



**Bee Informed Partnership: Real Time Disease Load Monitoring
Final Report 2015**

Participant Demographics

This report combines data from 3 different groups of participants: Sentinel, North Dakota and Real Time Disease Load Monitoring participants (hereafter referred to as Sentinel, ND and RTDL).

The **Real Time Disease Load Monitoring** Program was initiated in 2013 as a precursor to the Sentinel Project but will be continued and supported by UMD. It involves monthly sampling and colony inspections with the goal of monitoring disease load profiles and treatment efficacy.

Sentinel Apiaries is a pilot project started this year, building on the RTDL, with the addition of pollen collection and continuous hive-scale data with the added goal of tracking disease load with environmental conditions through hive-scale weights.

North Dakota participants represent a subset of RTDL whose participation is sponsored by the North Dakota Department of Agriculture.

Number of Beekeepers		Program			
		RTDL	ND	Sentinel	TOTAL
Backyard	<i>(less than 50 colonies)</i>	9	1	17	27
Sideline	<i>(50-500 colonies)</i>	3	0	4	7
Commercial	<i>(500 or more colonies)</i>	0	8	0	8
TOTAL		12	9	21	42

Number of Samples Processed		Program			
		RTDL	ND	Sentinel	TOTAL
Backyard	<i>(less than 50 colonies)</i>	223	16	691	930
Sideline	<i>(50-500 colonies)</i>	119	0	166	285
Commercial	<i>(500 or more colonies)</i>	0	255	0	255
TOTAL		342	271	857	1470

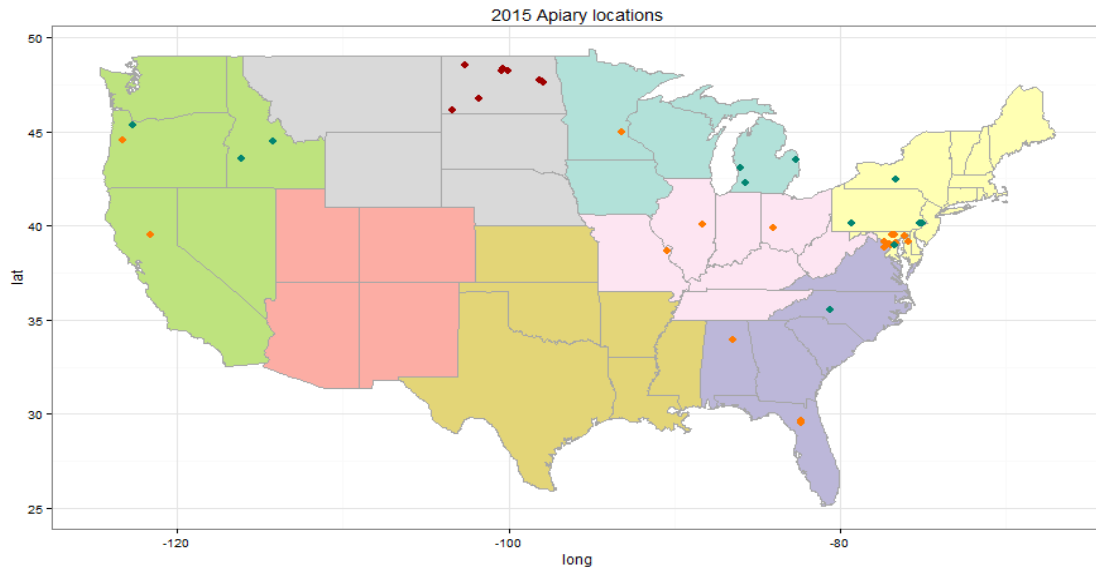
Number of Colonies Sampled		Program			
		RTDL	ND	Sentinel	TOTAL
Backyard	<i>(less than 50 colonies)</i>	53	8	141	202
Sideline	<i>(50-500 colonies)</i>	24	0	35	59
Commercial	<i>(500 or more colonies)</i>	0	65	0	65
TOTAL		77	73	176	326

Demographics by Month

	March	April	May	June	July	August	September	October	November
# Samples	8	8	192	240	264	278	248	176	56
% Samples	0.5%	0.5%	13.1%	16.3%	18.0%	18.9%	16.9%	12.0%	3.8%
# Beekeeper	1	1	27	33	36	37	34	23	7
% Beekeeper	2.40%	2.4%	64.3%	78.6%	85.7%	88.1%	81.0%	54.8%	16.7%

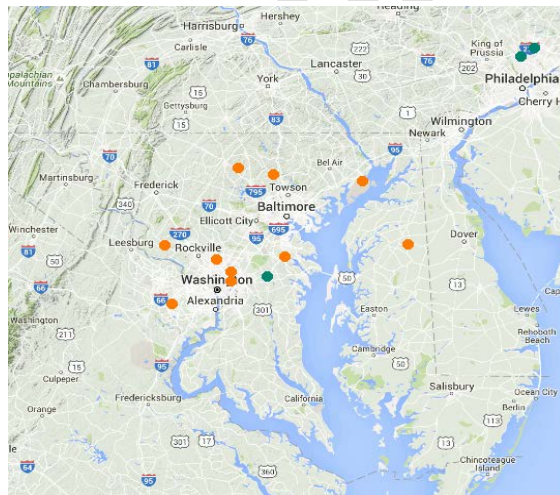


Participant Demographics



Regions: C ENC NE S SE SW West WNC

Program: RTDL ND Sentinel



Program: RTDL ND Sentinel

* We grouped the beekeepers into eight regional areas so that you could compare your results based on region.

Number of Beekeepers	Region							TOTAL
	C	ENC	NE	SE	West	WNC		
Backyard (less than 50 colonies)	4	2	13	3	4	1	27	
Sideline (50-500 colonies)	0	3	2	1	1	0	7	
Commercial (500 or more colonies)	0	0	0	0	0	8	8	
TOTAL	4	5	15	4	5	9	42	

Number of Samples Processed	Region							TOTAL
	C	ENC	NE	SE	West	WNC		
Backyard (less than 50 colonies)	169	65	393	104	183	16	930	
Sideline (50-500 colonies)	0	127	87	48	23	0	285	
Commercial (500 or more colonies)	0	0	0	0	0	255	255	
TOTAL	169	192	480	152	206	271	1470	

Number of Colonies Sampled	Region							TOTAL
	C	ENC	NE	SE	West	WNC		
Backyard (less than 50 colonies)	33	17	83	32	29	8	202	
Sideline (50-500 colonies)	0	26	17	8	8	0	59	
Commercial (500 or more colonies)	0	0	0	0	0	65	65	
TOTAL	33	43	100	40	37	73	326	



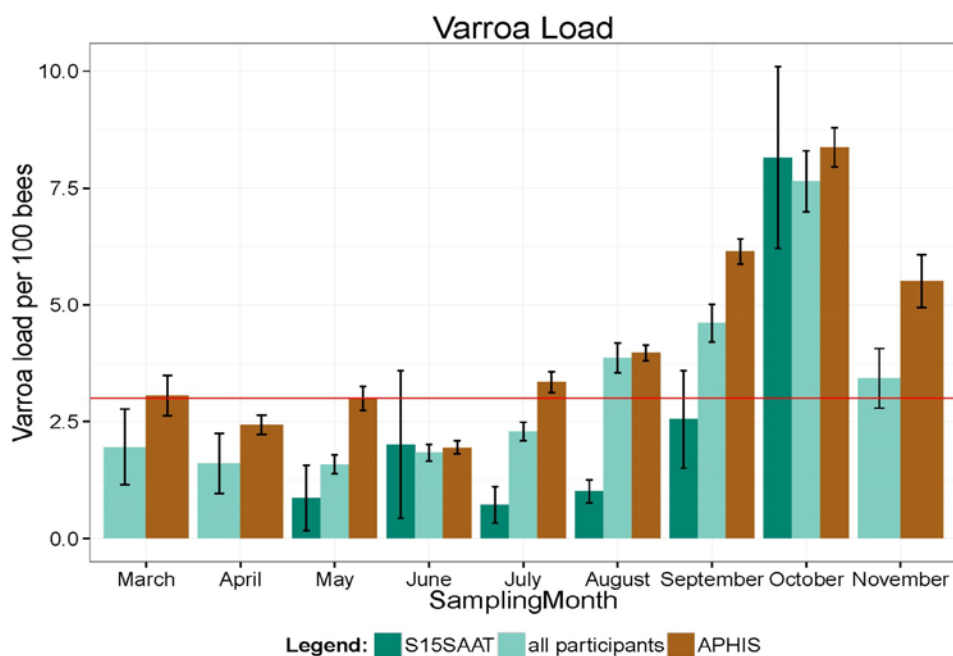
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Your Seasonal Varroa Load

Samples preserved in saltwater are processed at the University of Maryland Honey Bee Lab to determine Varroa mite load by method of automatic shaker. This method is comparable to the alcohol shake procedure and removes 100% of phoretic mites attached to the bees. Varroa mite loads above 3 mites per 100 bees is considered damaging to the survival of the colony.

Varroa mites (number of mites per 100 bees)

	March	April	May	June	July	August	September	October	November
Average	-	-	0.87	2.01	0.72	1.01	2.55	8.16	-
standard error	-	-	0.70	1.57	0.39	0.24	1.04	1.94	-



* APHIS Honey Bee Disease Survey is a national effort sponsored by USDA Animal and Plant Health Inspection Service (APHIS) in collaboration with the Agricultural Research Service (ARS) and University of Maryland (UMD). To date, the data provided for the APHIS monthly average are a composite of 5 years of data.

Data presented: average ± 1 standard error



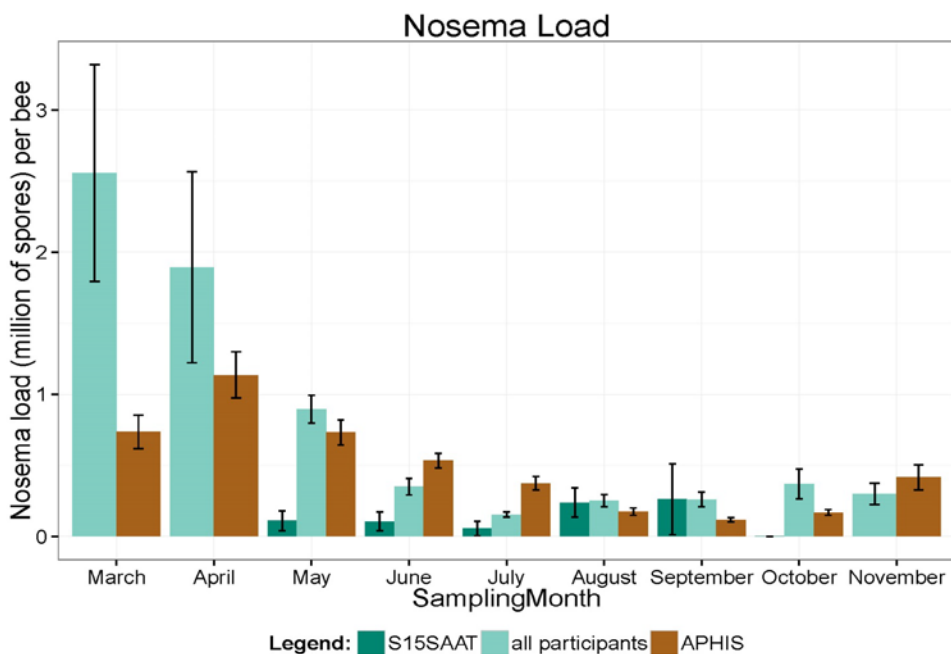
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Your Seasonal Nosema Load

Samples preserved in saltwater are processed at the University of Maryland Honey Bee Lab to determine *Nosema* spore load by microscopic counting. This method cannot differentiate between the two species (*Nosema ceranae* and *Nosema apis*). *Nosema* loads above 1 million spores per bee are believed to be damaging to the survival of the colony.

Nosema spores (million of spores per bee)

	March	April	May	June	July	August	September	October	November
Average	-	-	0.11	0.11	0.06	0.24	0.26	0.00	-
standard error	-	-	0.07	0.07	0.05	0.10	0.25	0.00	-



* APHIS Honey Bee Disease Survey is a national effort sponsored by USDA Animal and Plant Health Inspection Service (APHIS) in collaboration with the Agricultural Research Service (ARS) and University of Maryland (UMD). To date, the data provided for the APHIS monthly average are a composite of 5 years of data.

Data presented: average ± 1 standard error



Bee Informed Partnership: Real Time Disease Load Monitoring
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For All Participants

Varroa mites (number of mites per 100 bees)

Region	Operation	April		May		June		July		August		September		October		November	
		Average	Sd.error	Average	Sd.error	Average	Sd.error	Average	Sd.error	Average	Sd.error	Average	Sd.error	Average	Sd.error	Average	Sd.error
C	Backyard	-	-	3.24	2.04	2.45	0.88	4.50	1.30	6.15	1.64	6.59	1.93	8.54	0.75	-	-
C	Backyard	-	-	0.38	0.16	0.45	0.23	2.51	0.66	1.09	0.52	1.64	0.64	6.46	2.62	-	-
C	Backyard	-	-	0.87	0.70	2.01	1.57	0.72	0.39	1.01	0.24	2.55	1.04	8.16	1.94	-	-
C	Backyard	-	-	-	-	-	-	4.14	1.18	7.65	1.77	0.78	0.34	-	-	-	-
ENC	Sideline	-	-	0.44	0.24	1.06	0.60	0.75	0.34	1.86	0.54	-	-	8.43	1.56	-	-
ENC	Sideline	-	-	-	-	0.00	0.00	0.38	0.22	1.67	0.53	7.80	1.96	-	-	-	-
ENC	Sideline	-	-	0.00	0.00	0.00	0.00	0.13	0.09	0.06	0.06	1.86	0.77	2.25	0.78	-	-
ENC	Backyard	-	-	-	-	2.86	0.80	6.37	1.60	6.73	1.57	8.96	2.45	-	-	1.89	0.75
ENC	Backyard	-	-	1.75	0.93	1.61	0.64	-	-	3.79	1.63	5.89	1.64	-	-	-	-
NE	Backyard	-	-	4.19	0.84	6.47	2.91	3.31	1.03	1.77	0.96	1.22	0.44	3.17	0.77	-	-
NE	Backyard	-	-	1.54	0.81	0.68	0.49	0.49	0.49	0.09	0.09	1.58	0.58	7.20	2.09	-	-
NE	Sideline	-	-	1.82	0.63	2.49	1.30	1.37	0.66	2.07	1.07	4.50	1.03	-	-	-	-
NE	Sideline	-	-	0.39	0.20	1.78	1.01	2.05	0.77	5.27	2.27	4.57	0.83	-	-	-	-
NE	Backyard	-	-	0.15	0.15	0.48	0.30	1.89	1.02	3.68	1.74	3.95	1.38	23.46	6.25	-	-
NE	Backyard	-	-	1.42	0.67	3.49	0.88	-	-	7.31	1.48	2.75	0.85	-	-	-	-
NE	Backyard	-	-	1.44	0.69	3.07	0.79	4.65	0.72	8.38	2.87	9.47	3.07	23.22	7.91	-	-
NE	Backyard	-	-	0.60	0.29	1.67	0.48	1.61	0.49	4.06	1.34	-	-	13.10	2.42	-	-
NE	Backyard	-	-	4.86	1.83	3.83	1.43	3.81	1.01	6.61	2.53	20.66	6.37	11.72	1.84	-	-
NE	Backyard	-	-	-	-	0.48	0.17	4.91	3.04	6.42	3.48	1.92	1.09	7.23	1.38	10.09	1.73
NE	Backyard	-	-	0.45	0.31	2.00	0.72	0.76	0.33	5.54	2.20	6.53	4.66	6.80	1.91	-	-
NE	Backyard	-	-	0.00	0.00	1.52	0.87	3.77	1.36	-	-	0.91	0.31	-	-	-	-
NE	Backyard	-	-	0.23	0.17	-	-	0.12	0.12	-	-	-	-	-	-	-	-
NE	Backyard	-	-	0.72	0.40	-	-	1.92	0.58	-	-	-	-	-	-	-	-
NE	Backyard	-	-	-	-	2.40	0.90	2.36	0.89	3.33	1.01	3.41	1.13	-	-	-	-
SE	Backyard	-	-	3.08	1.33	1.12	0.60	2.90	1.49	-	-	1.86	1.42	-	-	-	-
SE	Backyard	-	-	2.31	0.84	1.96	0.73	1.43	0.47	0.85	0.57	3.26	1.70	5.87	3.09	-	-
SE	Backyard	-	-	-	-	-	-	0.53	0.14	3.86	0.64	19.71	3.18	-	-	-	-
SE	Sideline	-	-	0.28	0.12	0.41	0.25	0.58	0.17	4.37	1.05	9.07	1.72	-	-	2.32	0.80
W	Backyard	1.61	0.64	3.19	0.70	2.73	0.67	5.83	1.81	2.16	1.37	1.71	0.42	9.71	4.03	-	-
W	Backyard	-	-	-	-	-	-	1.09	0.41	2.80	0.73	1.85	0.62	0.20	0.15	0.00	0.00
W	Backyard	-	-	0.77	0.23	1.50	0.38	3.72	0.69	1.95	0.79	3.98	1.18	3.49	1.25	-	-
W	Sideline	-	-	-	-	3.01	0.74	-	-	16.43	5.05	2.97	0.98	-	-	-	-
W	Backyard	-	-	1.84	1.36	1.02	0.64	6.03	4.75	2.45	0.94	4.01	2.16	4.83	1.88	-	-
WNC	Backyard	-	-	4.98	2.19	-	-	3.32	1.92	-	-	-	-	-	-	-	-
WNC	Commercial	-	-	-	-	-	-	-	-	3.91	1.54	-	-	2.79	1.52	-	-
WNC	Commercial	-	-	0.00	0.00	0.90	0.90	-	-	3.07	2.53	-	-	-	-	-	-
WNC	Commercial	-	-	-	-	4.77	1.37	4.40	1.03	5.99	1.66	2.35	0.73	7.03	2.60	0.52	0.20
WNC	Commercial	-	-	-	-	0.87	0.35	0.63	0.27	3.52	0.68	2.21	0.97	-	-	-	-
WNC	Commercial	-	-	-	-	1.07	0.49	-	-	3.04	0.81	-	-	17.58	5.00	9.20	1.40
WNC	Commercial	-	-	-	-	0.17	0.09	0.40	0.15	2.41	0.56	4.11	1.01	0.04	0.04	-	-
WNC	Commercial	-	-	-	-	-	-	0.00	0.00	0.31	0.12	1.58	0.42	0.82	0.36	-	-
WNC	Commercial	-	-	-	-	-	-	0.00	0.00	0.00	0.00	2.59	0.83	-	-	0.00	0.00

# Beekeeper ≥ 3 mites/100 bees	0	0.0%	6	22.2%	6	18.2%	13	36.1%	21	56.8%	17	50.0%	18	78.3%	2	28.6%
# Beekeeper < 3 mites/100 bees	1		21		27		23		16		17		5		5	
# Beekeeper ≥ 5 mites/100 bees	0	0.0%	0	0.0%	1	3.0%	3	8.3%	11	29.7%	9	26.5%	15	65.2%	2	28.6%
# Beekeeper < 5 mites/100 bees	1		27		32		33		26		25		8		5	

* We consider 3 mites per 100 bees as approaching a high threshold at or beyond where you may want to consider some varroa mite control strategy. If your varroa mite load is more than 5 mites per 100 bees, this is a severe infestation and recovery may be difficult. Varroa mite load will fluctuate based on your bees' brood cycle.



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For All Participants

Nosema spores (number of millions of spores per bee)

Region	Operation	April		May		June		July		August		September		October		November	
		Average	Sd.error	Average	Sd.error	Average	Sd.error	Average	Sd.error	Average	Sd.error	Average	Sd.error	Average	Sd.error	Average	Sd.error
C	Backyard	-	-	1.01	0.45	0.51	0.22	0.19	0.10	0.31	0.19	0.09	0.06	0.00	0.00	-	-
C	Backyard	-	-	1.21	0.39	0.24	0.09	0.03	0.02	0.39	0.16	0.13	0.09	0.31	0.11	-	-
C	Backyard	-	-	0.11	0.07	0.11	0.07	0.06	0.05	0.24	0.10	0.26	0.25	0.00	0.00	-	-
C	Backyard	-	-	-	-	-	-	0.09	0.07	0.46	0.30	0.04	0.04	-	-	-	-
ENC	Sideline	-	-	0.17	0.06	0.05	0.04	0.03	0.03	0.24	0.20	-	-	0.09	0.04	-	-
ENC	Sideline	-	-	-	-	0.16	0.05	0.02	0.01	0.00	0.00	0.05	0.05	-	-	-	-
ENC	Sideline	-	-	2.01	0.39	0.63	0.17	0.09	0.04	0.01	0.01	0.03	0.02	0.13	0.13	-	-
ENC	Backyard	-	-	-	-	0.53	0.35	0.04	0.02	0.04	0.03	0.08	0.08	-	-	0.17	0.11
ENC	Backyard	-	-	0.39	0.16	0.06	0.02	-	-	0.05	0.04	0.00	0.00	-	-	-	-
NE	Backyard	-	-	1.62	0.63	0.42	0.27	0.16	0.07	0.00	0.00	0.48	0.22	2.84	2.00	-	-
NE	Backyard	-	-	0.35	0.15	0.36	0.20	0.07	0.06	0.48	0.18	3.93	1.17	2.63	1.43	-	-
NE	Sideline	-	-	1.50	0.47	0.04	0.03	0.06	0.03	0.03	0.02	0.03	0.02	-	-	-	-
NE	Sideline	-	-	0.19	0.07	0.06	0.04	0.02	0.01	0.01	0.01	0.17	0.07	-	-	-	-
NE	Backyard	-	-	0.09	0.04	0.08	0.07	0.02	0.02	0.20	0.19	0.09	0.09	0.14	0.11	-	-
NE	Backyard	-	-	0.19	0.08	0.08	0.03	-	-	0.22	0.07	0.71	0.33	-	-	-	-
NE	Backyard	-	-	1.36	0.33	0.58	0.41	0.05	0.03	0.00	0.00	0.06	0.05	0.04	0.02	-	-
NE	Backyard	-	-	0.22	0.10	0.03	0.01	0.07	0.02	0.19	0.12	-	-	0.06	0.04	-	-
NE	Backyard	-	-	3.30	1.08	1.04	0.52	0.20	0.09	0.07	0.04	0.35	0.20	0.33	0.17	-	-
NE	Backyard	-	-	-	-	0.31	0.16	0.06	0.04	0.00	0.00	0.05	0.04	0.00	0.00	0.01	0.01
NE	Backyard	-	-	0.21	0.06	0.05	0.04	0.00	0.00	0.00	0.00	0.05	0.02	0.05	0.05	-	-
NE	Backyard	-	-	1.99	1.24	0.24	0.14	0.24	0.12	-	-	0.38	0.14	-	-	-	-
NE	Backyard	-	-	0.49	0.11	-	-	0.00	0.00	-	-	-	-	-	-	-	-
NE	Backyard	-	-	0.25	0.09	-	-	0.13	0.12	-	-	-	-	-	-	-	-
NE	Backyard	-	-	-	-	0.89	0.30	0.41	0.14	0.59	0.23	0.78	0.55	-	-	-	-
SE	Backyard	-	-	0.12	0.06	0.02	0.01	0.04	0.03	-	-	0.11	0.05	-	-	-	-
SE	Backyard	-	-	0.26	0.25	0.14	0.12	0.01	0.01	0.06	0.04	0.02	0.01	0.01	0.01	-	-
SE	Backyard	-	-	-	-	-	-	0.02	0.01	0.03	0.02	0.04	0.04	-	-	-	-
SE	Sideline	-	-	0.05	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-	-	0.06	0.04
W	Backyard	1.89	0.67	2.08	0.65	1.61	1.34	0.18	0.08	0.18	0.09	0.67	0.29	0.26	0.13	-	-
W	Backyard	-	-	-	-	-	-	0.03	0.03	0.43	0.36	0.01	0.01	0.00	0.00	0.02	0.02
W	Backyard	-	-	2.26	0.75	0.18	0.06	0.10	0.05	0.01	0.01	0.03	0.03	0.01	0.01	-	-
W	Sideline	-	-	-	-	0.24	0.07	-	-	0.54	0.24	0.38	0.24	-	-	-	-
W	Backyard	-	-	0.20	0.08	0.29	0.16	0.90	0.58	0.51	0.30	0.09	0.04	0.00	0.00	-	-
WNC	Backyard	-	-	1.78	0.41	-	-	0.08	0.05	-	-	-	-	-	-	-	-
WNC	Commercial	-	-	-	-	-	-	-	-	0.14	0.13	-	-	0.00	0.00	-	-
WNC	Commercial	-	-	0.39	0.16	1.67	0.33	-	-	0.46	0.18	-	-	-	-	-	-
WNC	Commercial	-	-	-	-	0.19	0.07	0.35	0.15	0.81	0.36	0.14	0.12	0.20	0.10	0.39	0.15
WNC	Commercial	-	-	-	-	0.23	0.08	0.88	0.14	0.14	0.07	0.06	0.01	-	-	-	-
WNC	Commercial	-	-	-	-	0.00	0.00	-	-	0.41	0.12	-	-	0.34	0.10	0.94	0.28
WNC	Commercial	-	-	-	-	0.54	0.28	0.19	0.07	1.84	1.16	0.03	0.02	0.07	0.07	-	-
WNC	Commercial	-	-	-	-	-	-	0.84	0.22	0.09	0.04	0.33	0.11	1.71	0.38	-	-
WNC	Commercial	-	-	-	-	-	-	0.22	0.09	0.18	0.07	0.13	0.06	-	-	0.53	0.31

# Beekeeper ≥ 1 million spores per bee	1	100.0%	11	40.7%	3	9.1%	0	0.0%	1	2.7%	1	2.9%	3	13.0%	0	0.0%
# Beekeeper < 1 million spores per bee	0		16		30		36		36		33		20		7	

* We consider one million spores per bee to be the acceptable threshold in a hive.
Your nosema levels will fluctuate with temperature and the hives sun exposure every month.



Management Practices

The tables below summarize the information reported by beekeepers on their monthly sample data sheets. All data is self-reported and not all participants replied to our management survey.

From DIS Sheet (Self-reported by Beekeepers)

Chemical Method used for Varroa control										
This table reports the use of chemical-based varroa control methods.										
		April	May	June	July	August	September	October	November	Total
C	# Beekeeper	0	0	1	1	3	3	1	0	9
	# Hives	0	0	1	8	23	18	2	0	52
ENC	# Beekeeper	1	0	0	2	2	2	3	1	11
	# Hives	8	0	0	9	16	16	13	4	66
NE	# Beekeeper	1	1	2	7	5	1	3	1	21
	# Hives	8	8	4	29	32	1	17	8	107
SE	# Beekeeper	0	0	2	0	0	1	1	1	5
	# Hives	0	0	16	0	0	8	8	8	40
W	# Beekeeper	1	0	0	2	3	4	0	1	11
	# Hives	8	0	0	16	24	26	0	8	82
WNC	# Beekeeper	0	1	0	0	2	5	0	2	10
	# Hives	0	8	0	0	11	36	0	16	71
Total	# Beekeeper	3	2	5	12	15	16	8	6	67
	# Hives	24	16	21	62	106	105	40	44	418

note: 22 of the 30 beekeepers who responded treated all sampled colonies in the apiary at least once during the project.

Non-chemical Method used for Varroa control										
This table reports the use of non-chemical-based varroa control (i.e. drone brood removal) methods.										
		April	May	June	July	August	September	October	November	Total
C	# Beekeeper	0	2	0	0	0	0	0	0	2
	# Hives	0	9	0	0	0	0	0	0	9
ENC	# Beekeeper	0	0	0	0	0	0	0	0	0
	# Hives	0	0	0	0	0	0	0	0	0
NE	# Beekeeper	2	2	3	3	2	1	1	1	15
	# Hives	12	6	15	12	12	4	4	4	69
SE	# Beekeeper	1	1	2	1	1	1	1	1	9
	# Hives	8	8	16	8	8	8	8	8	72
W	# Beekeeper	0	2	0	0	0	0	0	0	2
	# Hives	0	11	0	0	0	0	0	0	11
WNC	# Beekeeper	0	0	0	0	0	0	0	0	0
	# Hives	0	0	0	0	0	0	0	0	0
Total	# Beekeeper	3	7	5	4	3	2	2	2	28
	# Hives	20	34	31	20	20	12	12	12	161

note: 4 of the 9 beekeepers who responded treated all sampled colonies in the apiary at least once during the project.

Chemical Treatment for Nosema										
This table reports the use of Fumagillin or Nosevit treatments against Nosema.										
		April	May	June	July	August	September	October	November	Total
C	# Beekeeper	0	0	0	0	0	0	0	0	0
	# Hives	0	0	0	0	0	0	0	0	0
ENC	# Beekeeper	0	0	0	0	0	0	0	0	0
	# Hives	0	0	0	0	0	0	0	0	0
NE	# Beekeeper	0	0	1	0	0	0	0	0	1
	# Hives	0	0	2	0	0	0	0	0	2
SE	# Beekeeper	0	0	1	0	0	0	0	0	1
	# Hives	0	0	8	0	0	0	0	0	8
W	# Beekeeper	0	0	0	0	0	1	1	0	2
	# Hives	0	0	0	0	0	4	4	0	8
WNC	# Beekeeper	0	0	1	1	0	0	1	0	3
	# Hives	0	0	8	8	0	0	8	0	24
Total	# Beekeeper	0	0	3	1	0	1	2	0	7
	# Hives	0	0	18	8	0	4	12	0	42

note: 4 of the 5 beekeepers who responded treated all sample colonies in the apiary at least once during the project.



Management Practices

From DIS Sheet (Self-reported by Beekeepers)

Fed Their Colonies										
This table includes feeding methods.										
		April	May	June	July	August	September	October	November	Total
C	# Beekeeper	0	1	1	2	1	3	1	0	9
	# Hives	0	1	2	3	2	13	8	0	29
ENC	# Beekeeper	0	1	0	0	0	2	2	1	6
	# Hives	0	8	0	0	0	12	12	8	40
NE	# Beekeeper	0	5	2	3	5	12	4	1	32
	# Hives	0	27	5	15	17	66	23	8	161
SE	# Beekeeper	0	2	0	2	0	2	1	2	9
	# Hives	0	14	0	8	0	8	3	10	43
W	# Beekeeper	0	0	0	0	1	2	2	1	6
	# Hives	0	0	0	0	8	11	16	8	43
WNC	# Beekeeper	0	1	1	0	0	0	0	0	2
	# Hives	0	8	5	0	0	0	0	0	13
Total	# Beekeeper	0	10	4	7	7	21	10	5	64
	# Hives	0	58	12	26	27	110	62	34	329

Colonies Died During Project										
This table shows all reported colonies that had to be replaced with a new colony during the project.										
		April	May	June	July	August	September	October	November	Total
C		0	0	0	0	0	0	0	0	0
ENC		0	0	0	0	0	4	2	0	6
NE		0	0	2	0	2	2	2	0	8
SE		0	0	0	0	0	0	0	0	0
W		0	0	0	0	0	1	0	0	1
WNC		0	0	0	0	0	0	0	0	0
Total		0	0	2	0	2	7	4	0	15

Queen Found in Sample										
This table shows all the queens we received from accidental sampling.										
		April	May	June	July	August	September	October	November	Total
C		0	0	0	0	0	0	1	0	1
ENC		0	0	0	0	0	0	0	0	0
NE		0	0	1	0	0	0	0	0	1
SE		0	0	0	0	0	0	0	0	0
W		0	0	0	0	1	0	0	0	1
WNC		0	0	0	0	0	0	0	0	0
Total		0	0	1	0	1	0	1	0	3

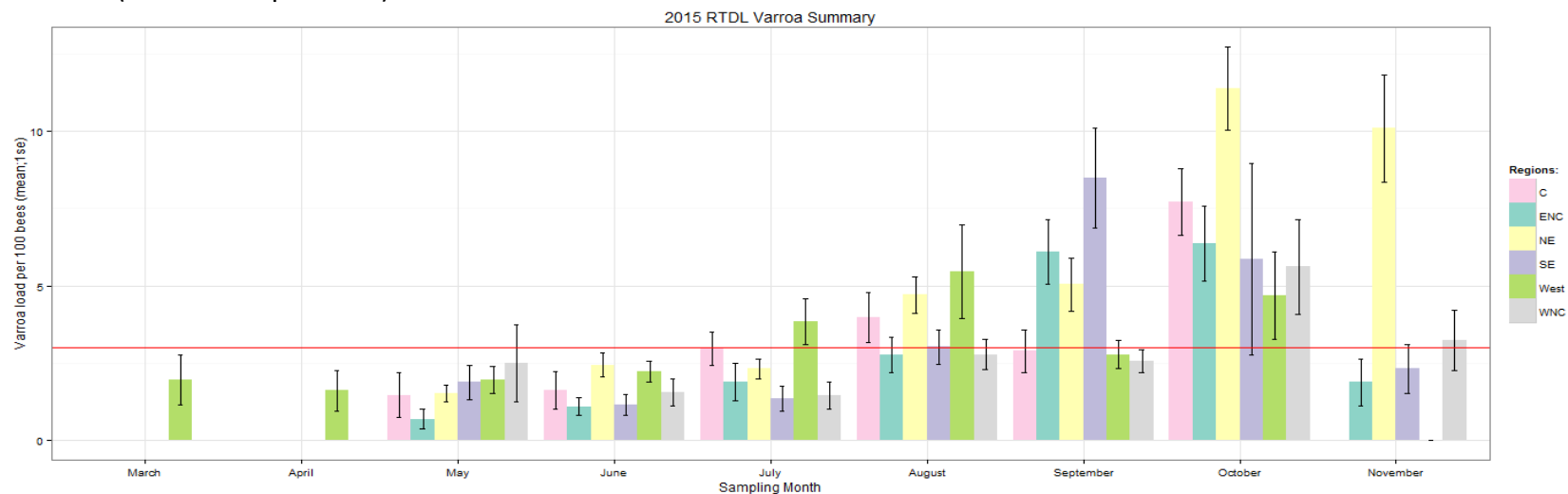


Bee Informed Partnership: Real Time Disease Load Monitoring Report
Final Report 2015

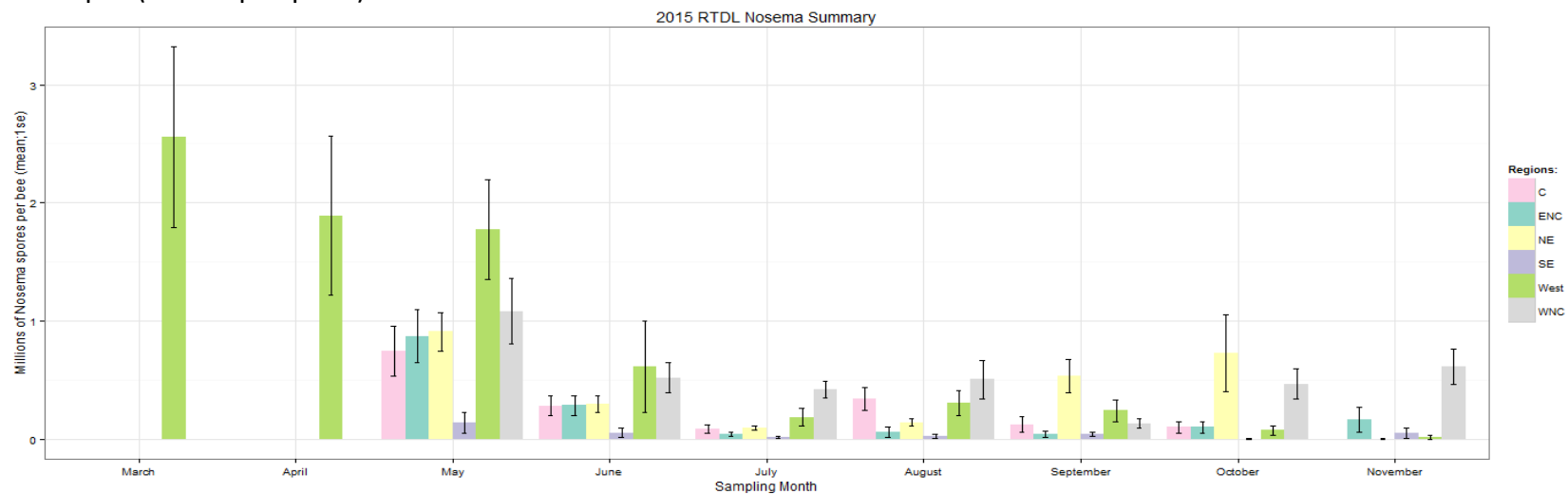
By Regions

These graphs represent the disease load of participating beekeepers grouped by their respective regions.

Varroa mites (number of mites per 100 bees)



Nosema spores (million of spores per bee)



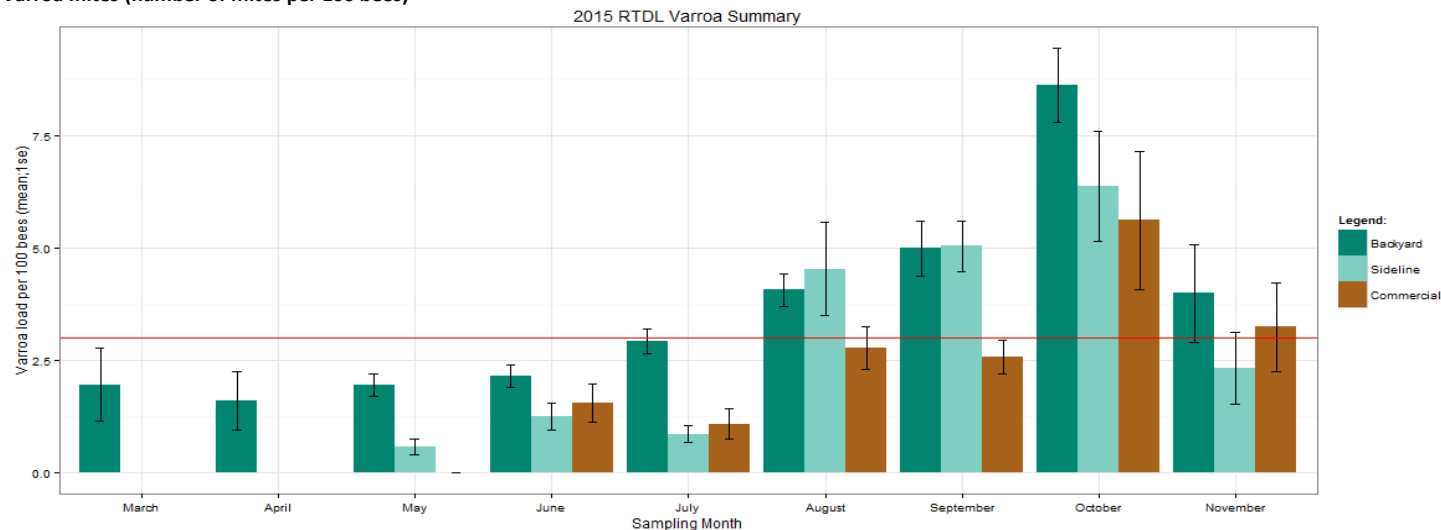


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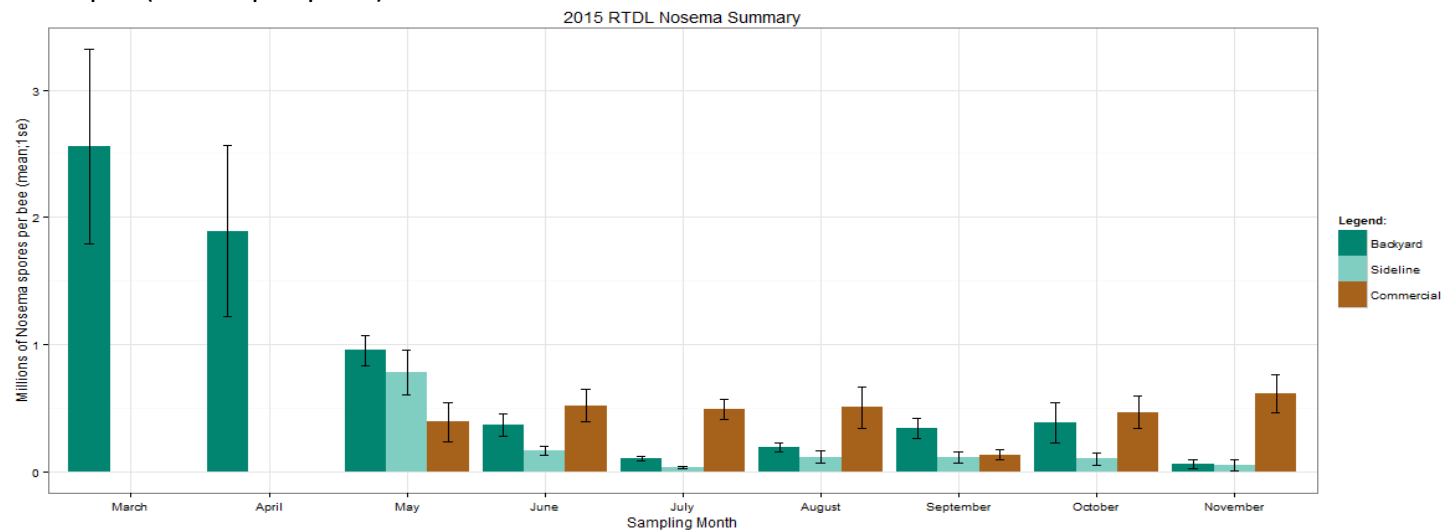
By Operation Size

These graphs represent the disease load of participating beekeepers grouped by operation type as decided by the size of their operation

Varroa mites (number of mites per 100 bees)



Nosema spores (million of spores per bee)

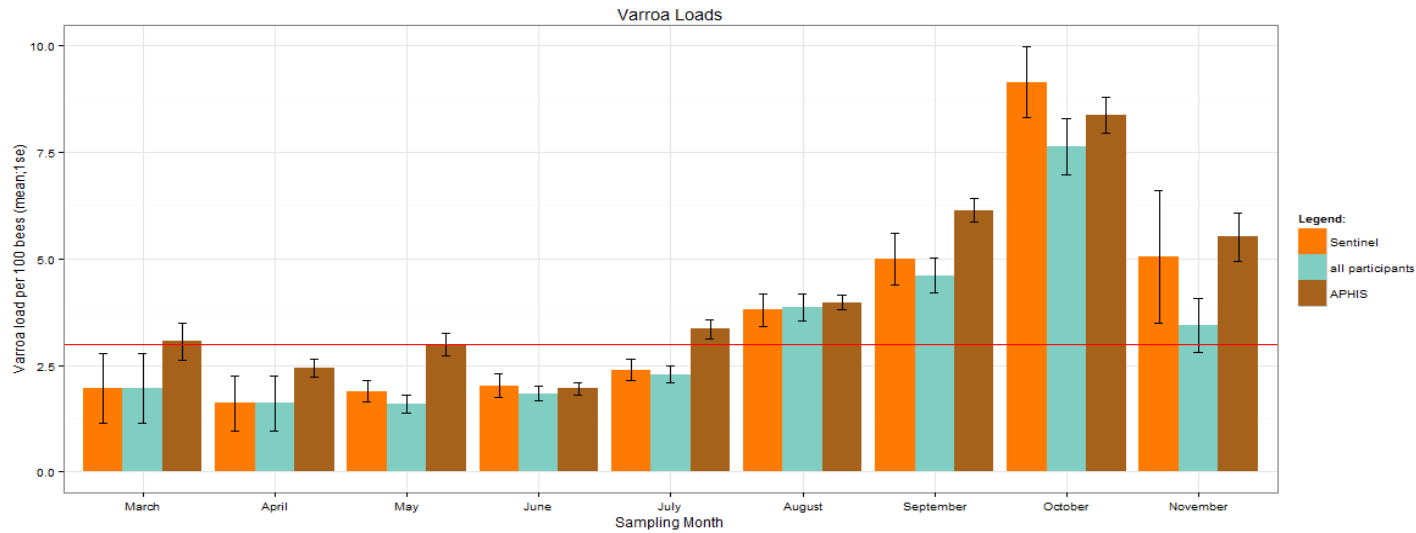




By Program Participation

These graphs represent the disease load of participating beekeepers grouped by their program type.

Varroa mites (number of mites per 100 bees)



Nosema spores (million of spores per bee)

