Neonicotinoids Research at AAFM

Neonicotinoids in Vermont

- Enter state as treated seed, pesticide products (turf, ornamentals, fruit trees), and pet care treatments (collars, spot-on)
- Replacement for more toxic organophosphate insecticides
  - Less toxic to humans/mammalian health
  - Highly toxic to honey bees
- Corn seeds usually treated with thiamethoxam and clothianidin
- Soybeans usually treated with imidacloprid

Big 3 Neonicotinoid Usage Data

Neonic usage on treated seeds NOT included

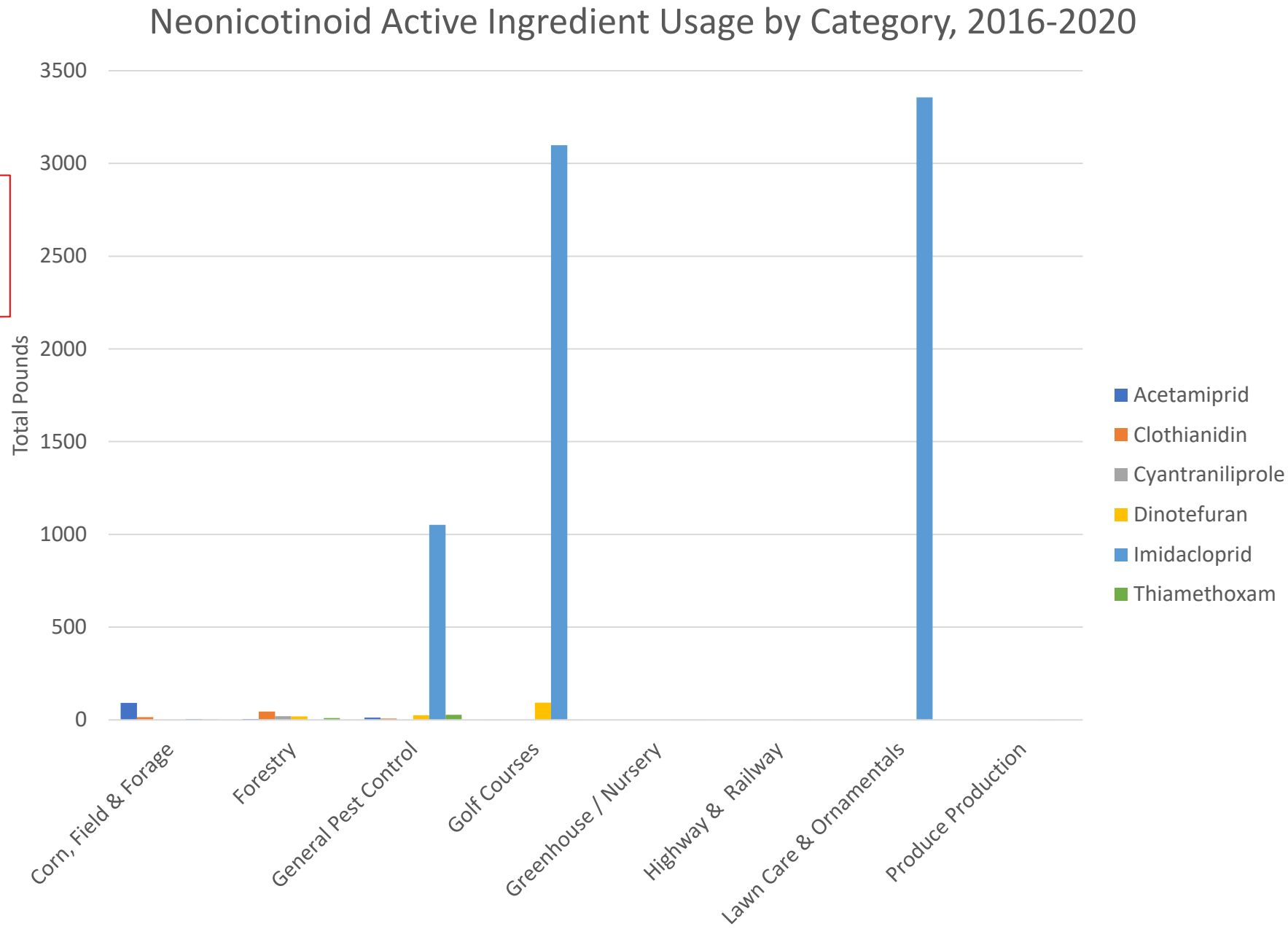
VT Neonicotinoid Pesticide Usage, 2017-2020

Year	Total Pounds Active Ingredient Applied		
	Clothianidin	Imidacloprid	Thiamethoxam
2017	9	1130	7
2018	9	982	8
2019	26	972	6
2020	19	1028	10

VT Seed Sales, 2020

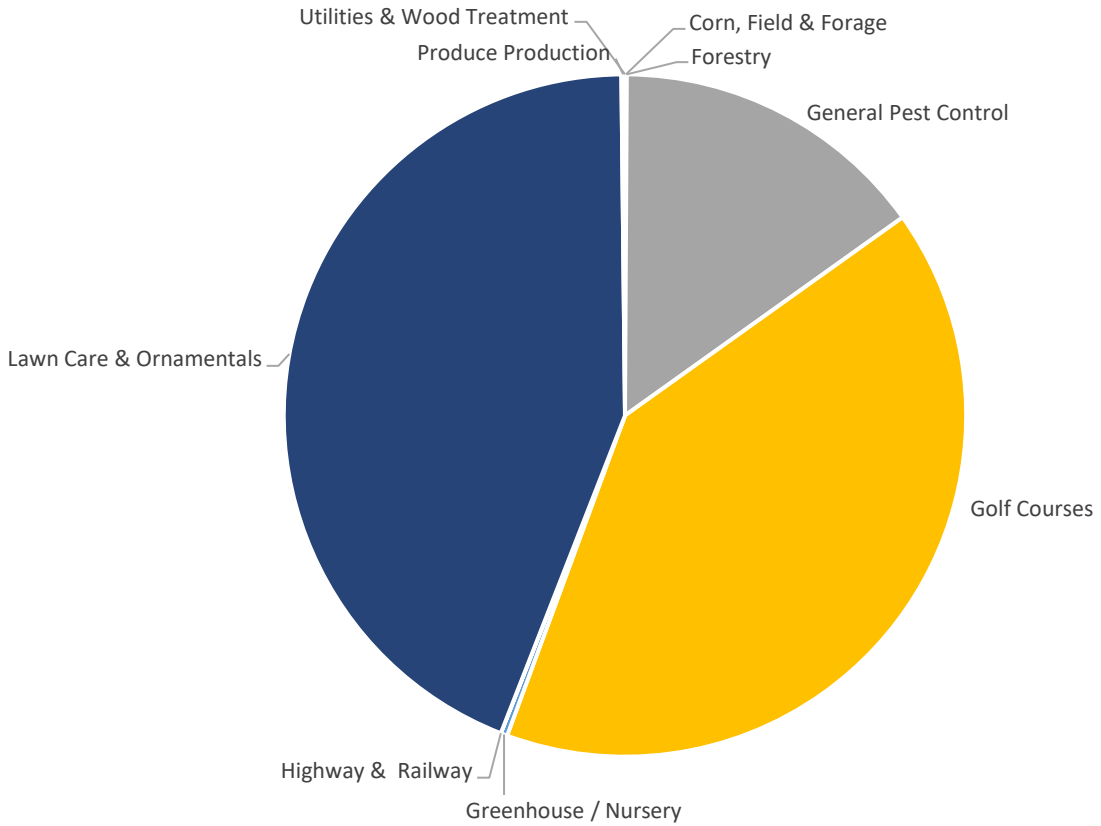
Seed Type	Treated (tons)	Untreated (tons)
Cereal Grain	0.3	7.8
Corn	848.5	68.2
Cover Crops	0.2	0
Flower and Vegetable	0	11.8
Forage-not otherwise specified	0.1	5.3
grass, forage and pasture	1.3	7.1
Hemp	0	0.00002
oil seed-no soybean	0	0
soybean	149.6	222.9
Turf	0	0.7

Neonic usage on treated seeds NOT included



Neonic usage on treated seeds NOT included

Neonicotinoid Usage by Category, 2016-2020

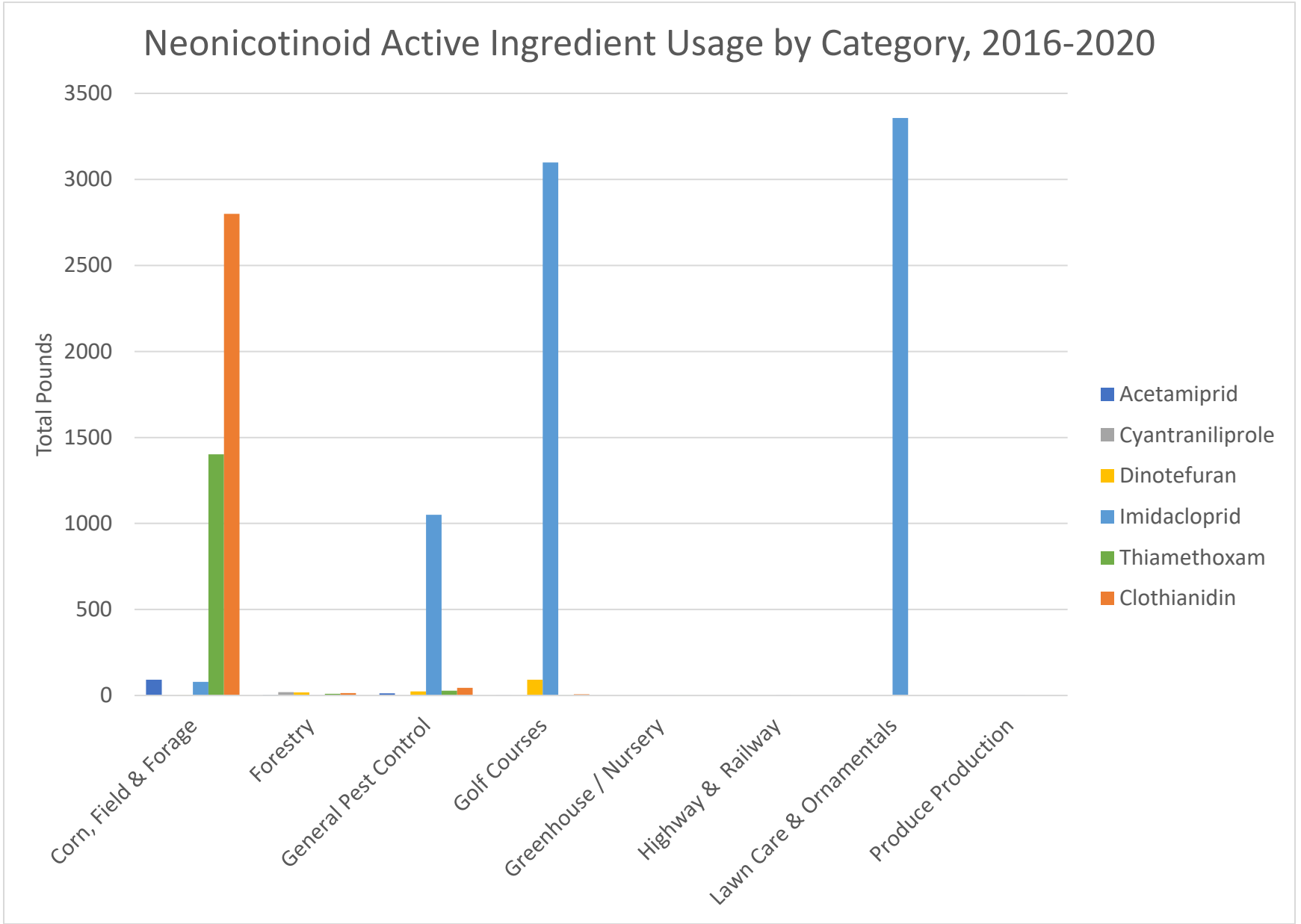


- Corn, Field & Forage
- Forestry
- General Pest Control
- Golf Courses
- Greenhouse / Nursery
- Highway & Railway
- Lawn Care & Ornamentals
- Produce Production
- Utilities & Wood Treatment

Estimated Neonics from Planted Treated Seeds

- Assumptions!!!!
  - Corn acres planted 2021 = 85,000 (NASS, USDA)
  - Soybeans acres planted 2017 = 4,800 (NASS, USDA).
  - Corn seeding rate = 26,000 – 33,000 seeds/acre (calculated with high end point for worst case scenario)
  - Soybean seeding rate = 90,000 – 120,000 seeds/acre (calculated with high end point for worst case scenario)
  - Clothianidin treated corn seeds = 0.5 mg a.i./seed
  - Thiamethoxam treated corn seeds = 0.25 mg a.i./seed
  - Imidacloprid treated soybeans = 0.15 mg a.i./seed
  - 92.6% of corn planted was treated seed
  - 40.2% of soybean planted was treated seed

Estimated Neonics from Planted Treated Seeds



Surface Water Monitoring for Neonicotinoids 2017-2021

Methods

Surface Water Collection Sites (Routine Sampling and Post-Rainfall Event Sampling), 2017-2021

Northwest	North/Central
Hungerford Brook (Highgate)	Otter Creek (Middlebury)
Jewett Brook - 01 (Lower Newton Road St. Albans)[a]	Middlebury River (Middlebury)
Jewett Brook - 02 (Lower Newton Road St. Albans)	Winooski River (Middlesex)
Mill River Tributary (Georgia)	Lamoille River (Morristown)
Alburgh Center Lake Champlain (Alburgh)	Little Otter Creek (Ferrisburgh) [ab]
Missisquoi Bay Lake Champlain (Highgate)	White River, 2nd Branch (Brookfield)
Missisquoi Bay Central Lake Champlain (Quebec)	Diamond Island Lake Champlain (Ferrisburgh)
Lake Champlain (Burlington)	Calendar Brook (Sutton)
Pike River (Quebec) [a]	King George Road Stream (Sutton)
Missisquoi River (St. Albans) [a]	Station Road Stream (Sutton)
Rock River (Highgate) [a]	Sheffield Road Culvert (Sutton)
St. Albans Bay Lake Champlain (St. Albans)	Burke Road Culvert (Sutton)
Northeast	**Southwest**
Black River (Coventry)	Battenkill River (Arlington)
Mississquoi River (Troy)	Mettawee River (Pawlet)
Passumpsic River (St. Johnsbury)	
East/Southeast	
Connecticut River (Newbury)	
Williams River (Chester)	
West River (Brattleboro)	

[a] indicates post rain-fall event sample site

[ab] indicates post rain-fall event sample site and routine sampling site

U.S. EPA Aquatic Life Benchmarks

[Aquatic Life Benchmarks and Ecological Risk Assessments for Registered Pesticides | US EPA]

U.S. EPA Aquatic Life Benchmarks (ppb)

Pesticide	Year Updated	CAS number	Fish		Invertebrates			Nonvascular Plants	Vascular Plants
			Acute[a]	Chronic[b]	Acute[c]	Chronic NOAEC[d]	Chronic LOAEC[e]	Acute[f]	Acute[g]
Clothianidin	2016	210880-92-5	> 50750	9700	11	0.05	3.4	64000	> 280000
Imidacloprid	2017	138261-41-3	114500	9000	0.385	0.01	0.03		
Thiamethoxam	2017	153719-23-4	> 57000	20000	17.5	0.74	2.23	> 99000	> 90200

[a]For acute fish, toxicity value is generally the lowest 96-hour LC_{50} in a standardized test (usually with rainbow trout, fathead minnow, or bluegill)

[b]For chronic fish, toxicity value is usually the lowest NOEAC from the life-cycle or early life stage test (usually with rainbow trout or fathead minnow)

[c]For acute invertebrate, toxicity value is usually the lowest 48- or 96-hour EC_{50} or LC_{50} in a standardized test (usually with midge, scud, or daphnids)

[d]For chronic invertebrates, toxicity value is usually the lowest NOAEC from a life-cycle test with invertebrates (usually with midge, scud, or daphnids)

[e]For chronic invertebrates, the LOAEC from a life-cycle test with invertebrates (midge or mayfly)

[f]For acute nonvascular plants, toxicity value is usually a short-term (<10 days) EC_{50} (usually with green algae or diatoms)

[g]For acute vascular plants, toxicity value is usually short-term (<10 days) EC_{50} (usually with duckweed)

Findings

Clothianidin detections by year and site (routine and post-rainfall event sampling), 2017-2021

	Samples	Detections	Detections above benchmark[a]	Site of detection	Date of detection
2017	43	7	7	Rock River[b] Jewett Brook - 01[b] Pike River[b]	6/7/2017, 6/20/2017, 6/30/2017 6/7/2017, 6/20/2017, 6/30/2017 6/20/2017
2018	116	2	2	Hungerford Brook Hungerford Brook (Woods Hill Rd)	6/13/2018 6/26/2018
2019	180	7	7	Jewett Brook - 01[b] Mill River Tributary Hungerford Brook	6/21/2019, 10/2/2019, 10/18/2019, 11/1/2019 9/10/2019, 10/2/2019 10/2/2019
2020	156	6	6	Jewett Brook - 01[b] Hungerford Brook Jewett Brook - 02	8/5/2020 6/1/2020, 8/6/2020, 10/6/2020 7/14/2020, 8/6/2020
2021	143	1	1	Little Otter Creek	7/6/2021

[a] most conservative aquatic life benchmark (USEPA Chronic Invertebrate, 0.05 ppb) is equivalent to reporting limit

[b] indicates post rain-fall event sample

No detections exceeded the invertebrate chronic LOAEC

Findings

Imidacloprid detections by year and site (routine and post-rainfall event sampling), 2017-2021

	Samples	Detections	Detections above benchmark[a]	Site of detection	Date of detection
2017	43	1	1	Jewett Brook - 01[b]	6/7/2017
2018	116	0	0		
2019	180	0	0		
2020	156	1	1	Jewett Brook - 02	8/6/2020
2021	143	0	0		

[a] most conservative aquatic life benchmark (USEPA Chronic Invertebrate, 0.01 ppb) is lower than reporting limit (0.05 ppb)

[b] indicates post rain-fall event sample

Both detections also exceeded the invertebrate chronic LOAEC

Findings

Thiamethoxam detections by year and site (routine and post-rainfall event sampling), 2017-2021

	Samples	Detections	Detections above benchmark[a]	Site of detection	Date of detection
2017	43	9	0	Mill River Tributary Pike River[b] Rock River[b] Jewett Brook - 01[b]	9/14/2017 6/7/2017, 6/20/2017, 6/30/2017 6/7/2017, 6/20/2017 6/7/2017, 6/20/2017, 6/30/2017
2018	116	2	0	Hungerford Brook Hungerford Brook (Woods Hill Rd)	6/13/2018 6/26/2018
2019	180	3	0	Jewett Brook - 01[b] Little Otter Creek	6/21/2019, 10/2/2019 6/21/2019
2020	156	1	0	Jewett Brook - 02	8/6/2020
2021	143	0	0		

[a] most conservative aquatic life benchmark (USEPA Chronic Invertebrate, 0.74 ppb)

[b] indicates post rain-fall event sample

No detections exceeded the invertebrate chronic LOAEC

Findings & Next Steps

Next Steps

- Increased monitoring and expanded biota testing if we see more than occasional detections in specific water ways
  - ANR Watershed Management Division Fall 2022 bioassessment planned at Jewett Brook
- Survey neonicotinoid treated seeds planted in Vermont and identify available alternatives
- Lower reporting limit of imidacloprid detection testing so our monitoring data can more accurately be compared to benchmarks.

Glimpse Into The Hives

Snapshot of USDA APHIS National Honey Bee Survey – 2021 Health Assessment from 2 VT Beekeepers

Figure 1: Your *Varroa* load results compared to national averages

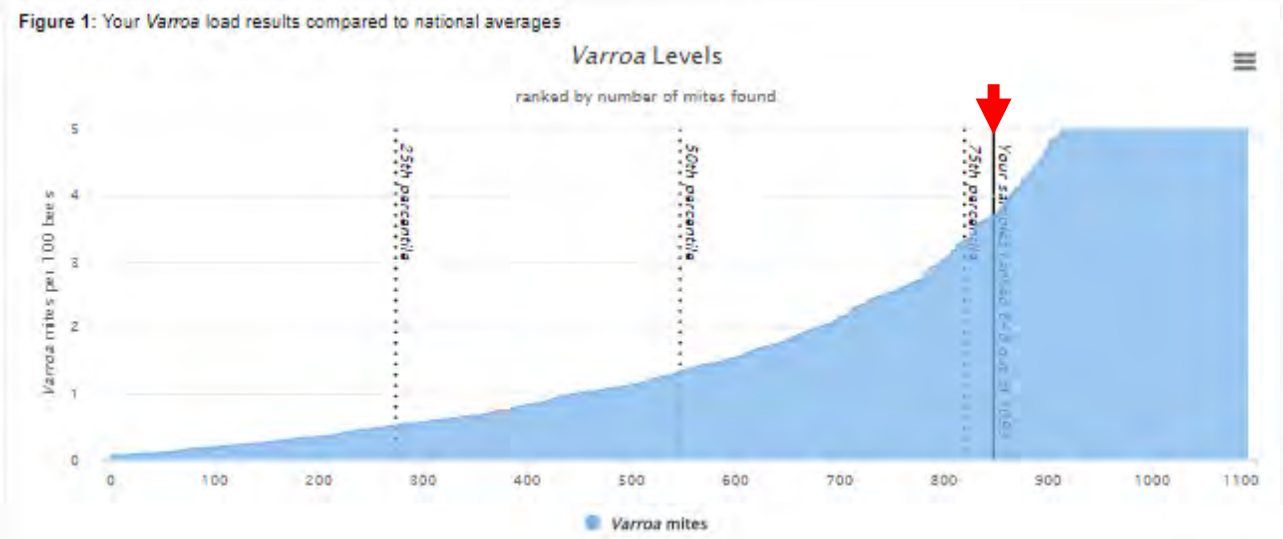


Figure 1: Your *Varroa* load results compared to national averages

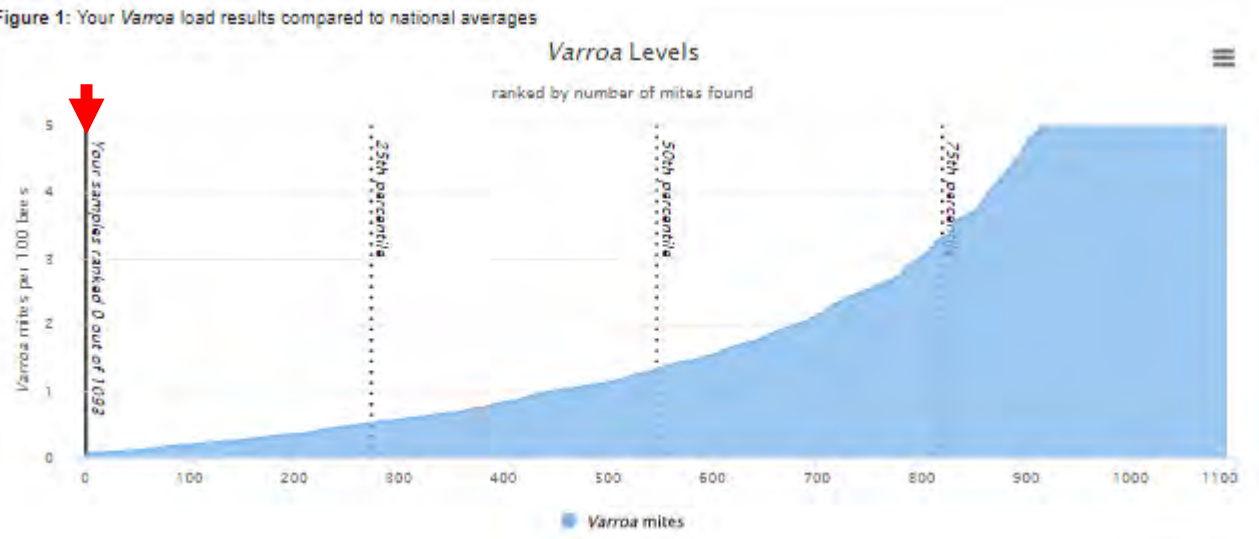


Figure 2: Your *Nosema* load results compared to national averages

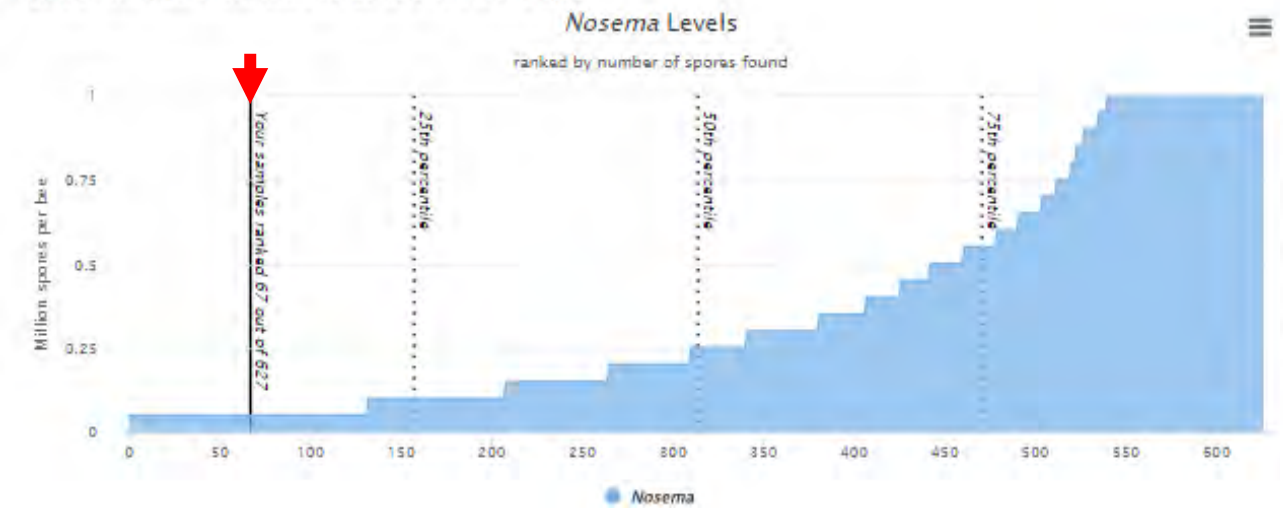
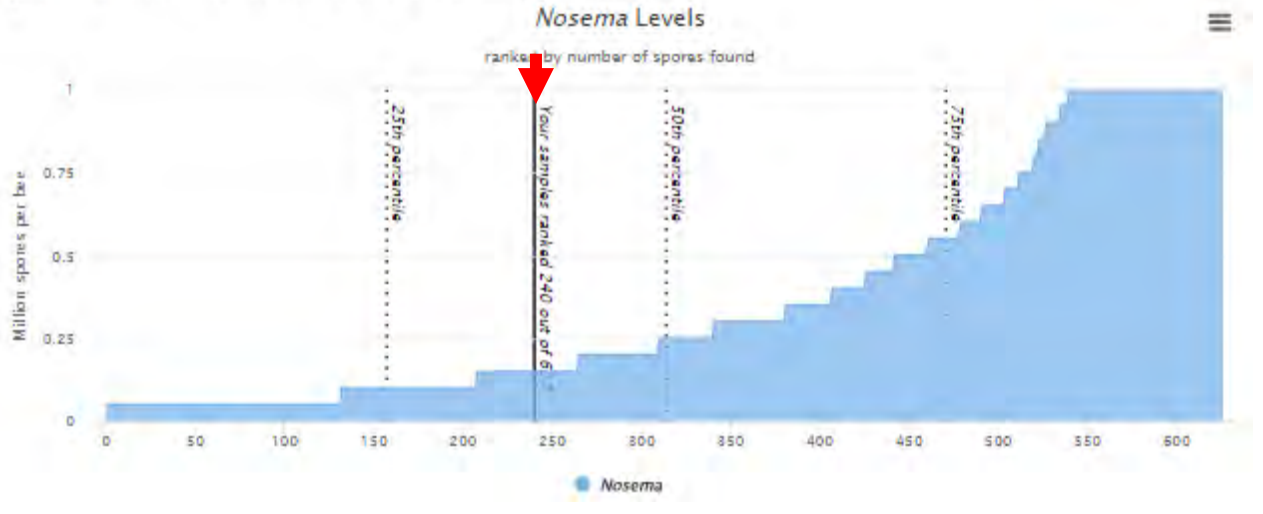
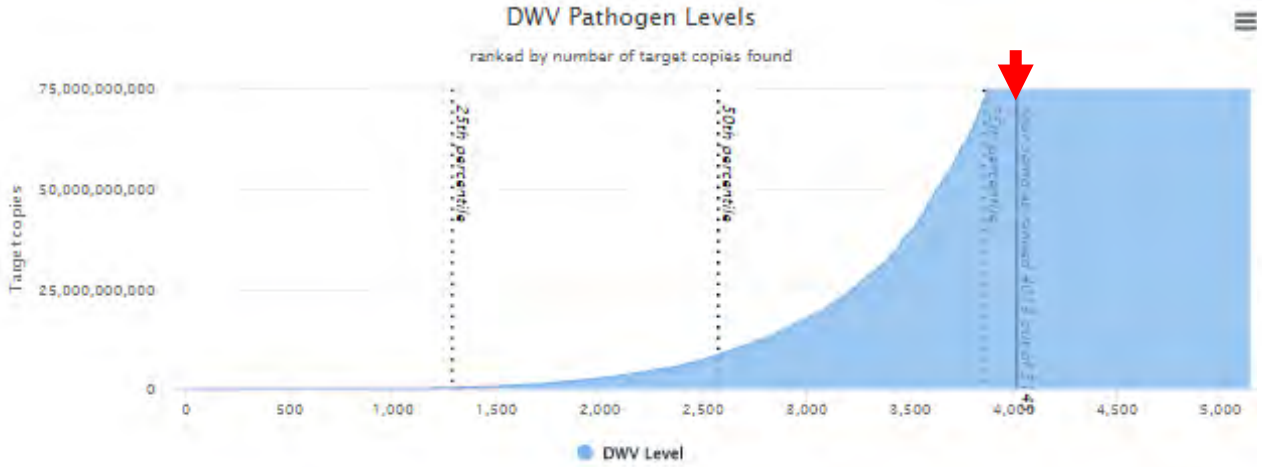


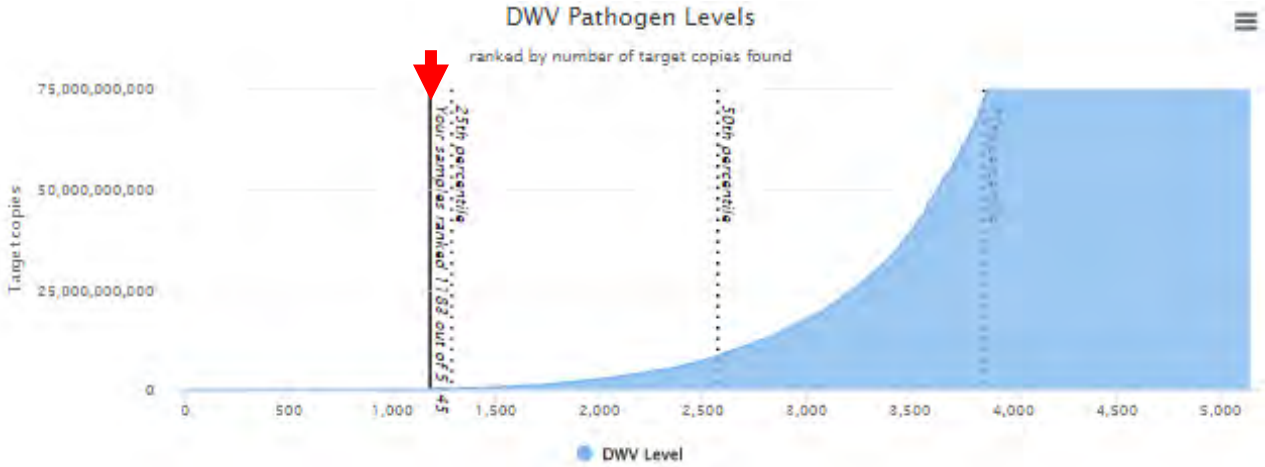
Figure 2: Your *Nosema* load results compared to national averages

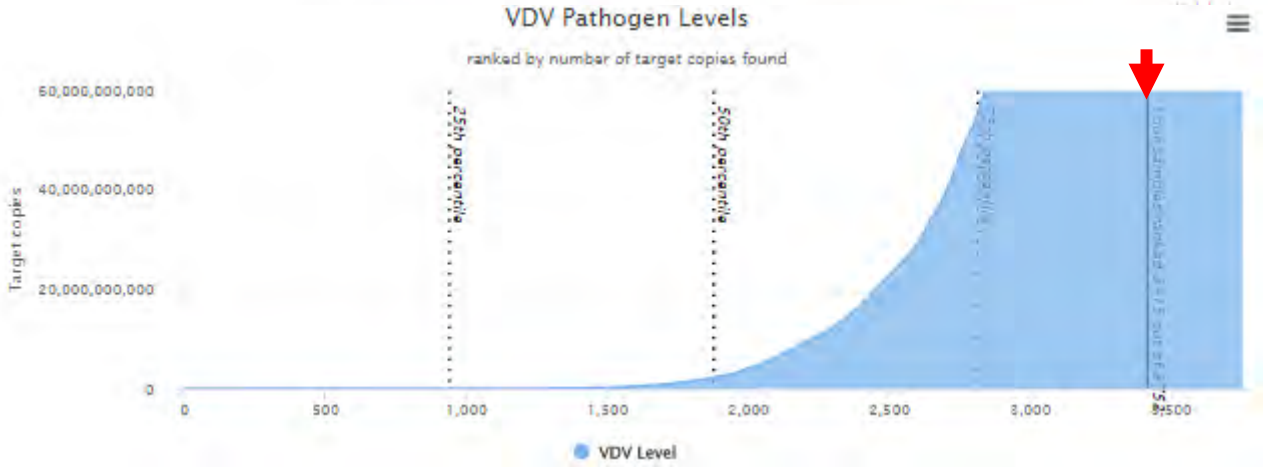


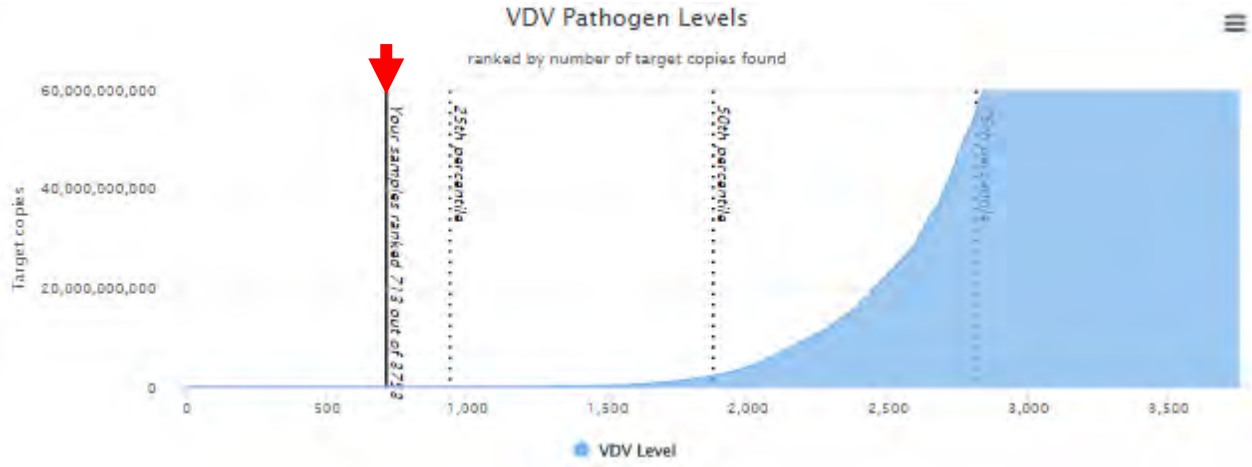
Glimpse Into The Hives

Snapshot of USDA APHIS National Honey Bee Survey – 2021 Health Assessment from 2 VT Beekeepers



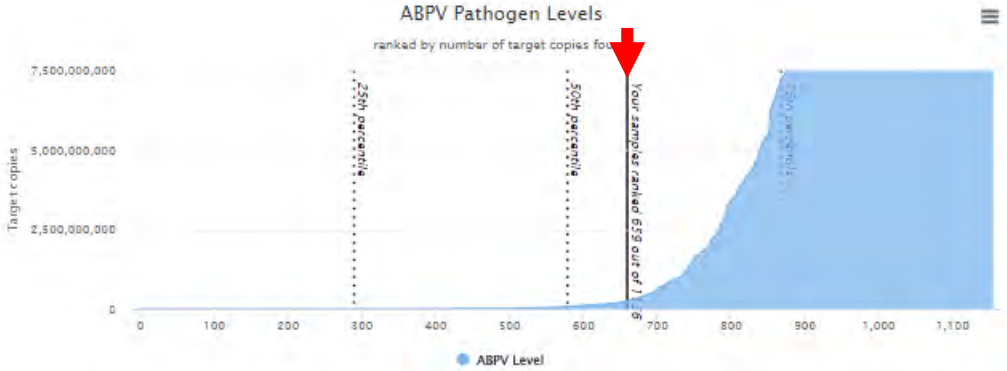


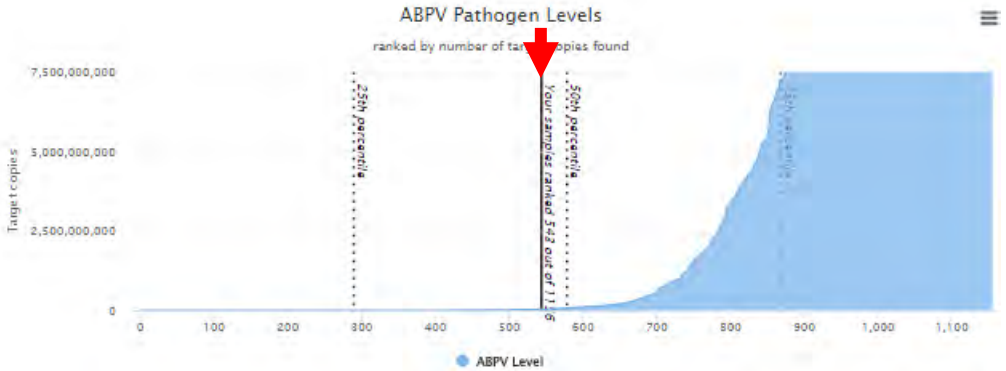


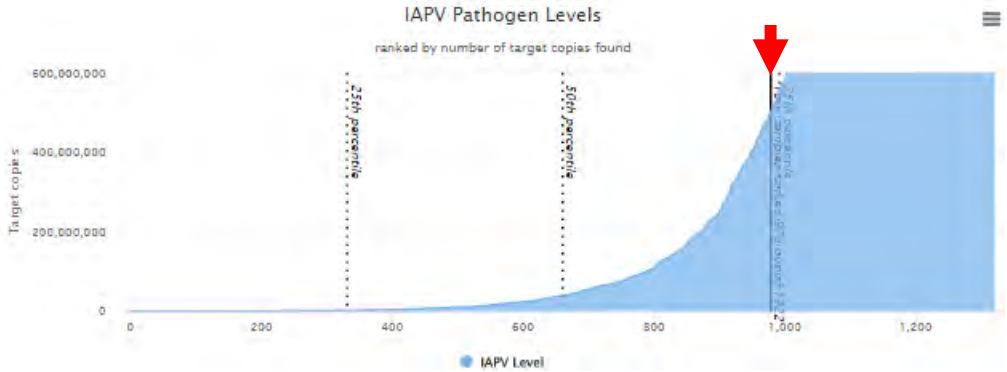


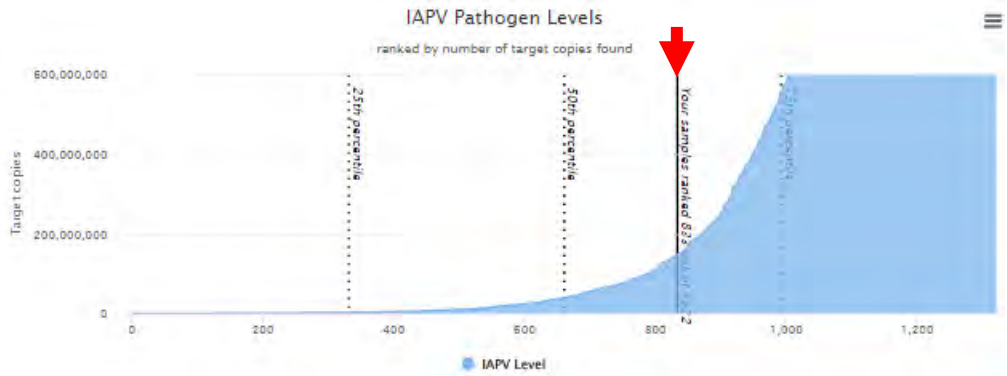
Glimpse Into The Hives

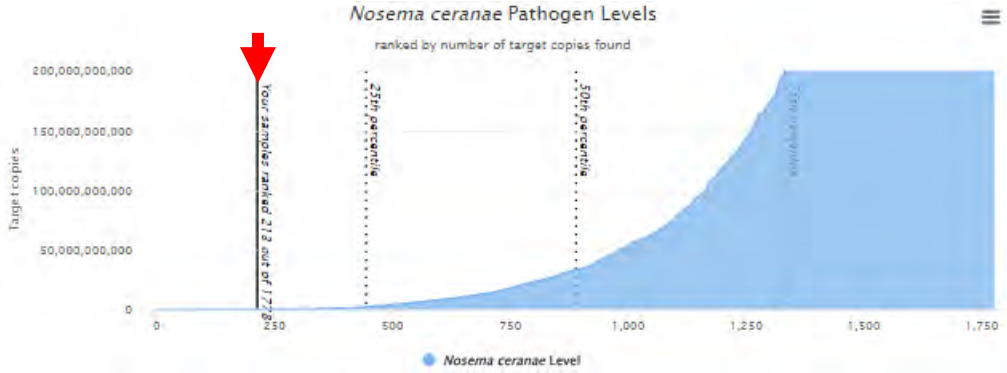
Snapshot of USDA APHIS National Honey Bee Survey – 2021 Health Assessment from 2 VT Beekeepers











Glimpse Into The Hives

USDA APHIS National Honey Bee Survey – Pesticide Results from VT Beekeepers

USDA APHIS National Honey Bee Survey, Vermont pesticide Results 2016 – 2020

Pesticide Active Ingredients Detected (maximum detected concentration)

2016	2017	2018	2019	2020
2,4-DMPF	2,4-DMPF	2,4-DMPF	2,4-DMPF	2,4-DMPF (240 ppb)
Acetamiprid	Acetochlor	Acetochlor	Acetochlor	4-OH-Chlorothalonil
Carbendazim (MBC)	Atrazine	Atrazine	Atrazine	Acetamiprid
Prothioconazole	Carbaryl	Boscalid	Captan	Atrazine
Thymol (1990 ppb)	Carbendazim	Carbendazim	Carbaryl	Boscalid
	Chlorpyrifos	Chlorothalonil	Carbendazim	Captan
	Chlorthal-dimethyl (DCPA)	Chlorpyrifos	Coumaphos	Carbaryl
	Coumaphos	Chlorthal-dimethyl	Coumaphos oxon	Chlorantraniliprole
	Coumaphos oxon	Coumaphos	Diphenylamine	Coumaphos
	Cyprodinil	Coumaphos oxon	Diuron	Coumaphos oxon
	Difenoconazole	DDE p,p'	Fenpyroximate	Cyprodinil
	Diphenylamine	DEET	Hexythiazox	Fluvalinate
	Diuron	Diphenylamine	Metolachlor	Fluxapyroxad
	Fenamidone	Diuron	Piperonyl Butoxide	Indoxacarb
	Fenpyroximate	Fenamidone	Propargite	Metolachlor
	Fluvalinate	Fenpyroximate	Thymol (4290 ppb)	Novaluron
	Hexythiazox	Flumeturon		Piperonyl Butoxide
	Indoxacarb	Fluopyram		Pyraclostrobin
	Iprodione	Fluvalinate		
	Metalaxyl	Hexythiazox		
	Metolachlor	Metolachlor		
	Penthiopyrad	Piperonyl Butoxide		
	Permethrin	Propargite		
	Piperonyl butoxide	Thymol (15200 ppb)		
	Propargite	Trifluralin		
	Tebufenozide			
	Thymol (7750 ppb)			
	Trifloxystrobin			
	Trifluralin			

Glimpse Into The Hives

Snapshot of USDA APHIS National Honey Bee Survey – 2020 Pesticide Results from 7 VT Beekeepers

USDA APHIS National Honey Bee Survey, 2020 Vermont pesticide Results (ppb)

Pesticide	Beekeeper A	Beekeeper B	Beekeeper C	Beekeeper D	Beekeeper E	Beekeeper F	Beekeeper G
2,4-DMPF	29				240	199	34
4-OH-Chlorothalonil		Trace					
Atrazine	Trace	Trace					3
Boscalid				Trace			
Carbaryl		Trace			Trace		Trace
Coumaphos	Trace		21				
Coumaphos oxon			2				
Fluvalinate	Trace				81	Trace	26
Metolachlor	Trace						Trace
Novaluron		Trace					
Pyraclostrobin				Trace			

Glimpse Into The Hives Next Steps

- Cornell Review of literature finds the majority of laboratory and semi-field research demonstrate neonicotinoids can be harmful to honey bees, however the majority of field studies find only limited or no effects on honey bees
  - The impact of neonicotinoids on bumble bees is more in agreement between lab and field research studies

VT Field Observations & Next Steps

- Little to no investigations involving honey bee health impacted by neonicotinoids in the state
- Pollen monitoring for pesticides (through VAAFM) planned for Summer 2022
- National Honey Bee Survey (administered through UVM) will continue for 2022

A look Back At The Hives

- 2012 & 2013 pollen study
  - Collected weekly during growing seasons from 2 managed honeybee hives in Addison County (Hive 1 adjacent to hay field, Hive 2 near conventional corn field).
  - Results (4 detections over 2 years)
    - Hive 2 imidacloprid = 0.70 ppb after planting June 2012
    - Hive 2 thiamethoxam = 0.8 ppb (5/11-14/2013) 1.2 ppb (5/15-18/2013); clothianidin = 6.2 ppb (5/11-14/2013) during planting May 2013

Previous AAFM Neonic Sampling

Tile drain outlet water (Northern Vermont 2017 & 2018)

Site	County	Sample Date	Thiamethoxam (ppb)	Clothianidin (ppb)	Imidacloprid (ppb)
Mill River	Franklin	9/14/2017	*	1.554	*
		10/16/2017	*	1.055	*
		4/5/2018	*	0.268	*
		6/26/2018	0.111	0.350	*
		6/13/2018	*	0.153	*
		7/13/2018	0.065	0.252	*
		8/2/2018	*	*	*
		8/24/2018	*	0.059	*
		9/17/2018	*	0.100	*
Hungerford Brook	Franklin	6/26/2018	*	*	*
Missisquoi River	Orleans	5/4/2018	*	0.130	*
		7/9/2018	0.146	0.069	*
		6/25/2018	0.309	0.086	*

No thiamethoxam detections exceeded the invertebrate chronic NOAEC or LOAEC
All clothianidin detections exceed the invertebrate chronic NOAEC, but no detections exceed LOAEC

Previous AAFM Neonic Sampling

Tile drain outlet water (Franklin County 2015 & 2016)

Site	Sample date	Thiamethoxam (ppb)	Clothianidin (ppb)	Imidacloprid (ppb)
Corn - Rep 1	6/10/2015	*	1.20	*
	6/17/2015	*	0.05	*
	7/1/2015	*	0.34	*
	5/6/2016	*	*	*
	6/6/2016	0.13	0.31	*
	7/26/2016	*	0.08	*
	12/8/2016	*	*	*
Corn - Rep 2	6/10/2015	0.11	0.06	*
	6/17/2015	*	0.24	*
	7/1/2015	*	0.07	*
	6/6/2016	0.057	0.06	*
Corn - Rep 3	6/10/2015	0.16	0.43	*
	6/17/2015	0.09	0.20	*
	7/1/2015	0.06	0.15	*
	9/14/2015	*	*	*
	6/6/2016	0.15	0.31	*
	7/26/2016	0.61	0.19	*
	10/19/2016	*	0.13	*
Corn - Rep 4	6/10/2015	0.26	0.88	*
	6/17/2015	0.15	0.25	*
	7/1/2015	0.14	0.32	*
	9/14/2015	*	0.18	*
	6/6/2016	0.18	0.54	*
Corn - Rep 5	6/10/2015	0.12	0.55	*
	6/17/2015	0.06	0.27	*
	7/1/2015	0.12	0.53	*
	9/14/2015	*	0.48	*
	6/6/2016	0.21	0.58	*
	7/26/2016	*	0.13	*
	10/19/2016	*	0.06	*
	12/8/2016	*	0.10	*

Site	Sample date	Thiamethoxam (ppb)	Clothianidin (ppb)	Imidacloprid (ppb)
Corn - Rep 6	6/10/2015	0.05	0.31	*
	6/17/2015	*	0.18	*
	7/1/2015	0.08	0.42	*
	9/14/2015	*	0.18	*
	5/6/2016	*	*	*
	6/6/2016	0.23	0.47	*
	9/8/2016	*	0.06	*
Soy/Corn - Rep 1	6/10/2015	0.06	0.28	**0.29**
	6/17/2015	0.06	0.27	**0.20**
	7/1/2015	0.10	0.73	**0.84**
	9/14/2015	*	0.44	**0.21**
	5/6/2016	*	*	*
	6/6/2016	1.31	**4.17**	**0.10**
	7/26/2016	0.30	0.51	*
	9/8/2016	0.07	0.40	*
	10/19/2016	*	0.25	*
	12/8/2016	*	0.22	*
Soy/Soy - Rep 1	6/10/2015	*	0.64	**0.54**
	6/17/2015	*	0.33	**0.20**
	7/1/2015	*	0.46	**0.31**
	9/14/2015	*	0.54	**0.13**
	5/6/2016	*	*	*
	6/6/2016	*	0.60	**1.12**
	7/26/2016	*	0.36	**0.85**
	12/8/2016	*	0.13	**0.09**
Alfalfa/Grass - Control	6/10/2015	*	*	*
	6/17/2015	*	*	*
	7/1/2015	*	*	*
	9/14/2015	*	*	*
	5/6/2016	*	*	*
	6/6/2016	*	*	*
	9/8/2016	*	*	*
	10/19/2016	*	*	*
	12/8/2016	*	*	*

1 thiamethoxam detection exceeded the invertebrate chronic NOAEC (all detections below LOAEC)

All clothianidin detections exceeded the invertebrate chronic NOAEC (1 detection exceeded LOAEC)

All imidacloprid detections exceeded the invertebrate chronic NOAEC and LOAEC

Previous AAFM Neonic Sampling

Soil sampling (Franklin County 2016)

Site	Sample date	Sample depth†	Thiamethoxam (ppb)	Clothianidin (ppb)	Imidacloprid (ppb)
Corn - Rep 1	6/17/2016	0 - 12	3.36	2.35	*
		12–24	*	*	*
		24–36	*	3.23	*
	9/13/2016	0–12	*	*	*
		12–24	*	*	*
		24–36	*	*	*
	12/8/2016	0–12	*	*	*
		12–24	*	*	*
		24–36	NT	NT	NT
Corn - Rep 2	6/17/2016	0–12	8.24	4.59	*
		12–24	*	*	*
		24–36	*	*	*
	9/13/2016	0–12	*	14.13	*
		12–24	*	*	*
		24–36	*	*	*
	12/8/2016	0–12	*	*	*
		12–24	*	*	*
		24–36	*	*	*
Corn - Rep 3	6/17/2016	0–12	*	2.51	*
		12–24	*	*	*
		24–36	*	*	*
	9/13/2016	0–12	*	3.64	*
		12–24	*	*	*
		24–36	*	*	*
	12/8/2016	0–12	*	*	*
		12–24	*	*	*
		24–36	*	*	*

Site	Sample date	Sample depth†	Thiamethoxam (ppb)	Clothianidin (ppb)	Imidacloprid (ppb)
Soy/Corn - Rep 1	6/17/2016	0–12	*	3.48	*
		12–24	*	*	*
		24–36	*	*	*
	9/13/2016	0–12	*	*	*
		12–24	*	*	*
		24–36	*	*	*
	12/8/2016	0–12	*	2.08	*
		12–24	*	*	*
		24–36	*	*	*
Soy/Soy - Rep 1	6/17/2016	0–12	*	*	*
		12–24	*	*	*
		24–36	*	*	*
	9/13/2016	0–12	*	*	18.08
		12–24	*	*	*
		24–36	*	*	*
	12/8/2016	0–12	*	*	6.43
		12–24	*	*	*
		24– 36	*	*	*
Alfalfa / Grass - Control	7/26/2016	0–12	*	*	*
		12–24	*	*	*
		24–36	*	*	*
	9/13/2016	0–12	*	*	*
		12–24	*	*	*
		24–36	*	*	*
	12/8/2016	0–12	*	*	*
		12–24	*	*	*
		24–36	*	*	*

Detection limit: 2.0 ppb
NT: Not tested
* Not detected
† Inches below ground surface

Previous AAFM Neonic Sampling

Vegetation sampling (Franklin County 2015 & 2016)

- No neonic detections in offsite vegetation samples

Vegetation/associated site	Sample date	Thiamethoxam (ppb)	Clothianidin (ppb)	Imidacloprid (ppb)
Steven's Brook - Site 1	9/14/2015	*	*	*
	9/8/2016	*	*	*
Steven's Brook - Site 2	9/14/2015	*	*	*
	9/8/2016	*	*	*
Steven's Brook - Site 3	9/14/2015	*	*	*
	9/8/2016	*	*	*
Jewett Brook - Site 1	9/14/2015	*	*	*
	9/8/2016	*	*	*
Jewett Brook - Site 2	9/14/2015	*	*	*
	9/8/2016	*	*	*
Veg - Rep 1 (corn)	9/14/2015	*	*	*
	9/8/2016	*	*	*
Veg-Rep 2 (corn)	9/14/2015	*	*	*
	9/8/2016	*	*	*
Veg-Rep 3 (corn)	9/14/2015	*	*	*
	9/8/2016	*	*	*
Veg-Rep 1 (soy/corn)	9/14/2015	*	*	*
	9/8/2016	*	*	*
Veg-Rep 1 (soy)	9/14/2015	*	*	*
	9/8/2016	*	*	*
Corn leaves, positive control	9/8/2016	*	2.91	*

Detection limit varies by sample 5 –13.9 ppb for non-detected
*Not detected

H.626 (as passed by House and Senate)

a. AAFM upon recommendation of Ag Innovation Board may adopt by rule:
   1. BMPs relating to sale, use, storage, disposal of treated articles that AIB has determined will have hazardous/long term deleterious effect on environment and/or likely risk to human health
   2. Requirements for the response to or corrective actions to contamination from a treated article that threatens human health or environment
   3. Requirements for examination or inspection of treated articles that AIB has determined will have hazardous/long term deleterious effect on environment and/or likely risk to human health
   4. Requirements for persons selling treated articles to keep and make available records of sale and what treatments the sold articles received
   5. Requirements for reporting accidental contamination from misuse of treated articles that AIB has determined will have hazardous/long term deleterious effect on environment and/or likely risk to human health

H.626 (as passed by House and Senate)

b. Submit draft rule at least 30 days before ICAR filing to House Committee on Agriculture and Forestry and Senate Committee on Agriculture for review **[Submit proposed rules to House and Senate Committees by March 1, 2024]**

c. (1) AAFM after consultant with AIB shall adopt by rule BMPs for the use of neonicotinoid treated article seeds. Rules shall address:

   A. Establish threshold levels of pest pressure required prior to use of neonic treated seeds
   B. Availability of non-treated seeds
   C. Economic impact from crop loss compared to yield when using neonic treated seeds
   D. Relative toxicities of different neonic treated seeds and effect on human health and environment
   E. Surveillance and monitoring techniques for in-field pest pressure
   F. Ways to reduce pest harborage from conservation tillage practices
   G. Criteria for a system of approval of neonic treated seeds

(2) Shall work with farmers, seed companies, and relevant parties to ensure farmers have access to appropriate varieties and amounts of untreated seed or treated seeds without neonics.

H.626 (as passed by House and Senate)

AAFM shall monitor pollinator health benchmarks:

1. Presence of pesticides in hives
2. Mite pressure
3. Disease pressure
4. Mite control methods
5. Genetic influence on survival
6. Winter survival rate
7. Forage availability

H.626 (as passed by House and Senate)

The AIB shall submit report to Senate and House Committees by February 15, 2023. Report regarding whether BMPs should be adopted for the use of treated article seeds that are not neonic treated article seeds shall include:

1. Summary of AIB review of treated seeds that are not neonic treated, including identification of treated seeds that may have adverse effects on human health or environment
2. Recommendation of whether BMPs for treated seeds that are not neonic treated should be adopted and whether adopted by rule
3. Proposed BMPs for treated seeds that are not neonic treated

2 new permanent positions at AAFM to staff Residuals Management Program, supporting the AIB, and enforcing and reviewing the use of treated articles pesticides