2020-21 NH Winter Hive Survey Results

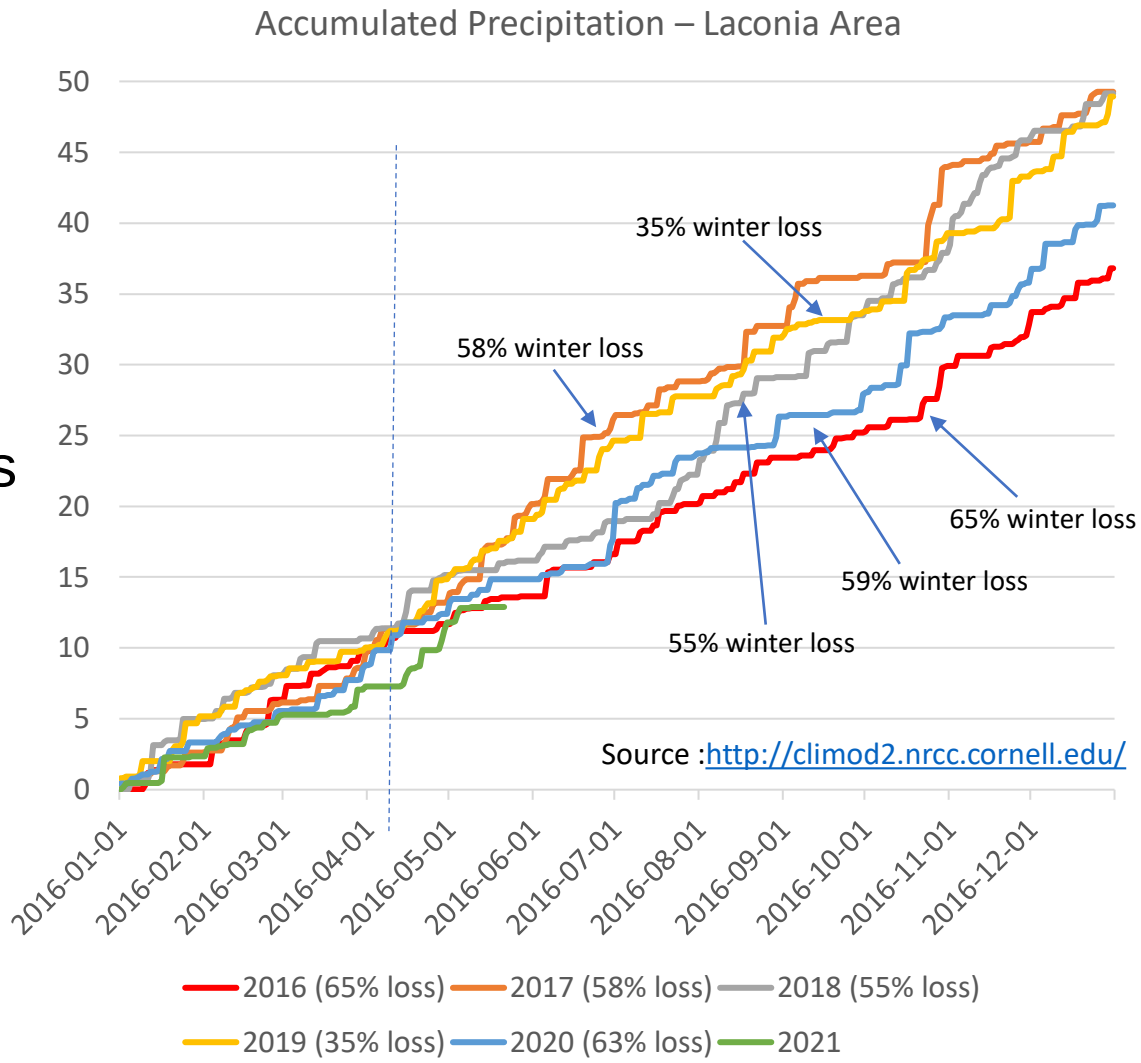
Heather Achilles

2020-21 Survey Executive Summary

- **2020-21 Winter Survival is the 2nd worst we've seen since doing the survey : 41% (59% loss)**
  - 78% of respondents have between 1-10 hives
- February was the biggest loss month for hives by a significant margin
  - Highest percentage of NUCs were lost in Feb (consistent with previous years)
- Absconding was in the top 5 reasons for loss for the first time.
- Other" was in the top 5 reasons for loss for the first time since 2016. These reports included several 'comments of:
  - Excess viral load in 2020
  - Drought
  - Inability to do cleansing flights
  - CCD
- 2020 Honey Crop (New question added)
  - Above Average: 27 apiaries
  - Average: 80 apiaries
  - Below Average: 153 apiaries

2020-21 Survey Notable Changes from Previous Years

- Both 2016 & 2020 had significant droughts & had the highest winter loss
- 80% of apiaries (~83% of hives) used commercial varroa treatment at least 1 time
- 70% of apiaries report doing varroa mite testing at least once
- Increasing number of comments/notes about hives being in a building for the winter
- Significantly less winter feeding than in the past.
- Much higher May swarming than in the past
- Grafton County & VT hives reported significantly more issues with Yellow Jackets, Wasps, etc. than others
- Nosema treatments were only 13% of hives vs 19-20% from previous years… (availability of Fumidil-B?)

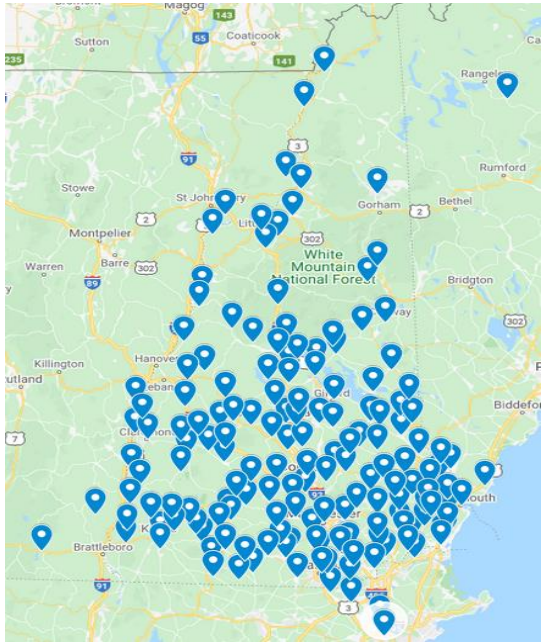


2020-21 Hive Loss Survey Recommendations & Request for Approval

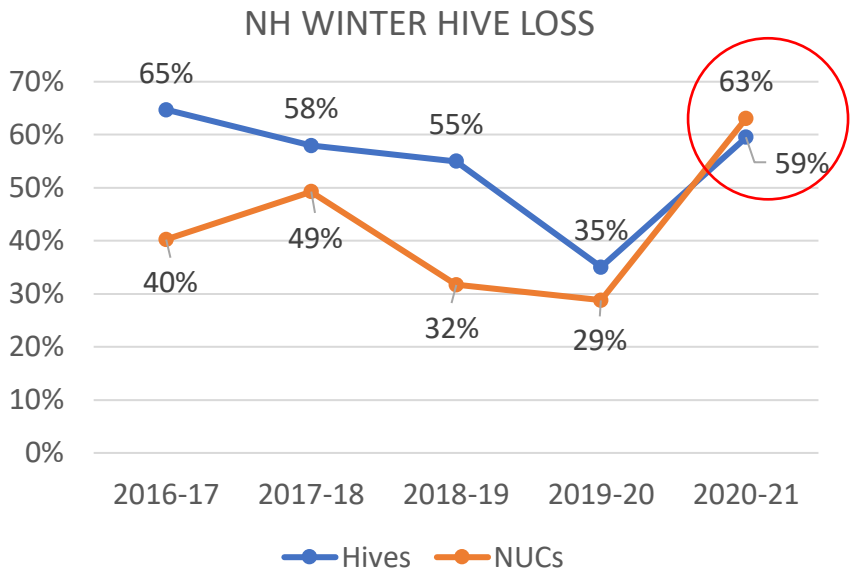
- Make this summary data public on our website
  - Present data at webinar & club meetings if the clubs are interested.
  - Email the summary (or a pointer to the info on the website) to all participants that submitted information to the survey
  - Send paper copies of the summary to members who participated via postal mail.
- Work with our UNH coop extension colleagues using this data to continue :
  - Support grant applications to further beekeeper education.
  - Help shape future grant requests
- Do additional analysis to determine:
  - Combine with data from the other citizen science projects
  - Add weather and other factors as overlays to gain more insight.
- Submit an article to ABJ and/or Bee Culture describing our findings
- Run this survey in 2022

NHBA board approved 6/10/21

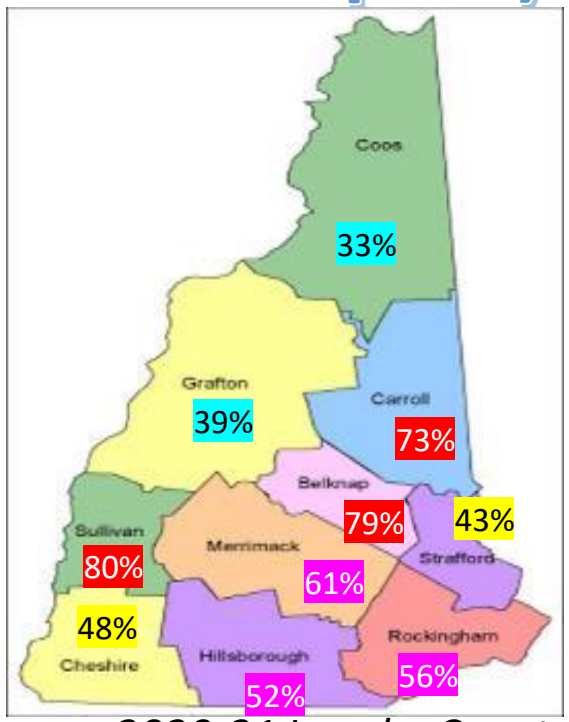
2020-21 NH Winter Hive Survival (Oct 1→Apr 1)



2020-21: 163 towns/352 apiaries

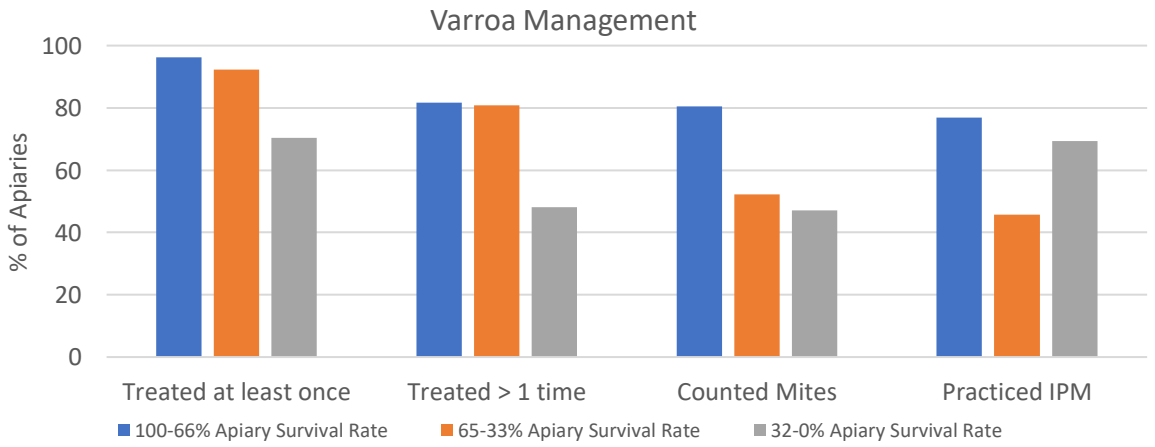


59% Hive Loss & 63% NUC loss over the Winter of 2020-21



2020-21 Loss by County

Survival Rate based on Management Practices



Reported Cause of Loss	2016	2017	2018	2019	2020
#1	Varroa	Varroa	Varroa	Varroa	Varroa
#2	Don't Know	Don't Know	Starvation	Weak colony	Other
#3	Starvation	Starvation	Moisture	Cold Temps	Weak colony
#4	Other	Moisture	Don't Know	Queen Issues*	Abscond
#5	Weak colony	Cold Temps	Cold Temps	Moisture	Cold Temps

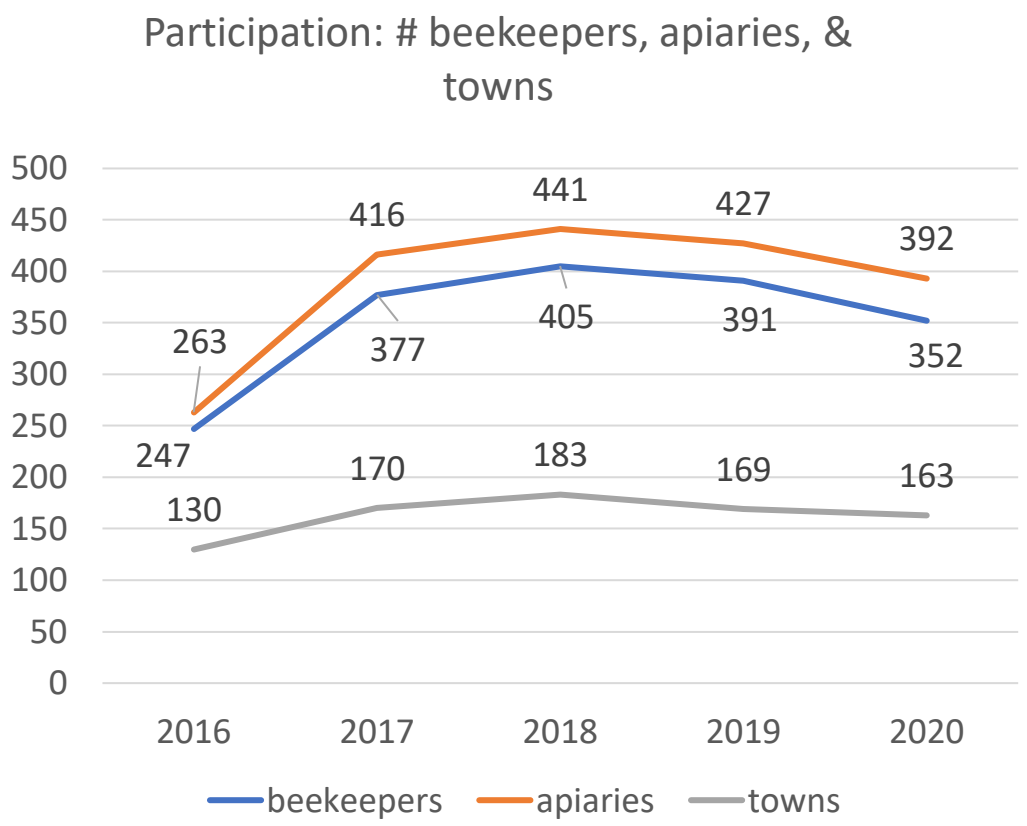
Details on page 20

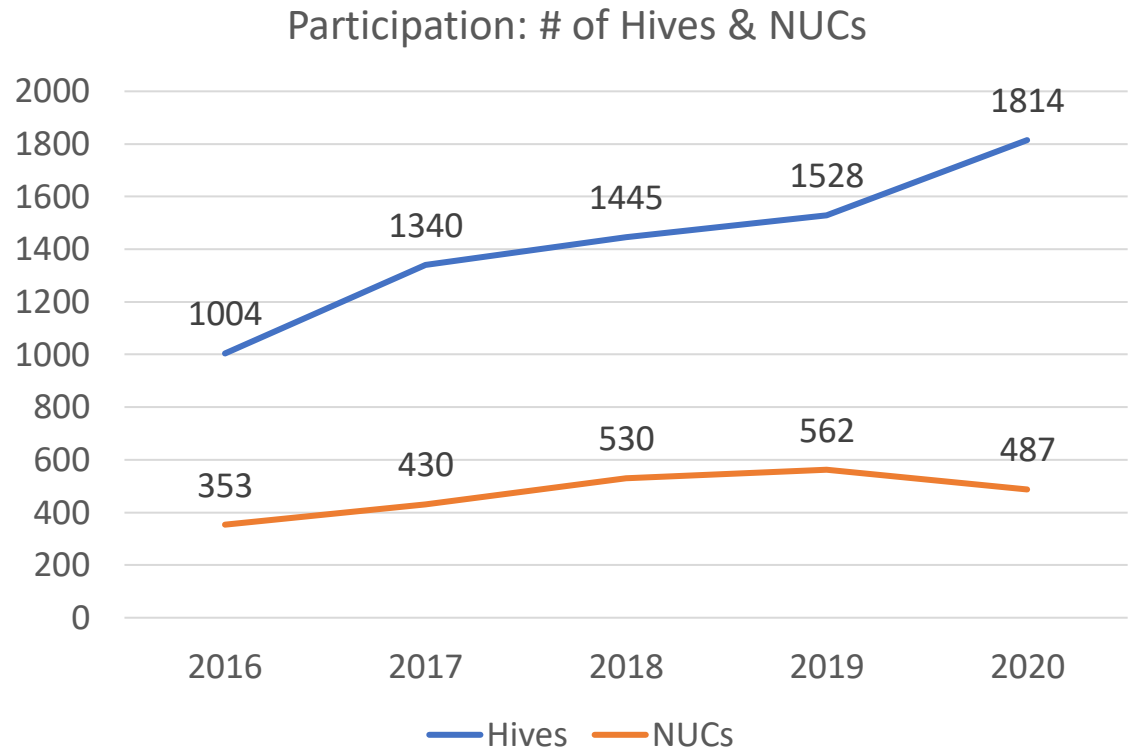
Table Of Contents

- Participation & Demographics 7
- Winter Hive Loss 12
- Varroa Management 26
- Bee Races 39
- Nosema Management 45
- Feed Management 48
- Winterizing & Moisture Management 55
- Swarming 58
- Best Management Practices 60
- By County Analysis 69

Participation & Demographics

Survey Participation Over the Years



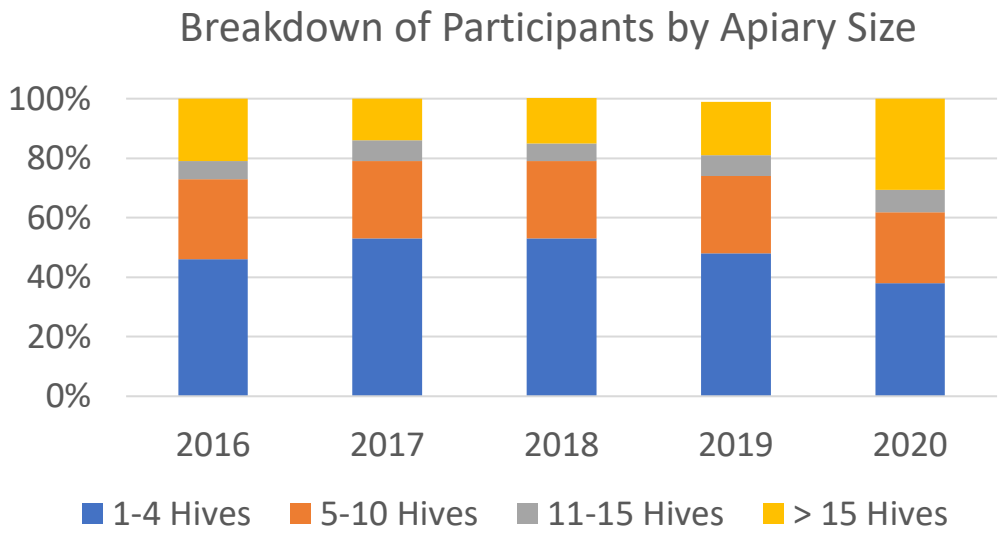


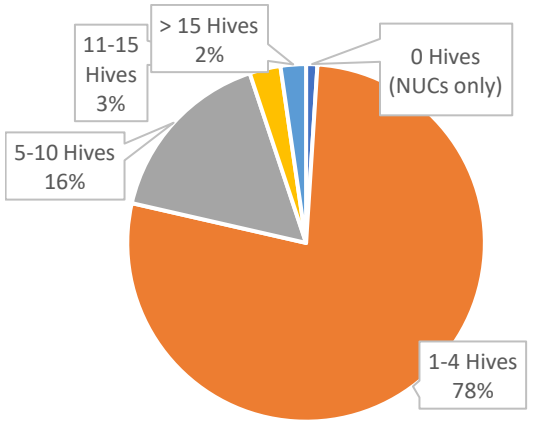
2020-21 Survey : Excellent Response!

Out of state Participants: MA: 6 apiaries (30 Hives,6 NUCs), VT : 7 apiaries (37 Hives, 32 NUCs); ME: 2 apiaries(2 Hives,2 NUCS)

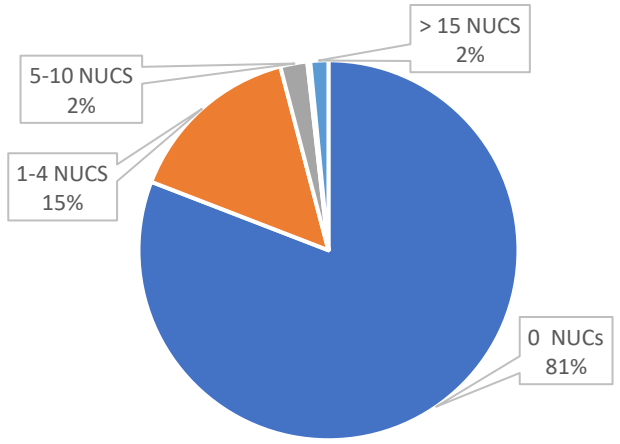
*Had 1 response from VA – this data was removed from the analysis

Size of Apiaries Participating in Survey





2020 Hives - Apiary Size Breakdown**



2020 NUC Apiary Size Breakdown

Apiary representation in Survey by number of hives

	2016	2017	2018	2019	2020
1-4 Hives	46%	53%	53%	48%	38%*
5-10 Hives	27%	26%	26%	26%	24%
11-15 Hives	6%	7%	6%	7%	7%
> 15 Hives	21%	14%	16%	18%	31%

*interpretation: When you look at the total number of hives in the survey 38% are in apiaries with 1-4 hives

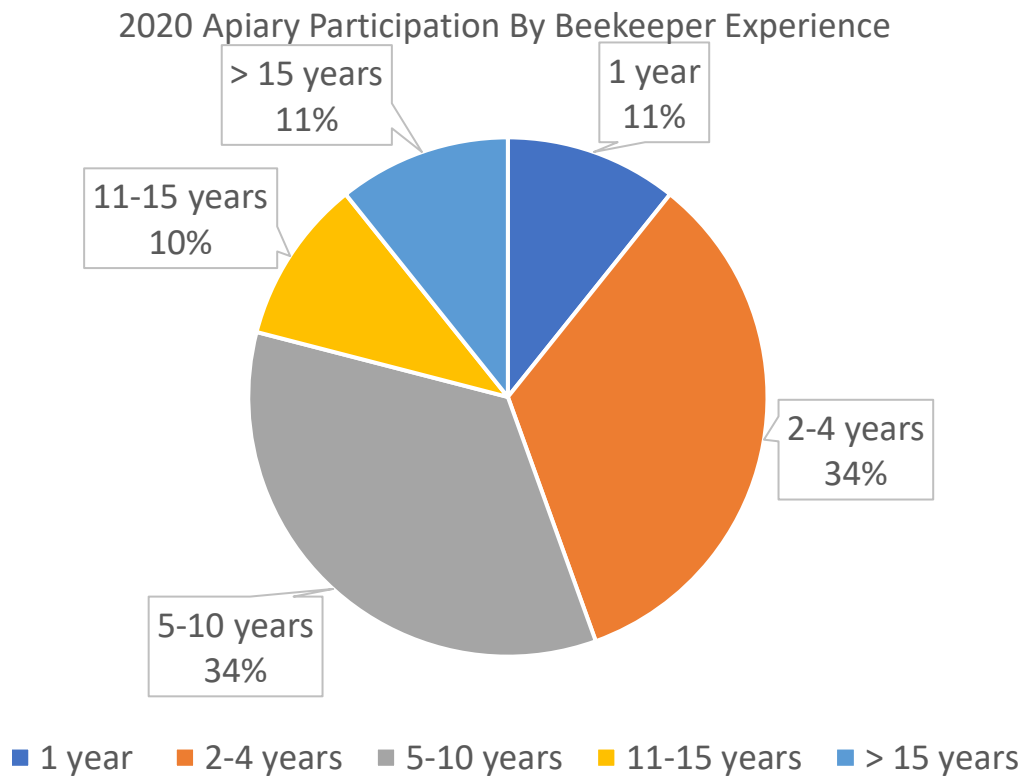
2020-21 : average hives per apiary: 4.6

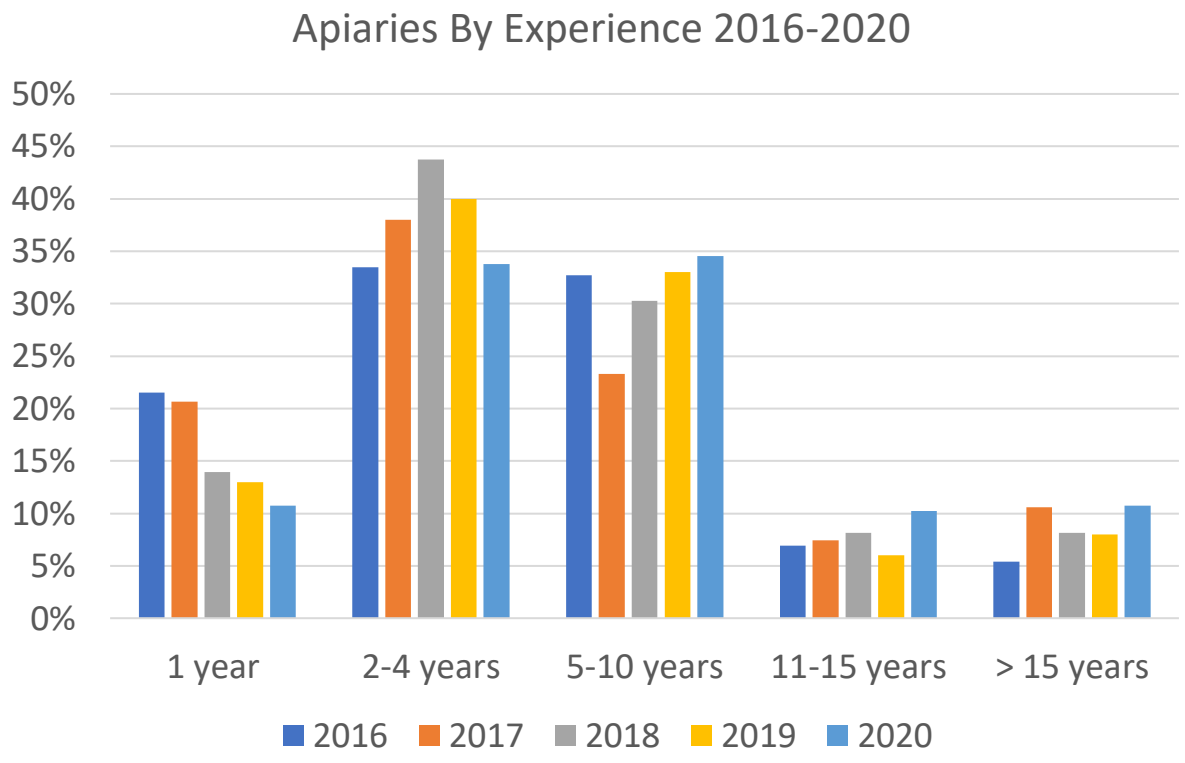
Apiaries with > 15 hives had a larger representation than in the past. (31% vs ~16% in previous years)

This had some effect on the overall survival rate, but it was minimal.

**Interpretation of Apiary breakdown chart: 78% of the reporting apiaries have 1-4 hives

Experience of Beekeepers Participating in Survey





Participating apiaries in 2020
- ~11% managed by first year beekeepers
- ~78% managed by beekeepers with 2-10 years experience
- ~11% are managed by beekeepers with > 11 years experience

2020-21 Respondent's Club Affiliations

352 Respondents:

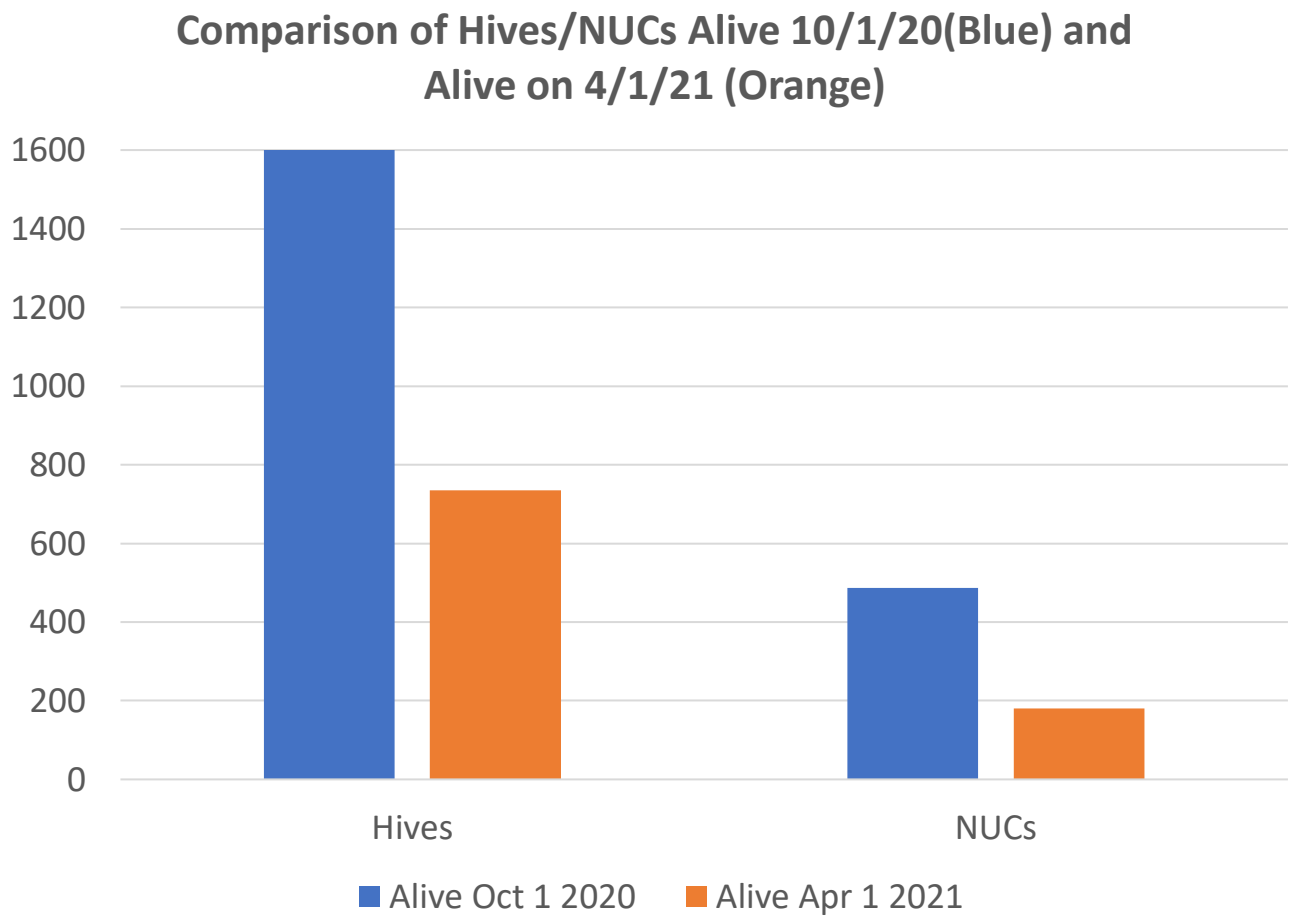
- 77 belong to NO Bee Club (~22%)
- 87 belong to NHBA + at least 1 NH Club
- 153 belong to NH clubs but not NHBA
- 18 belong only to NHBA
- Other clubs mentioned:
  - Mt Washington Beekeepers
  - Northeast Beekeeping
  - Grafton County
  - York County
  - Middlesex
  - Western Maine
  - Connecticut & RI

Club	Respondents	Participation Rate
KBA	**42**	**74%**
North Country	**22**	**61%**
Pawtuckaway	**47**	**52%**
Monadnock	30	50%
MVBA	40	47%
PBBA	25	45%
CABA	41	35%
Seacoast	26	29%
CT River Valley	5	7%
Winni	13	

Club	Respondent
NHBA	105
EAS	11
ABF	3
VT Beekeepers	8
MA Beekeepers	9
ME Beekeepers	9

Winter Hive Loss

2020-21 Hive and NUC Winter Loss

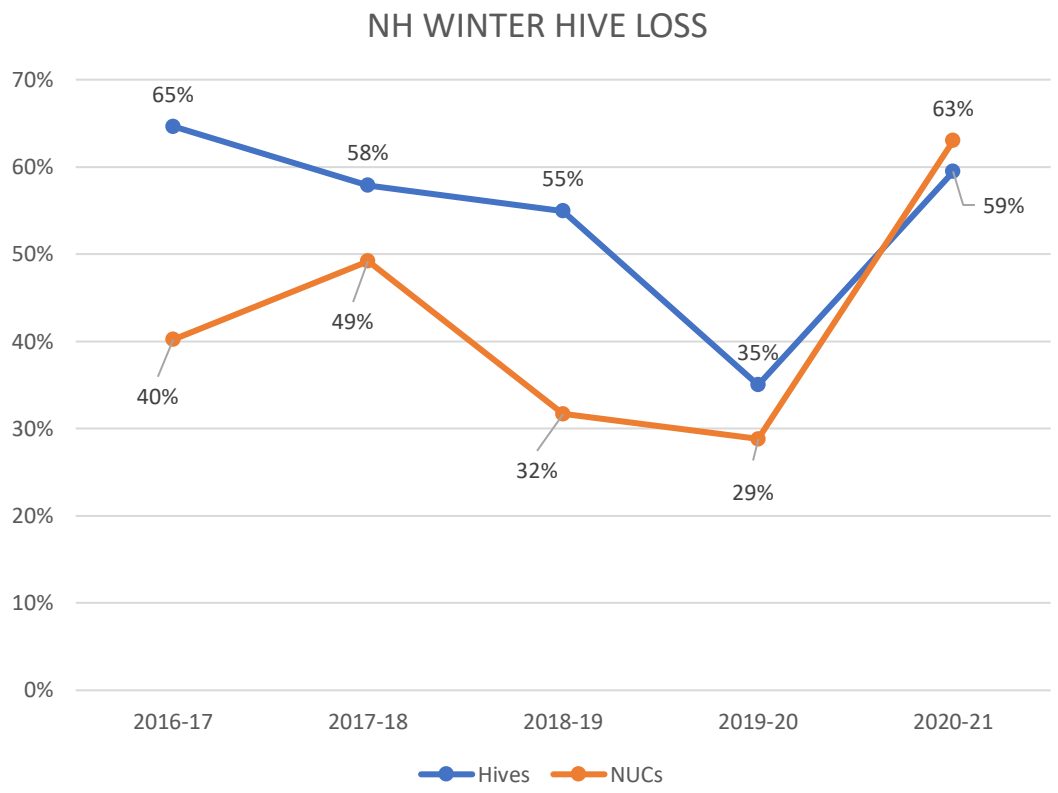


	# Hives	#NUCS
Alive Oct 1 2020	1814	487
Alive Apr 1 2021	735	180

2019-20 Winter Loss:
59% Hive & 63% NUC Loss

Of the hives lost:
- 606 were overwintered
- 617 were packages

2020-21 Hive and NUC Winter Loss

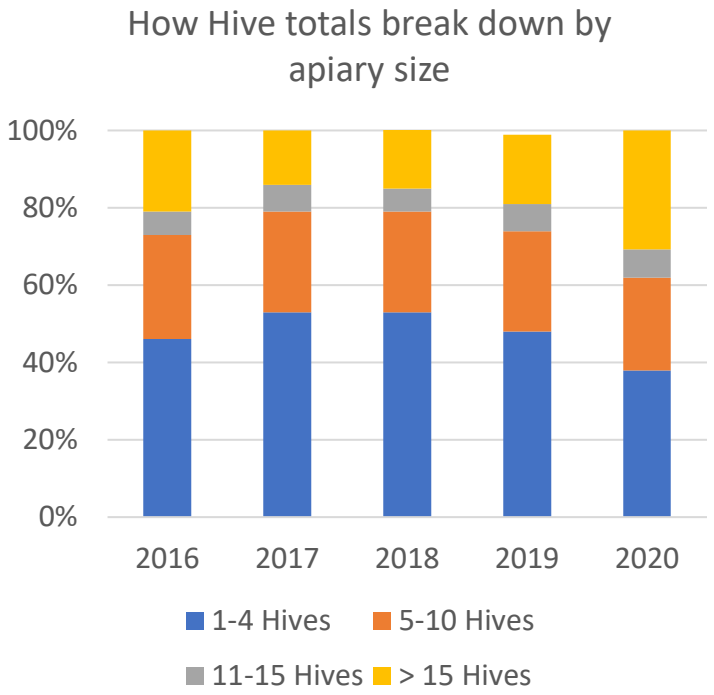


	# Hives alive on 10/1	# NUCS alive on 10/1
2016	1007	353
2017	1340	323
2018	1445	530
2019	1528	559
2020	1814	487

Why was the loss so high over the winter?
Did the Drought affect the nutrition available to the bees?
Other theories?

2020-21 Hive and NUC Winter Loss By Apiary Size

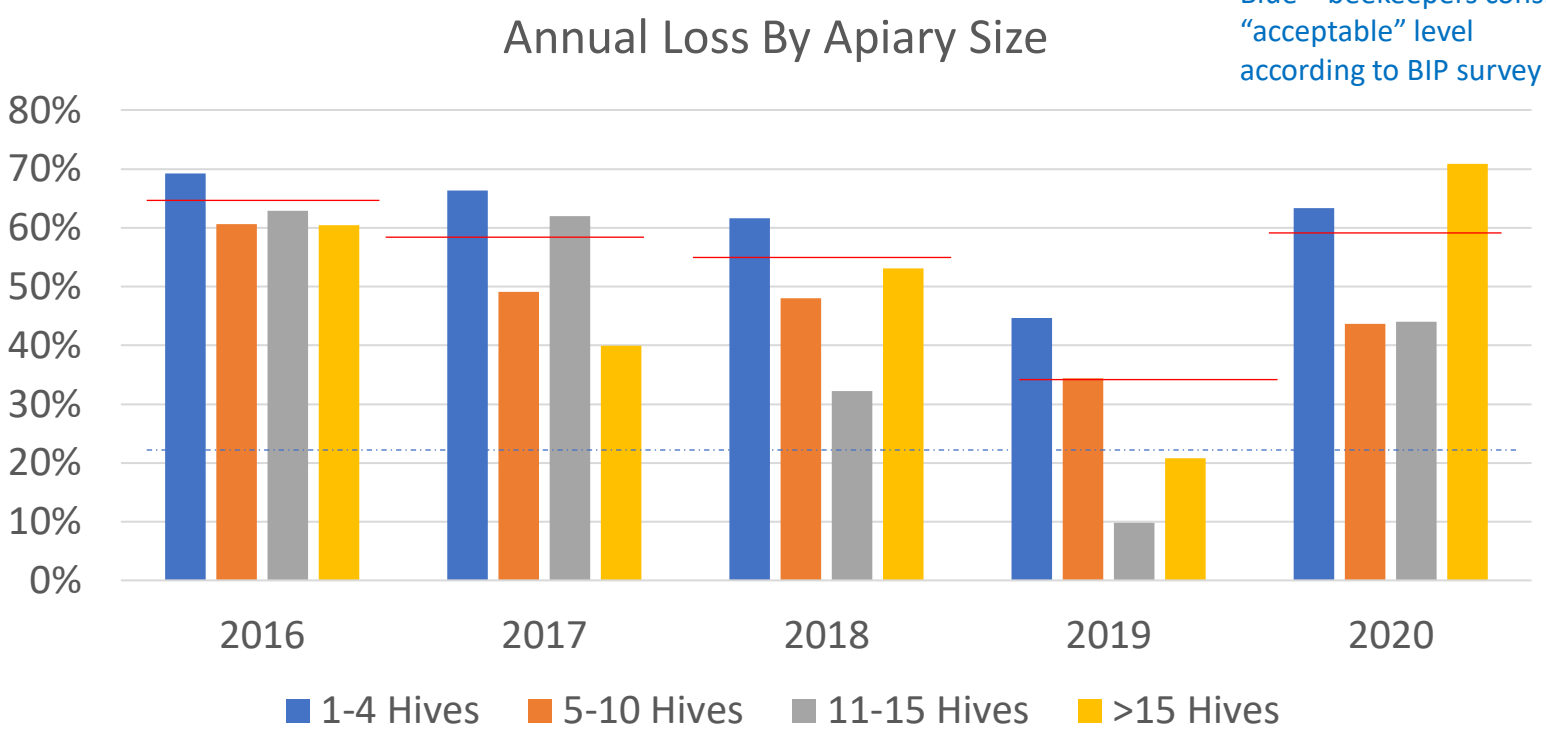
Redline = Overall loss rate
Lower bar is better!



Hive Total Breakdown by Apiary Size

	2016	2017	2018	2019	2020
1-4 Hives	46%	53%	53%	48%	38%
5-10 Hives	27%	26%	26%	26%	24%
11-15 Hives	6%	7%	6%	7%	7%
> 15 Hives	21%	14%	16%	18%	31%

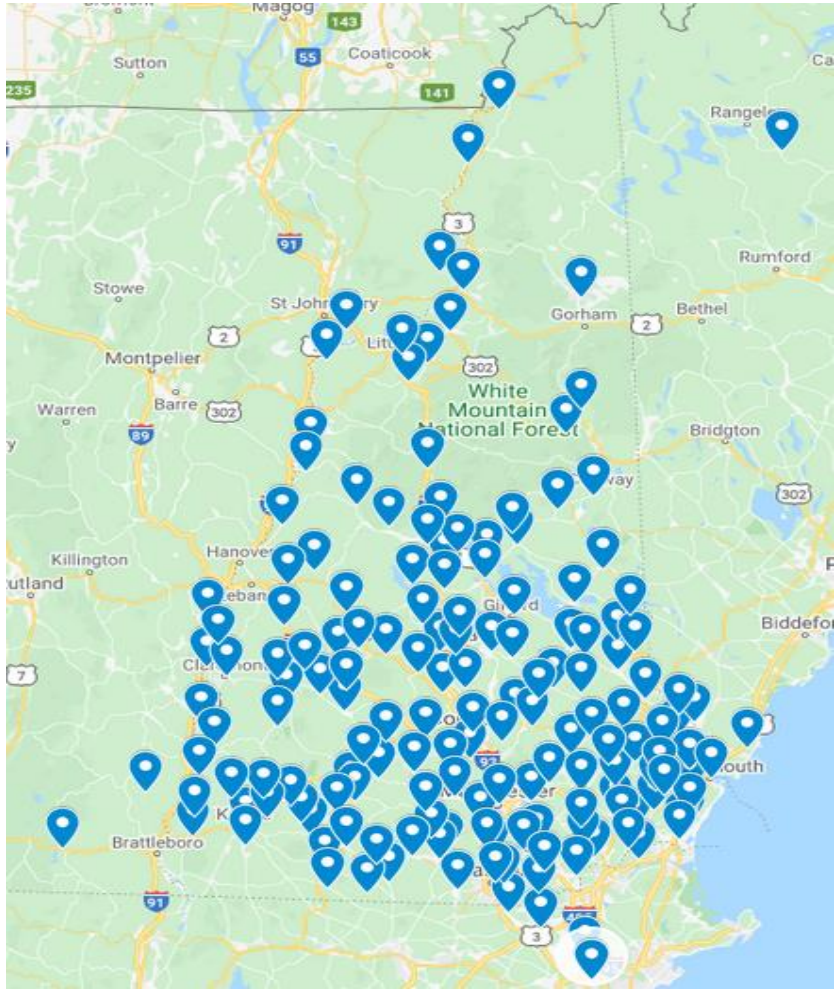
Blue = beekeepers consider "acceptable" level according to BIP survey



Out loss totals are slanted toward smaller apiaries as they represent 69% of the hives in the survey

In 2020, apiaries with > 15 hives represented a larger percentage of the total hives than in previous years which had a small effect on the overall loss.

2020-21 Reported Hive and NUC Loss by County

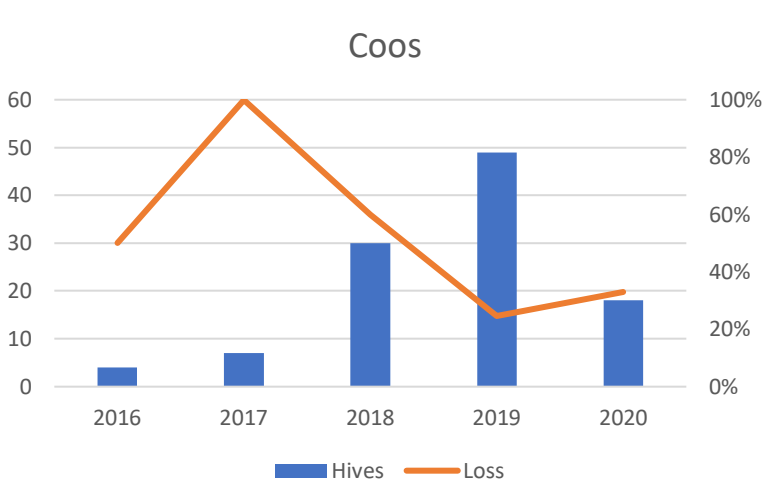


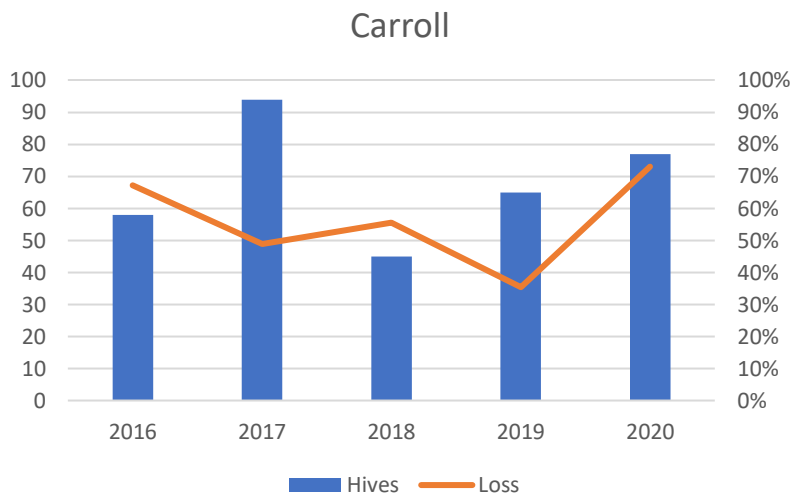
Each pin represents
a town with at least 1 hive

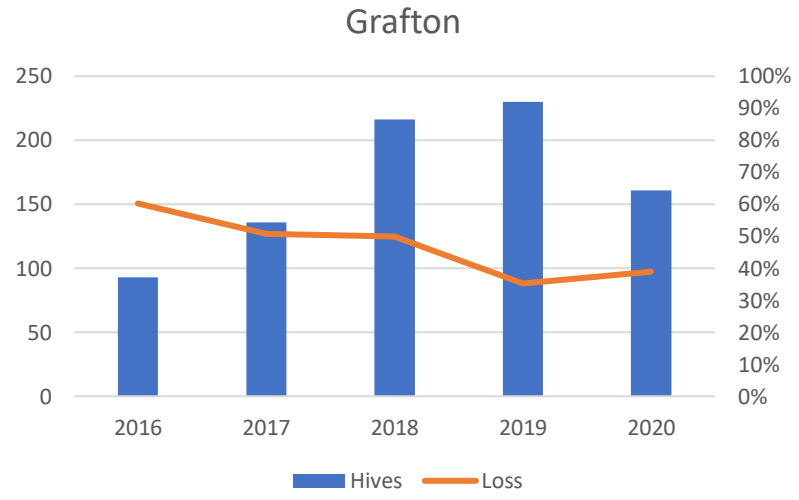
	# Hives Reported	Hive Loss	# NUCs reported	NUC Loss
Sullivan	407	80%	222	79%
Belknap	78	79%	10	100%
Carroll	77	73%	21	86%
Merrimack	256	61%	36	81%
Rockingham	174	56%	20	70%
Hillsborough	312	52%	32	44%
Cheshire	149	48%	28	25%
Strafford	113	43%	30	67%
Grafton	161	39%	76	22%
Coos	18	33%	3	0%

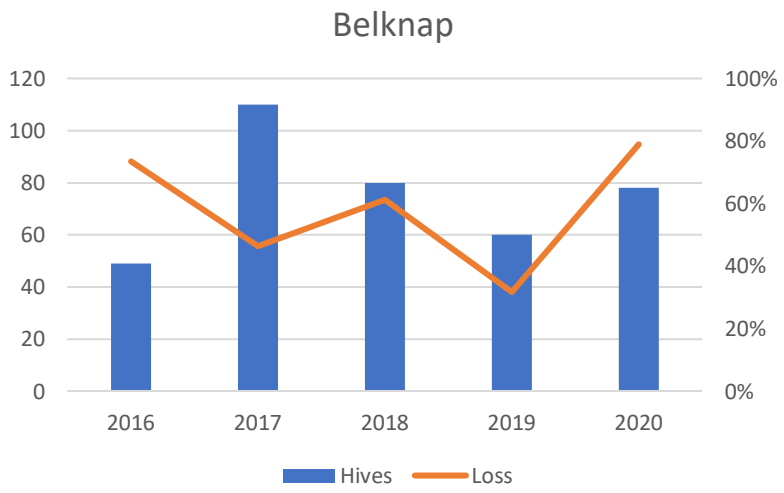
MA: 30 hives (80% loss); 4 NUCs (100% loss)
ME: 2 hives (100% loss)
VT: 37 hives (27% loss),7 NUCs (0% loss)

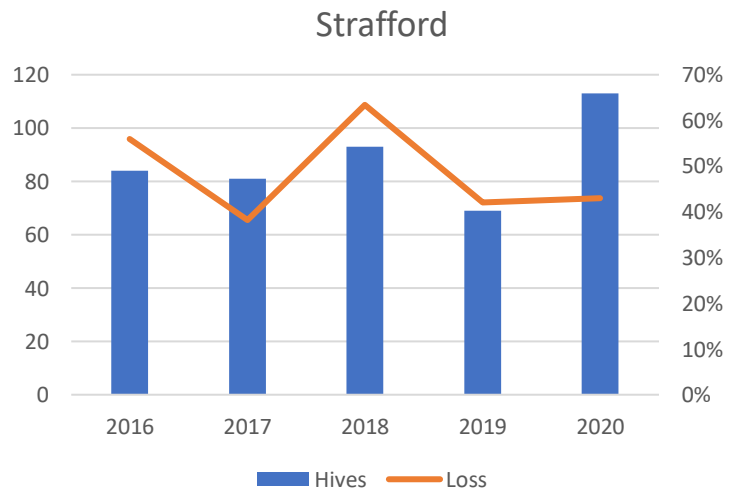
Hives Reported & Loss Rate Year to Year (by County)







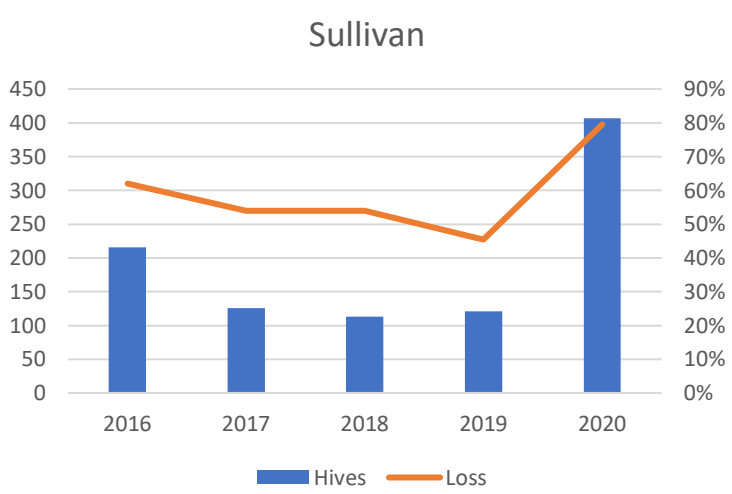


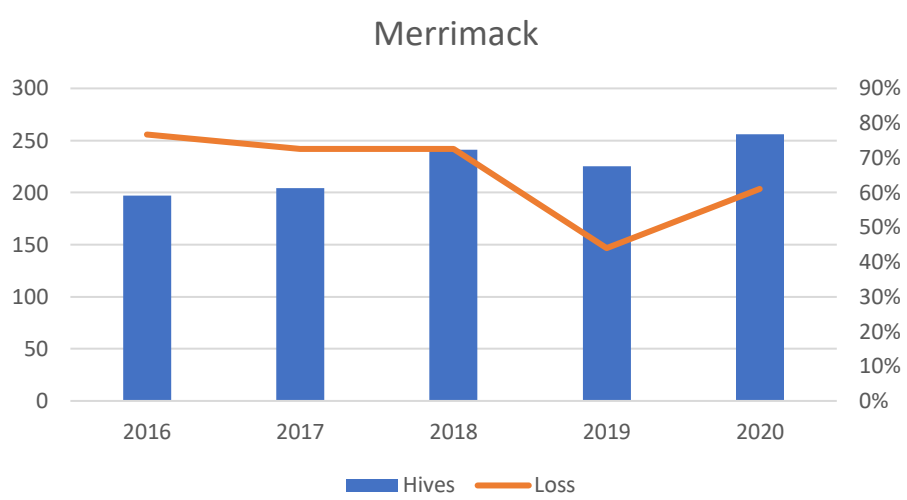


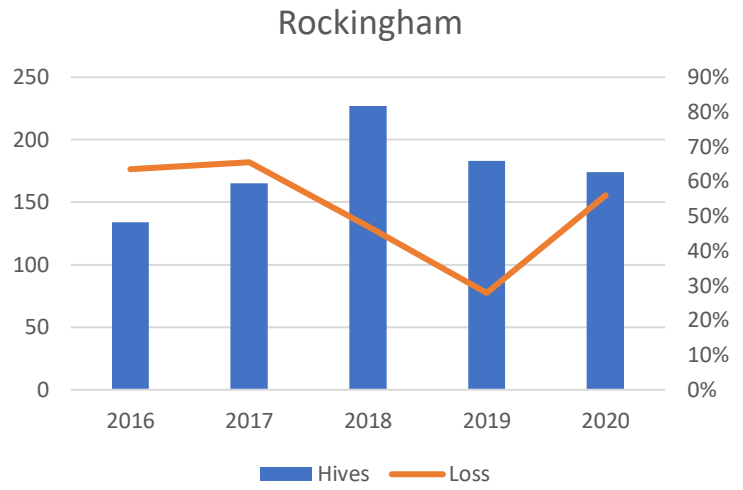
# of hives :

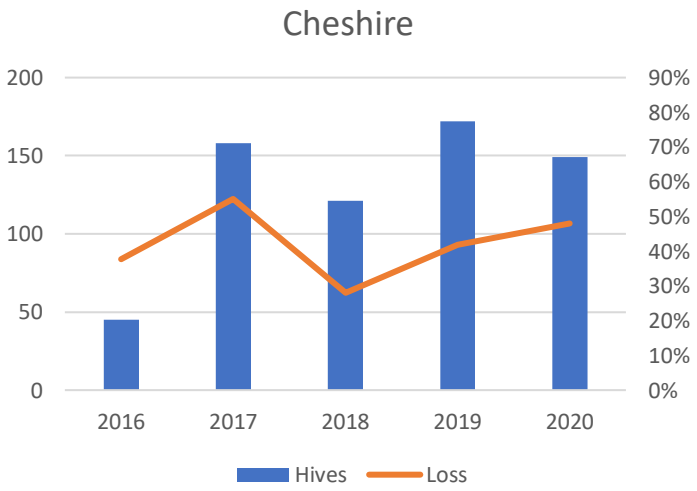
Hive loss :

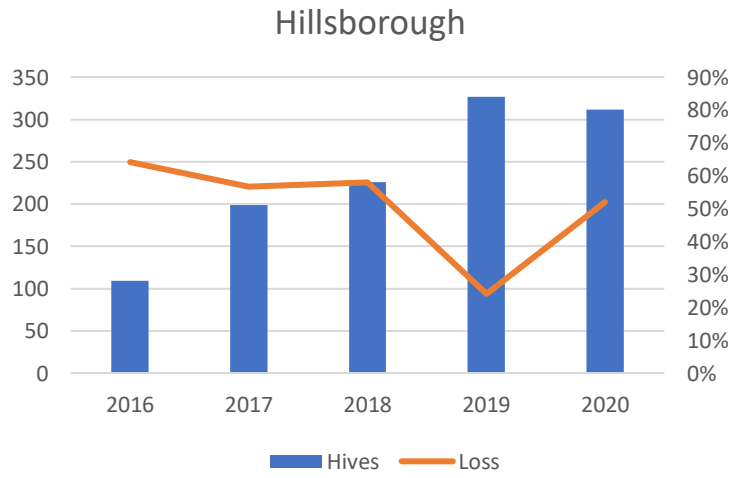
Hives Reported & Loss Rate Year to Year (by County)







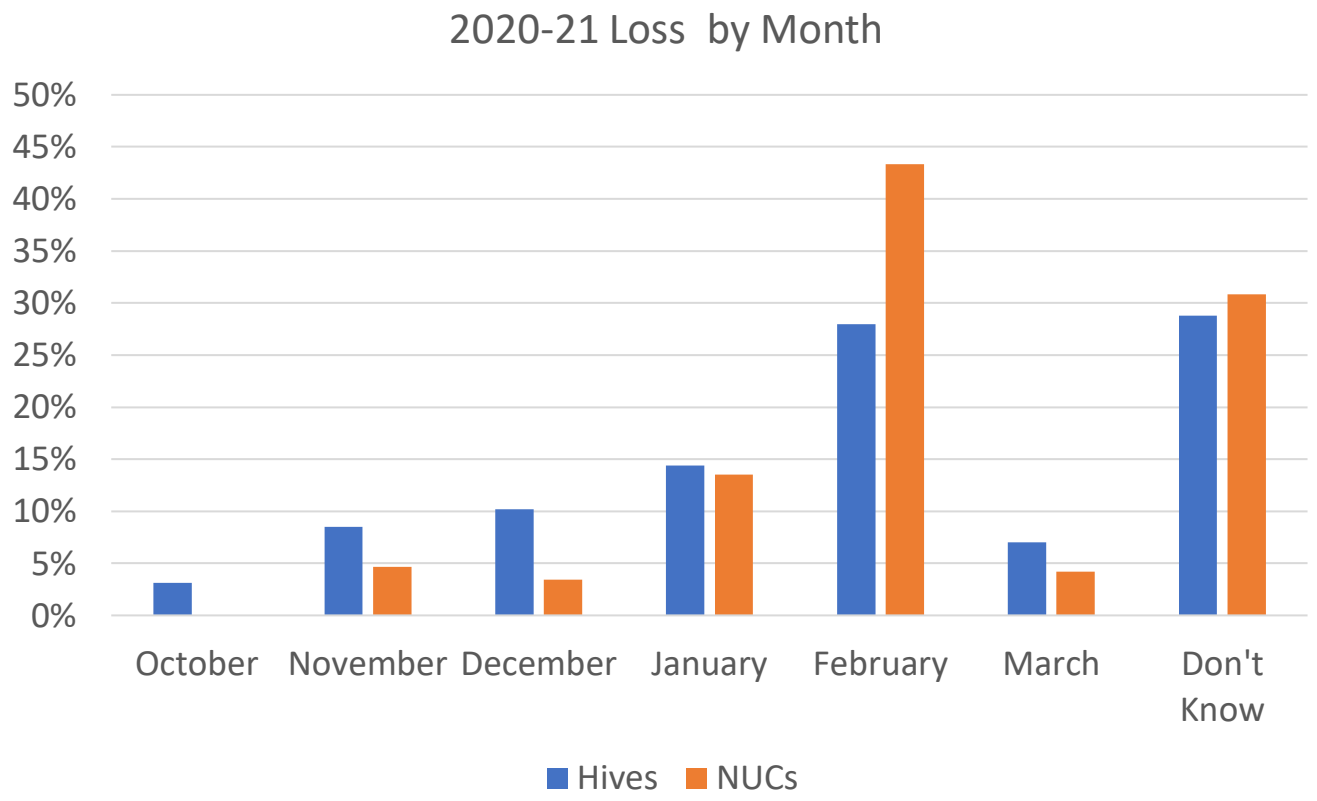




# of hives :

Hive loss :

Hive and NUC Loss By Month

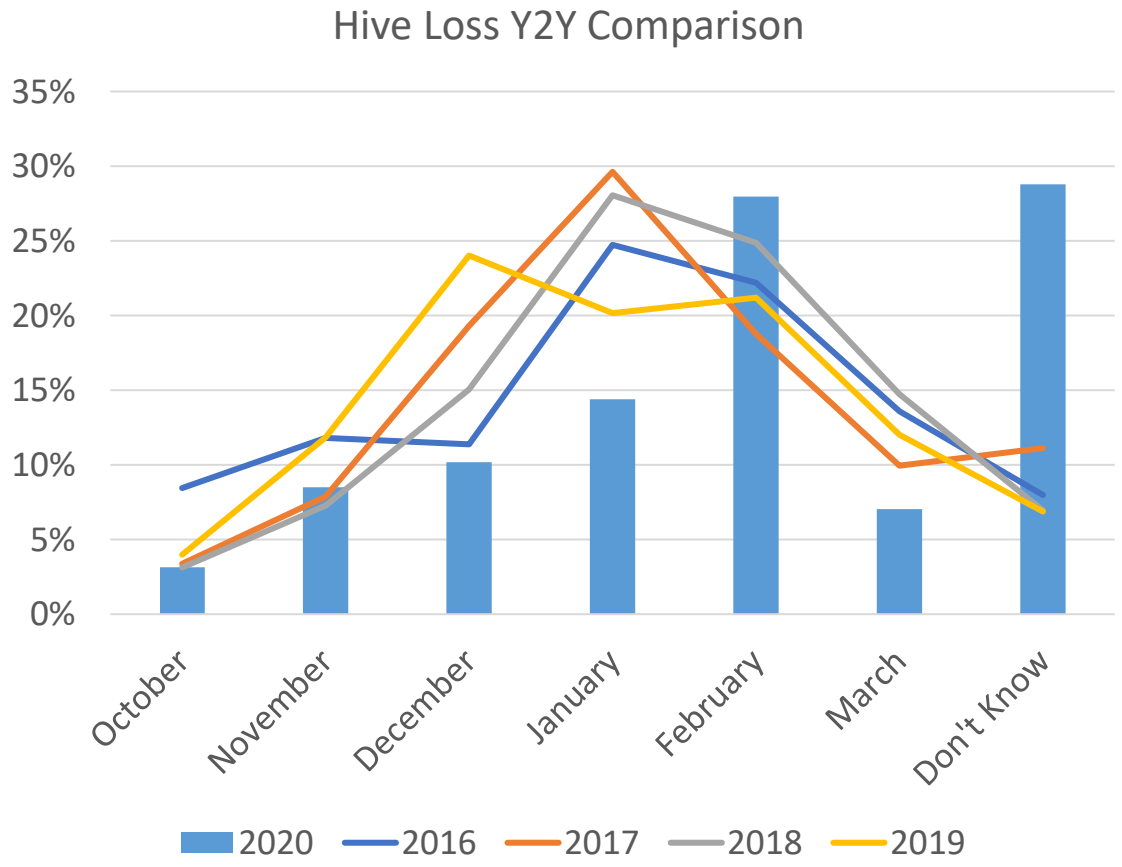


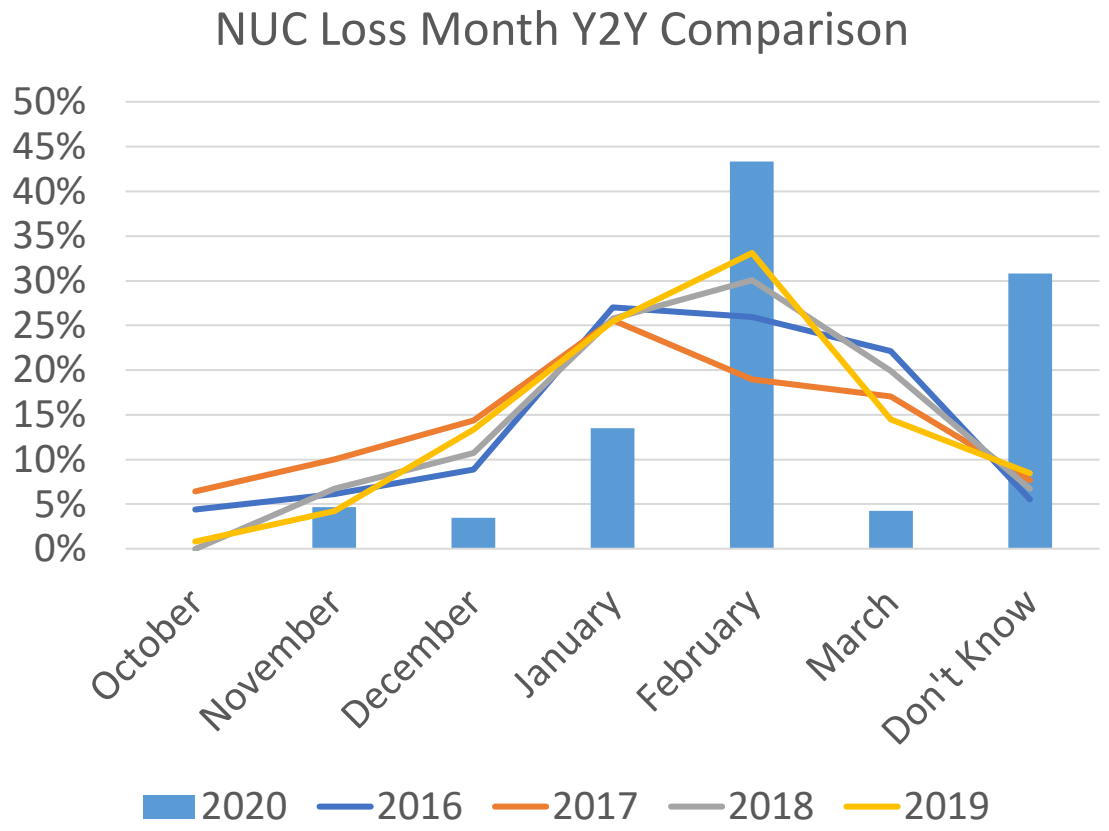
	# Hives Lost	# NUCs Lost
October	34	0
November	91	14
December	109	10
January	155	41
February	300	130
March	76	13
April	309	93
Don't Know	34	0

*note –When multiple months were listed for the loss in the apiary, the number of hives/NUCs lost was divided by the number of months listed & then applied equally to each month.

- February was the biggest loss month for hives by a significant margin(typically Jan/Feb)
  - Highest percentage of NUCs were lost in Feb (consistent with previous years)

Month of Loss – Year over Year

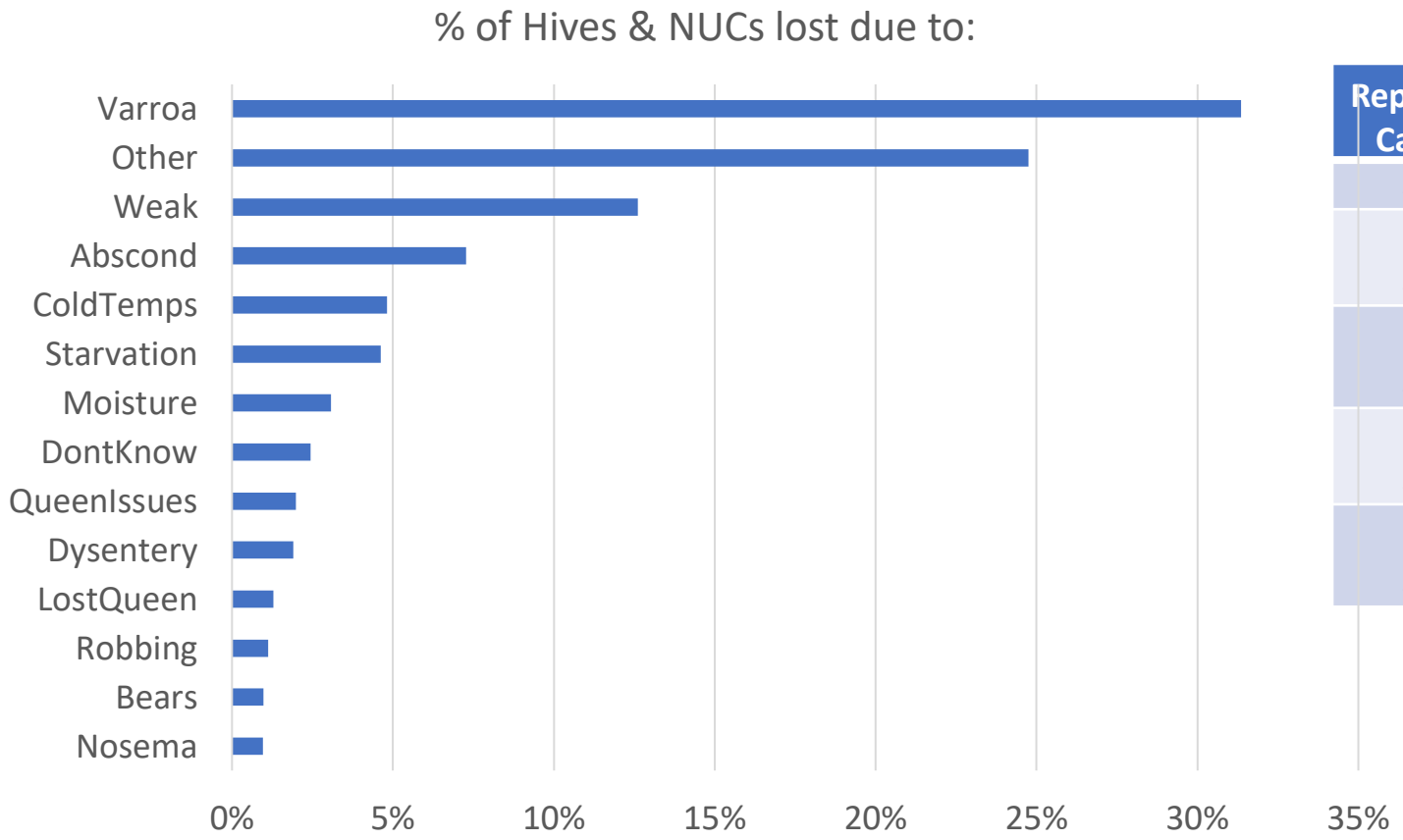




January losses were significantly lower than previous years; February's were a bit higher

- Feb NUC Losses were higher in 2020 than all previous years
- There is a high percentage of "don't know" so these could easily shift the results

Reported Cause of Loss



Reported Cause	2016	2017	2018	2019	2020
#1	Varroa	Varroa	Varroa	Varroa	Varroa
#2	Don't Know	Don't Know	Starvation	Weak colony	Other
#3	Starvation	Starvation	Moisture	Cold Temps	Weak colony
#4	Other	Moisture	Don't Know	Queen Issues*	Abscond
#5	Weak colony	Cold Temps	Cold Temps	Moisture	Cold Temps

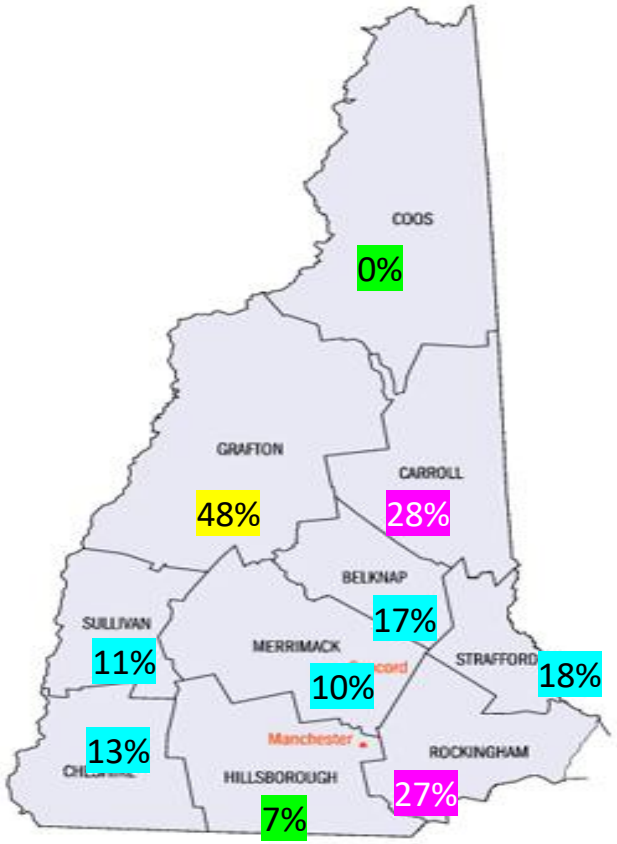
**The number of notes about bees absconded, CCD and/or no bees left in hive is much higher than previous years

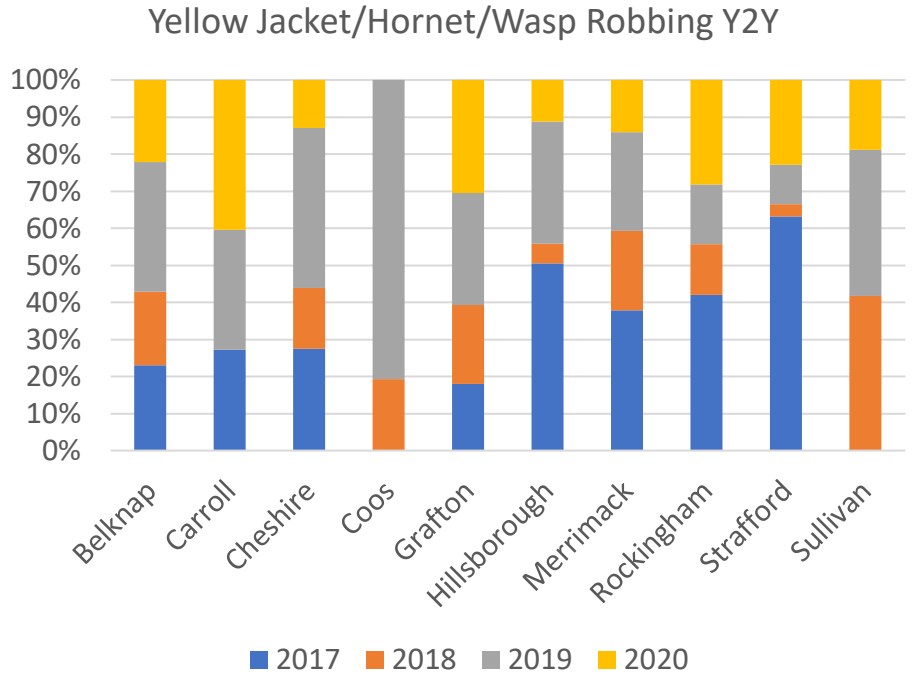
**note –When multiple causes were listed for the loss in the apiary, the number of hives+NUCs lost was divided by the number of causes listed & then applied equally to each cause

"Other": Drought (several), Poor reserves, high viral load (several), Hive beetles, Shrews, hornets, mouse, CCD (several), hives swamped, blocked entrance, inability to do cleansing flights (several), didn't reform cluster, mite treatment, not enough winter bees

Yellow Jacket/Hornet/Wasp Robbing Issues

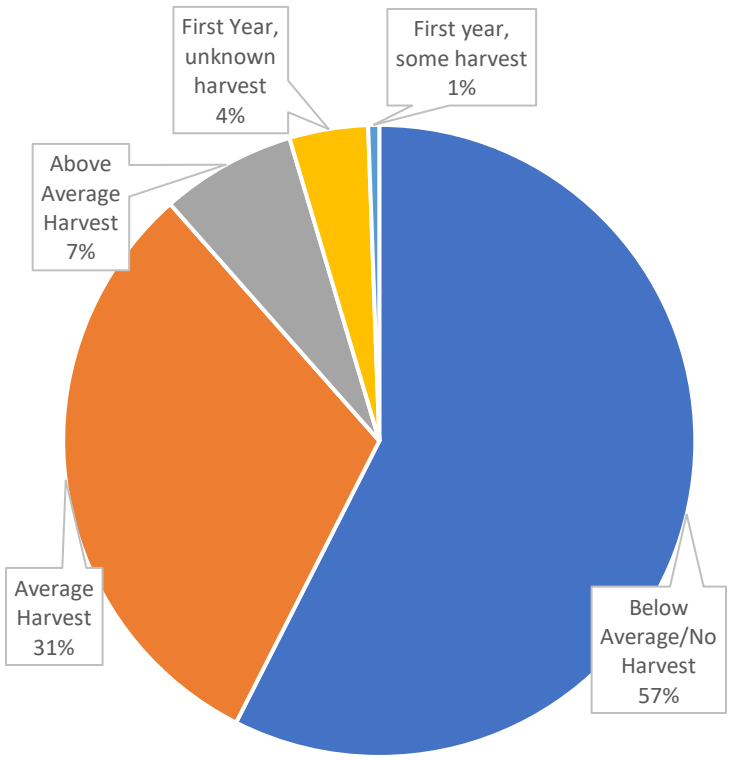
	% of hives that had robbing issues	# hives
VT	68%	37
ME	50%	2
Grafton	48%	145
Carroll	28%	50
Rockingham	27%	147
Strafford	18%	105
Belknap	17%	72
Cheshire	13%	142
Sullivan	11%	225
Merrimack	10%	159
Hillsborough	7%	204
Coos	0%	18
MA	0%	30



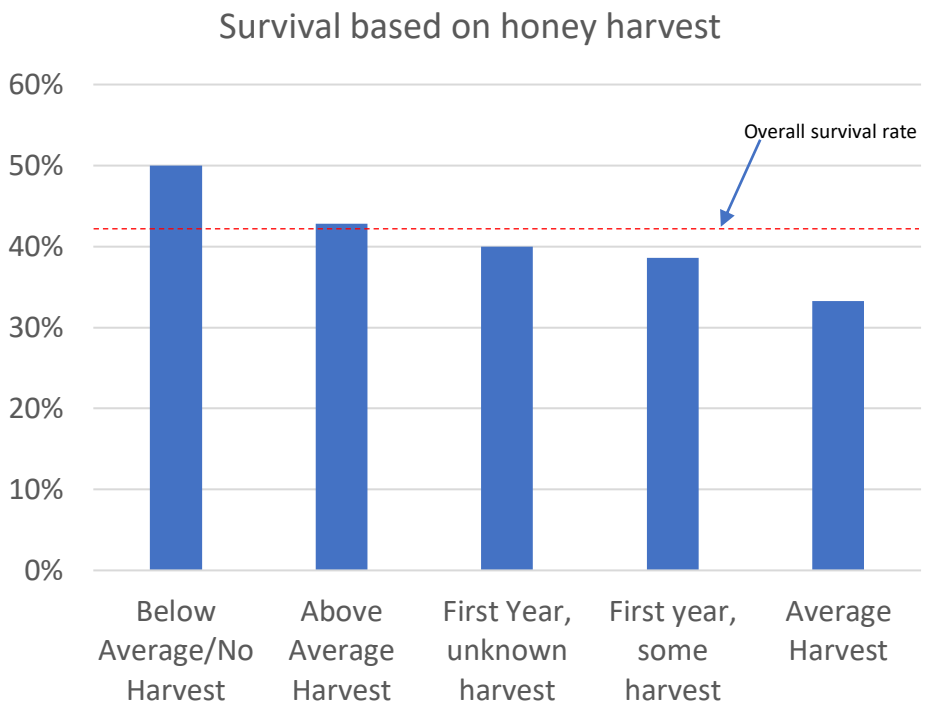


Interesting that VT & Grafton apiaries had significantly more issues with Yellow Jacket/Hornet/Wasps than elsewhere.
(Vt apiaries reporting issues were in Ascutney, Waterford & Wilmington)

2020 Honey Harvest



% of hives by 2020 Honey Harvest



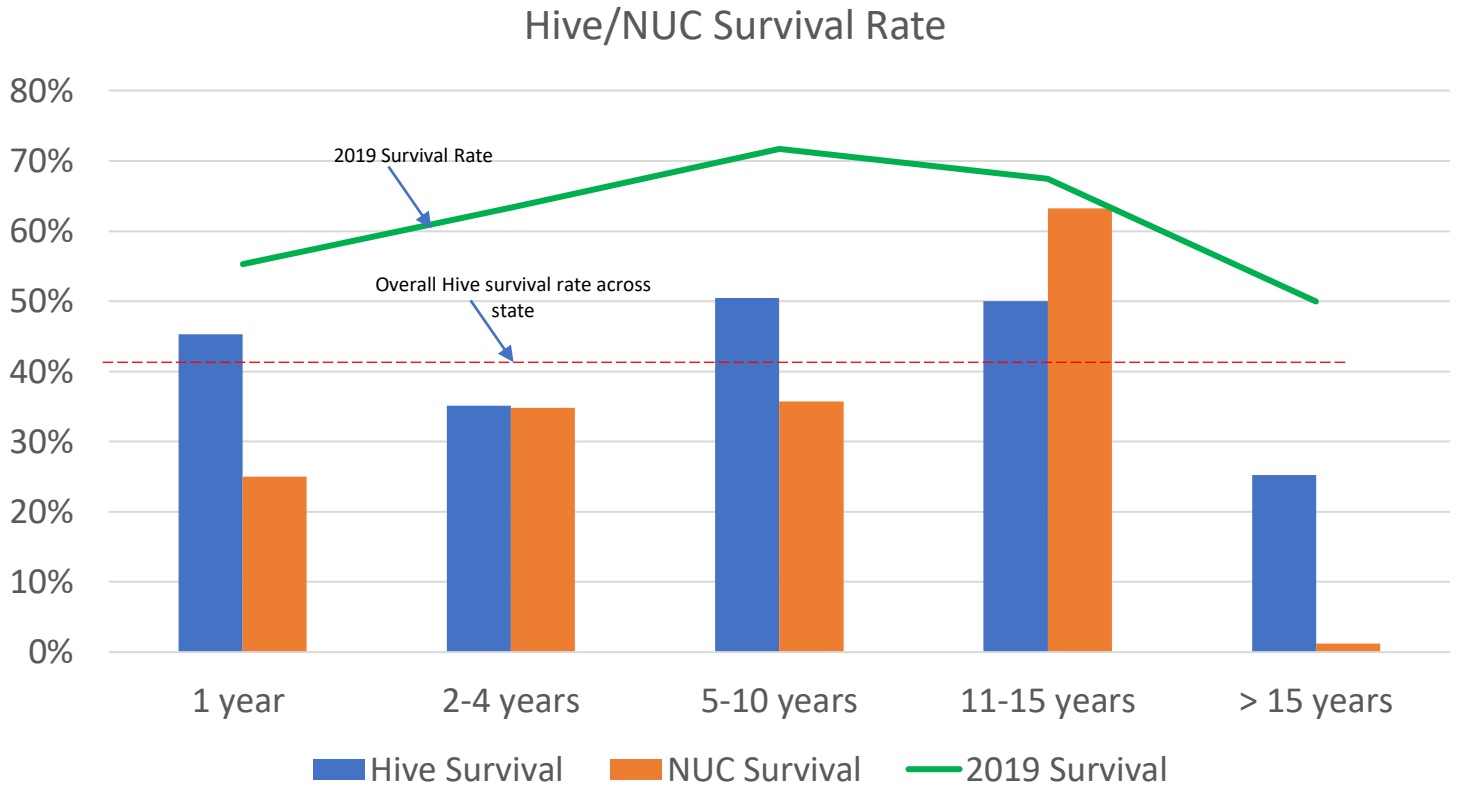
	# Hives
Below Average/No Harvest	814
Average Harvest	439
Above Average Harvest	98
First Year, Unknown	57
First year, some harvest	8

- 57% of the colonies had below average honey harvest.
- The hives that had below average harvest had the best survival rates

Next sets of graphs are SURVIVAL RATES

(Red dash line in graph indicates hive survival rate for state)

Do the Years of Experience Affect Survival Rate?

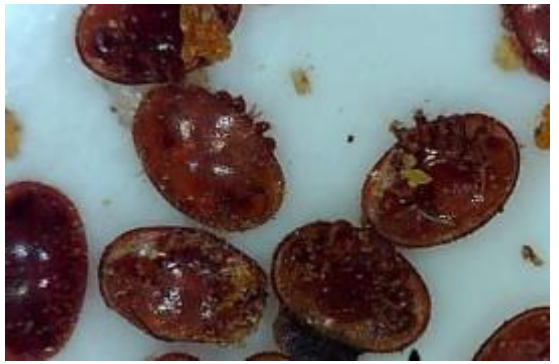


	# Hives On 10/1	# NUCs On 10/1
1 Year	64	4
2-4 Years	558	207
5-10 years	547	56
11-15 years	292	136
> 15 years	349	84

5 years experience seems to improve survival rate (consistent with previous years)
First year beekeeper survival being close to the overall rate is consistent with 3 out of the previous 4 years

Draft

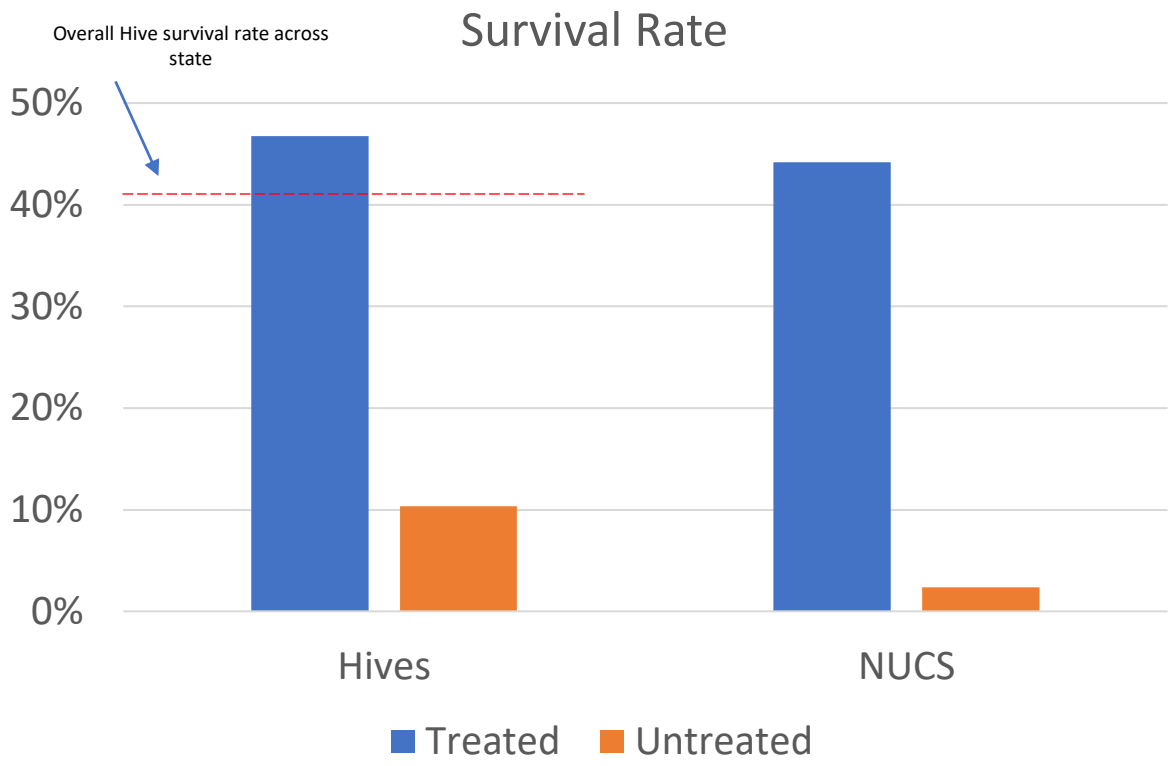
Varroa Management



2020 Highlights:

- Hive Survival:
  - Survival of hives treated with Commercial treatment was 37% better than those untreated(Slide 26)
  - Survival of NUCs treated with a commercial treatment was 42% better than those treated (This is a change from the past) (Slide 26)
  - Hives treated > 2 times had the highest survival rate at 58% (Slide 28)
- 80% of the apiaries representing ~83% of the total hives used a commercial varroa treatment at least 1 time (Slide 27)
- ~65% of the hives were treated 2 or more times (up from 63% (2019), 48% (2018) & 42% (2017) the previous 2 years). However, the % of hives treated more than 2 times dropped from 32% in 2019 to 25% in 2020 (Slide 29)
- Treatment types:
  - Oxalic Acid Vapor & Formic Acid (MAQS/Formic Pro) continue to be the most popular treatment types (Slide 30)
  - Continues to be unclear that any particular type of treatment is better than others – more likely the timing of the treatments
  - Other reported treatments: mineral oil fogging, thymol
- Mite Counting:
  - Number of apiaries that counting at least one time continues to increase increased from 61% in 2018→66% in 2019 → 70% in 2020 (Slide 35)

How does treating with commercial varroa treatments affect survival rate?

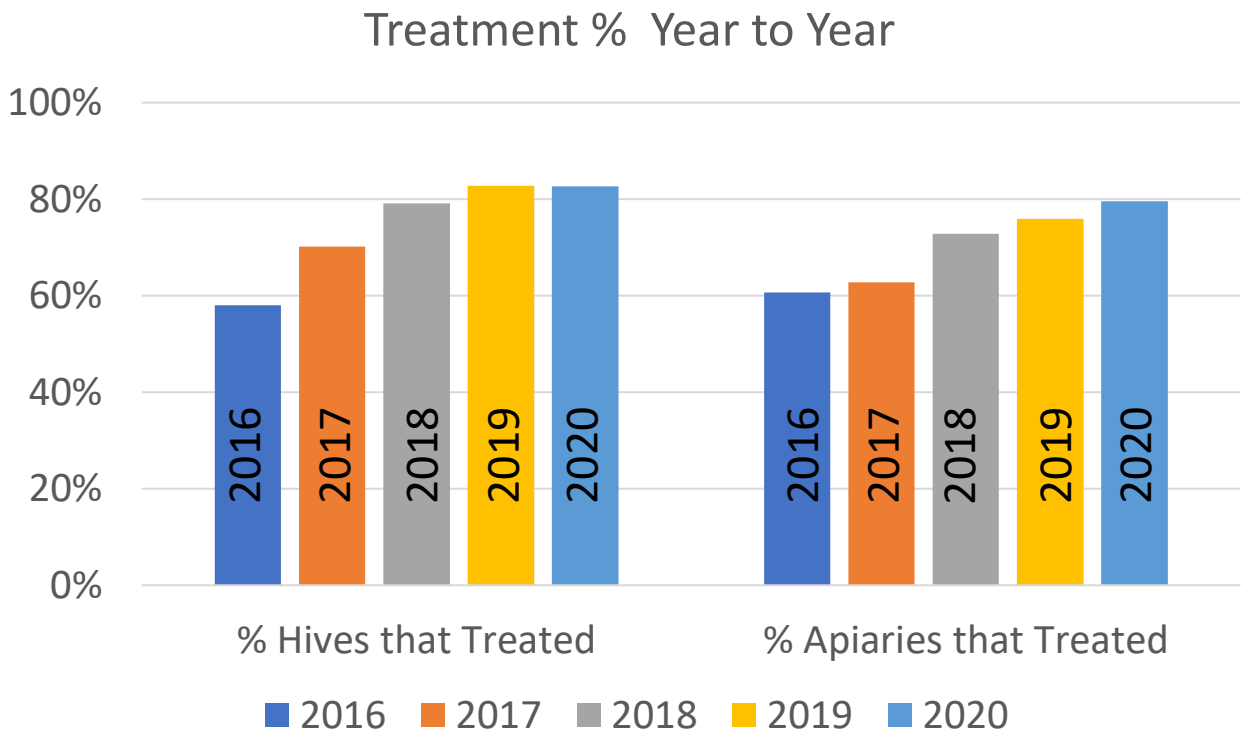


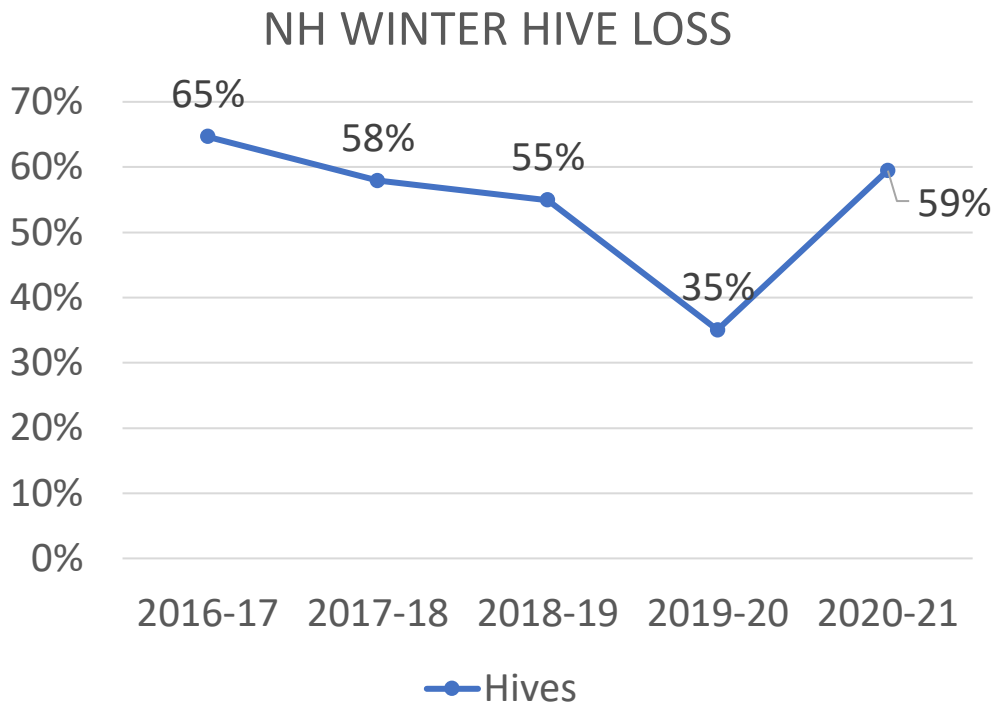
	# Hives on 10/1	# NUCs On 10/1
Treated	1500	403
Untreated	314	84

- Hives treated with commercial treatments had a better survival rate (47% vs 10%)
  - Was viral load higher this year? Did the drought add more stress?

*"commercial varroa treatment" refers to registered products

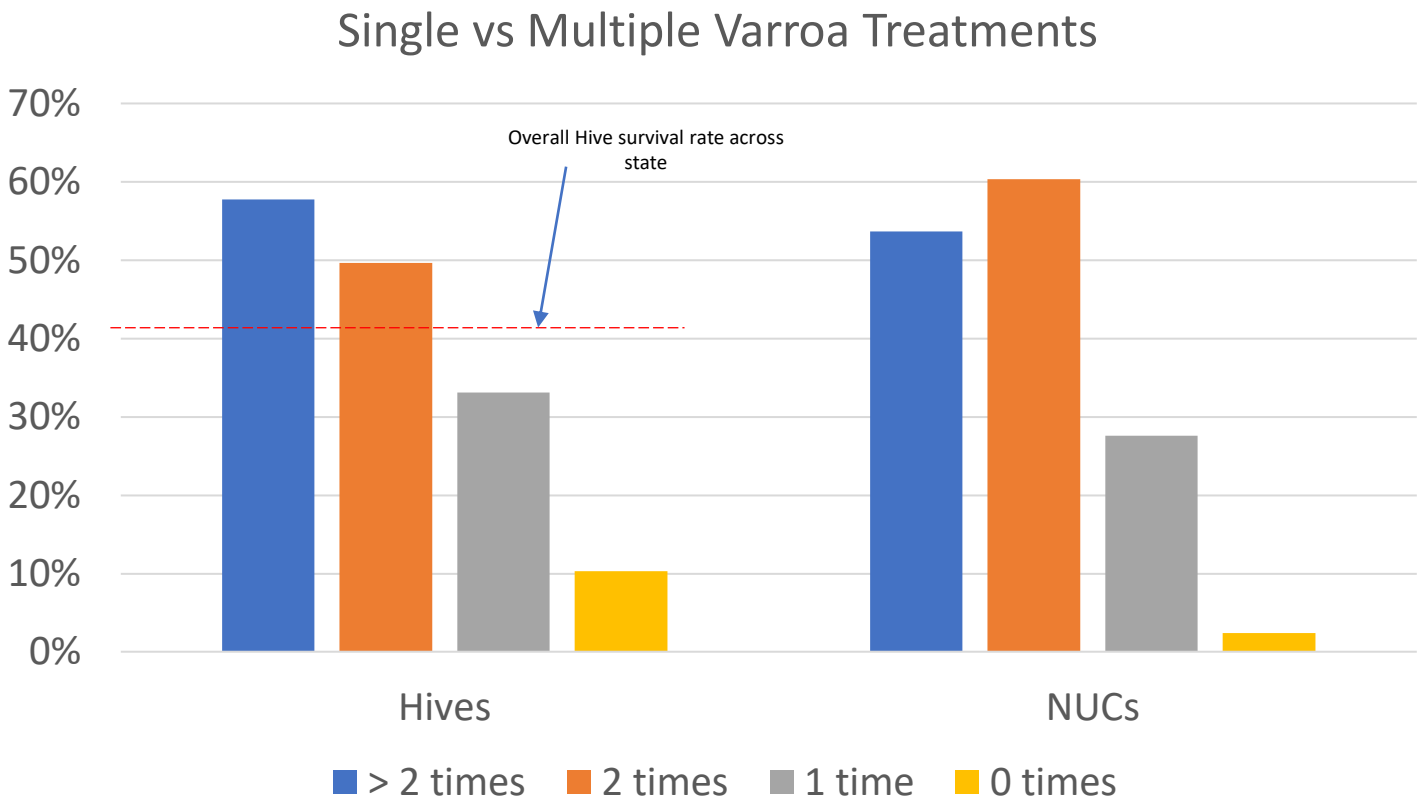
Has the percentage of hives/apiaries using treatments changed?





- Percentage of hives that are treated was consistent with 2019
- The percentage of apiaries that use commercial treatment has increased annually

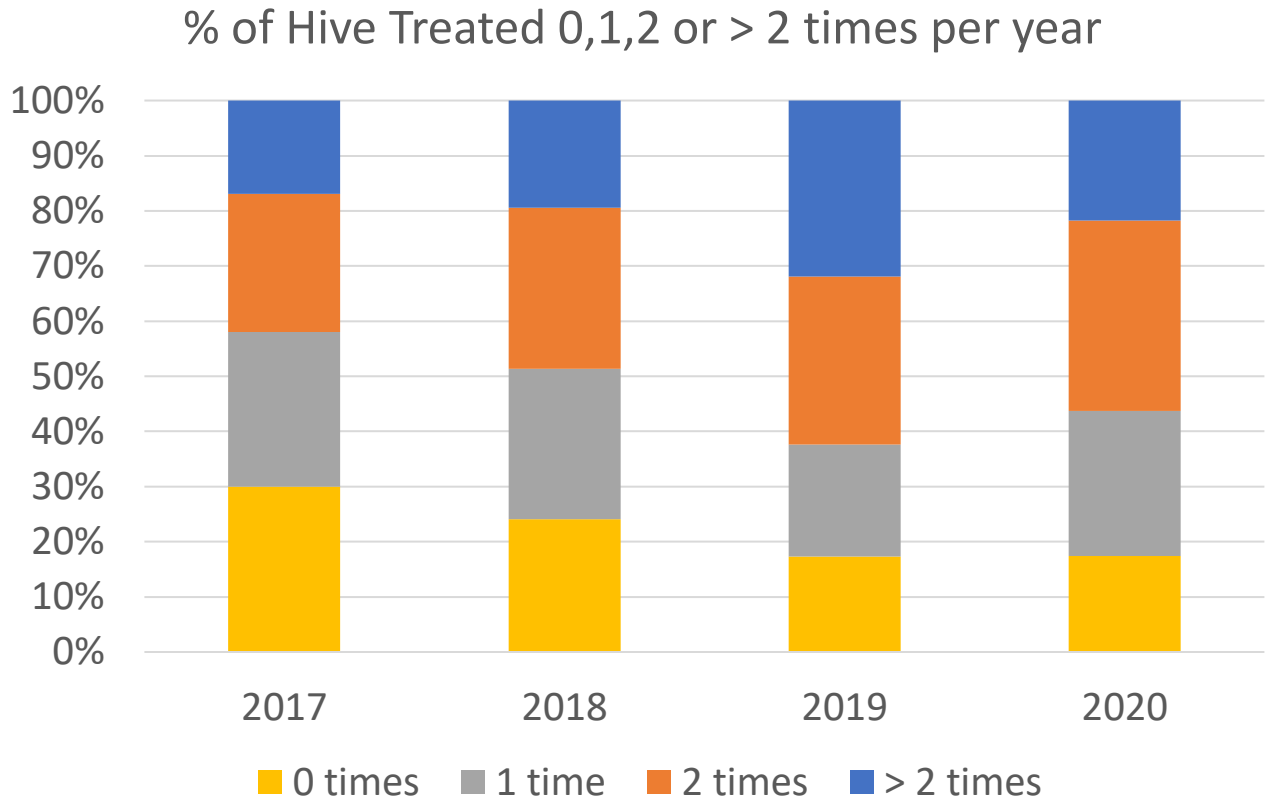
How does the number of times commercial treatments are used affect survival?



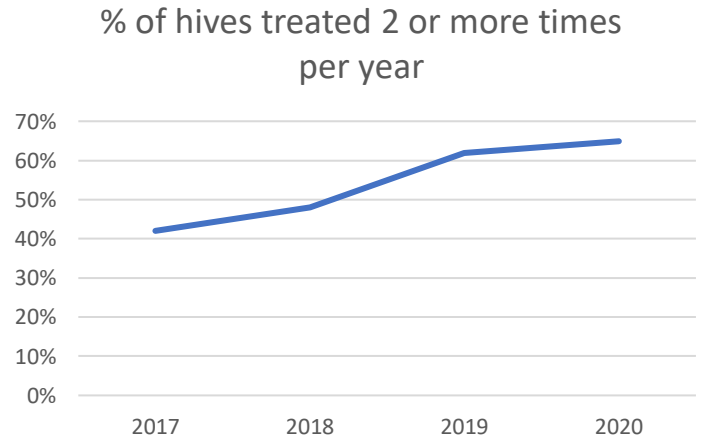
	# Hives On 10/1	# NUCs On 10/1
> 2 times	388	224
2 times	614	305
1 time	468	155
No treatments	310	32

Treating Hives more than 1 time through the season increased survival rates . (consistent with previous years)

How Does Number of Times Hives are Treated Change Year-to-Year?

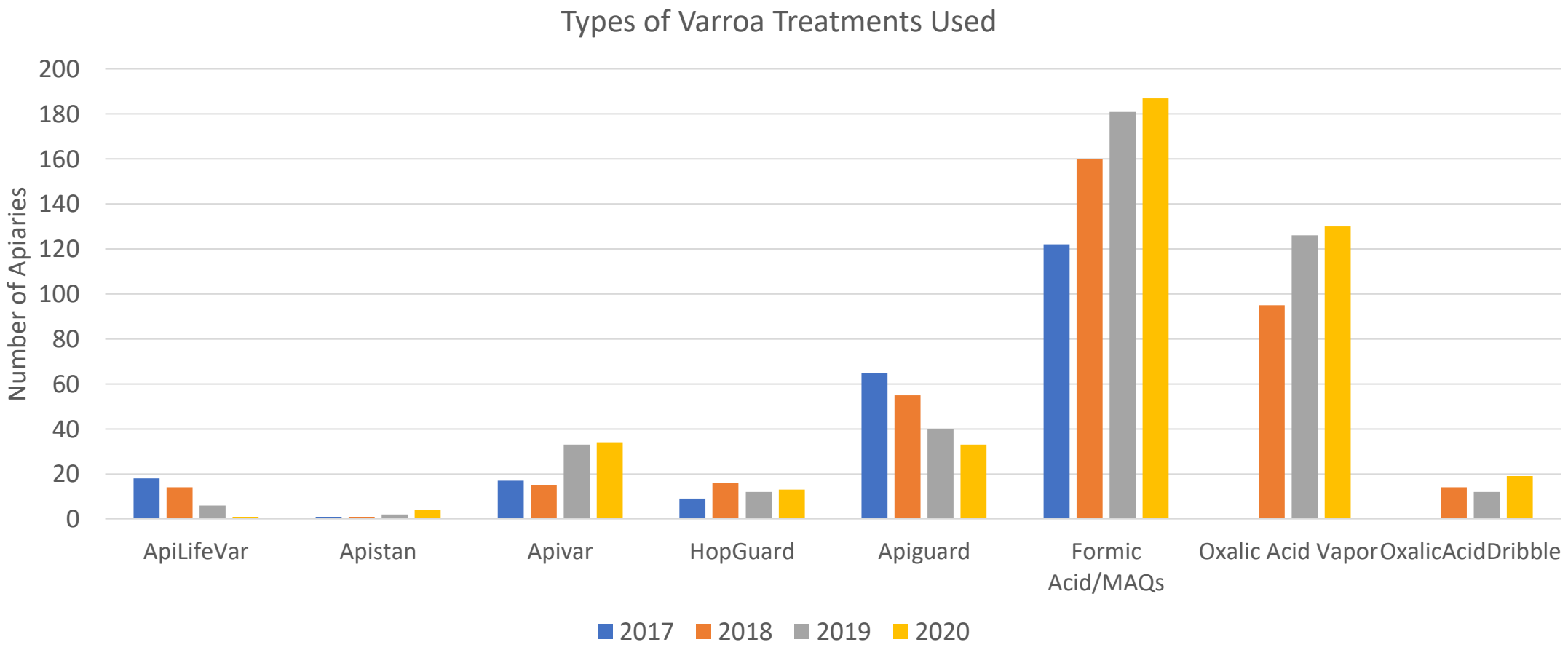


	2017	2018	2019	2020
> 2 times	17%	19%	32%	25%
2 times	25%	29%	30%	40%
1 time	28%	27%	20%	31%
0 times	30%	24%	17%	20%

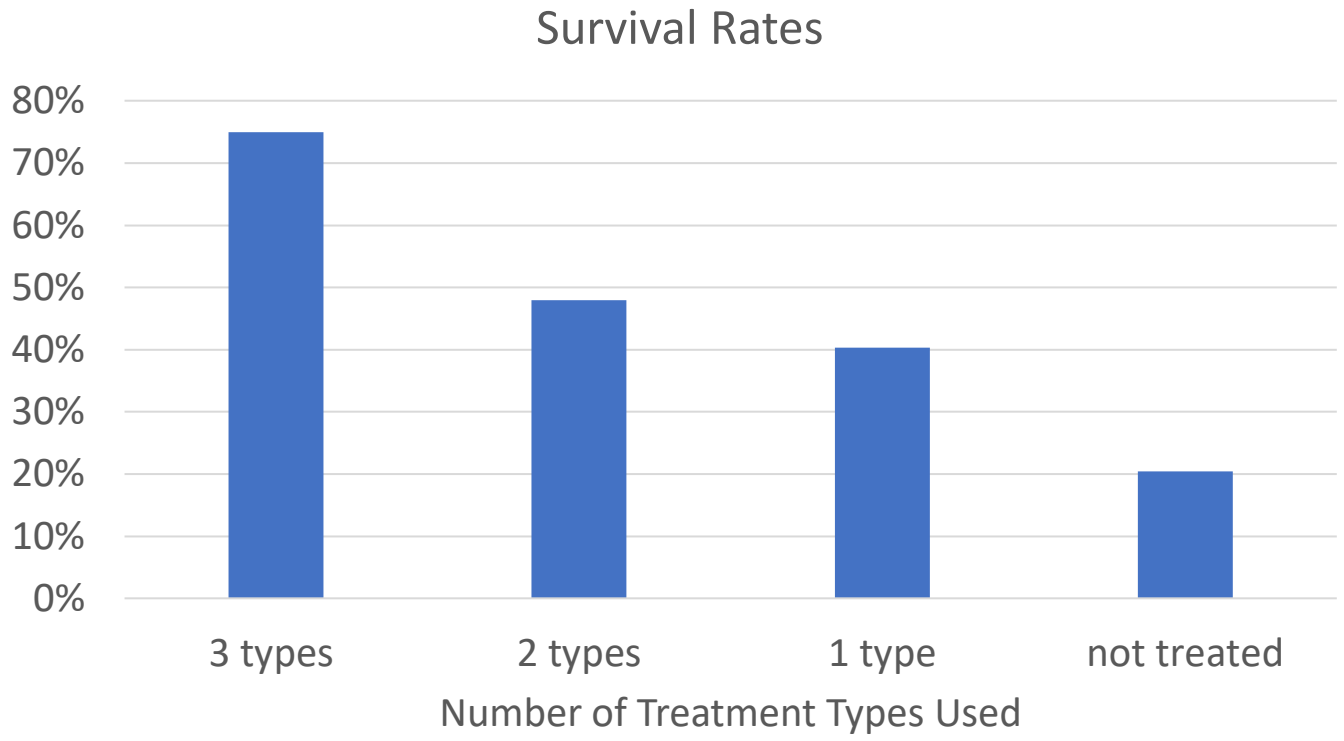


In 2020, ~65% of the hives were treated for varroa 2 times or more during the season. This is up from 62% in 2019, 48% in 2018 and 42% in 2017

What Types of Treatments are Used in our Apiaries?



Does the Number of Different Types of Treatments Affect Survival?



	# Hives
3 types	136
2 types	450
1 type	836
not treated	392
Total	1814

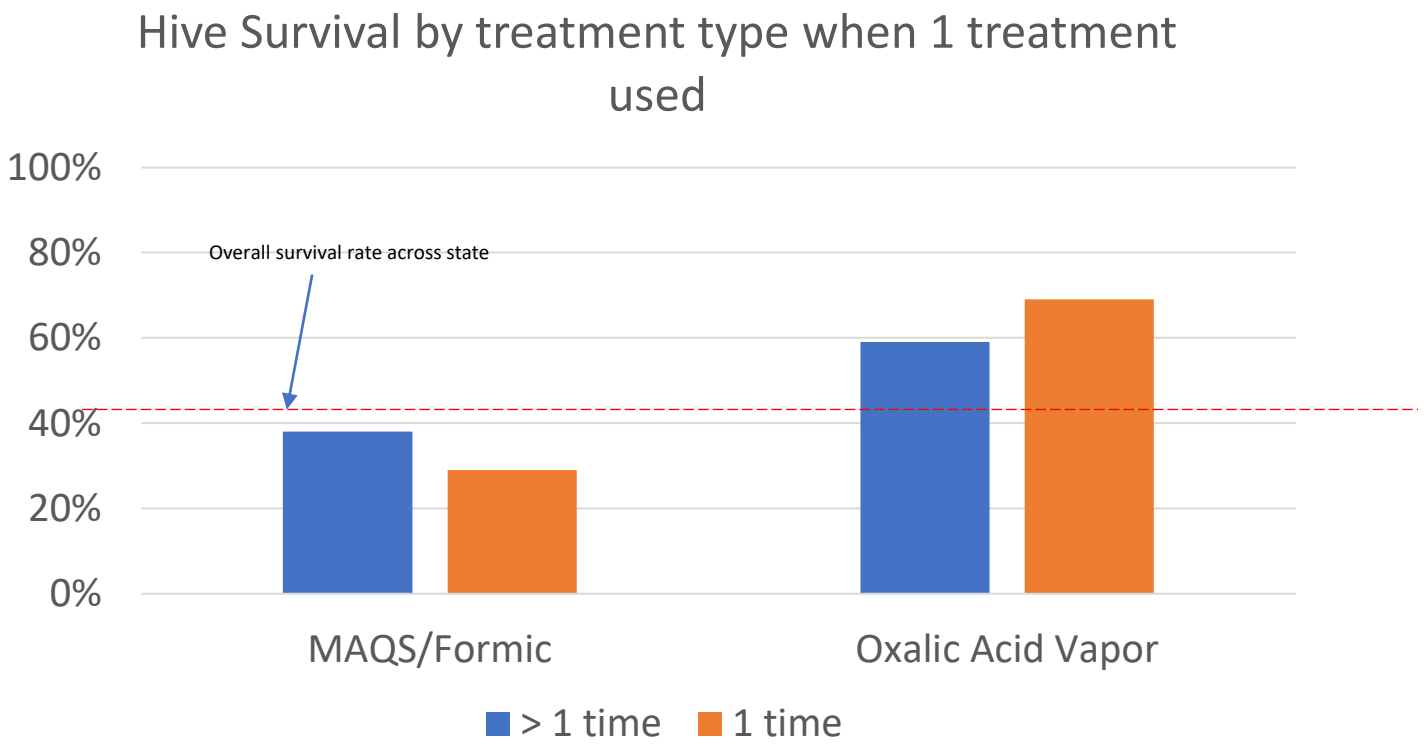
Unclear if the number of different treatment types affects survival – it is more likely that the number and timing of treatments is more important

Does the brand of commercial treatment affect survival rate?

- To answer this question -
  - **Only used data from apiaries that reported only 1 brand of treatment**
  - For apiaries that used multiple brands, our data was not fine grain enough to understand which hives survived and which didn't

- 818 hives

Does one commercial treatment help survival better than others?



	# of hives on 10/1 that had > 1 treatment of a single commercial product	# of hives on 10/1 that had 1 treatment of a single commercial product
Apiguard	12	26
ApiLifeVar	0	0
Apistan	2	5
Apivar	6	24
HopGuard	2	17
MAQS/Formic Pro	197	321
Other	0	0
Oxalic Acid Vapor	159	16
Oxalic Acid Dribble	19	10
Unknown	2	0
Total	**399**	**419**

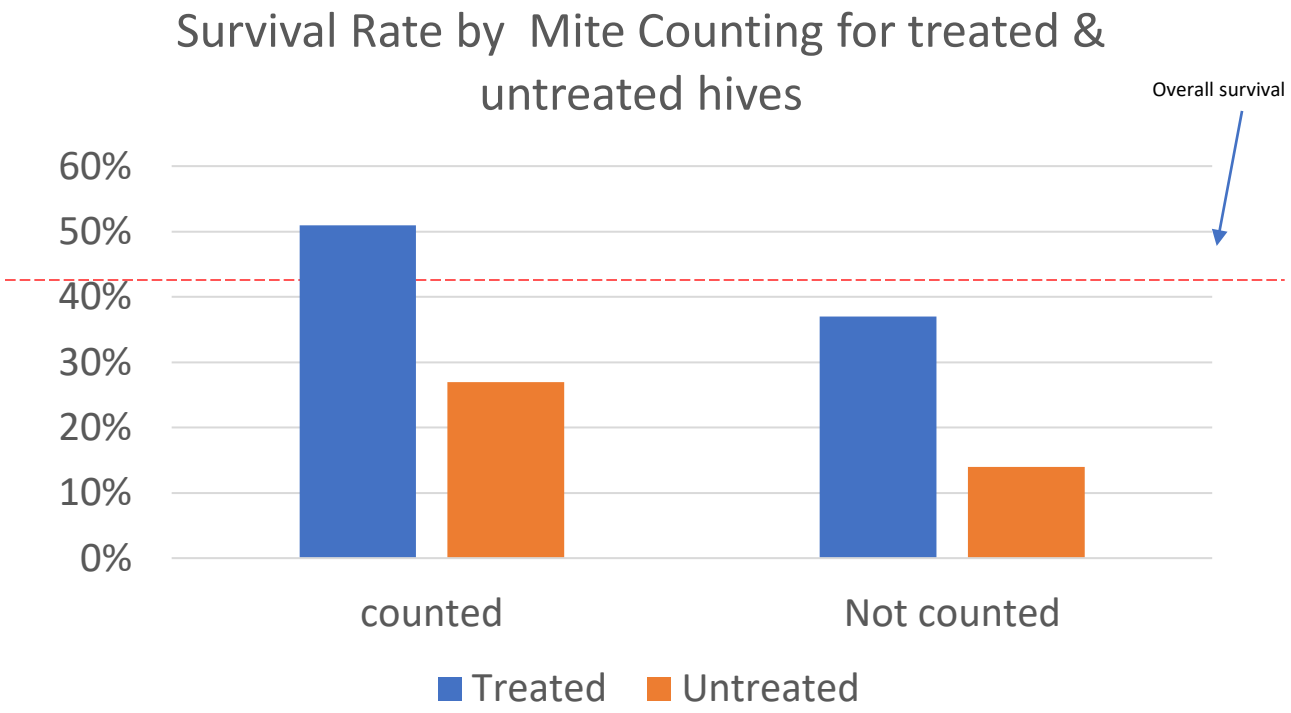
Unclear that a particular product improves survival rate – it is more likely the timing of the treatments.

Graph represents apiaries that were treated with only 1 type of commercial product during the year.

We did not include those apiaries that used multiple treatments because we don't know the split of treatments between surviving hives when multiple products were used

- 684 hives were treated with only 1 commercial product

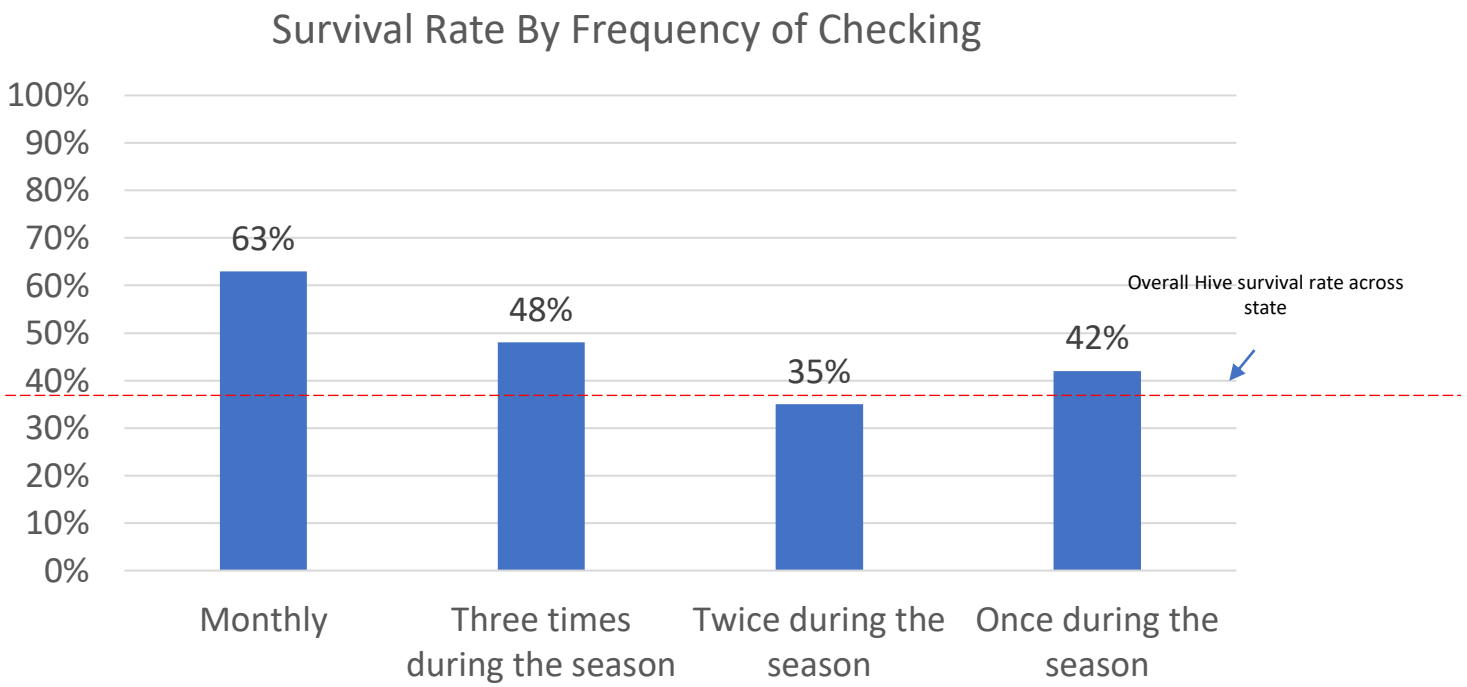
Was hive survival rate better because mites were counted and hives were treated with commercial treatments?



	# Hives Treated by 10/1	# Untreated Hives by 10/1
Counted	858	41
Didn't Count	201	3

- 81% of treated hives counted for mites at least 1 time (increase of 4% over 2019)

Survival rate based on the frequency of mite testing



Graph is for methods used on > 50 hives

% of apiaries that counted at the given frequency

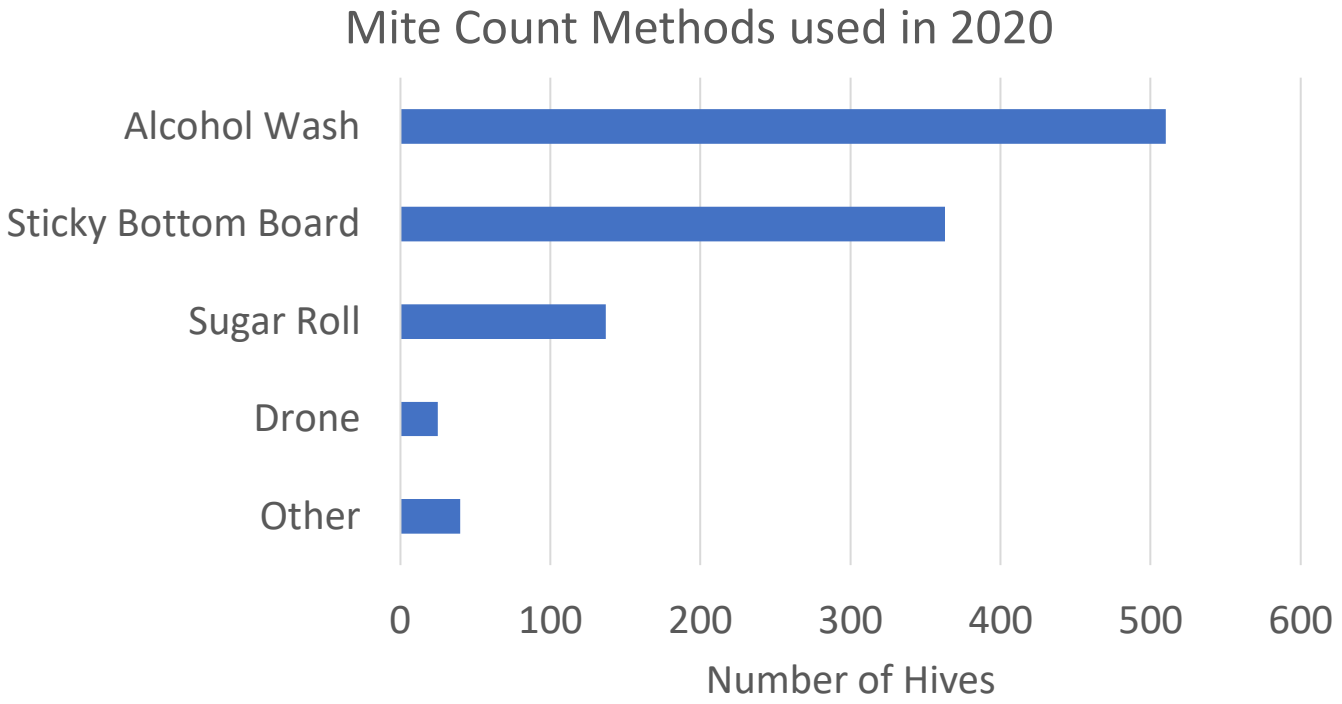
Mite Count Frequency	2017	2018	2019	2020
Monthly	21%	24%	21%	24%
Twice during the season	6%	9%	18%	19%
Three times during the season	2%	2%	12%	9%
Once during the season	21%	18%	8%	11%
drone	5%	1%	3%	1%
Twice a month	5%	6%	2%	4%
Weekly	1%	2%	1%	1%
No Testing	39%	39%	34%	30%

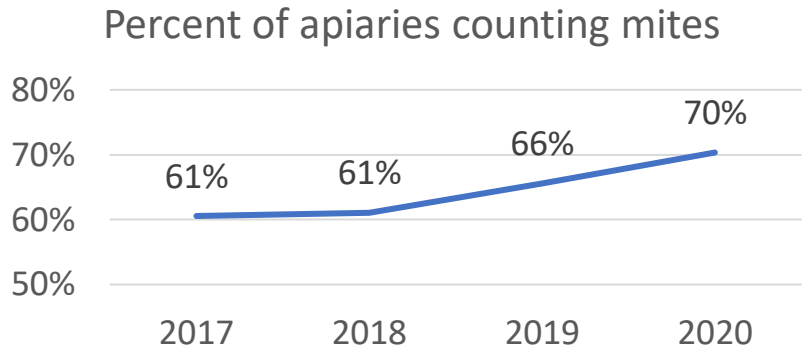
~70% of 300 apiaries reporting counted mites at least 1 time (66% in 2018)

*Note: Mite counting includes sticky bottom boards

More frequent testing yielded better survival rates
24% of the apiaries did monthly mite counts in 2020
% of apiaries that do no counting has continued to drop

What mite count methods were most common by number of Hives?





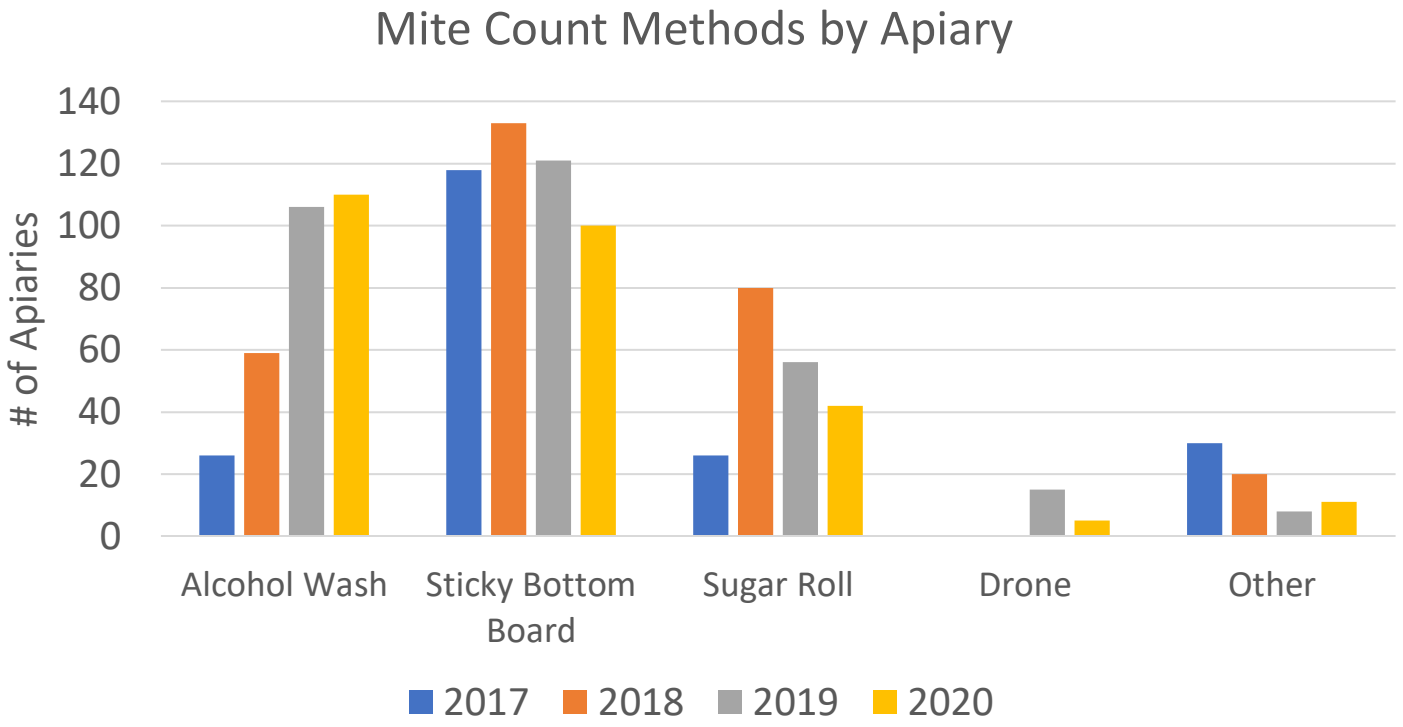
	2017	2018	2019	2020
Alcohol Wash	169	255	495	510
Sticky Bottom Board	428	411	473	363
Sugar Roll	234	265	180	137
Drone	N/A	N/A	60	25
Other	155	72	35	40

Other methods:

- Bee Scan App, Randy Oliver Dawn/Detergent Wash, visual inspection

Number of hives tested with Alcohol wash increased in 2020
70% of apiaries reported counting mites at least 1 time (2019: 66%)

How Mite Counting methods have changed over the last 4 years



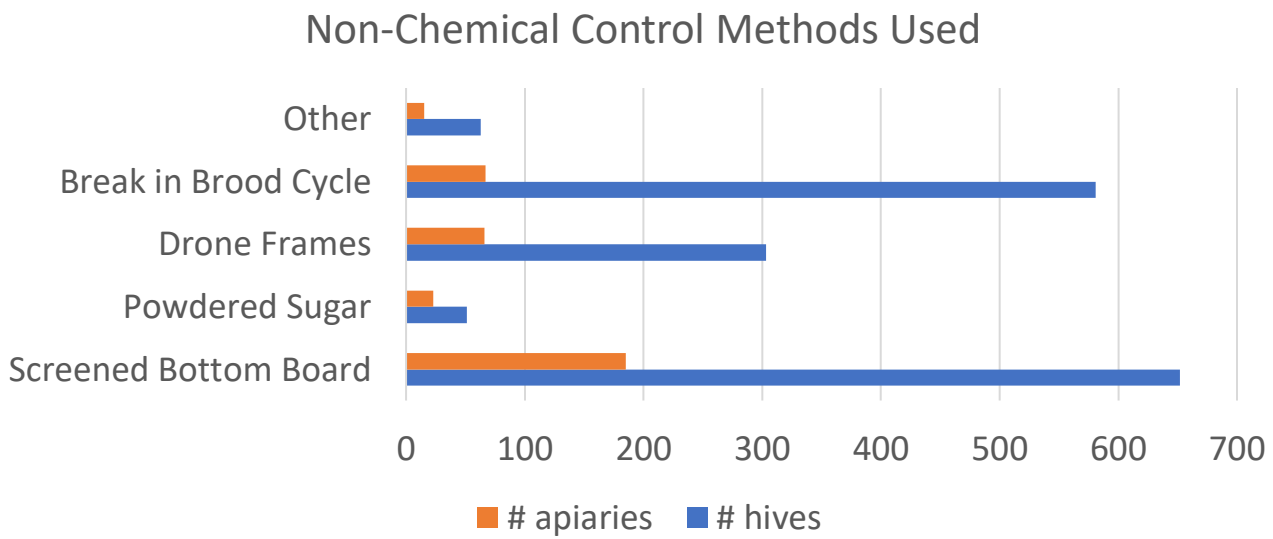
	# apiaries
3 methods	5
2 methods	32
1 method	189
not counted or didn't report	166

Other methods:

- Bee Scan App, Randy Oliver Dawn/Detergent Wash, visual inspection

Number of Apiaries using Alcohol Wash Method has increased significantly in the last 2 years.

What Non-Chemical Control Methods were used?



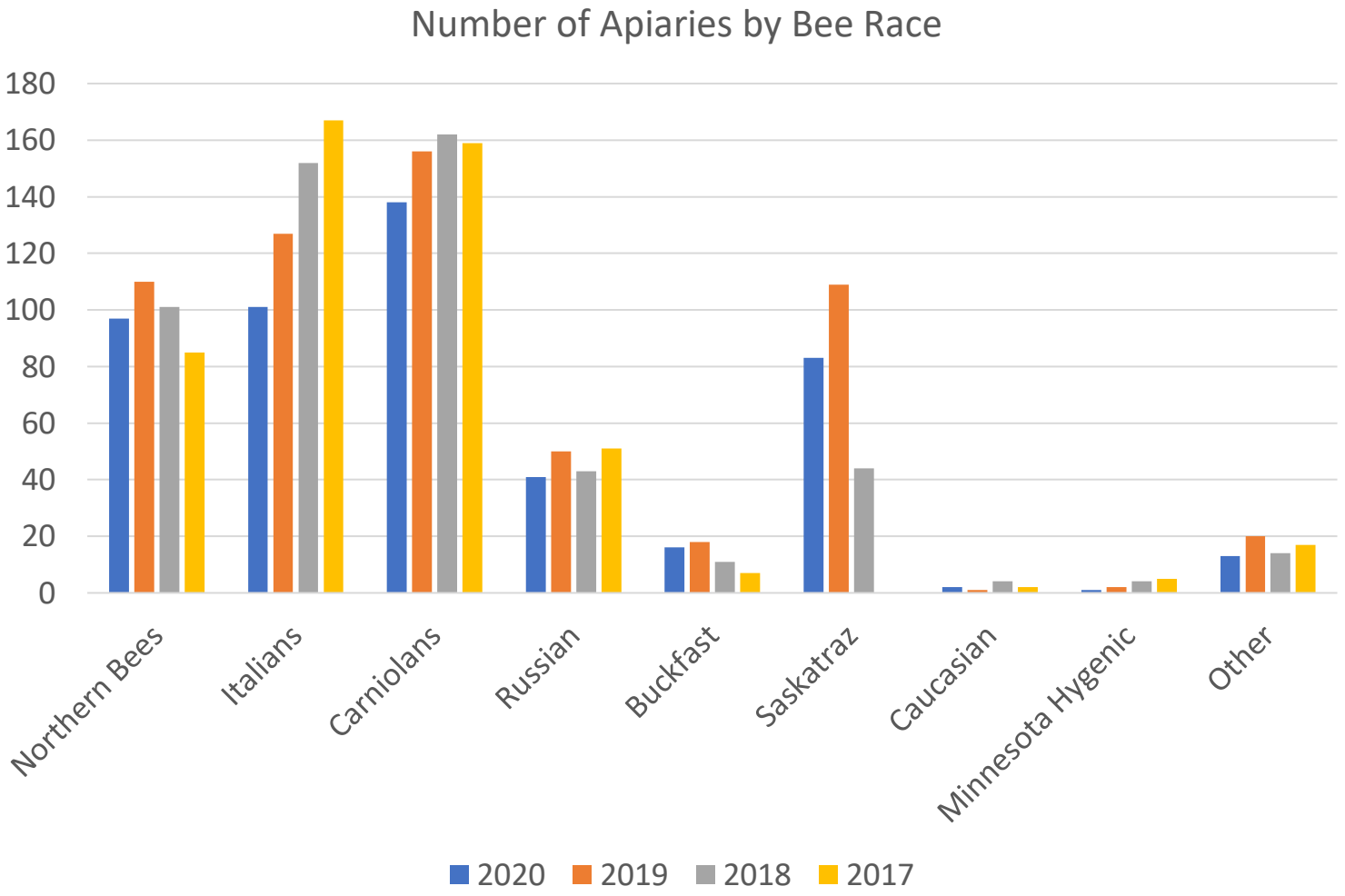
	# Hives	# Apiaries
Screened Bottom Board	652	185
Powdered Sugar	51	23
Drone Frames	303	66
Break in Brood Cycle*	581	67
Other	63	15

*Splits were combined with Break in brood cycle

- **Numbers are similar to 2017,2018, & 2019**
- **Many apiaries use multiple Non-Chemical Control methods**
- "Other" responses:
  - Fogging with mineral oil
  - Sugar water with essential oils and/or Thyme
  - Rhubarb Leaves
  - Requeening

Bee Races

What kinds of bees do our apiaries have?



2020: 311 Apiaries

- 183 have 1 race of bees
- 88 have 2 races
- 34 have 3 races
- 5 have 4 races
- 1 has 5 races

*northern is defined as a hive with a northern mated Queen

*2017 Saskatraz was part of “other”
*Other includes: unknown, Ankle biters, R. Weaver, mutts/mixed

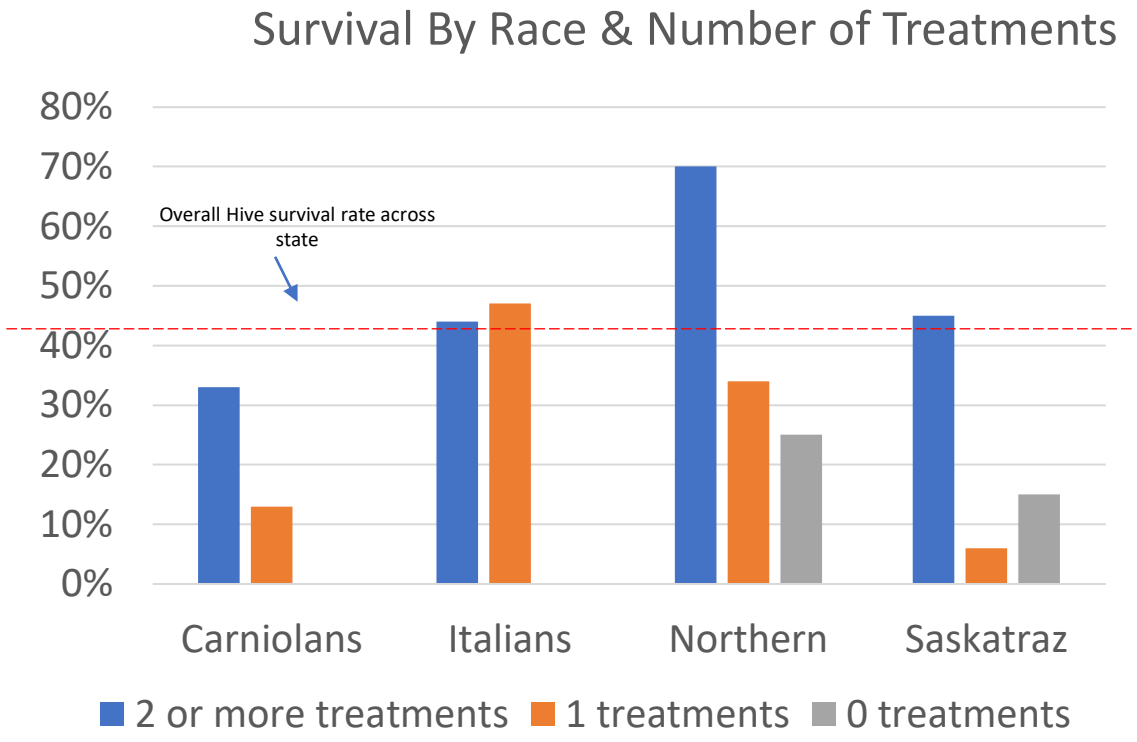
Does the “race” of bees affect survival rate?

- To answer this question -
  - **Only used data from apiaries that reported only 1 race of bees (211 apiaries of 427)**
    - For apiaries with multiple races, our data was not fine grain enough to understand which races survived and which didn’t

- 519 hives

- NUC Sample size is small so only the hive data is presented

How does the race of bees combined with number of mite treatment affect survival?



# of Hives in each treatment category

	"Northern"	Italians	Carni	Russian	Saskatraz	Total Hives
2 or more treatments	93	85	55	17	47	297
1 treatment	204	17	31	6	18	276
0 treatments	12	11	22	10	13	68

% of Hives in each Treatment category

	Northern	Italians	Carni	Russian	Saskatraz	All Hives
2 or more treatments	30%	75%	51%	52%	60%	46%
1 treatments	66%	15%	29%	18%	23%	43%
0 treatments	4%	10%	20%	30%	17%	11%

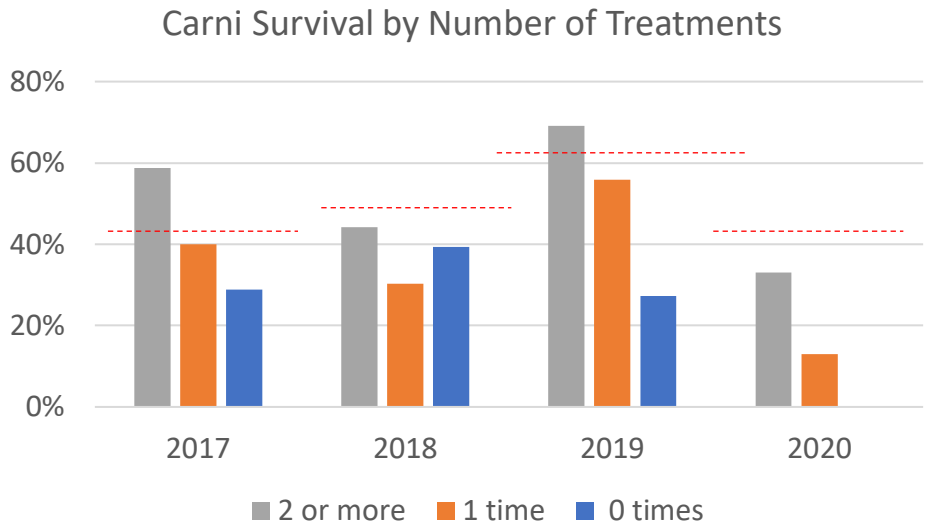
- Russian Survival not shown because of the small number of hives
- Generally using 2 or more treatments help survival no matter what race of bees.

- 641 Hives represented; 46% treated 2+ times; 43% treated 1 time; 11% treated 0 times.

*Data from apiaries with only 1 race

*Northern = queens mated in the "north" (North to be defined by the beekeeper)

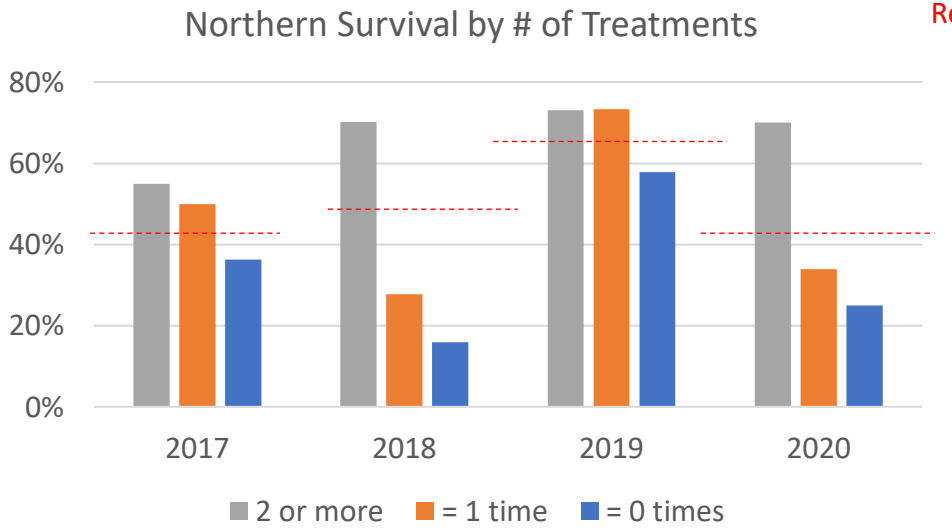
How does the race of bees combined with number of mite treatments affect survival? (another view)



Data from apiaries with only 1 race

Carni number of Hives

Treatments	2017	2018	2019	2020
2 or more	63	61	81	55
1 time	30	33	34	31
0 times	59	33	11	22



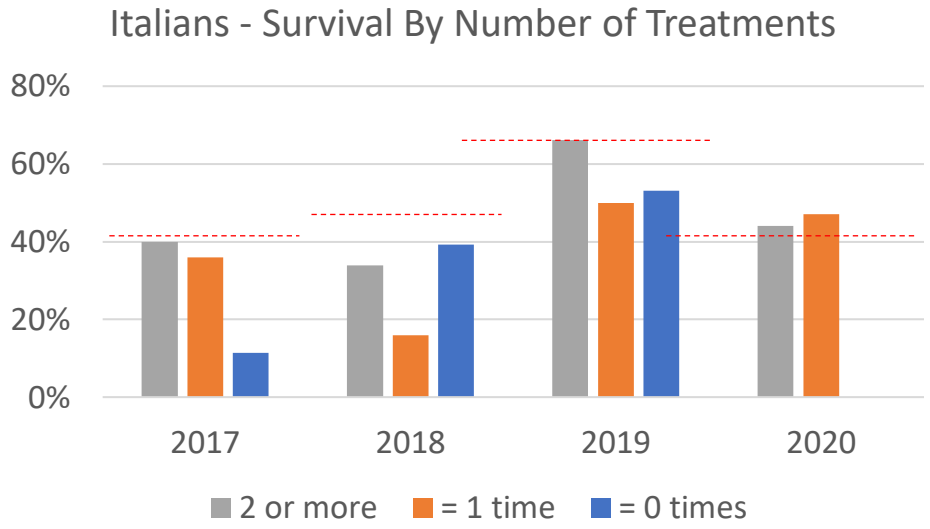
Redline = Overall Survival Rate
Higher bar is better!

Northern number of Hives

Treatments	2017	2018	2019	2020
2 or more	102	94	78	93
1 time	23	54	15	204
0 times	11	25	19	12

Two+ treatments helped survival

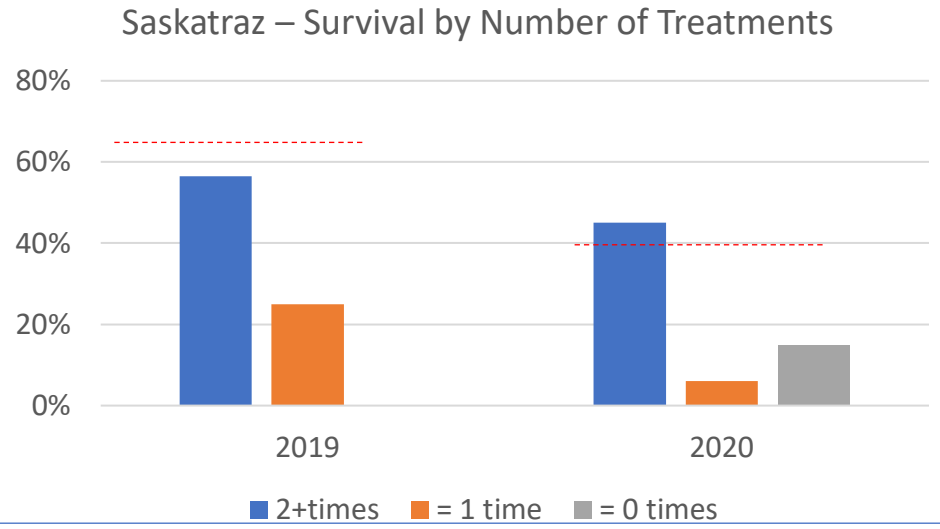
How does the race of bees combined with number of mite treatments affect survival? (another view)



Data from apiaries with only 1 race

Italian number of Hives

Treatments	2017	2018	2019	2020
2 or more	63	61	81	85
1 time	30	33	34	17
0 times	59	33	11	11



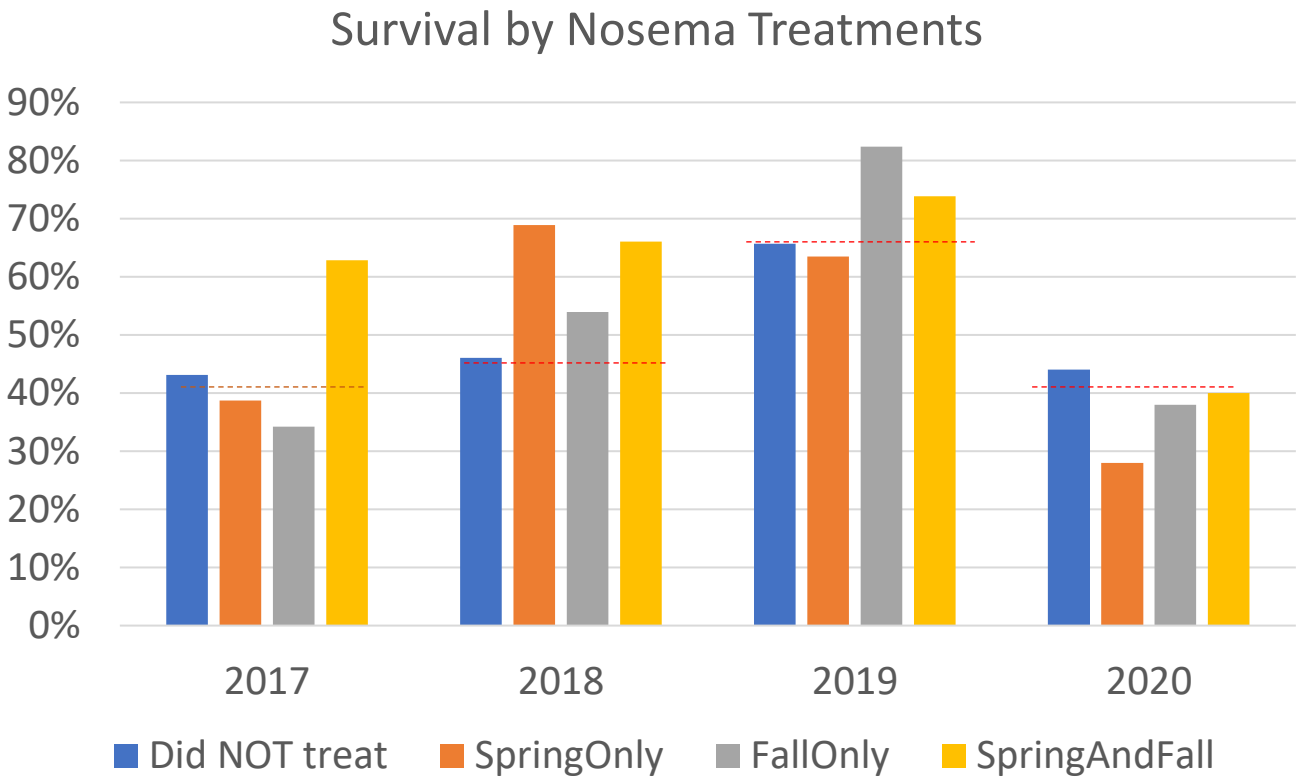
Redline = Overall Survival Rate
Higher bar is better!

Saskatraz number of Hives

Treatments	2019	2020
2 or more	39	47
1 time	23	18
0 times	24	13

Nosema Treatments

Did Nosema treatment affect survival?



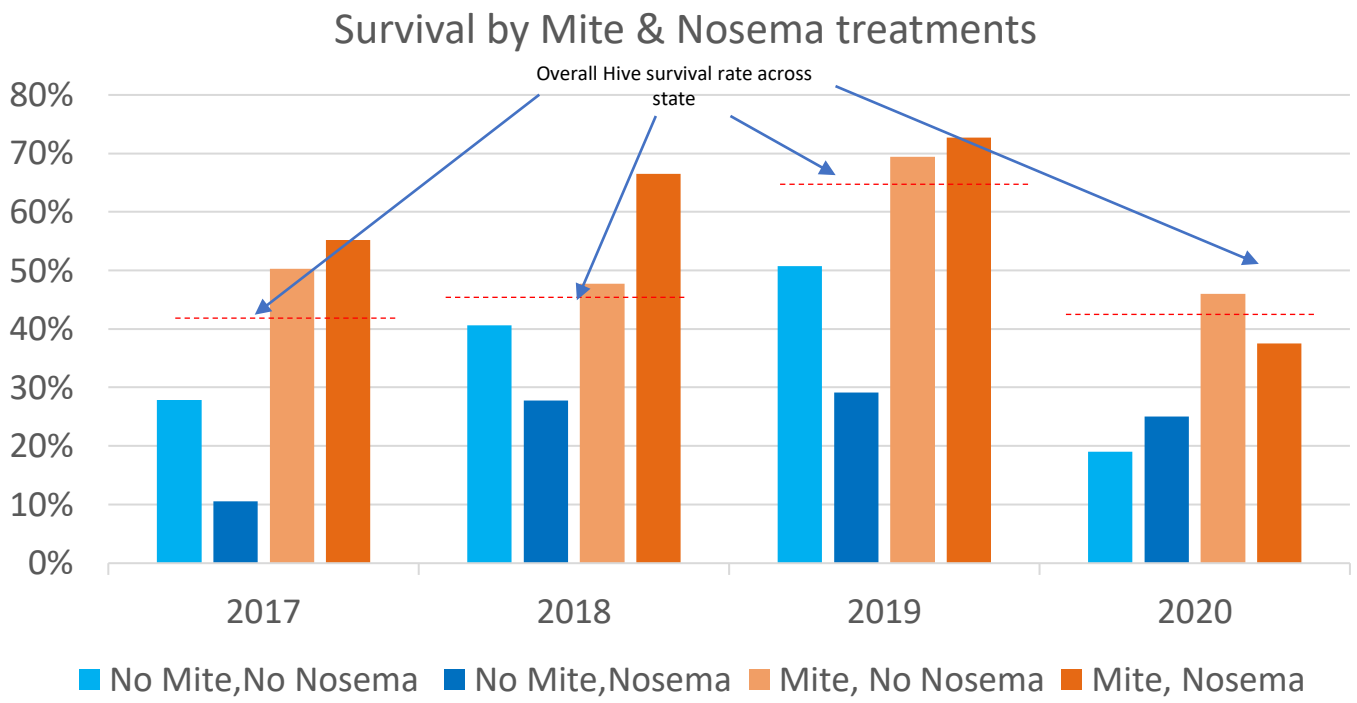
	2017 Hives 10/1	2018 Hives 10/1	2019 Hives 10/1	2020 Hives 10/1
Did Not Treat	947	953	1089	1128
Spring Treatment only	62	61	93	47
Summer	0	3	7	17
Fall Treatment only	73	63	17	72
Spring & fall Treatment	105	103	145	40
Total	**1187**	**1183**	**1351**	**1304**

Dotted lines represent the survival rate each year:

Only ~13% of hives were treated for Nosema in 2020 – Much lower than the 19-20% that we saw in 2017-19

Could this be due to Fumidil-B being off the market?

Overlaying mite treatment with Nosema treatment



*Orange bars = did at least 1 mite treatment
Blue bars – 0 mite treatments

	2017	2018	2019	2020
No Mite, No Nosema	284	219	213	96
No Mite, Nosema	38	18	24	24
Mite, No Nosema	654	734	873	1101
Mite ,Nosema	201	212	238	152
Total	**1177**	**1183**	**1348**	**1304**

Nosema Testing by NH Diagnostic Network

2018 : ~67 tests

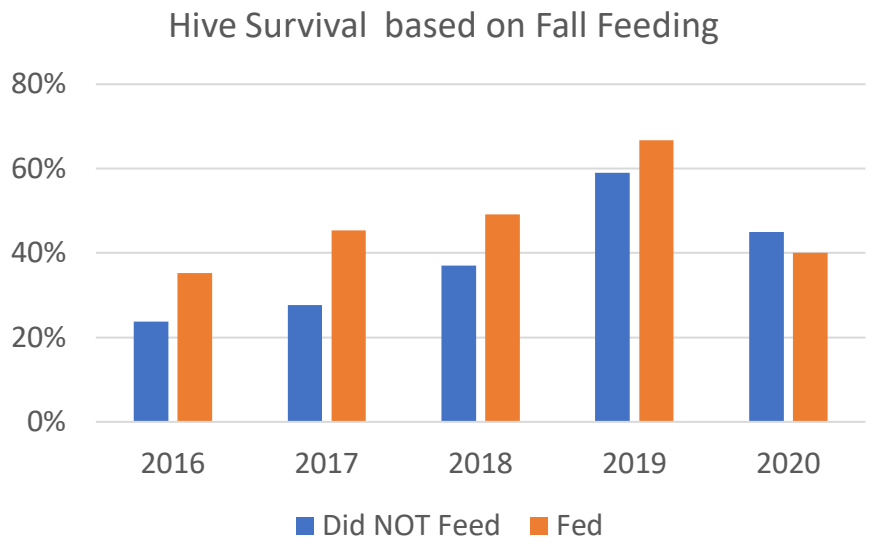
2019 : ~61 tests

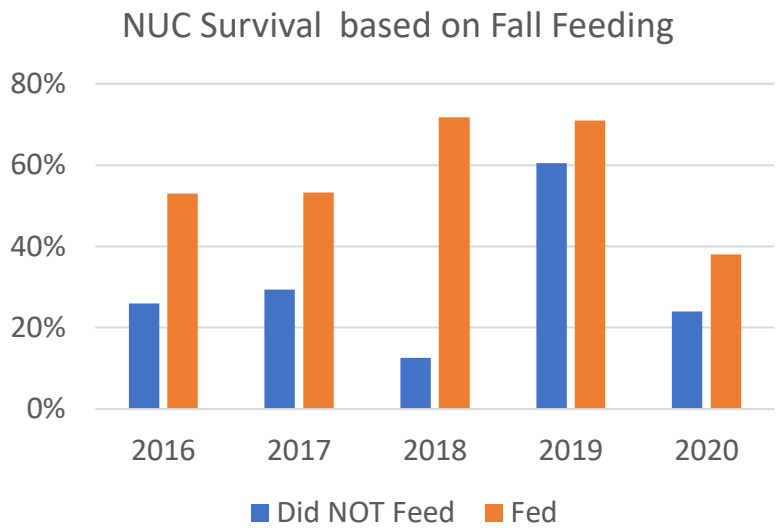
2020: ~16+ tests (records were only kept for apiaries of 5+ hives so we don't have an exact count)

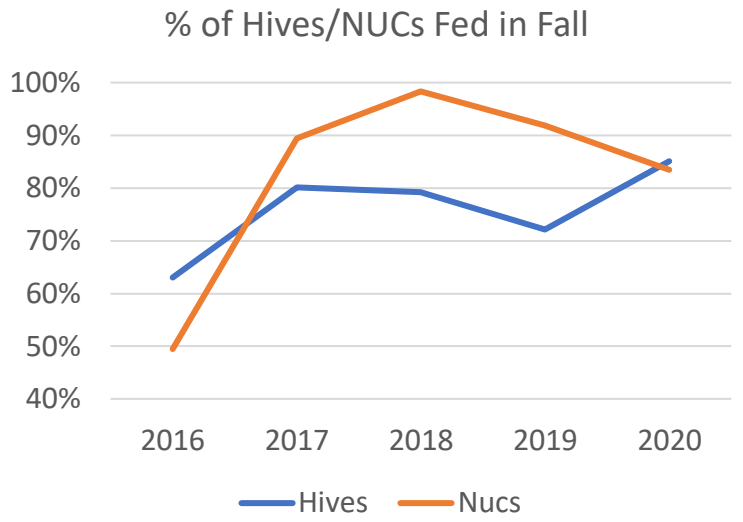
- Significantly fewer hives (36%) were treated for Nosema in 2020 than in previous years.
- Most hives treated for Nosema were also treated for mites

Feeding (Fall, Winter & Protein Supplements)

Did fall feeding help survival rate?





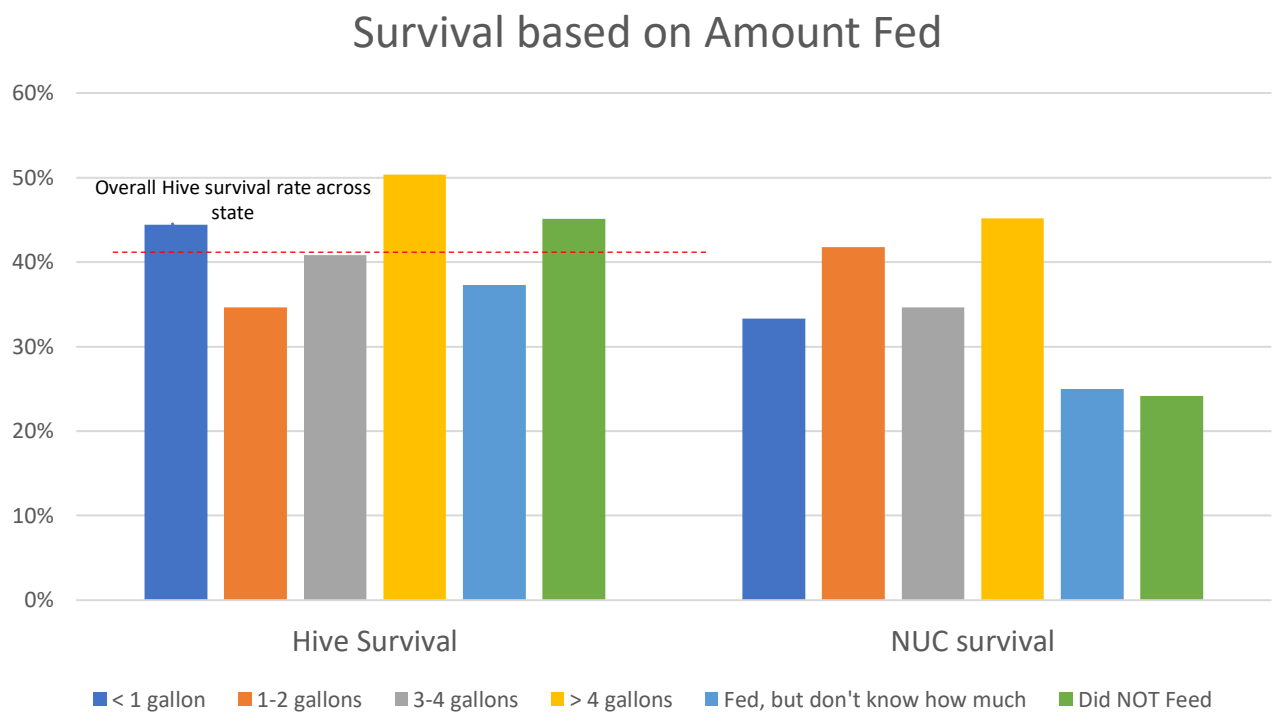


	# Hives on 10/1/20	# NUCs on 10/1/20
Fed	1529	611
Did Not Feed	268	121

	2016	2017	2018	2019	2020
Hives	63%	80%	79%	72%	85%
NUCs	49%	89%	98%	92%	83%

- % of hives fed in fall highest since we've been doing the survey whereas in 2019 fall feeding % was the lowest in 3 years.
- Is this possible indication that summer nutrition is playing a significant roll in our winter survival?
  - 2019 – had no dearth & had 65% survival
  - 2020 – drought & had 41% survival

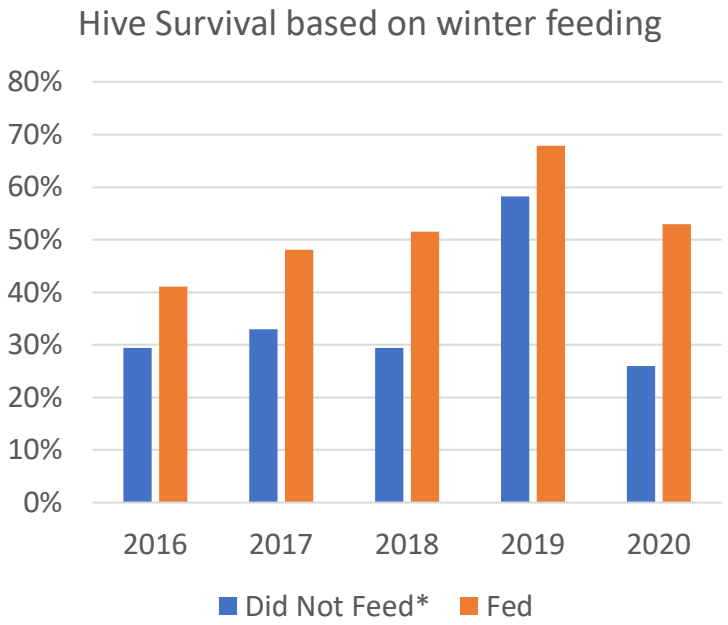
Did the amount of sugar syrup fed affect survival rate?

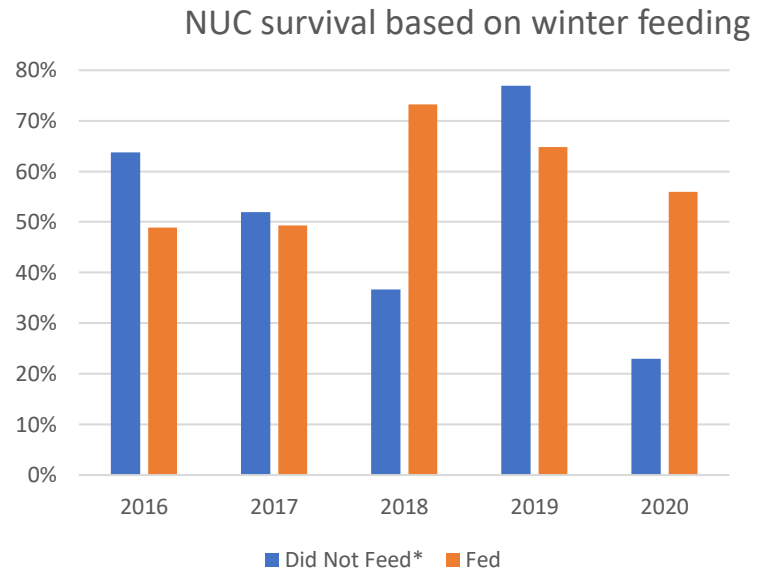


	# Hives on 10/1/20	# NUCs on 10/1/20
Did Not Feed	268	121
< 1 gallon	99	44
1-2 gallons	583	202
3-4 gallons	424	173
> 4 gallons	262	132
Fed but don't know how much	161	60

Hives & NUCs fed > 4 gallons had the best survival rate

Did winter feeding help survival rate?

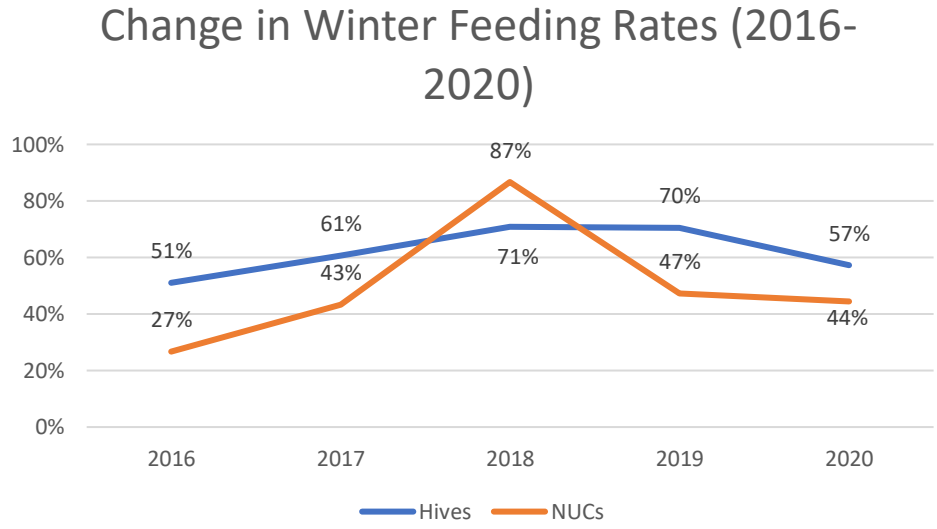




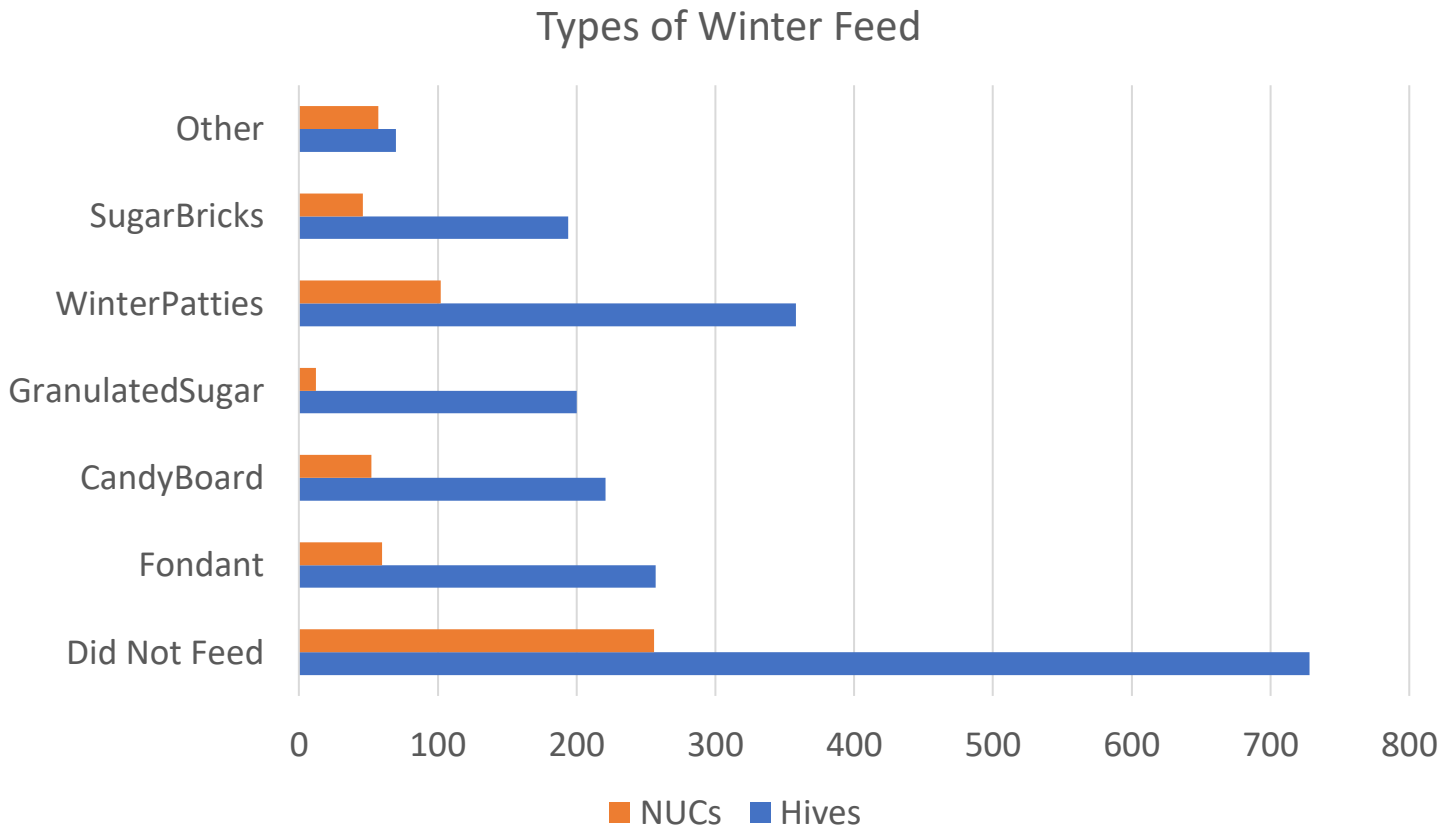
	# Hives on 10/1/20	# NUCs on 10/1/20
Fed	972	515
Did Not Feed	728	192

*Many that did not feed in 2020 commented the bees had plenty of honey

Winter Feeding appears to help survival in 2020
Feeding rates dropped significantly in 2020 - could this be because the hive was dead by the time feeding would normally begin?



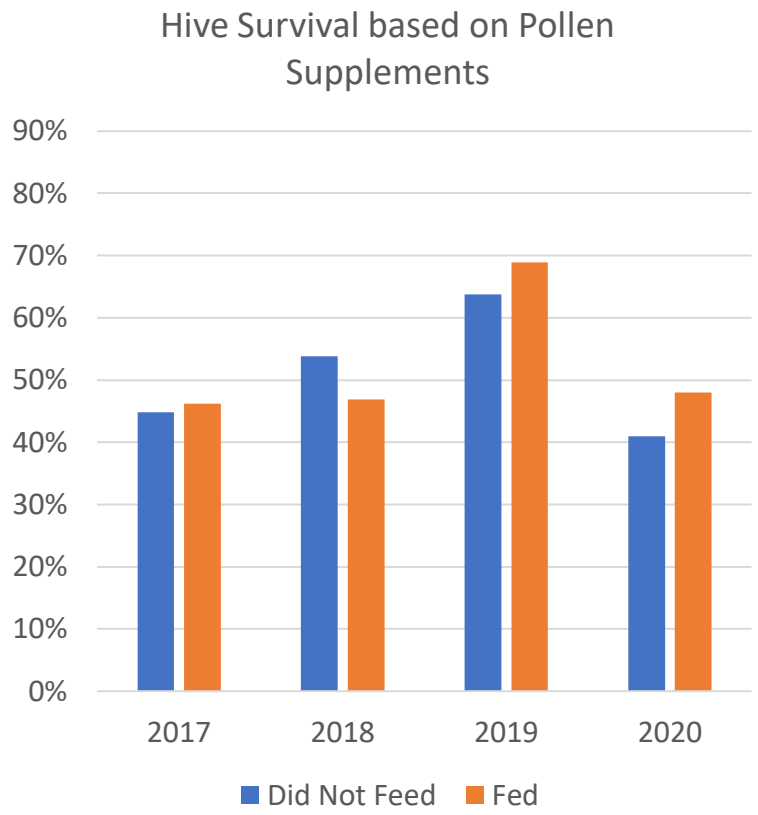
What types of winter feed were used?

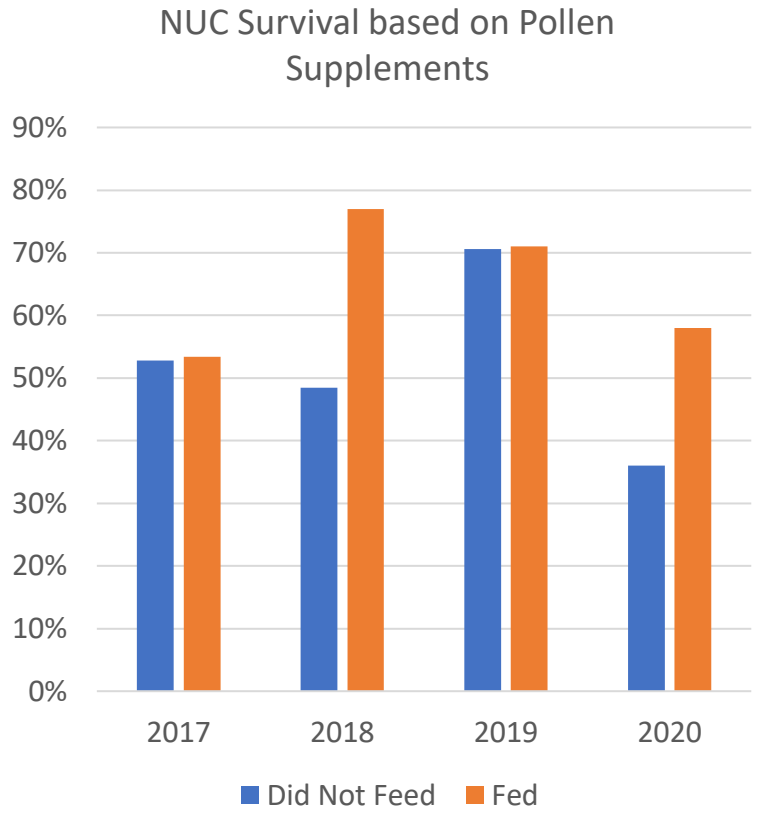


	# Apiaries
1 Type of Feed	178
2 types of feed	62
3 types of feed	7

Other includes: left their own honey, sugar water (for hives in 40F environment)

Does feeding protein supplements help survival?

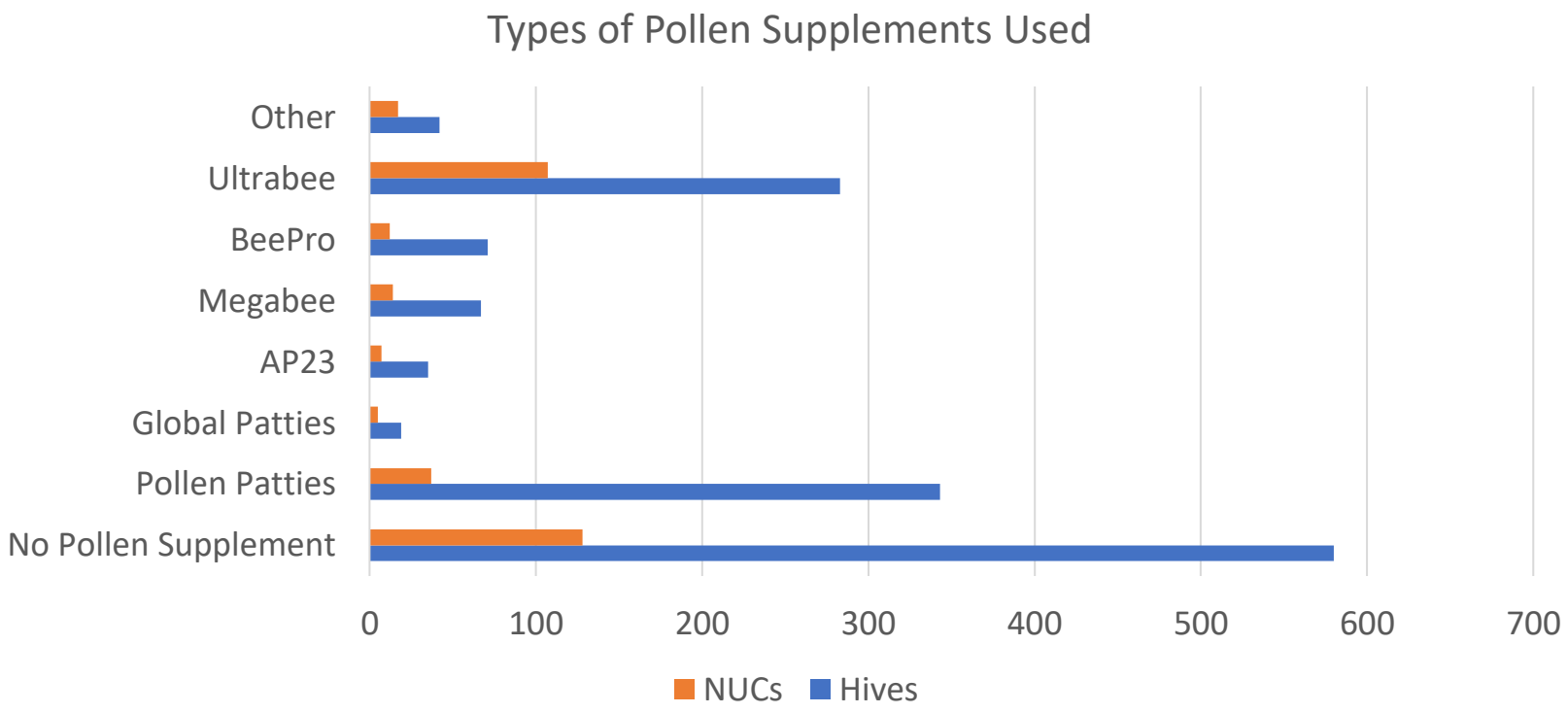




	# Hives on 10/1/20	# NUCs on 10/1/20
Fed	748	356
Did Not Feed	580	239

Feeding pollen supplements in 2020 helped survival of both NUCs & Hives

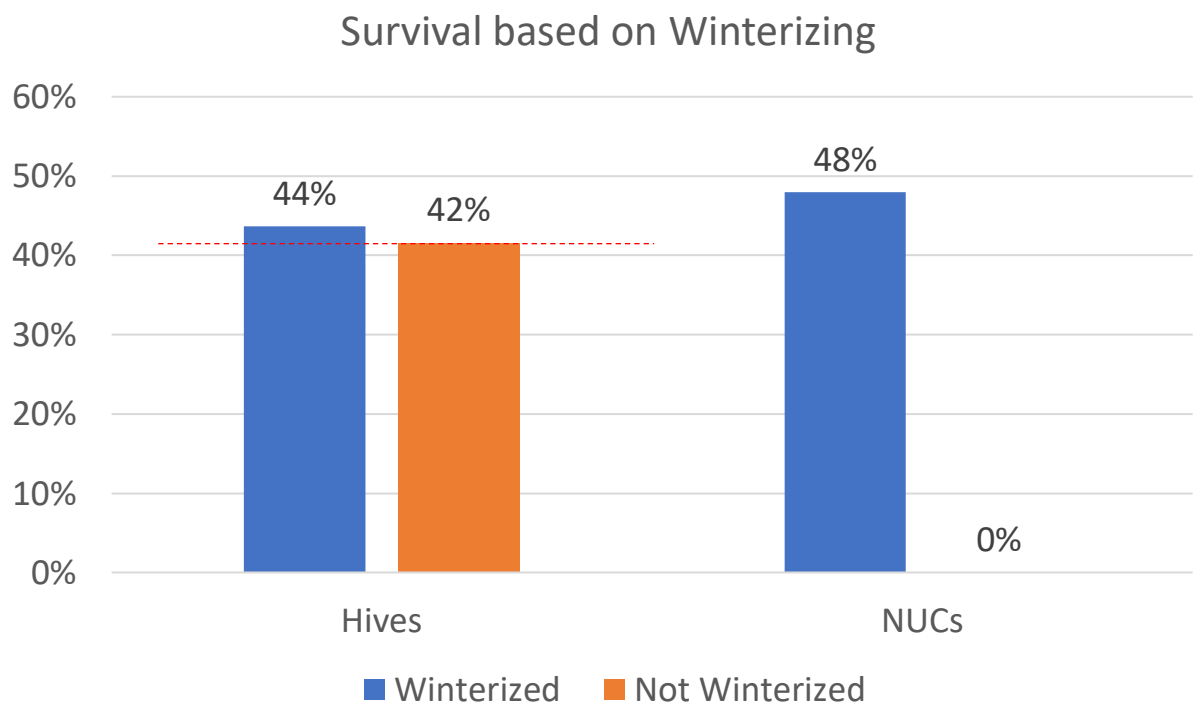
What types of protein supplements were used?

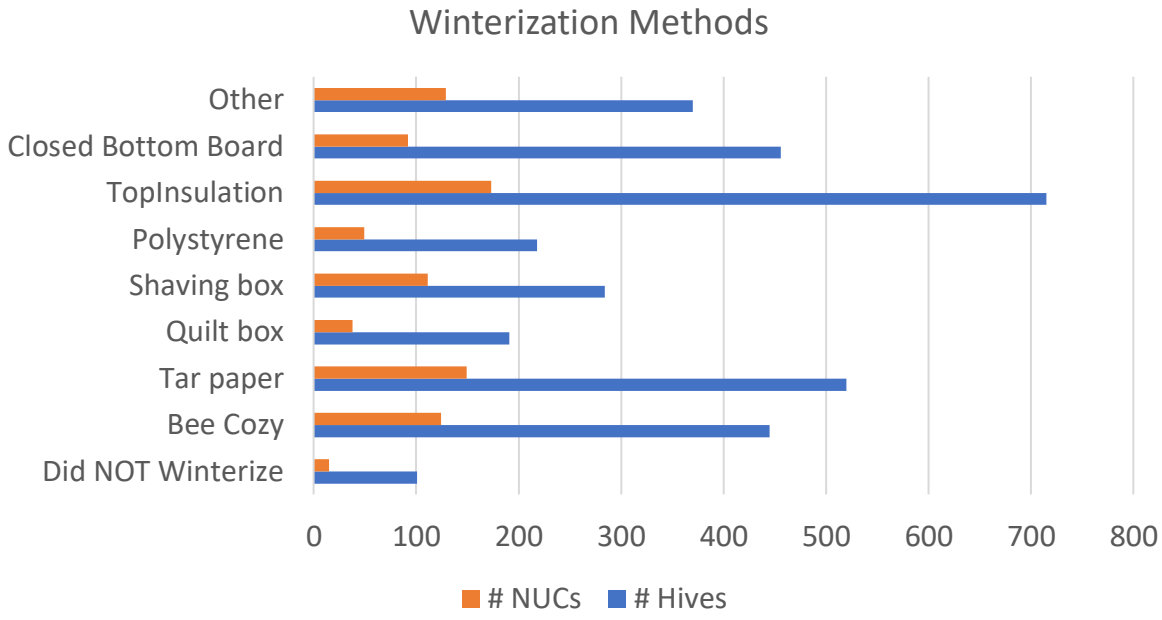


Other included: Pollen patties sold by local suppliers, but the beekeeper didn't know what brand

Winterizing & Moisture Control

Winterizing Hives



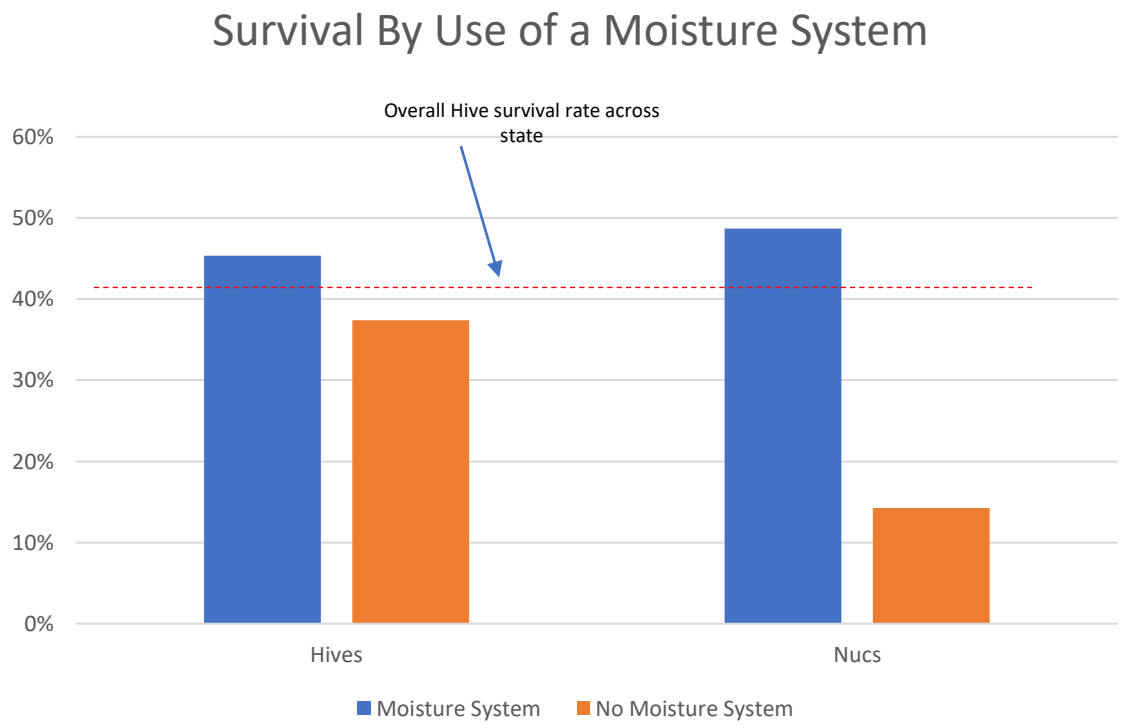


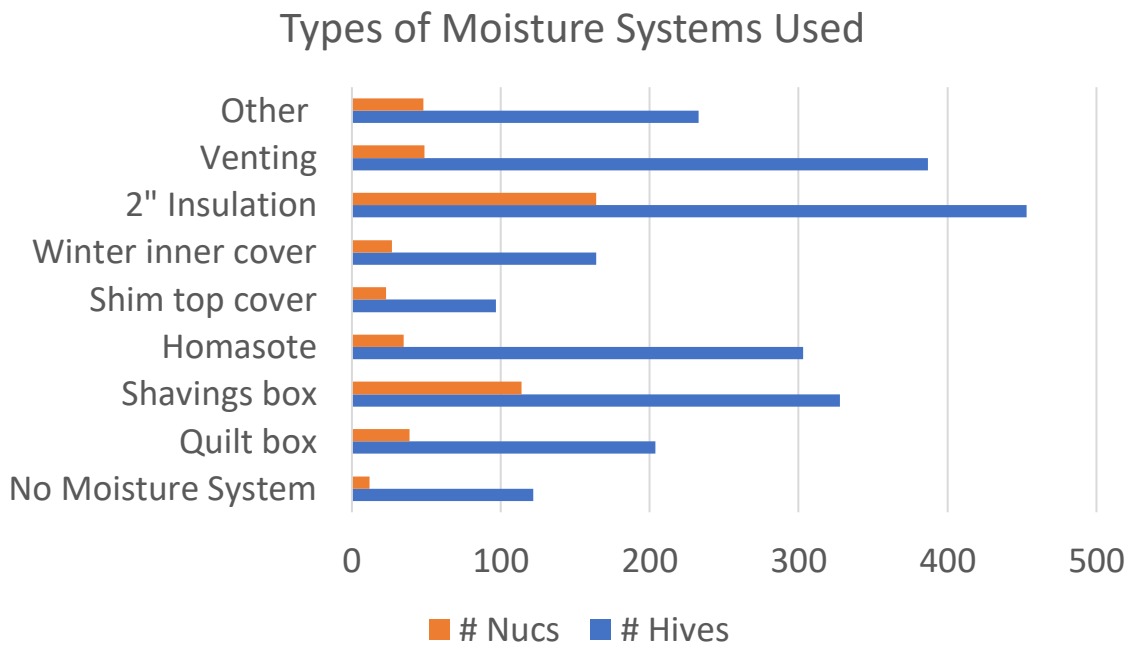
93% of hives & 95% of NUCs were winterized in 2019

Other includes:

- *Many hives were put into buildings or structures
- Various wind breaks= hay bales, plywood
- Apimaye hives
- Fiberglass insulation
- Wool fleece on top
- straw around bottom of hive
- Vivaldi top
- Colony Quilt

Winter Moisture Control





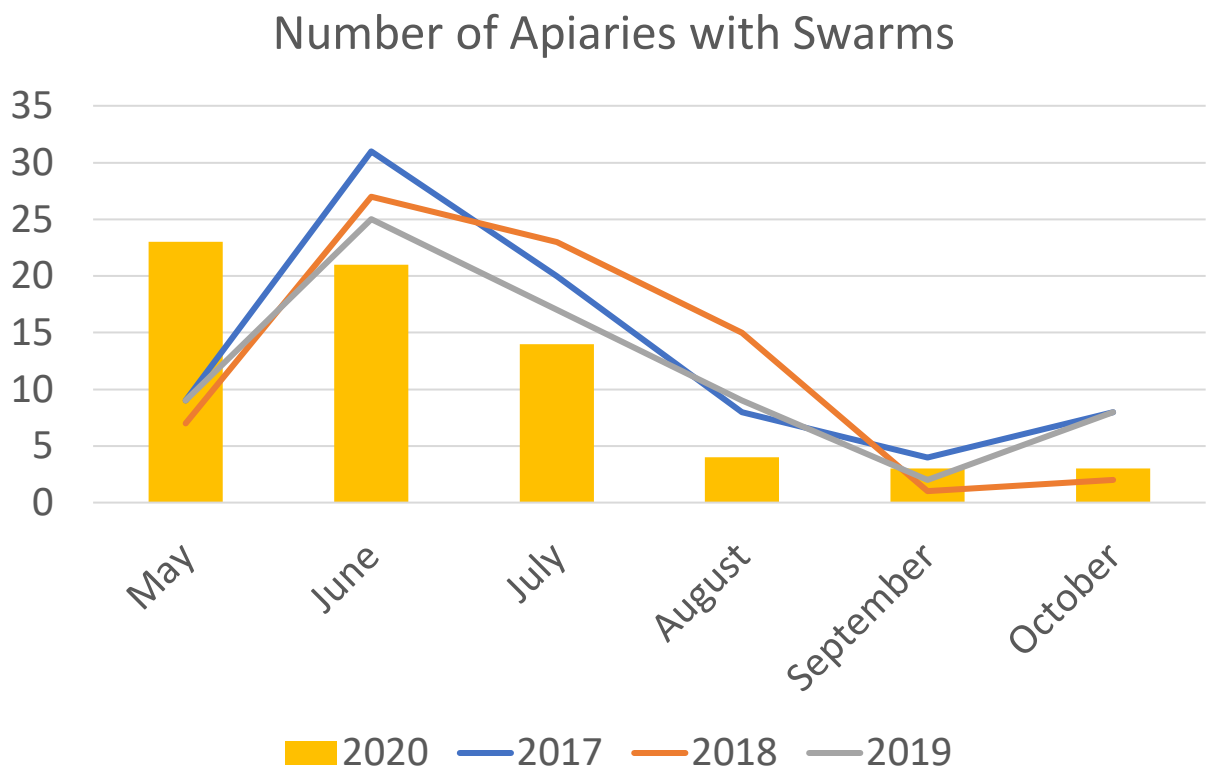
~92% of the reported hives used a moisture system
~98% of the reported NUCs used a moisture system

136 apiaries used 2 or more type of moisture control system

- Moisture board includes homasote, sound insulation
- Venting includes vent holes & open screen boards
- Other includes:
  - Wool, hay, pine needles, newspaper, burlap, Vivaldi box, 2 sox filled with kitty litter, candy board, fondant, AZ hives. Top vent only

Swarming

Apiaries reporting swarms



- 68 apiaries reported swarms (24%)
- 219 apiaries (985 hives) did not have swarms

We do not have granular enough data to tie swarming to survival rate

	# of apiaries without swarms
2017	234
2018	245
2019	232
2020	219

Significantly higher swarm activity in May thank previous years
Swarming has been reported by 23-25% of the apiaries each year.

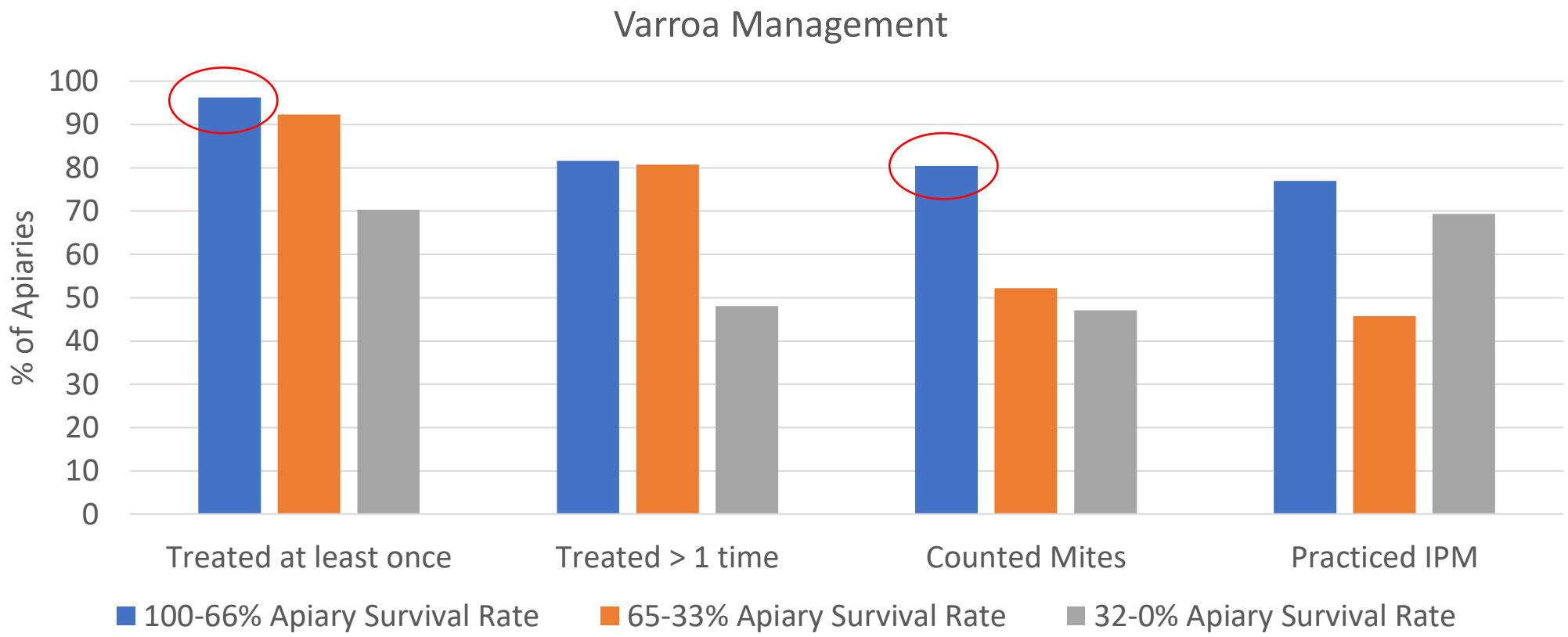
Big Picture: Can we determine "best management" practices from those apiaries that had high survival rate?

Methodology:

- Divided the apiaries in 3 groups: 32-0% survival; 65-33% survival & 100-66% survival
  - Hive breakdown in these groups was :
    - 32-0% survival: ~20% of hives
    - 65-33% survival: ~23% of hives
    - 100-66% survival: ~57% of hives

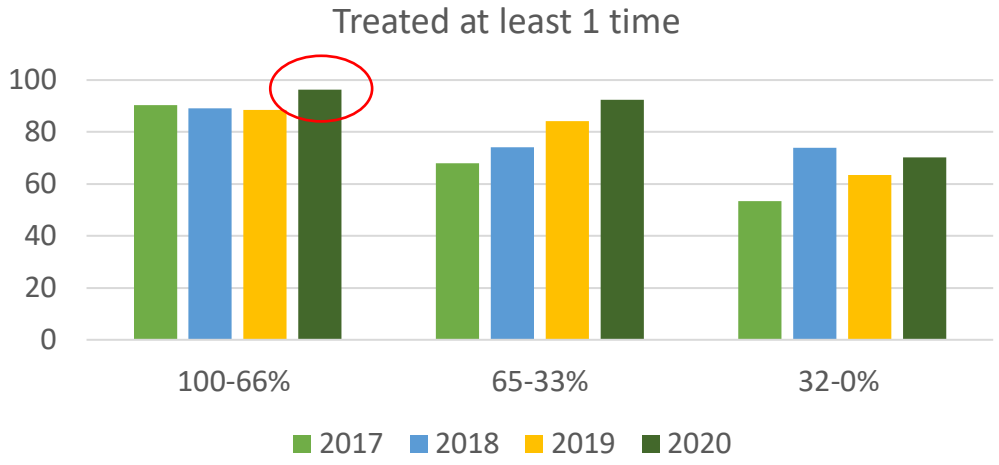
    *Note – in previous years this has been evenly split between groups
- For each major category, report what percentage of the hives were managed using a specific technique:
  - Ex: Report the percentage of the hives in each of the 3 categories that used commercial varroa treatments.
  - Assumption: all hives in an apiary were managed the same way.

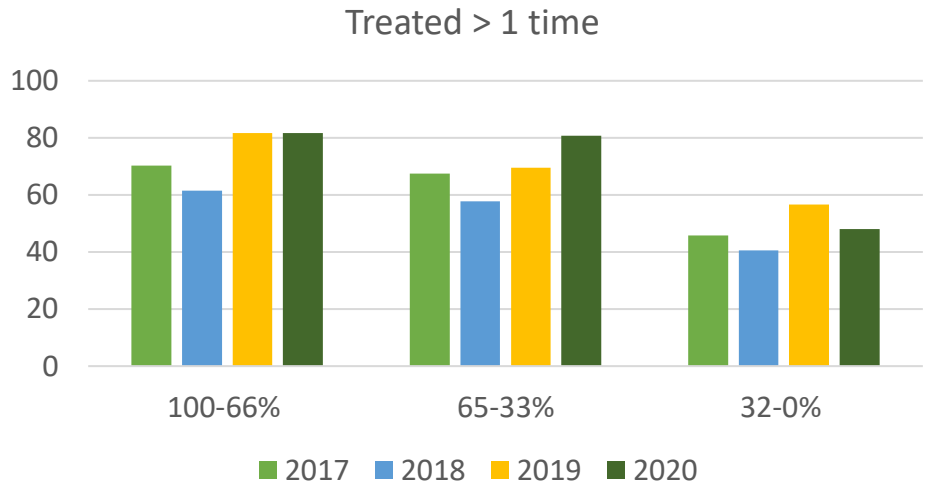
Big Picture: Varroa Management (2020)

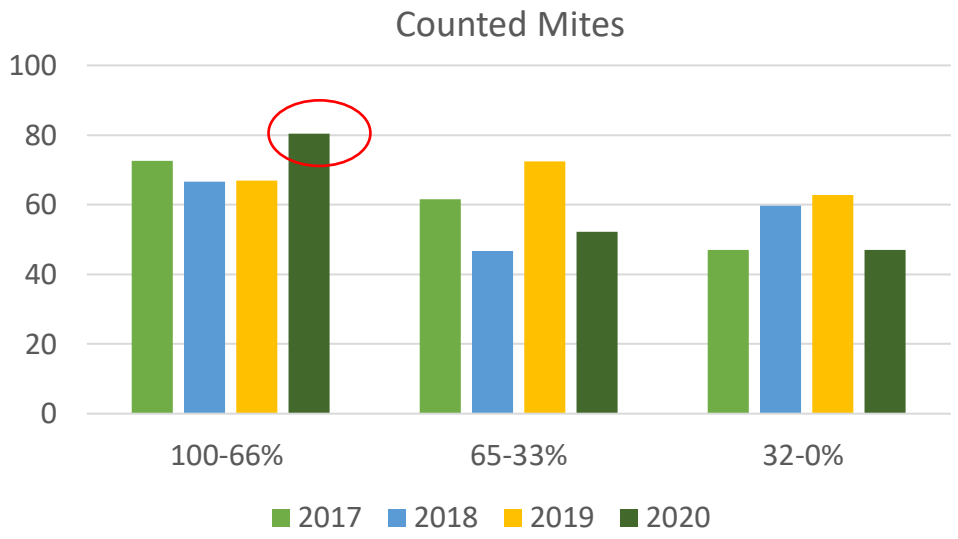


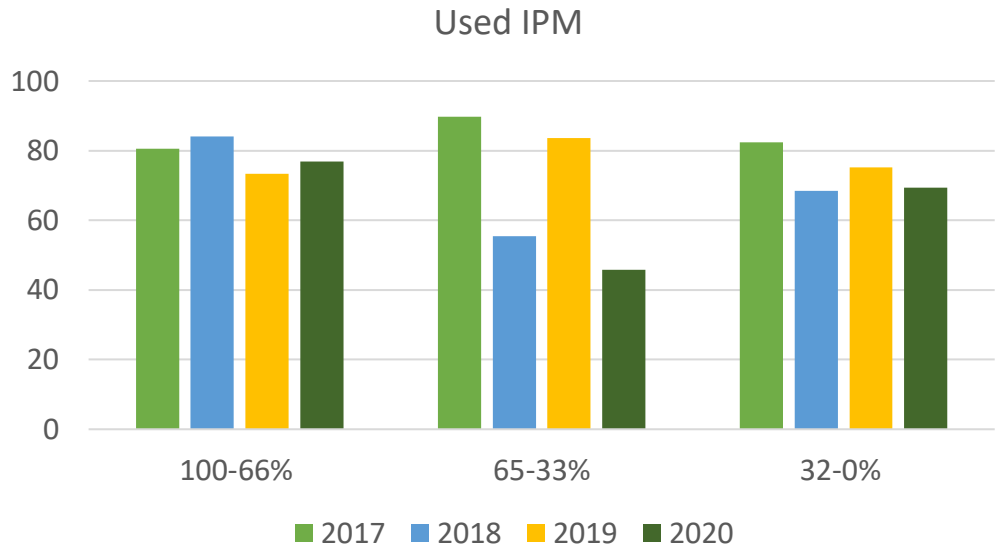
Hives in Apiaries with the best survival rates used a commercial varroa treatment at least one time
80% of the hives in the high survival group treated multiple times.

Big Picture: Varroa Management – comparing 2020,2019,2018 & 2017

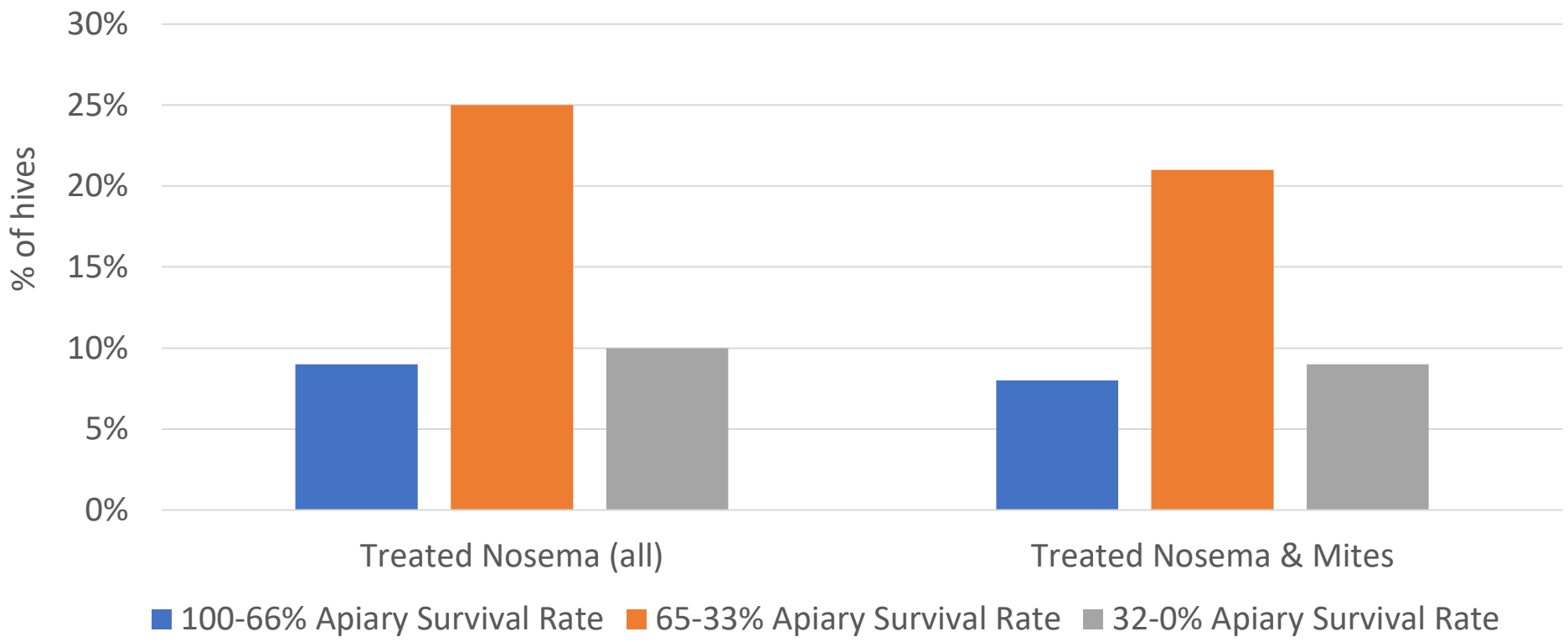






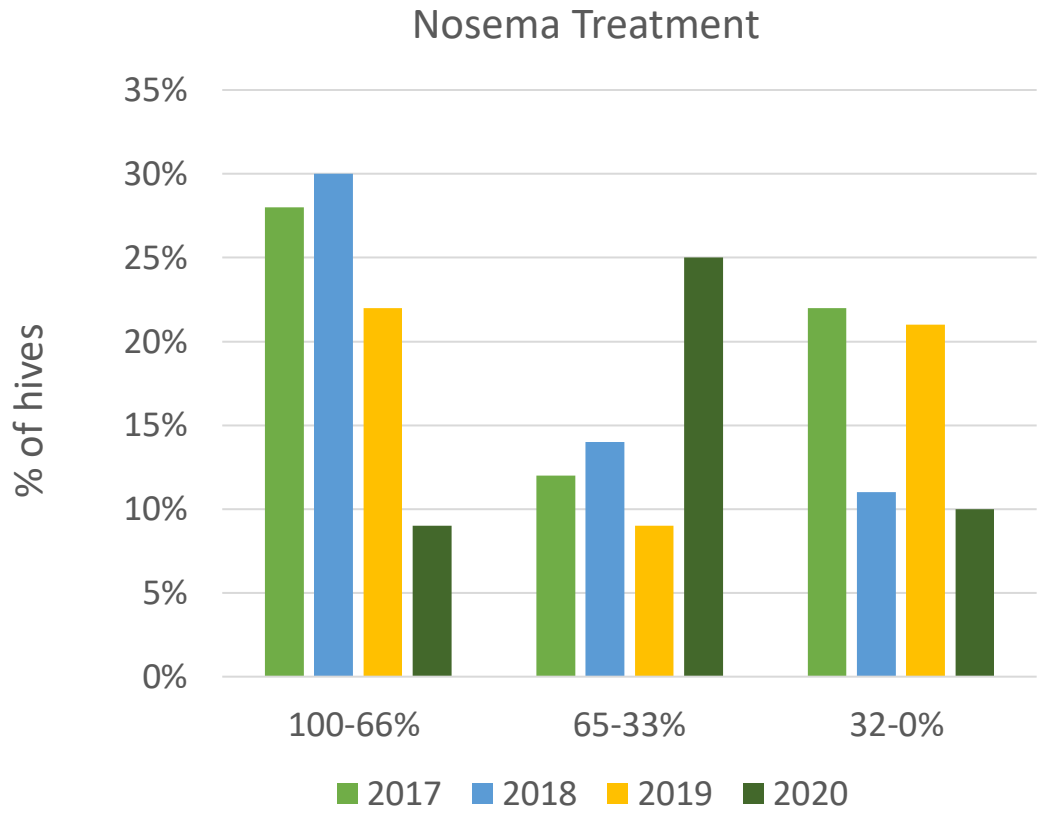


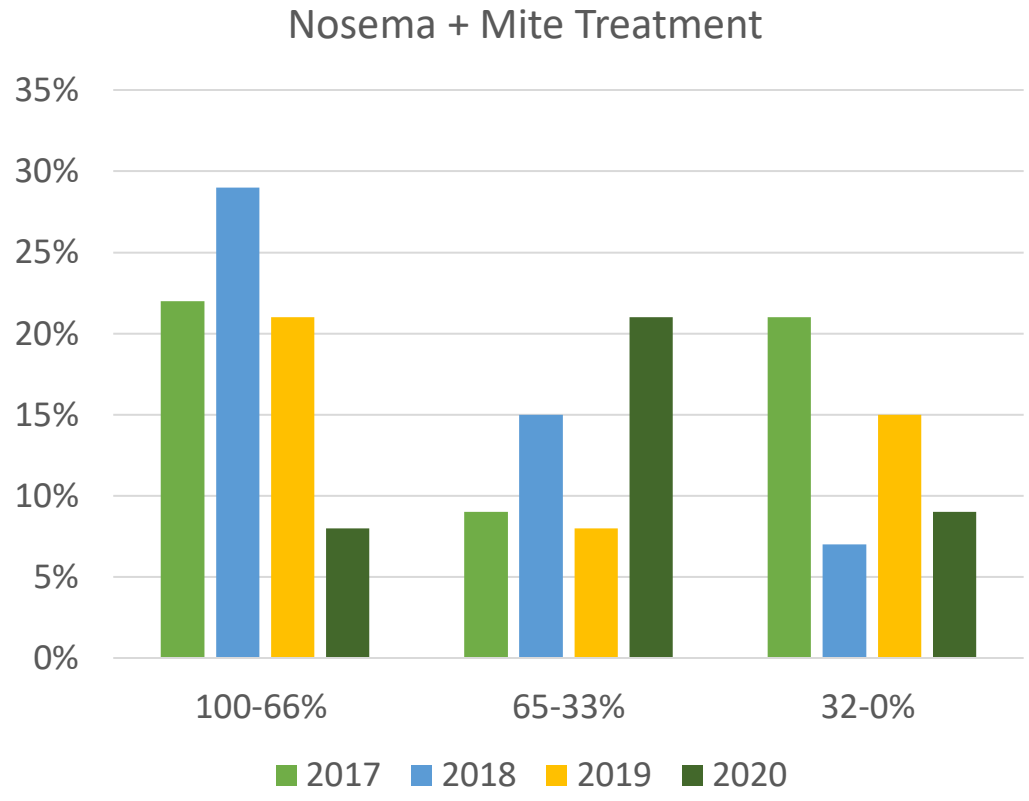
Big Picture: Nosema Management (2020)



*High Survival Rate group had significantly lower percentage of Nosema treatment in 2019 when 21% were treated for Nosema

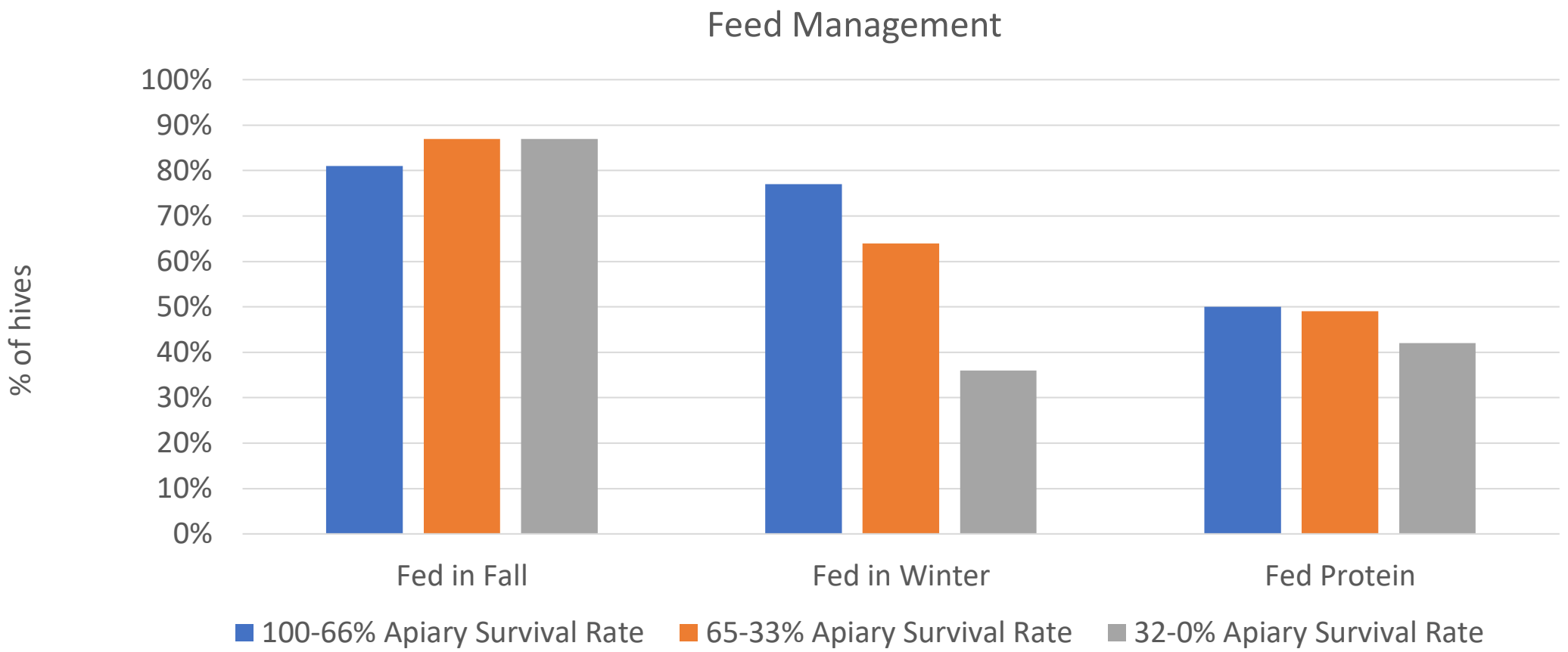
Big Picture: Nosema Management – comparing 2017 -2020





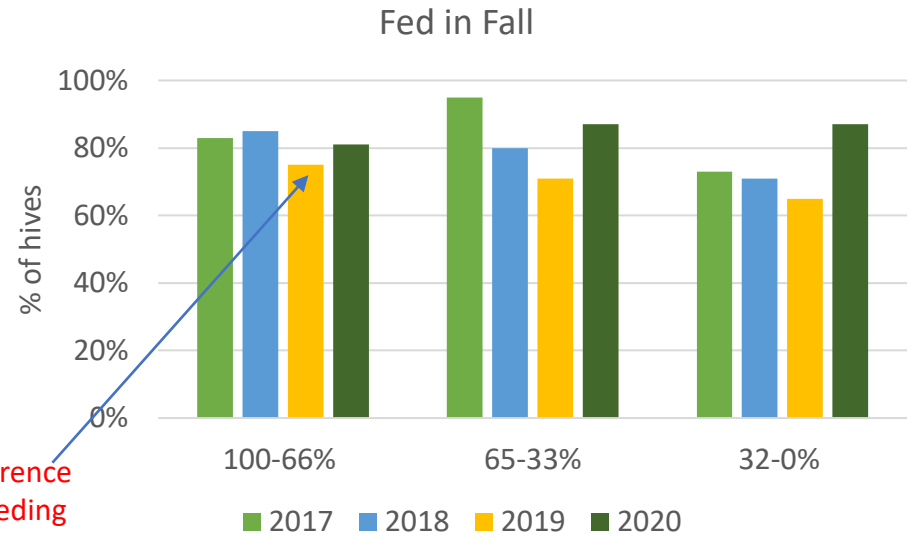
- For the “High” group, 2020 had the lowest % treated for Nosema of the 4 years.
- Overall 13% of hives were treated for Nosema at least once which is down from the typical 19-20% rate from 2017,2018 & 2019.

Feed Management

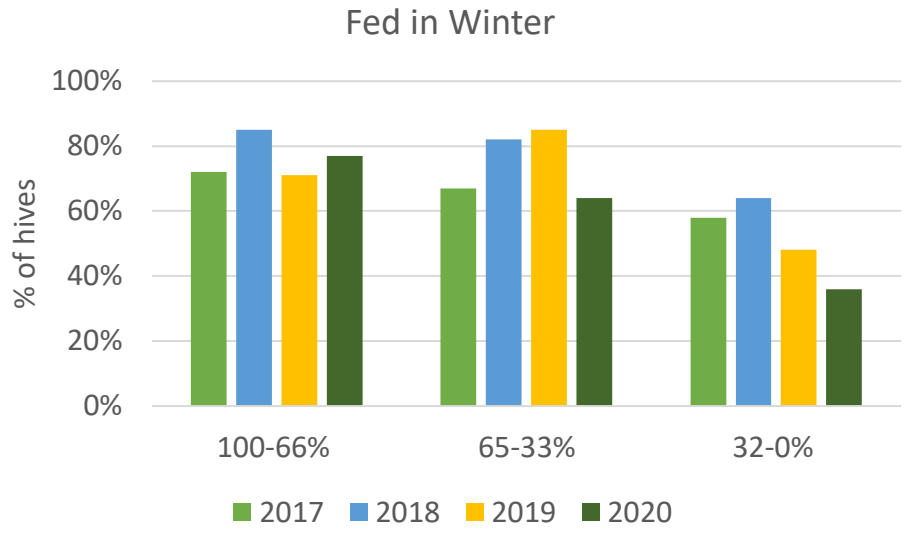


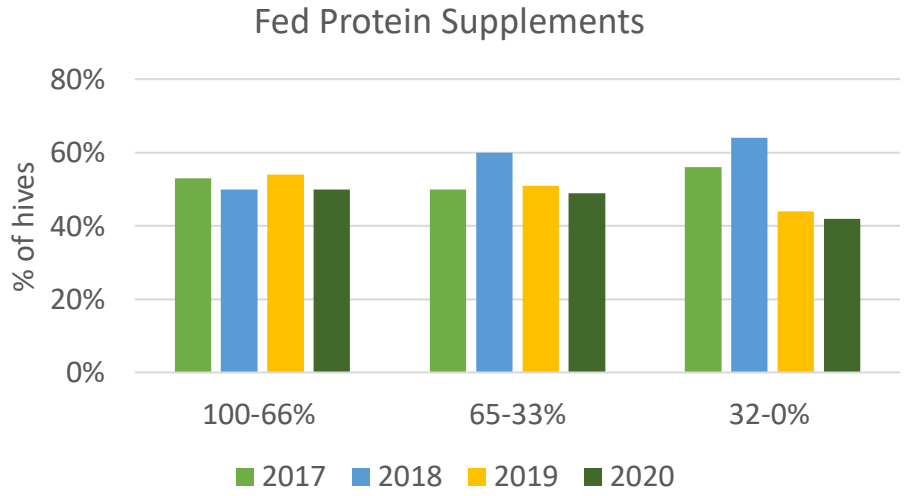
*Since feeding needs are so hive & region specific, in the future should look at data more regionally

Big Picture: Feed Management – comparing 2017-20

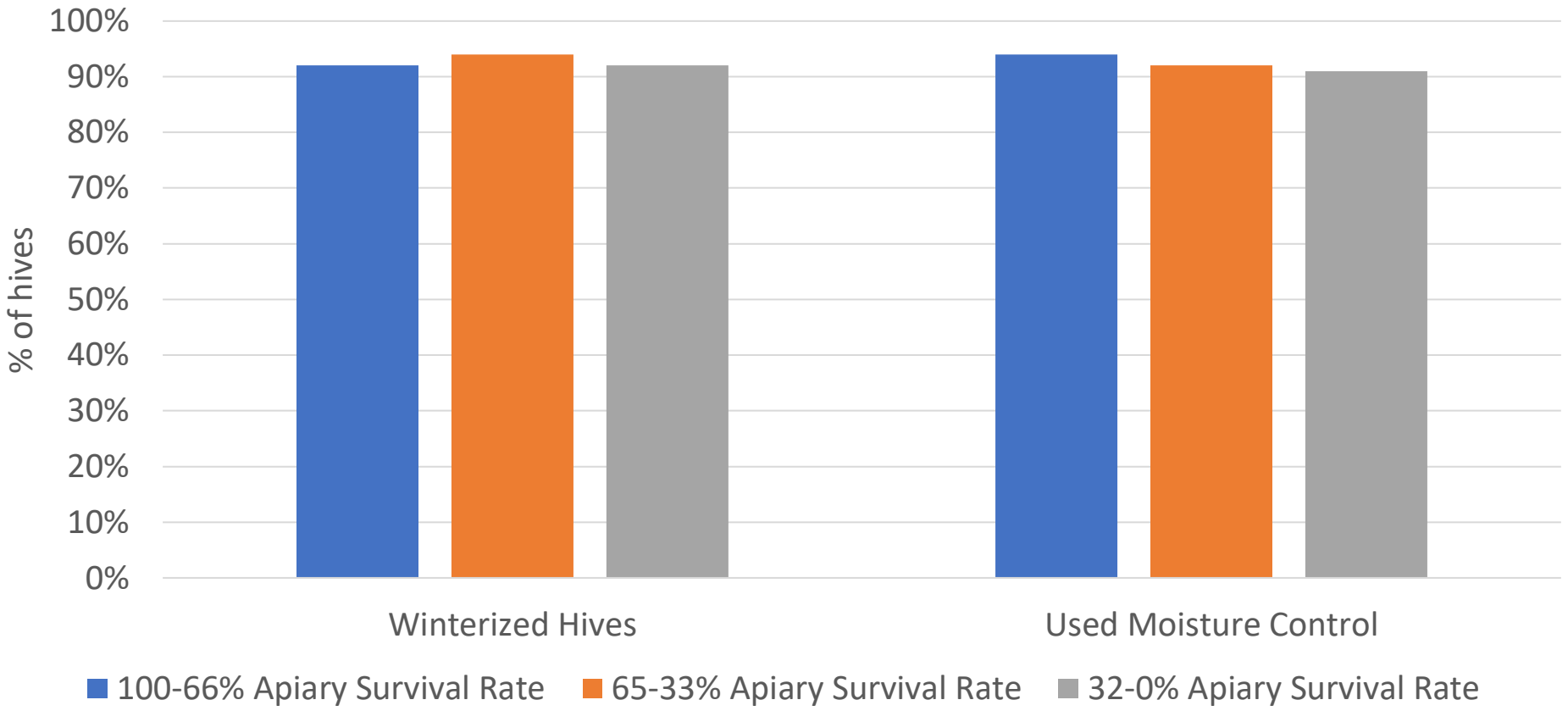


Note the difference
In 2019 fall feeding



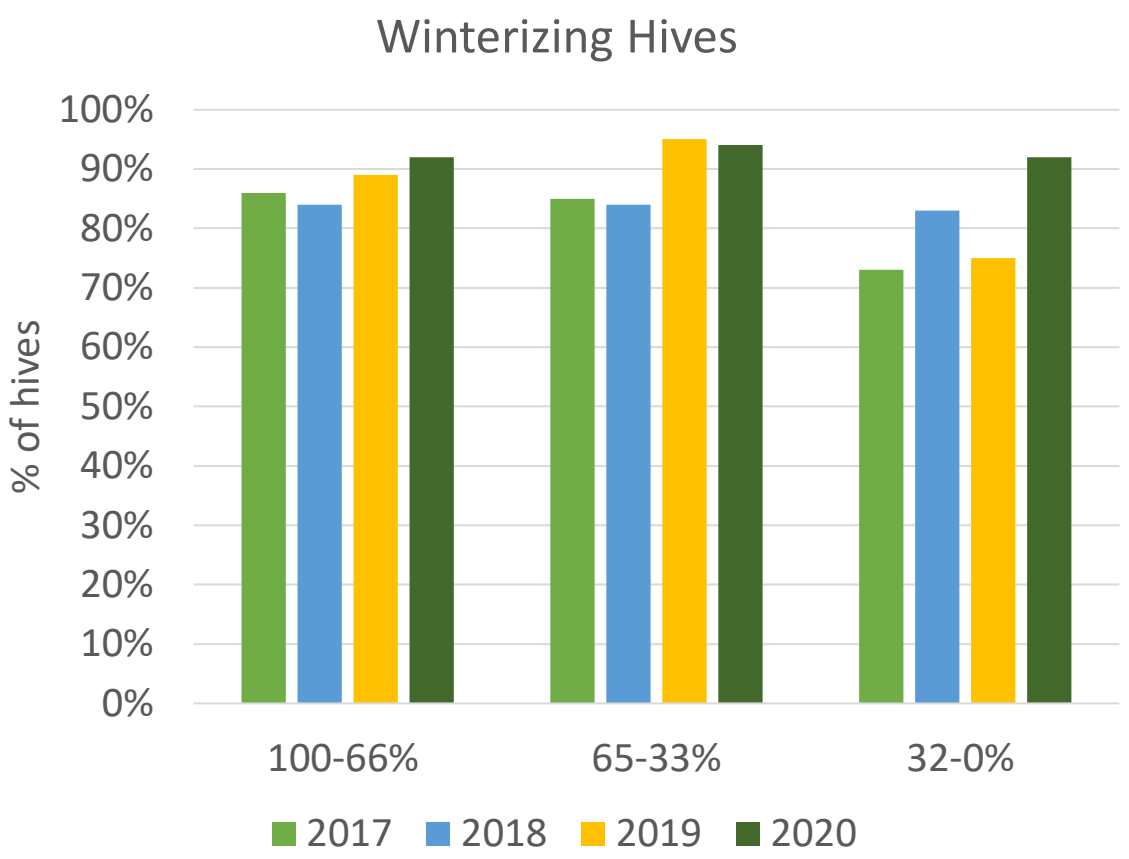


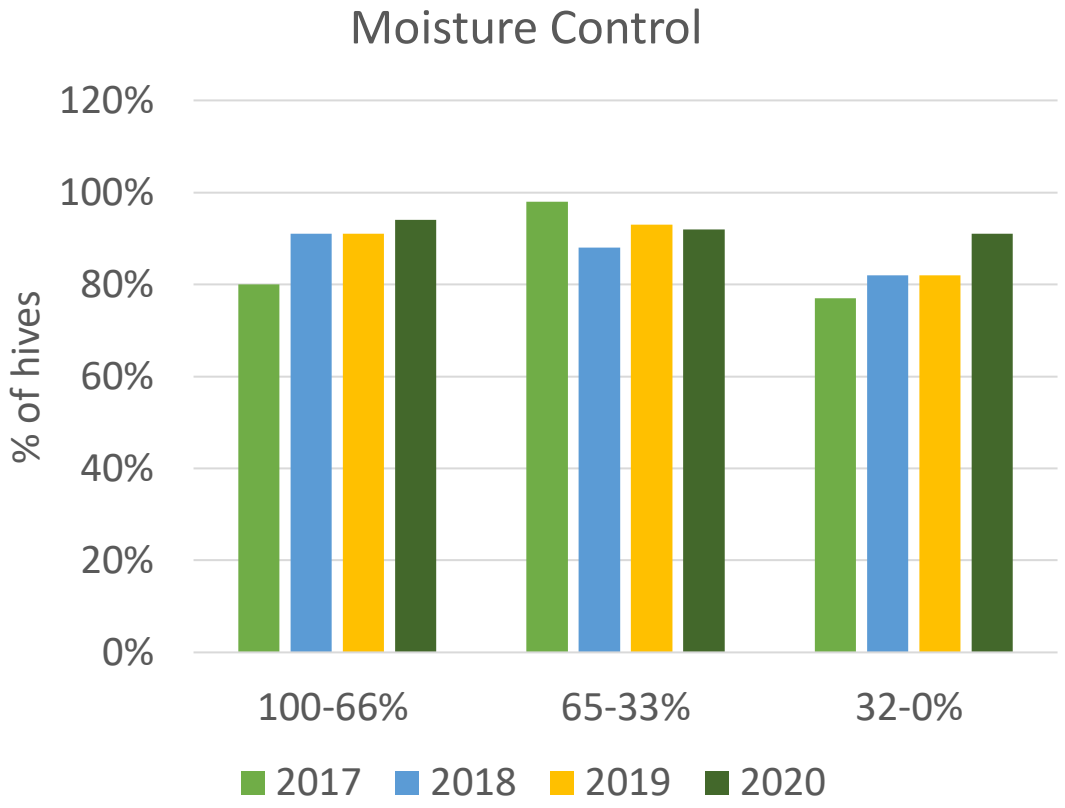
Big Picture: Winterizing & moisture control systems



Winterizing and Moisture Control was pretty consistent across groups.

Big Picture: Winter Management – comparing 2017-2020

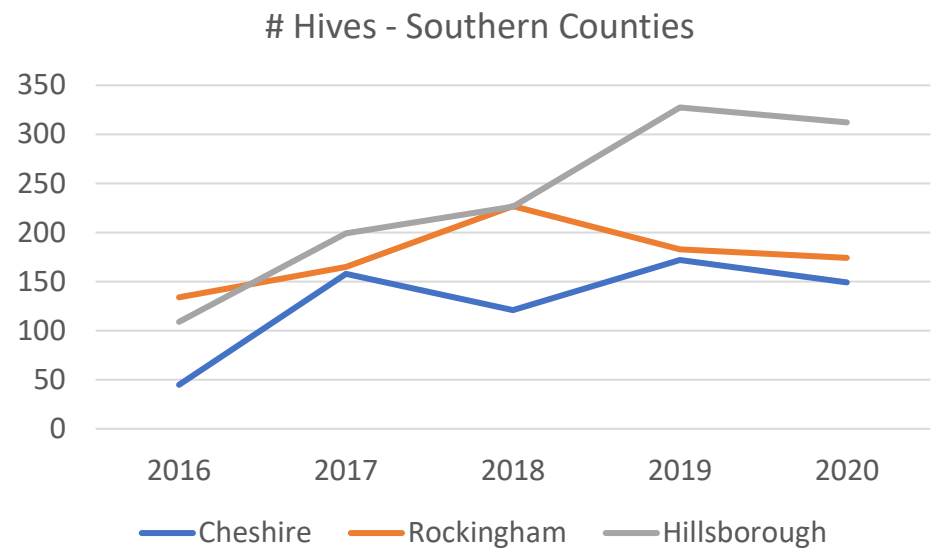




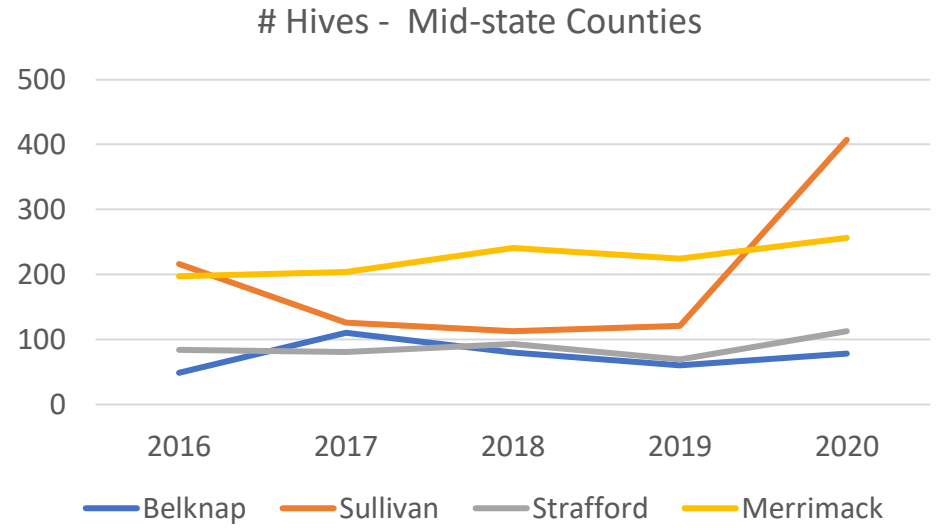
High and low groups had a higher percentage of winterized hives than in the past. Same with use of moisture control systems

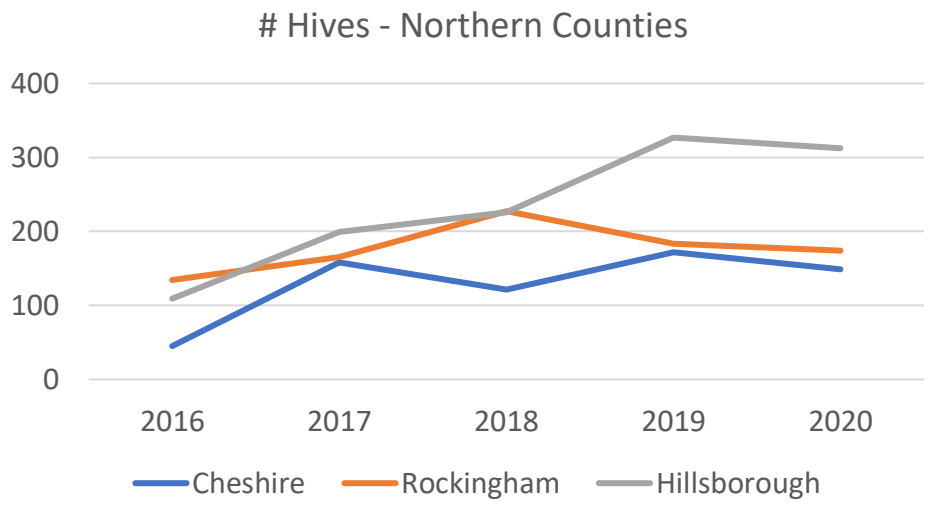
By County Analysis

Survey Participation Over the Years – By County

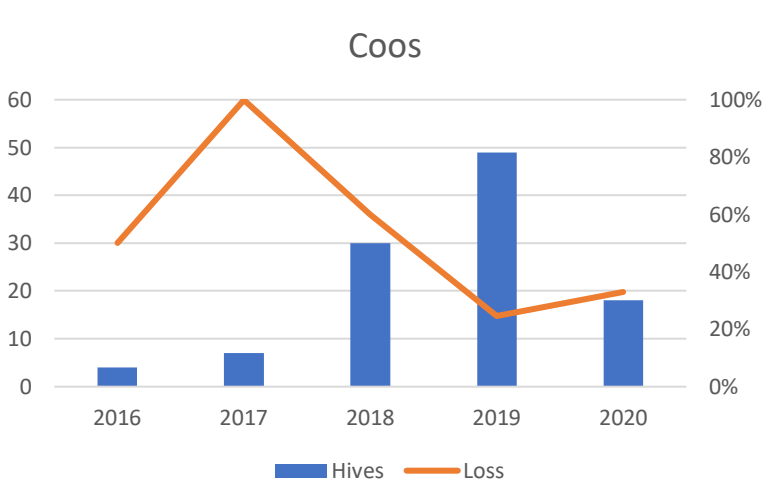


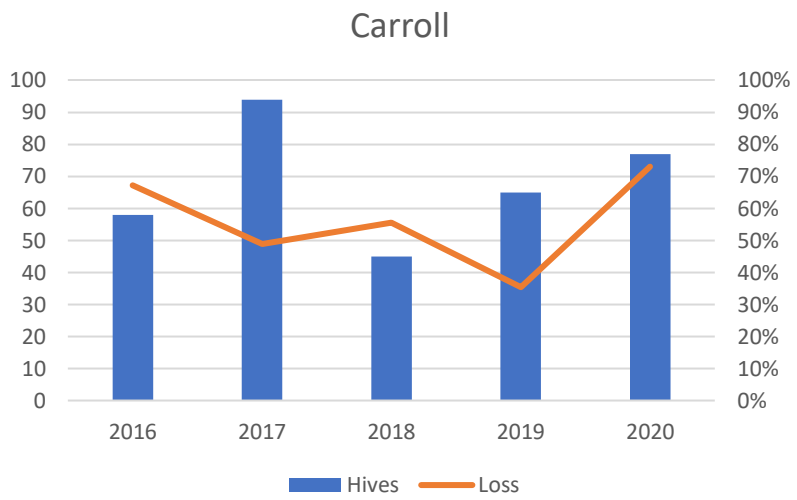
	2016	2017	2018	2019	2020
Belknap	49	110	80	60	78
Carroll	58	94	45	65	77
Cheshire	45	158	121	172	149
Coos	4	7	30	49	18
Grafton	93	136	216	230	161
Hillsborough	109	199	226	327	312
Merrimack	197	204	241	224	256
Rockingham	134	165	227	183	174
Strafford	84	81	93	69	113
Sullivan	216	126	113	121	407
MA	13	14	15	12	30
VT	2	8	9	12	37
ME	2	3	9	0	2

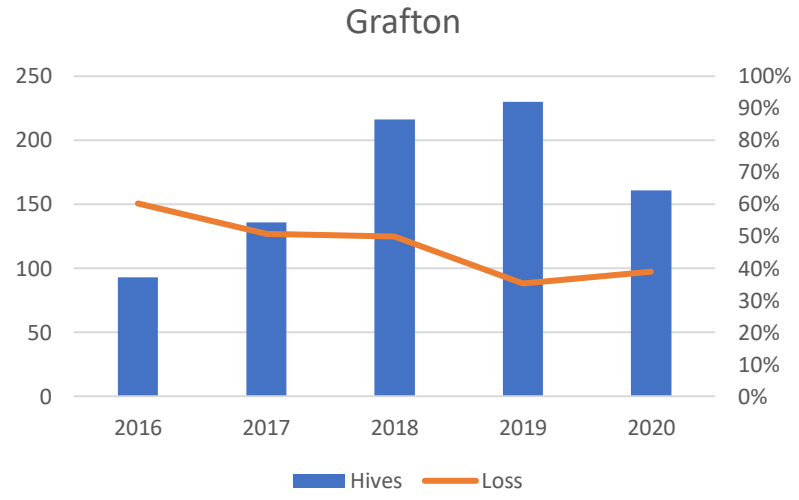


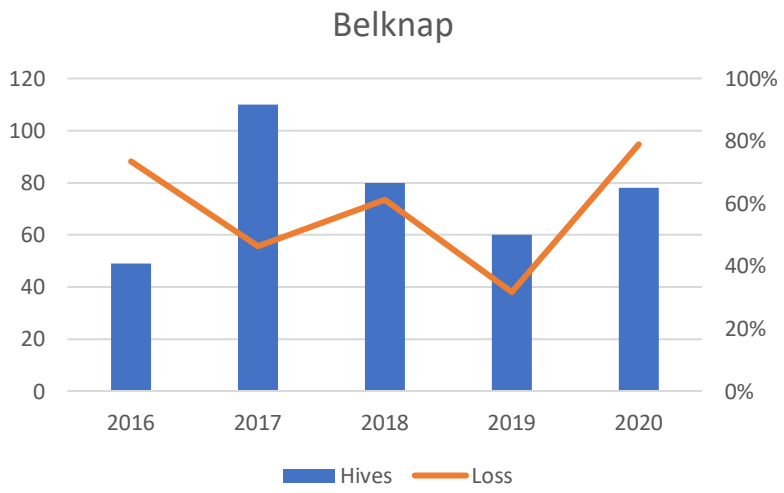


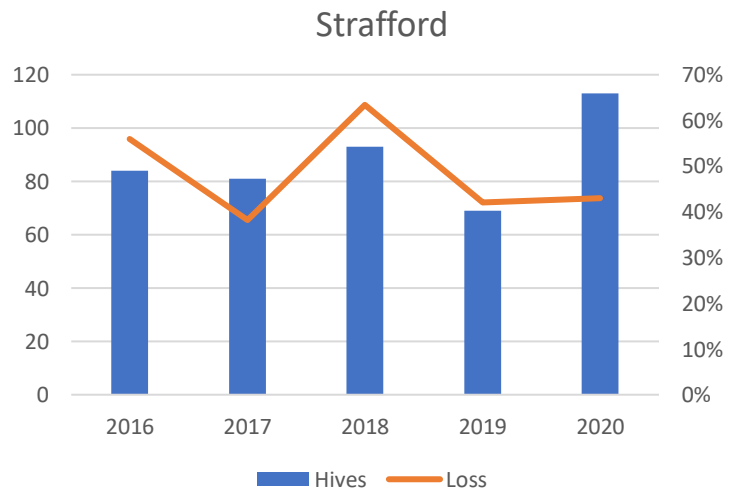
Hives Reported & Loss Rate Year to Year (by County)









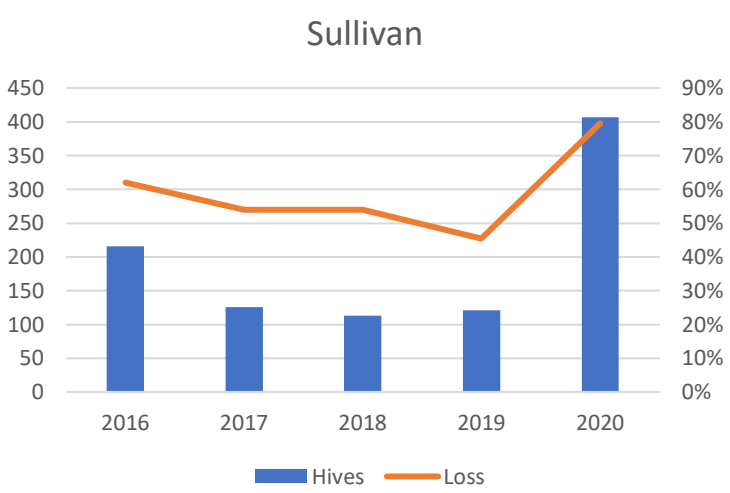


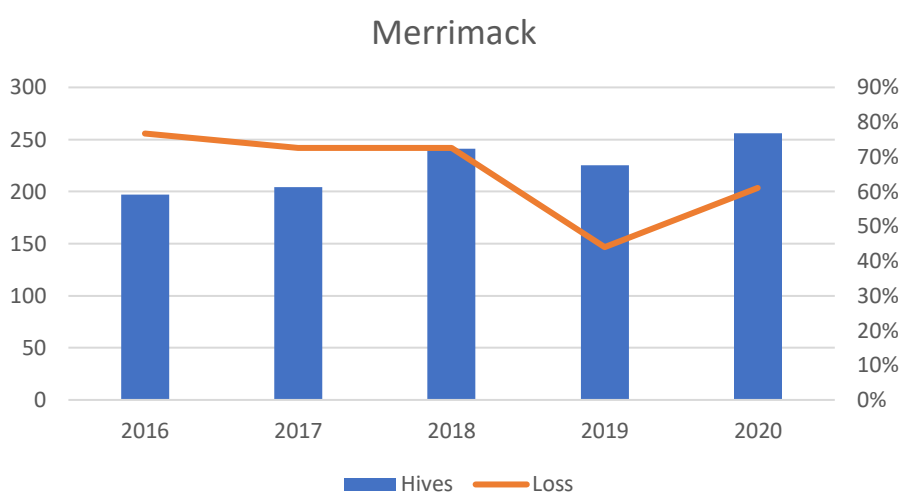
# of hives :

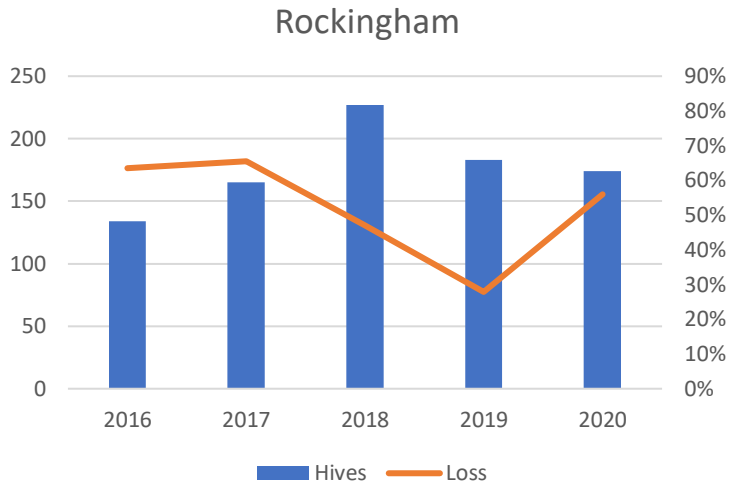
Hive loss :

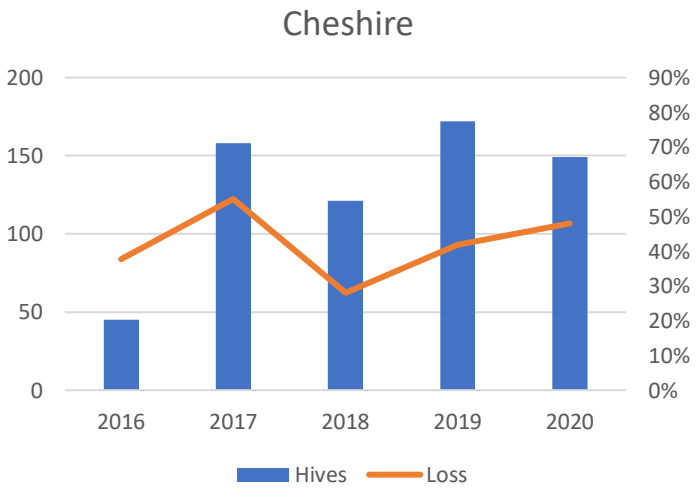
*very small sample size

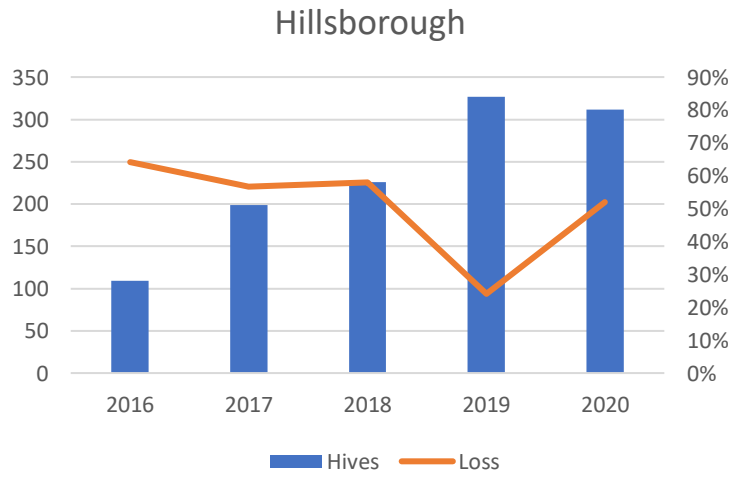
Hives Reported & Loss Rate Year to Year (by County)







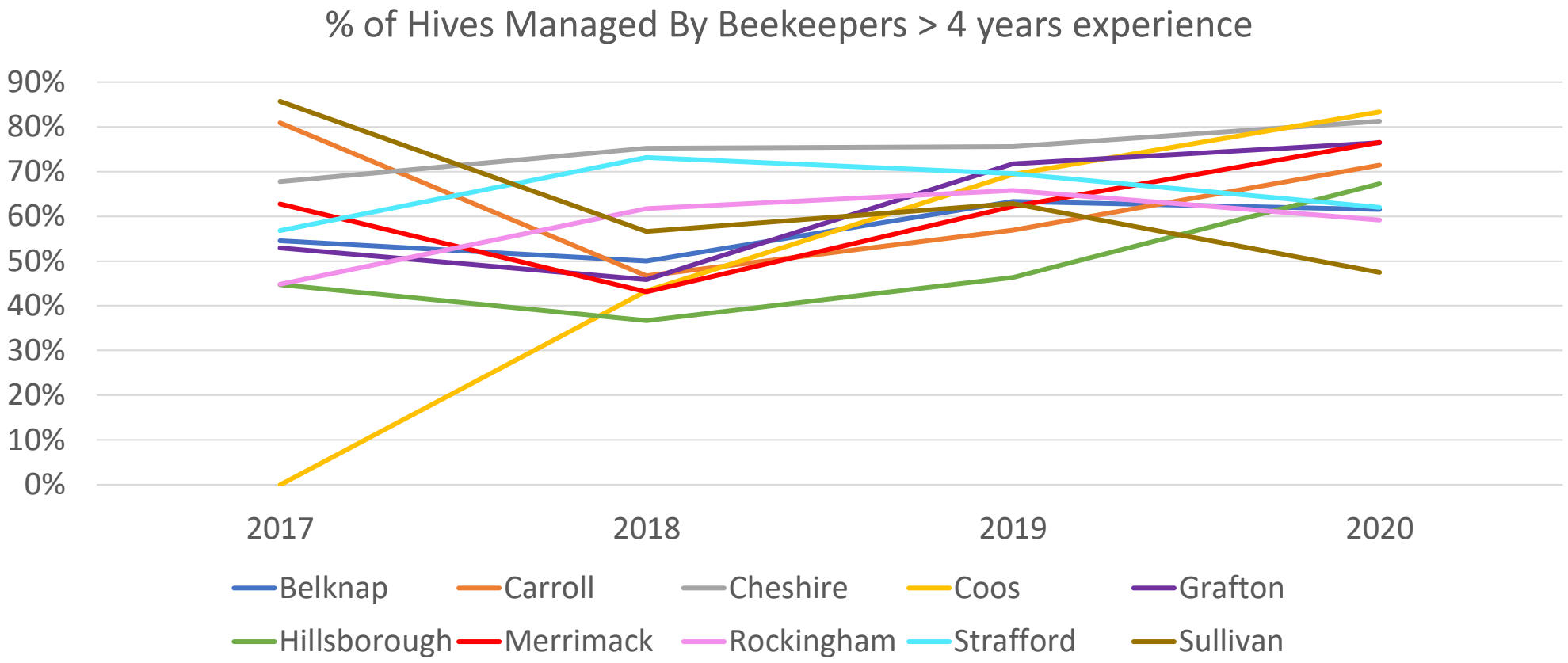




# of hives :

Hive loss :

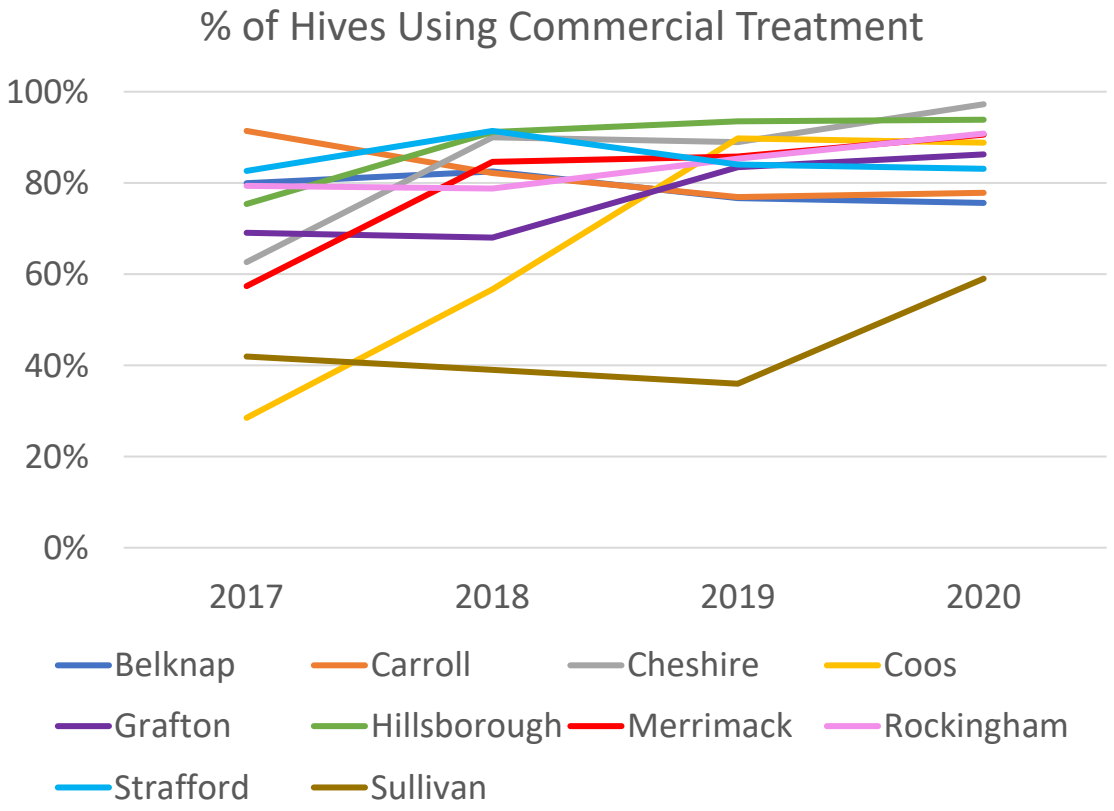
Years of Experience
By County

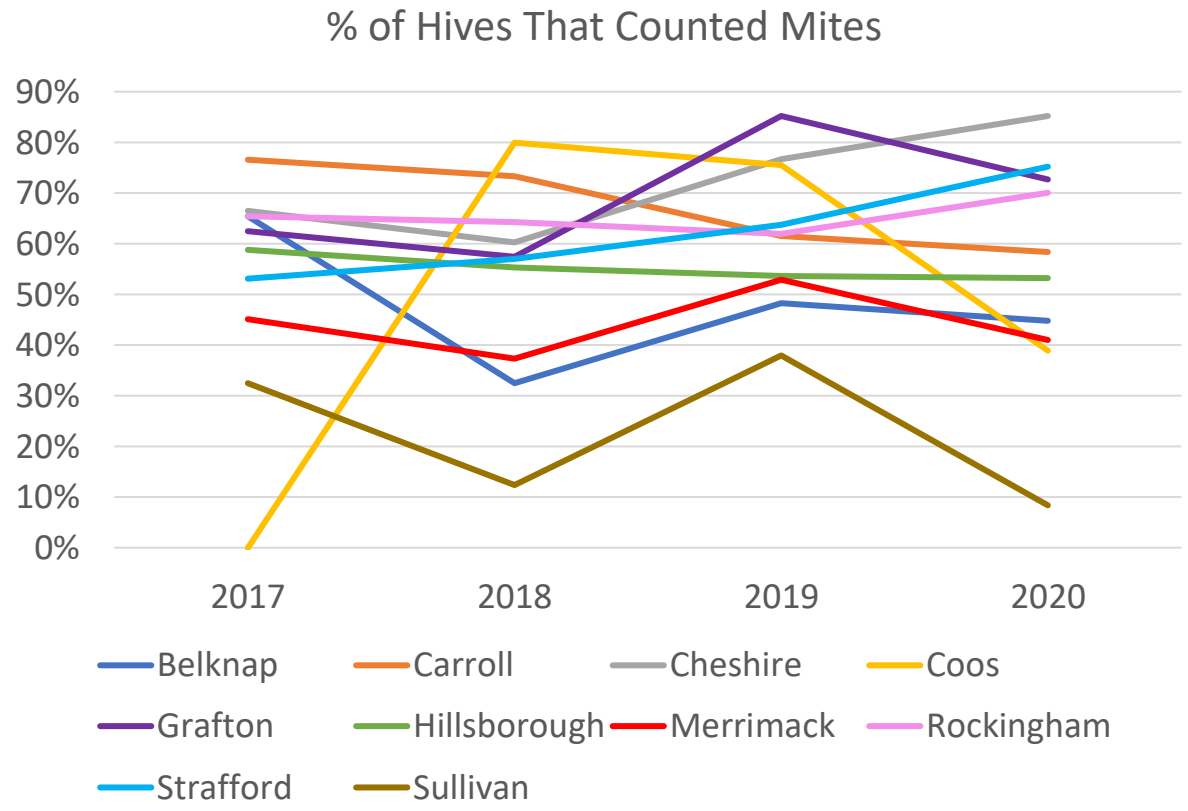


Until 2020, Hillsborough consistently has the lowest percentage of beekeepers with 5 or more years of experience

Since 2018, Cheshire has had the highest percentage of beekeepers with 5 or more years of experience

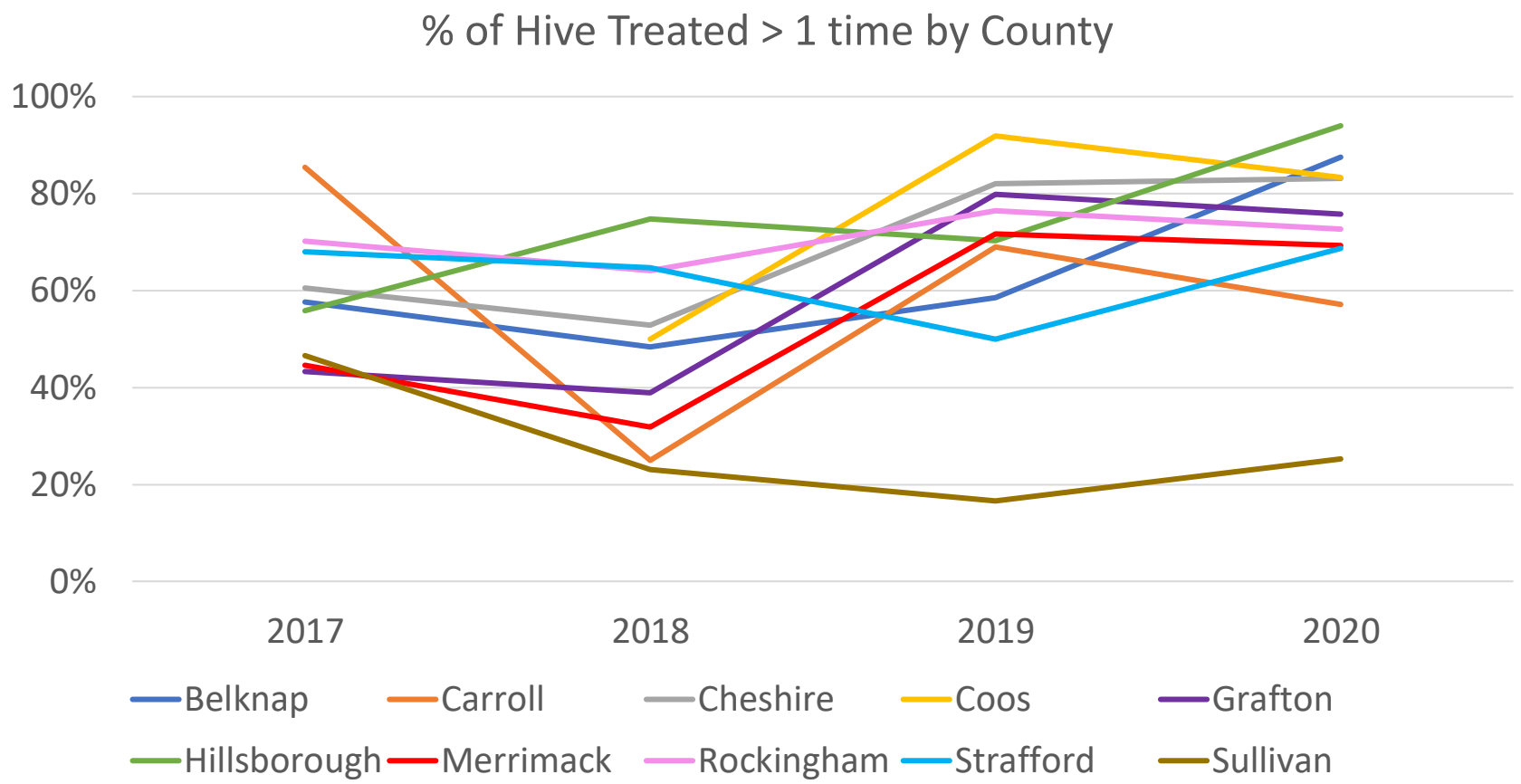
Varroa Management By County





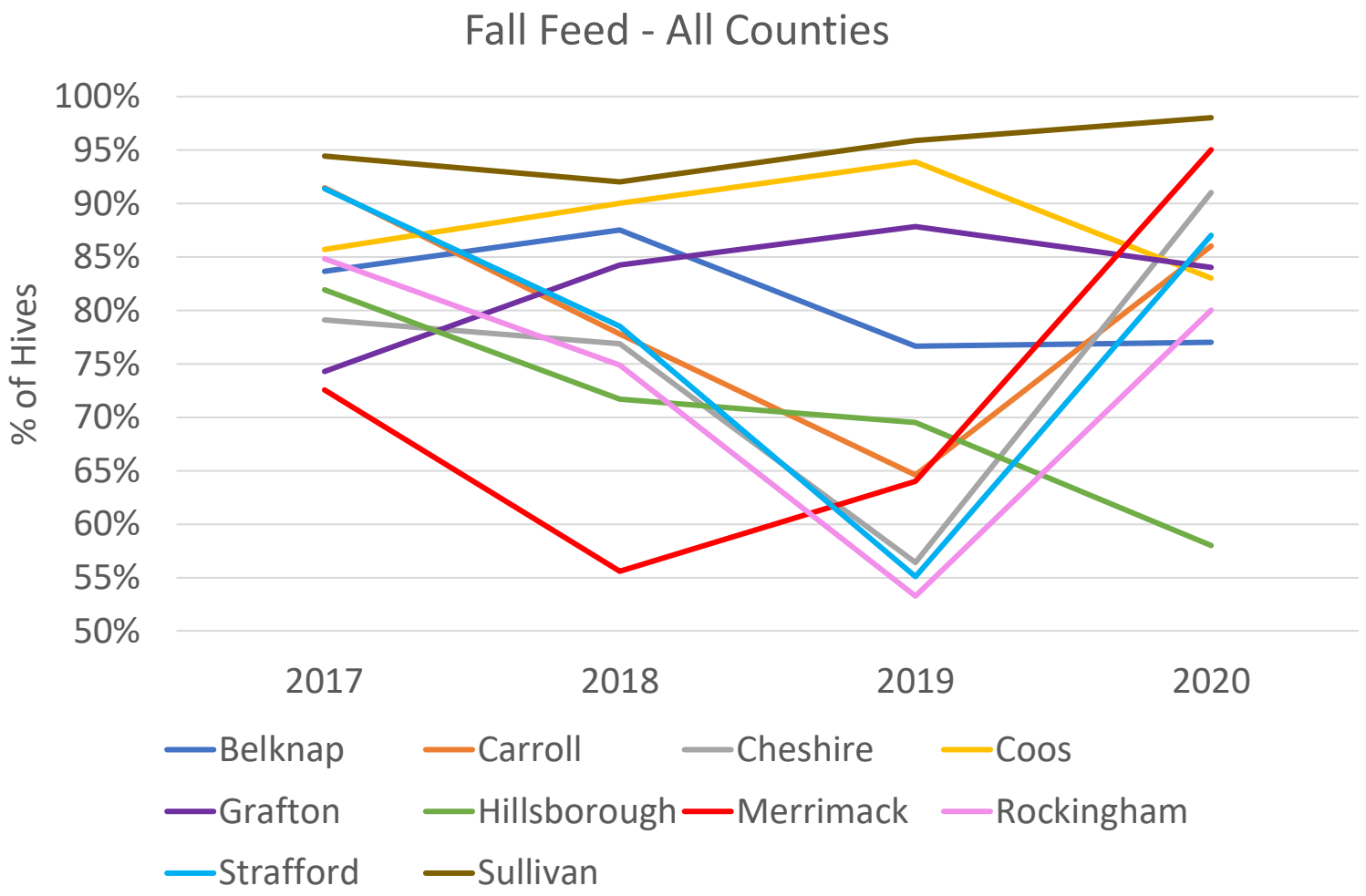
- Merrimack in bottom 3 for counting mites in all years
- Commercial treatments use pretty consistent from 2019-2020

Varroa Management By County



- Merrimack County is in the bottom 3 in 2017-18
- Also note the dip in 2018 on several counties
- Strafford, Belknap & Hillsborough had a higher percentage of hives treated in 2020 than previous years.

% of Colonies Fed in Fall By County

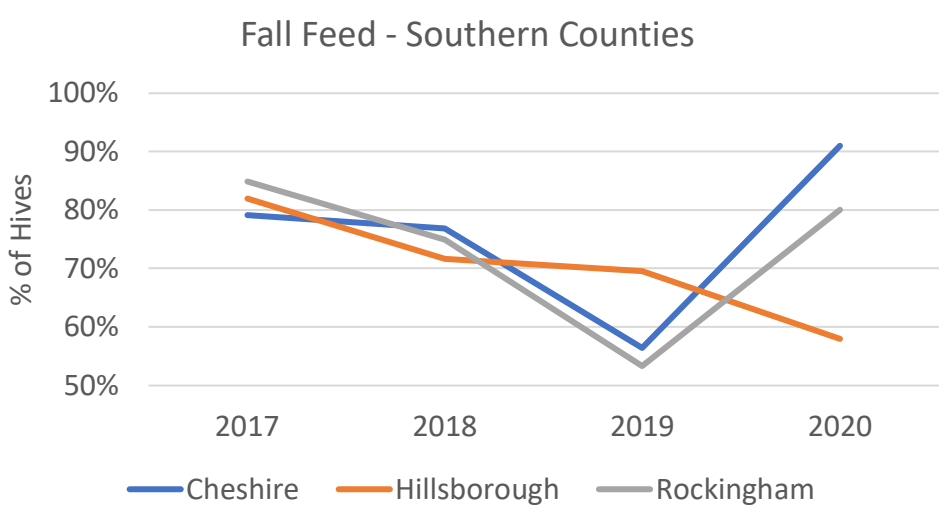


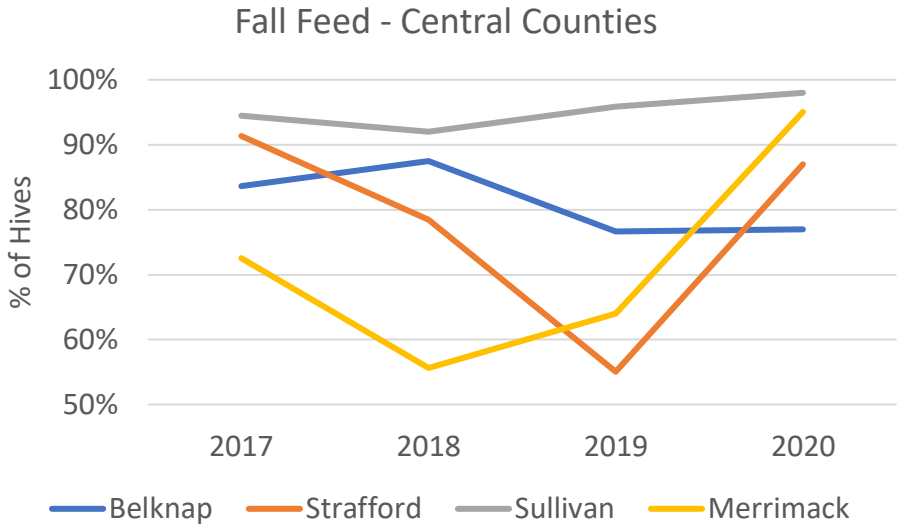
*In 2020, most counties did more fall feeding.

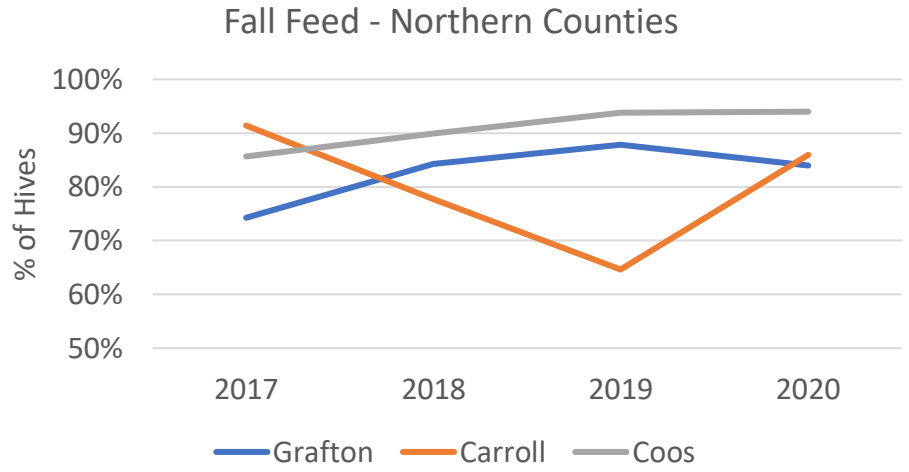
*Hillsborough county fed significantly less than previous years. (they were in the middle of the pack in terms of loss %)

	Hive Loss
Sullivan	80%
Belknap	79%
Carroll	73%
Merrimack	61%
Rockingham	56%
Hillsborough	52%
Cheshire	48%
Strafford	43%
Grafton	39%
Coos	33%

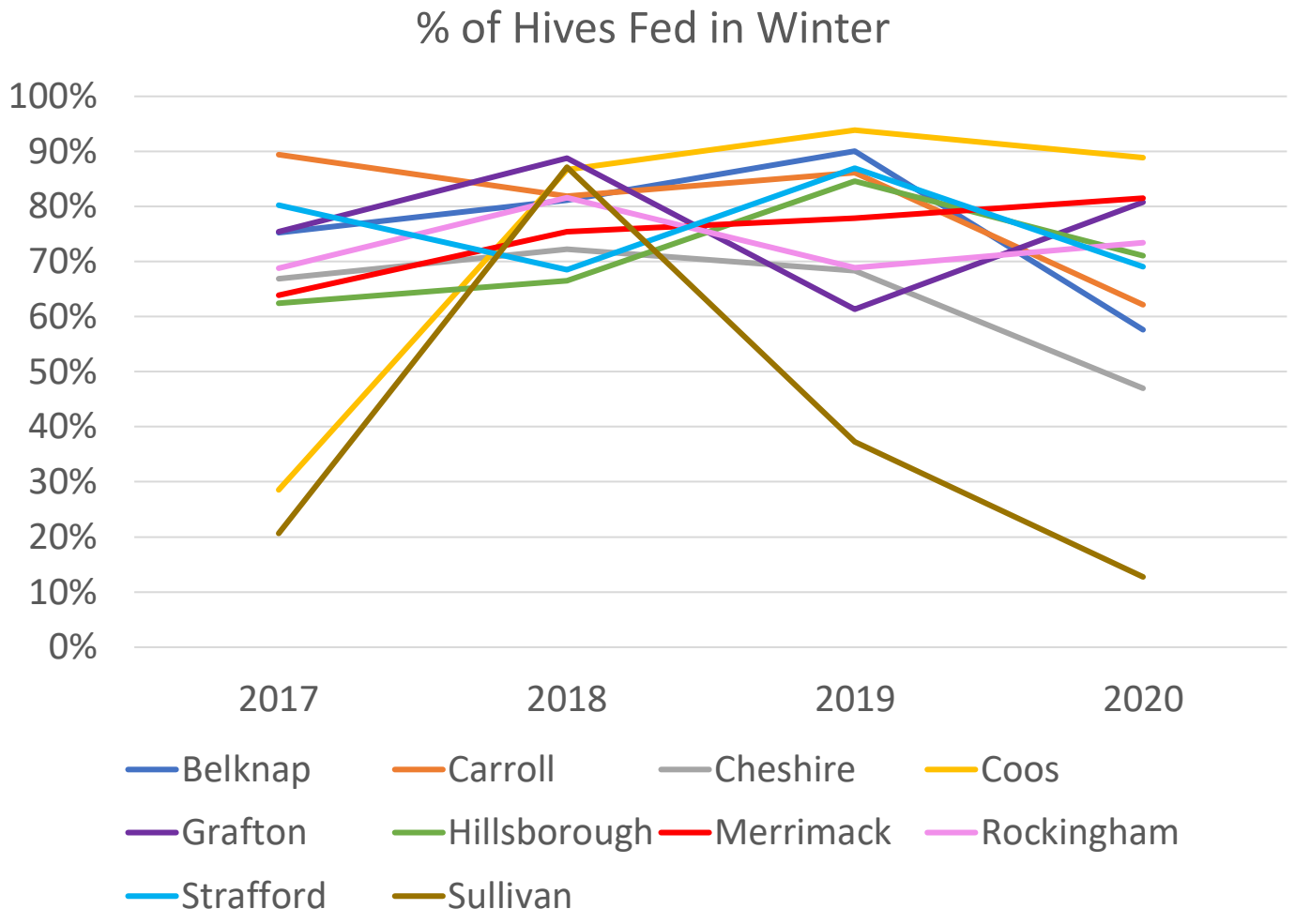
% of Colonies Fed in Fall By County







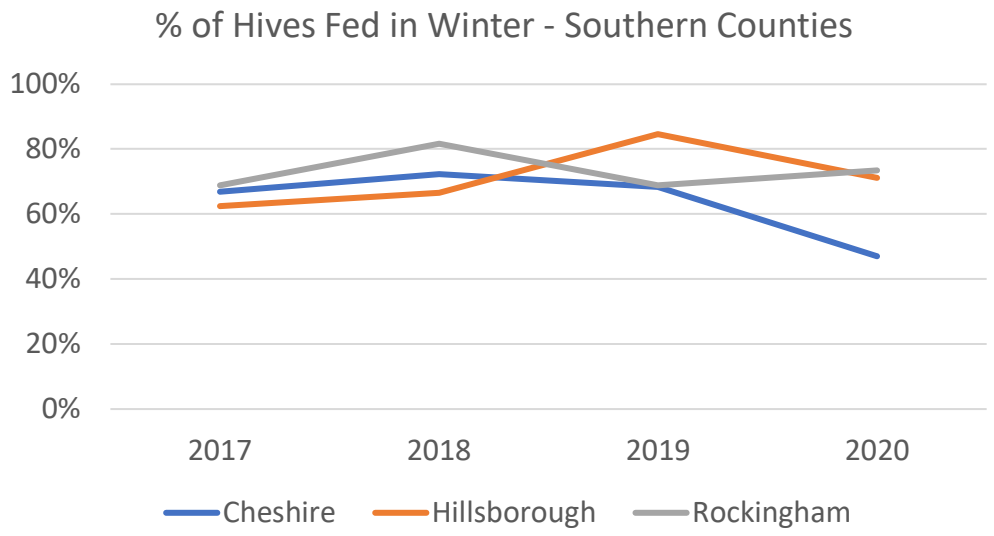
% of Colonies Fed in Winter – All Counties

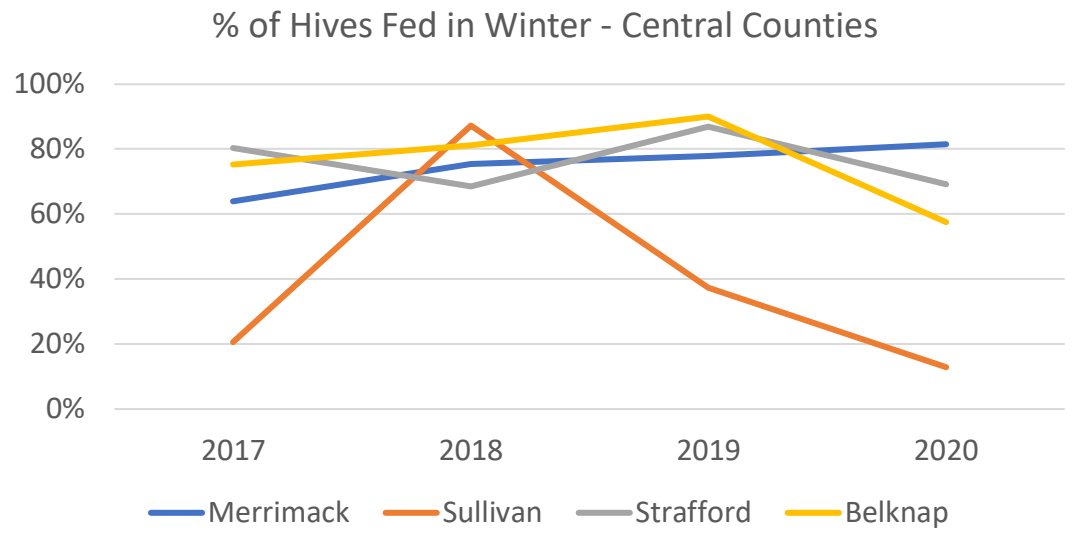


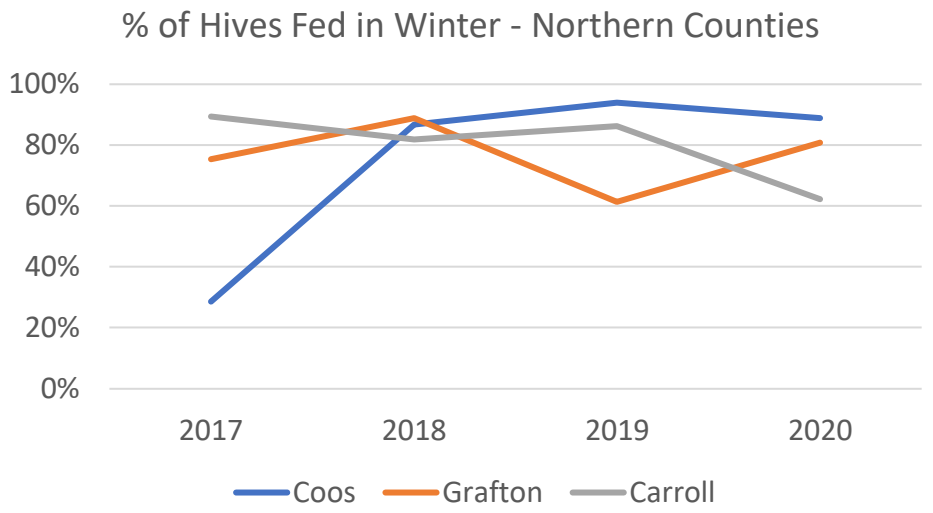
*6 of the 10 counties fed less in winter in 2020
3 of these counties had the top losses

	Hive Loss
Sullivan	80%
Belknap	79%
Carroll	73%
Merrimack	61%
Rockingham	56%
Hillsborough	52%
Cheshire	48%
Strafford	43%
Grafton	39%
Coos	33%

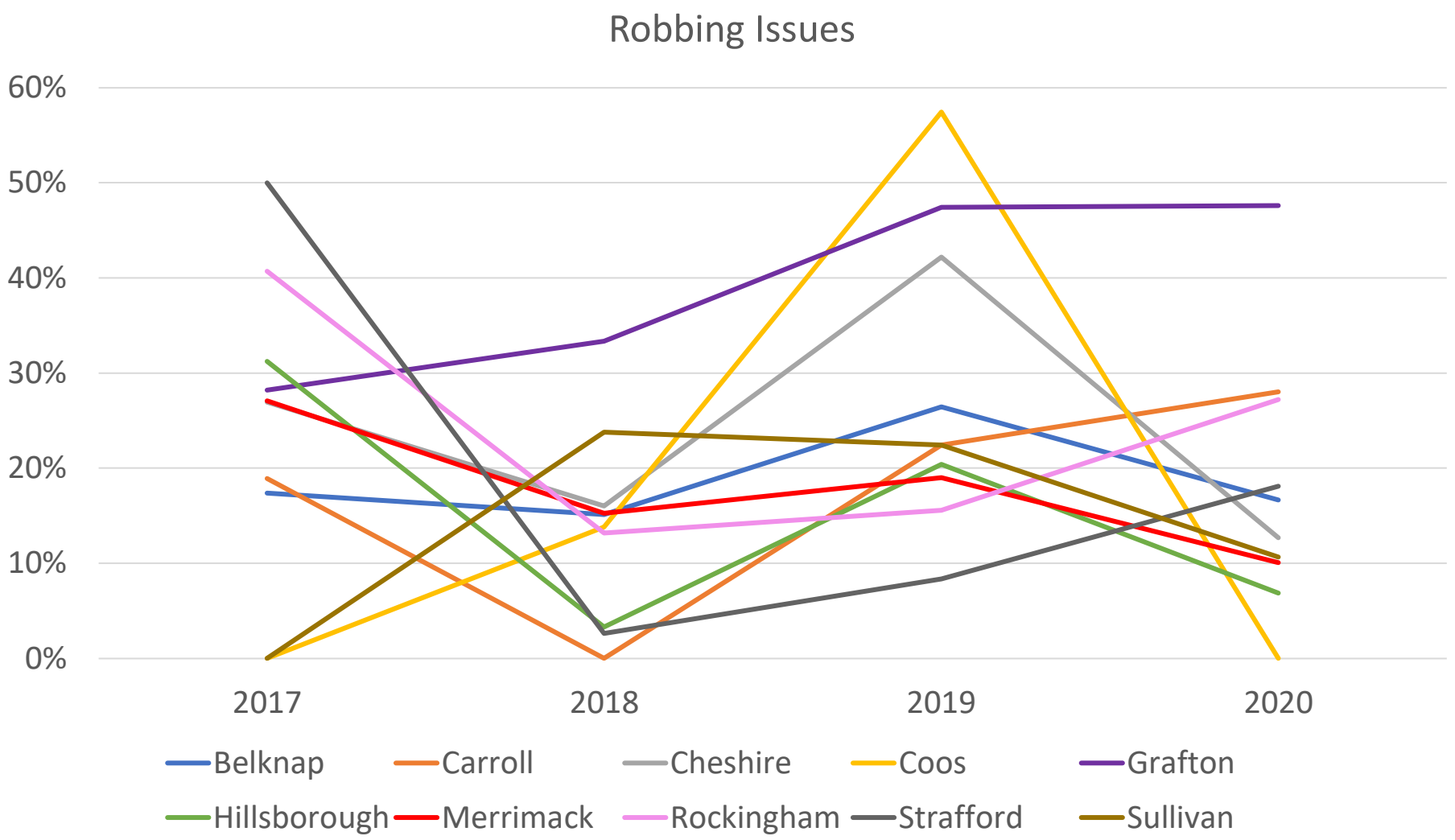
% of Colonies Fed in Winter By County





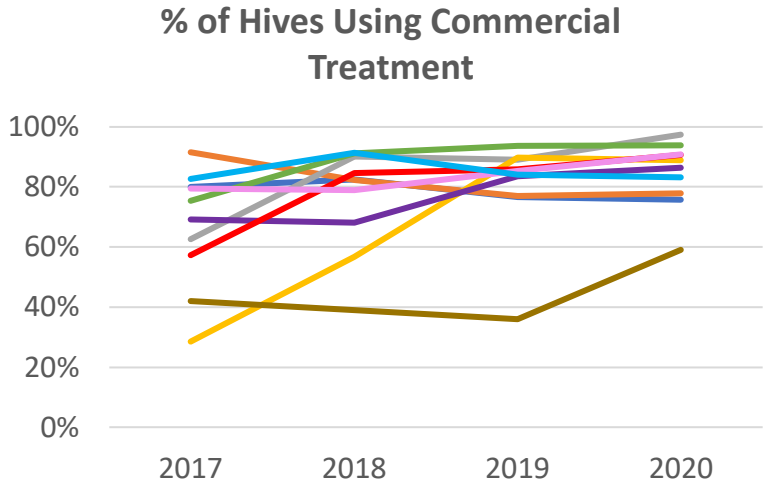


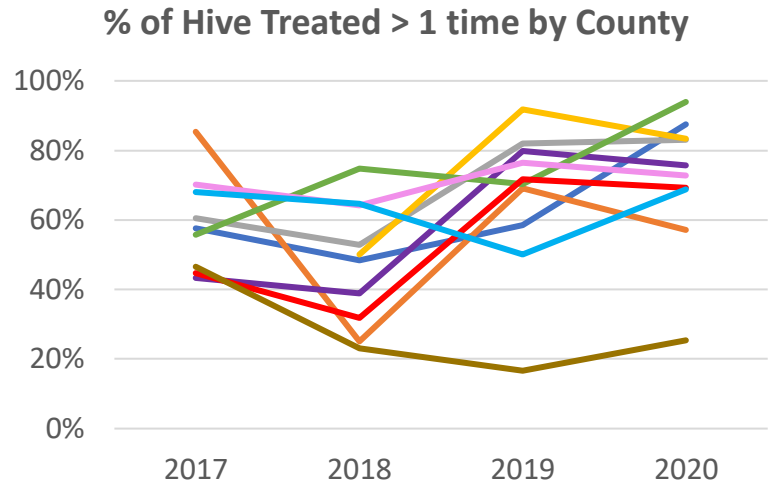
Yellow Jacket, Wasp, etc. Robbing issues – All Counties

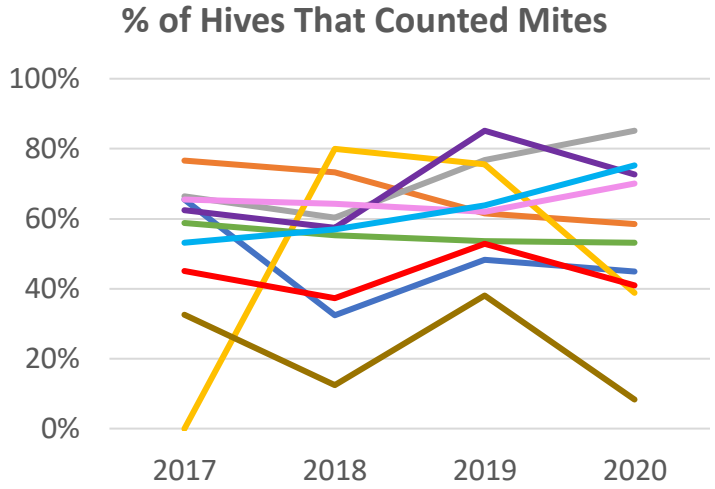


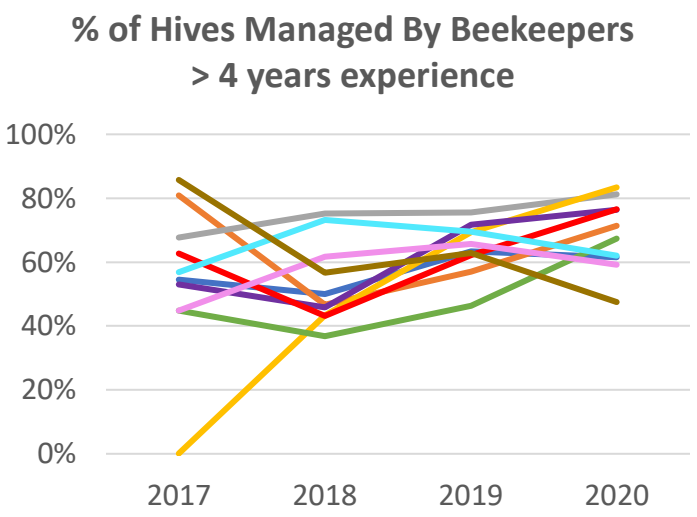
Grafton County (purple) has had the highest reported issues for the last 2 years

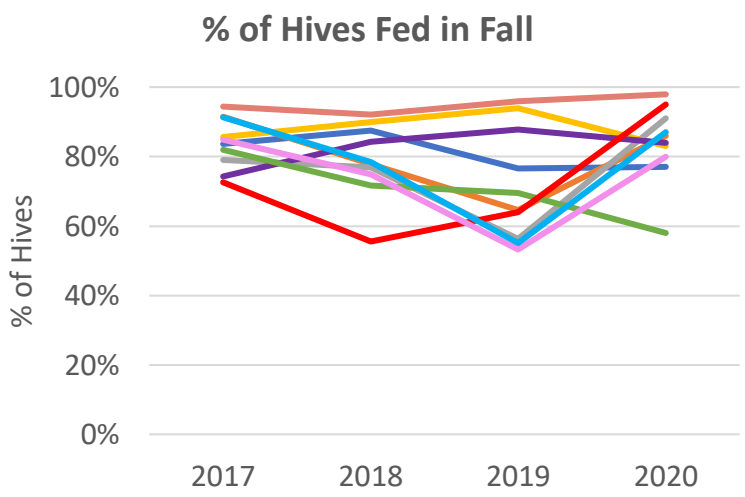
Management Trends by County – What do you Notice?

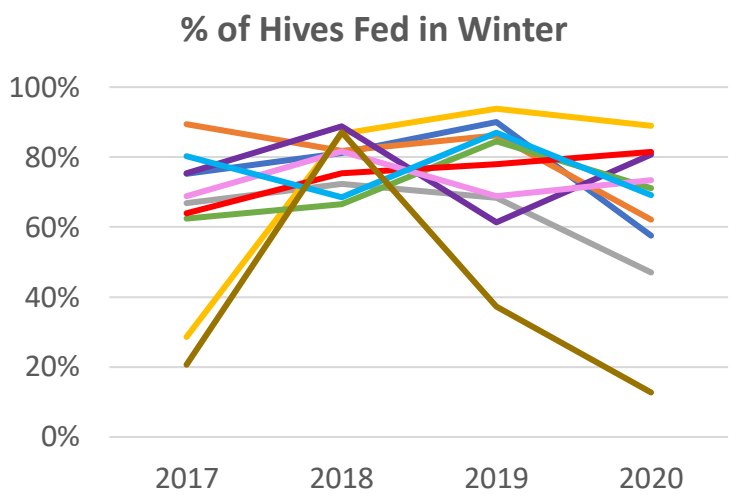












Belknap Carroll Cheshire Coos Grafton Hillsborough Merrimack Rockingham Strafford Sullivan

2020-21 Survey Executive Summary

- **2020-21 Winter Survival is the 2nd worst we've seen since doing the survey : 37% (63% loss)**
  - 78% of respondents have between 1-10 hives.
- Absconding was in the top 5 reasons for loss for the first time.
- Other was in the top 5 reasons for loss for the first time since 2016. These reports included several comments of:
  - Excess viral load in 2020
  - Drought
  - Inability to do cleansing flights.
- 2020 Honey Crop (New question added)
  - Above Average: 27 apiaries
  - Average: 80 apiaries
  - Below Average: 153 apiaries

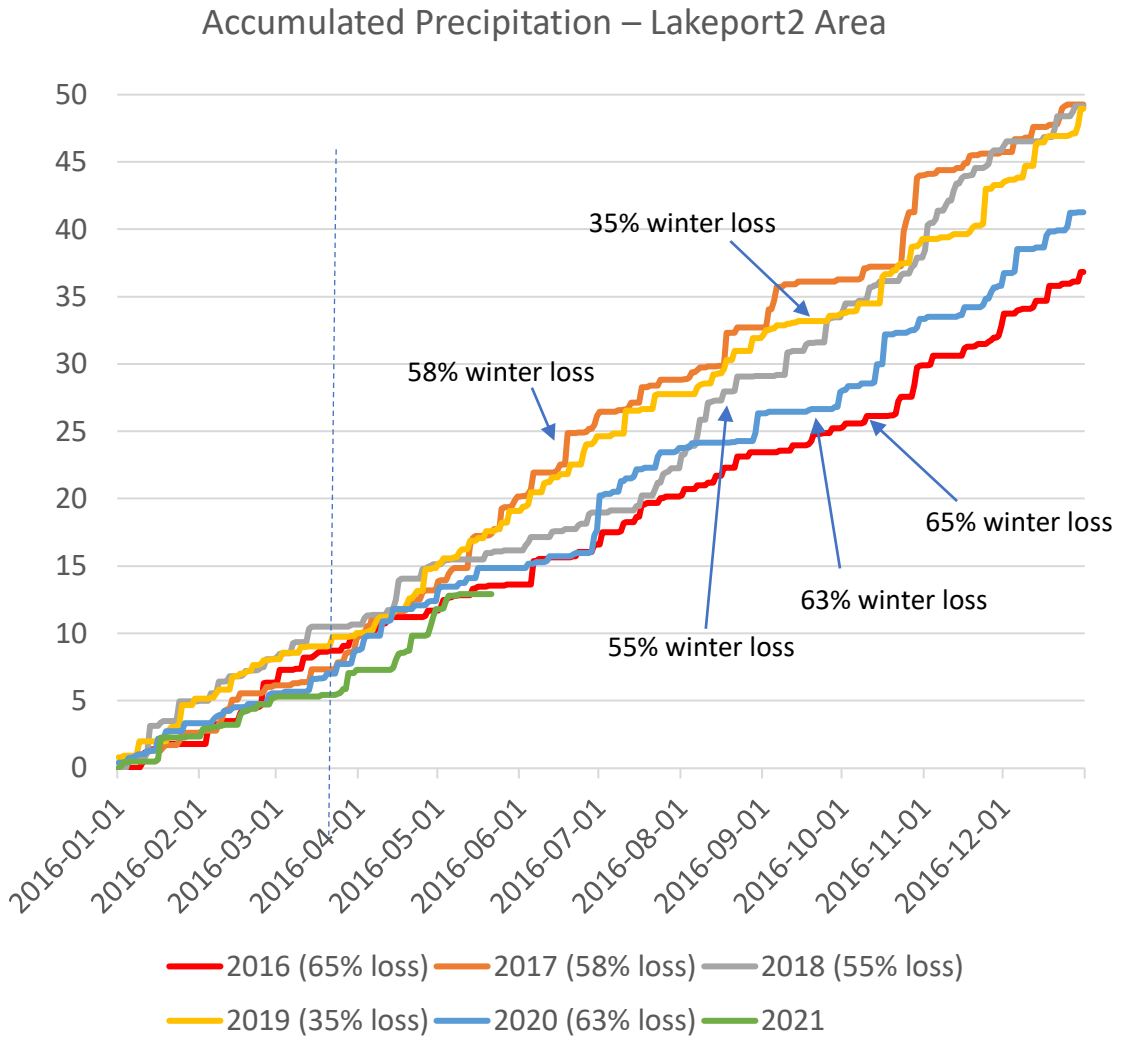
Additional Information

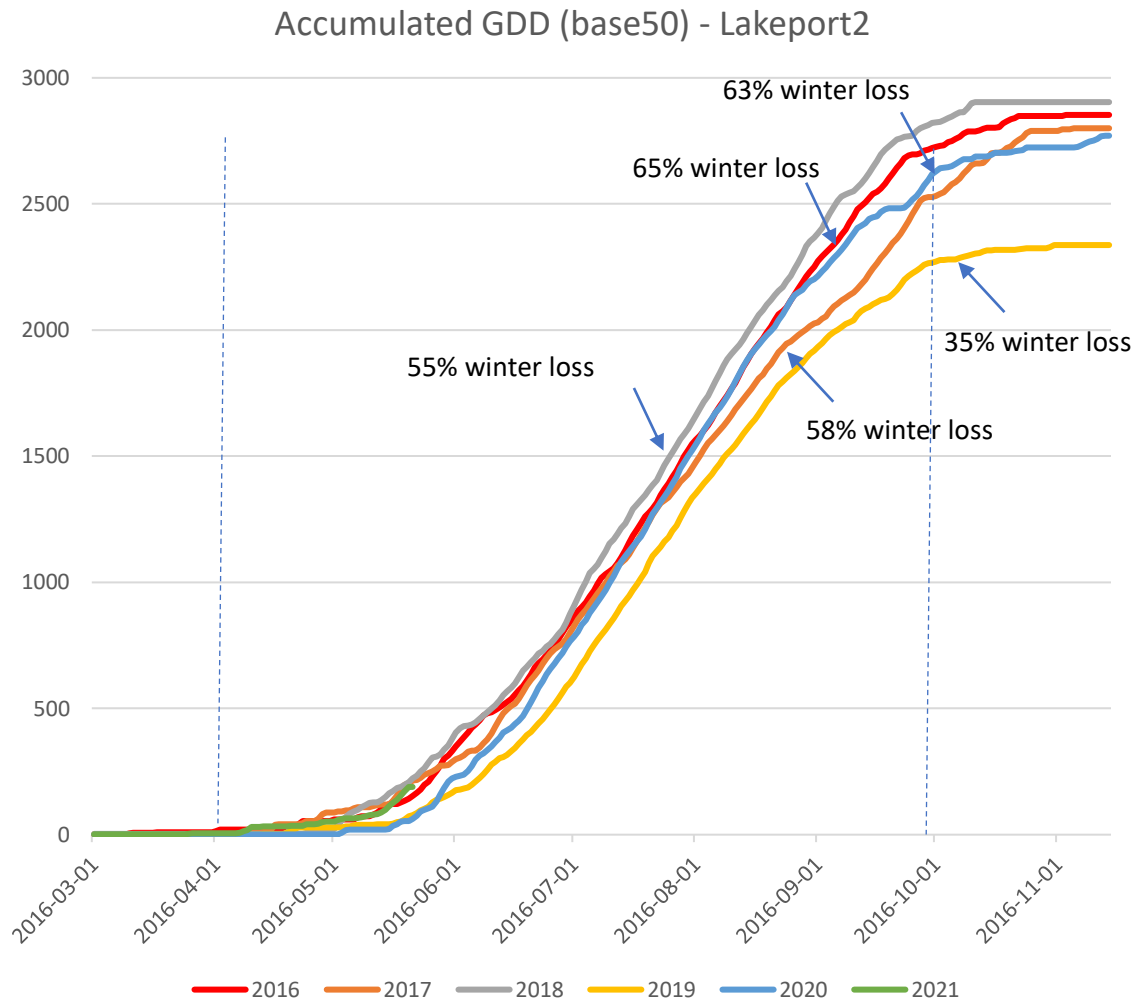
Notes

- Hive & NUC Loss per month – If there was more than 1 month listed, I assume that the hives/NUCs were lost equally across the months.. Ex: If 2 hives were lost & 2 months were listed, I applied 1 hive loss in month1 and 1 hive loss in month 2
- For “survival by Type” graphs, I only used the data for apiaries with 1 race of bees, because I had no way to know the split of which hives survived and which died when there were multiple races reported in a given apiary.
- For “survival by treatment type” graphs, I only used the data for apiaries that used 1 type of commercial treatment because I had no way to know the split of what products were used on which surviving hives in a given apiary

Precipitation (Laconia area)

Source :http://climod2.nrcc.cornell.edu/





Interesting in how 3 years with lowest precip are the 3 years with the fastest GDD accumulation