

Report date: 11/21/2017
Date sample was collected: July 26, 2017
Date live sample was received: July 28, 2017
Date alcohol sample was received:

National Honey Bee Survey - Funded by
USDA/APHIS
Honey Bee Diagnostic Report

Sean Collinworth
828 Evans Ridge Rd.
Lake Toxaway, NC 28747



Sample ID: NC-06-2017

The following report is from molecular and microscopic analysis of the live and alcohol-collected bees from your apiary located at Latitude **35.16934** Longitude **-82.91306**. Molecular analysis was performed on a composite sample of 50 live bees sent from your apiary. The bees were frozen, pooled, and their extracted nucleic acids were analyzed using molecular techniques to look for the presence of a select # of viruses. Visual, microscopic techniques were used to determine the levels of exotic mite, bee, and nosema species. The results for sample **NC-06-2017** follow. A plus symbol (+) indicates that the tested target was detected in your sample. A negative symbol (-) indicates that the tested target was not detected. The use of N/A indicates that no data is available for the particular test.

Counts of colonies with the following visual observations

Colonies in Apiary	35	Sacbrood	0
Sampled colonies	8	Chalkbrood	0
Queen right	8	Parasitic Mite Syndrome	0
Colonies with queen cells	0	Deformed Wing Virus symptoms	0
Queenless	0	Colonies with Black Shiny Bees	0
Drone laying queen	0	Colonies with Small Hive Beetle	0
American Foulbrood	0	Colonies with Wax Moth	0
European Foulbrood	0		

Table 1 below provides your specific viral load and pathogen load given as a percentile of all samples collected from Jan 01, **2013** to present where the pathogen count was greater than 0. The viral percentiles are based on the number of viral copies detected in the sample.

Higher percentile values in the column "Your Percentile Ranking" represent higher pathogen loads

(higher counts of the pathogen), or more viral copies than compared to other samples where that pathogen or virus was present. Samples without the virus or pathogen are not included in the calculation. For example, if your viral load percentile for Deformed Wing Virus (DWV) is listed in the table as '20th', this means your viral levels are in the 20-30th percentile, indicating your levels were *lower* than 70% percent of the samples that tested positive. A 'N/A' in Table 1 means the pathogen was not tested.

The 25th, 50th and 75th percentile values are also provided in this table for comparison to your values. These values represent what the pathogen value would be at the 25th, 50th, and 75th percentile. This gives an idea of what actual count values are considered lower, middle, and higher as compared to other samples where the count was greater than 0. When a virus is present in a sample, the count of viral copies is often in the millions.

Table 1: Parasite Percentiles

Parasite	25th Percentile	50th Percentile	75th Percentile	Your Percentile Ranking	Your Quantification
Varroa mite infestation (# mites/100 bees)	0.67	1.89	4.29	60 th	3.3
Nosema sp.(millions of spores/bee)	0.1	0.25	0.65	not present	0
ABPV	174,923	7.0 million	3.1 billion	not present	0
CBPV	1.2 million	8.8 million	483.9 million	70th	1.3 billion
DWV	608.8 million	12.6 billion	94.3 billion	not present	0
IAPV	469,376	17.2 million	362.0 million	not present	0
KBV	1.0 million	7.4 million	92.8 million	not present	0
LSV2	26.9 million	692.6 million	8.0 billion	not present	0
VDV	106.6 million	15.8 billion	1635.9 billion	30th	726.0 million

- Individual detection of a particular virus or pest may not be indicative of a problem, but will help in our understanding of disease and pest trends in the U.S.
- Honey bee viruses are very common and no treatments are currently available.
- Varroa mites detected at more than 3-10 mites/100 bees are thought to cause damage and colonies exceeding this threshold should be treated to reduce mite loads as soon as possible.
- *Nosema ceranae* is now the most common species and *Nosema apis* is rarely seen. Fumagillin is available for treatment of Nosema infection. Nosema spore counts in excess of 1 million spores per bee are thought to cause damage, and colonies with infection levels above this threshold should be considered for treatment depending on the season.

We appreciate your participation in this national effort. For additional information see: http://www.aphis.usda.gov/plant_health/plant_pest_info/honey_bees/survey.shtml

Molecular Report - Virus presence/absence is listed below:

Virus	+/-	Notes
ABPV	-	Acute Bee Paralysis Virus, rare, has been associated with colony losses
BQCV	N/A	Black Queen Cell Virus, very common, may be associated with Nosema disease.
CBPV	+	Chronic Bee Paralysis Virus, rare in U.S.
DWV	-	Deformed Wing Virus, very common, associated with varroa mites
IAPV	-	Israeli Acute Paralysis Virus, common in some regions, has been associated with colony losses
KBV	-	Kashmir Bee Virus, uncommon, has been associated with colony losses
SBPV	N/A	Slow Paralysis Virus, Not known to be in the U.S.
LSV-2	-	Lake Sinai Virus-2 newly discovered found at high levels in some bees and in the same family as CBPV.
VDV	+	Varroa Destructor Virus