

## 2017 NYS *Varroa* survey results



### Participation

Overall, 90 participants joined the 2017 NYS *Varroa* survey and collected samples in June, 72 participants collected samples in August, and 66 participants filled out the management survey. Thus, a complete dataset existed for 66 participants.

### Results

#### *Varroa* levels

*Varroa* levels ranged from 0 to 17 mites/100 bees in June, with an average of 1.4 mites/100 bees. In June, 19 of 90 colonies (21%) were above the recommended treatment threshold of 2 mites/100 bees. In August, *Varroa* levels ranged from 0 to 35 mites/100 bees, with an average of 2.6 mites/100 bees and 19 of 72 colonies (26%) above the treatment threshold of 3 mites/100 bees. *Varroa* levels in June and August were not related, suggesting a colony's infestation level in June was not predictive of its level in August.

#### Genetic stock as a control measure

Only 4 of 66 participants who completed the management survey identified that their bees had been bred for *Varroa* resistance (e.g., Russian stock). Honey bee races did not have significantly different *Varroa* levels ( $P = 0.18$ , Figure 1).

#### Chemical control measures

Slightly over half (53%) of participants used one or more chemical treatments to control *Varroa*. The most commonly used treatment was formic acid, which was used by 26% of participants. Oxalic acid and amitraz were used by 15% and 9% of participants, respectively. In both June and August, there was no difference in *Varroa* levels in colonies treated vs. not treated with chemicals ( $P = 0.64$ , Figure 2). Due to small sample sizes, individual chemicals could not be analyzed.

#### Non-chemical control measures

Sixty percent of participants used one or more non-chemical *Varroa* control measures. Approximately 50% of participants used screened bottom boards, 21% removed drone brood, 8% used brood interruption, and 14% used other methods. In August but not June, *Varroa* levels were on average two times higher in colonies that received at least one of these control measures ( $P = 0.028$ ), potentially because the treatments were employed in response to *Varroa*. This pattern was mostly driven by "other" treatments (Figure 3).

### Conclusions

There are two main conclusions from the 2017 NYS *Varroa* survey:

- 1) Over a quarter of participants were above the recommended treatment threshold for *Varroa* in August. Thus, *Varroa* is likely playing a significant role in colony deaths among NYS beekeepers.
- 2) A power analysis revealed that a sample size of ~200 participants will be necessary determine particular control measures that are working better than others. This is our goal for the 2018 NYS *Varroa* survey.

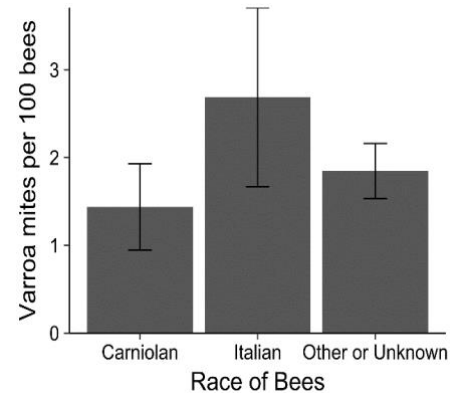


Figure 1. Average *Varroa* levels for each race or type of bee. The standard error bars represent variation in *Varroa* levels across colonies.

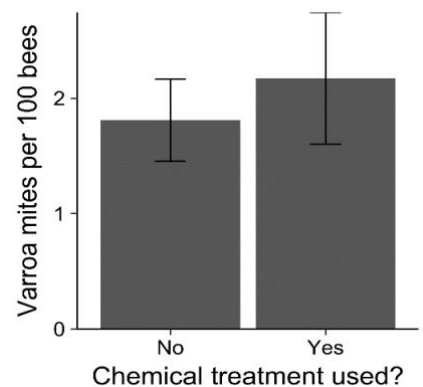


Figure 2. Average *Varroa* levels were similar in colonies treated and not treated with chemicals.

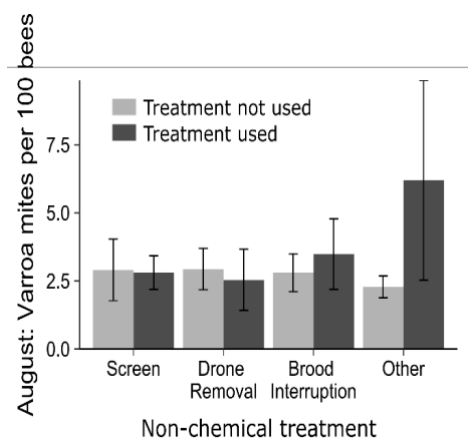


Figure 3. Average *Varroa* levels in colonies that used various non-chemical control methods.