: #1 queen loss, #2 varroa, #3 starvation. Unsurprisingly, backyard and commercial beekeepers disagree on causes of colony loss. Data presented was drawn heavily from articles available on the Bee Informed Partnership site, <https://beeinformed.org/results-categories/winter-loss/> (2014-2015 and 2013-2014 data compilations). Key charts showing bee loss rates can be found below.

Causes of losses are complex. In a quote paraphrased from H. L. Mencken, "For every complex problem there is an answer that is clear, simple, and wrong." We can find certain correlations, but they don't indicate that there is a direct causation.

3 main problems in beekeeping persist: pesticides, varroa, and monoculture crops.

In the 1980s 20 mites per 100 bees was the threshold for colony loss, now it is closer to 3 per 100. If your bees get to 5 mites per 100 or greater, the colony will likely suffer damage.

Bee loss is not exclusively about the mites but about the viruses that are being transmitted by the mites. Viruses were present before the Varroa problem, but only transmitted mother to daughter, now with Varroa, these viruses are transmitted sister-to-sister multiplying the effect. Also the viruses may be more potent than before. Compounding the problem, Varroa mites themselves are spreading viruses.

The most critical time for bees in MD is Sept-Oct. (October surprise!)

70% of BY beekeepers don't treat for mites (use a known treatment for mites). Mites can be passed to other colonies, to your neighbor's bees, through drifting, robbing, etc. Not treating for mites makes about as much sense as not treating your dog for ticks or fleas because you want to develop dogs that are naturally resistant to ticks or fleas.

Not monitoring and treating for mites can result in an explosion of mites (mite bomb). (Graphic of an A-bomb explosion 3 second video).

A good idea is for everyone in an area or in a group to agree to treat all at the same time. Mites are a community problem. Your neighboring beekeepers' mite problem is your mite problem, whether you realize it or not. Keeping bees without controlling varroa should be considered irresponsible, even unethical due the effects on others (within a 3 mile radius).

Successful beekeepers with less than 10% colony losses last year typically treated 4 times using different products. Possible regimen is: in Spring, before honey flow Thymol (like Apigard), early summer during honey flow Formic (like Miteaway quick strips), later Amitraz or Oxalic Acid vapor, Formic in the early fall, OA dribble in later fall or as soon as brood ceases. Beekeepers who do less than this typically lose 30 to 60% of their bees. Dennis vanEngelsdorp does not recommend using OA vaporization due to its danger for the beekeeper, from inhaling the fumes. (Very serious injury is possible.)

If you use a varroa treatment product the goal is to achieve at least a 80% knock down rate.

Bees must be tested (sampled) before and after treating to determine mite status, get data, and determine if your treatment worked.

The Bee Informed Partnership (BIP) has great guide available (which SBA distributes and recommends) which is the “Tools for Varroa Management”, available online through the SBA website or directly at: <http://honeybeehealthcoalition.org/Varroa/>

You must have a varroa control strategy!

Varroa has become resistant to several hard chemical pesticides used in the past, but so far has shown no resistance to Amitraz!

In the 2015 season as a part of the Sentinel Hive Project SBA provided pollen samples every 2 weeks to UMD. All of these were tested and found to be completely free of pesticides (except for one very minor trace in July). DVE was very surprised at this result as other more agricultural areas often show pesticide residues. This kind of sophisticated testing would have cost as much as \$20,000 if we had to pay for it!

UMD testing for residues in pollen (bee bread) normally finds an average of 3 chemicals in as much as 21% of samples. After 2014 sampling has shown a general increase in fungicide residues in pollen.

Neonics have not proven to be detrimental to bees at the colony level. Bees have more difficulty processing chemical pesticides because they have fewer genes dedicated to fight toxins. Bees have only half the genes possessed by the common housefly. Pesticides that are detected in hives normally are only up to 3% neonicotinoids. There are only a couple of states where agricultural pesticides are a serious danger to bees including Vermont. On the other hand Maryland and Pennsylvania have very small problems with pesticides compared to other states.

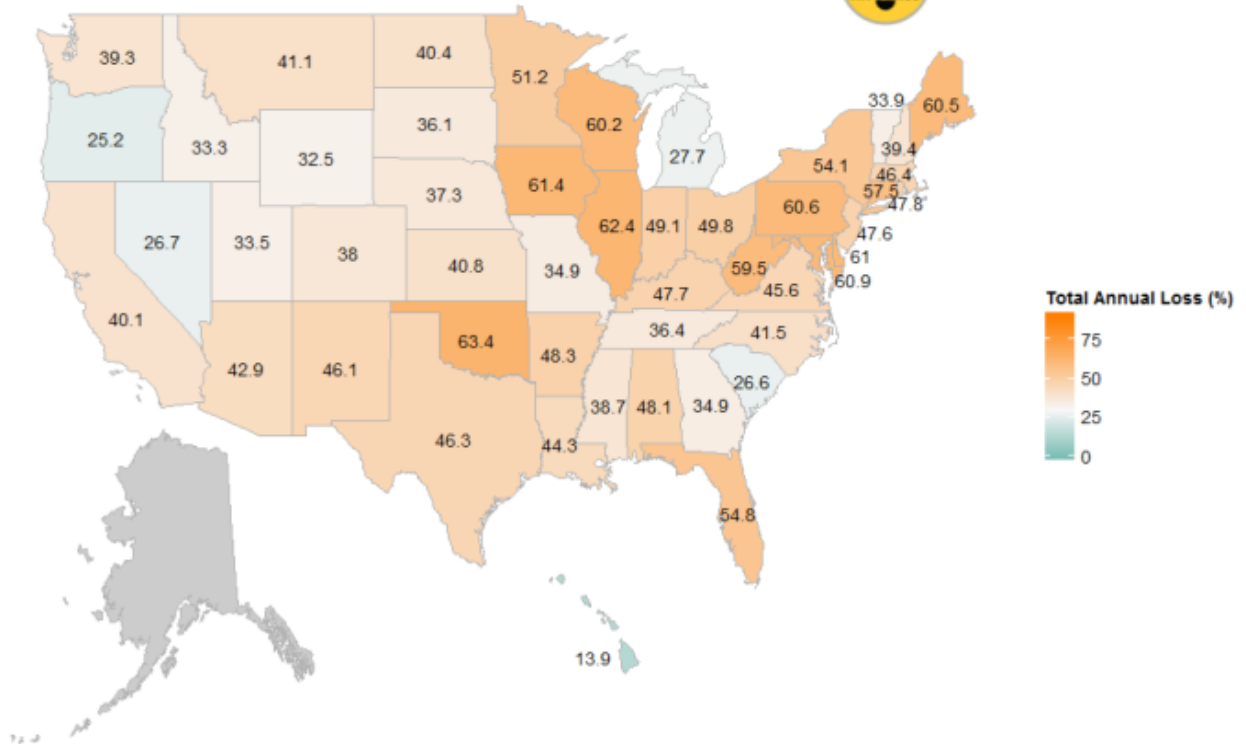
Fungicides may have a sub-lethal effect on the colony or its bees and this is not yet fully understood.

New studies have discovered entombed pollen/bee bread that often is covered in a red propolis-like capping in the cells. Hives with entombed pollen are 3 times more likely to die. The possible answer is fungicide in the pollen within these cells kills the yeast, preventing fermentation, so when the pollen rots (disintegrates), it releases the pesticides into the surrounding wax. These colonies are 3 times more likely to experience a “queen event” and resulting loss of the colony.

Dr. vanEngelsdorp recommends replacing about 2 out of every 10 frames each year, but not more than that. Think of comb as a living entity. If possible comb needs to be cared for and kept alive by bees, not put in storage. A bee should not be considered an organism. The colony including the comb should be considered the organism, in fact a super organism. “Una apis, nulla apis” - one bee is no bee.

There are 4,000 species of native bees in North America but only the honeybee is affected by varroa as far as we know.

Total Annual Loss by State - Loss Survey 2014-2015



Total US managed honey bee colonies Loss Estimates

