2021-22 NH Winter Hive Survey Results

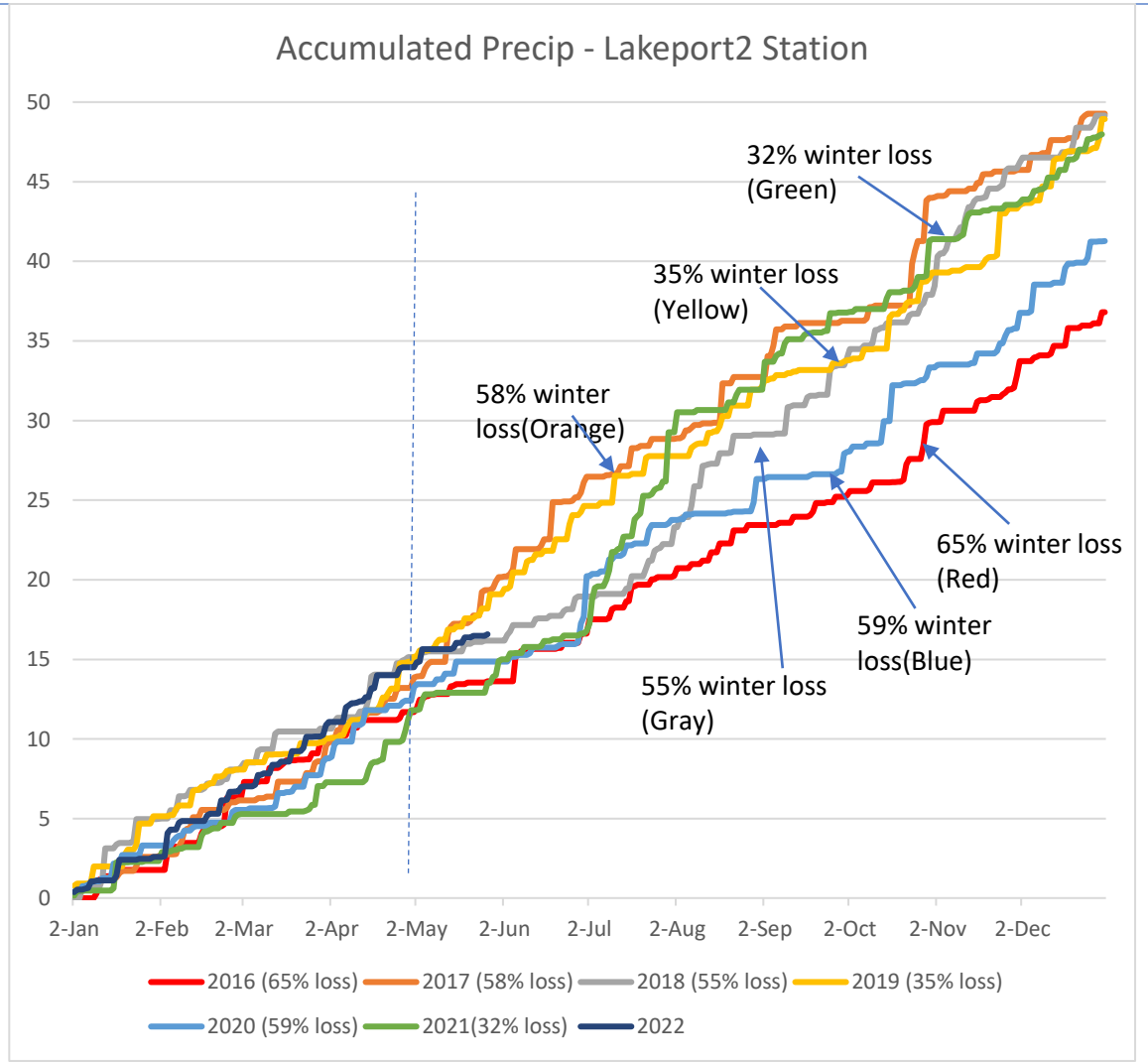
Heather Achilles

2021-22 Survey Executive Summary

- **2021-22 Winter Survival is the BEST we've seen since doing the survey : 68% (32% loss)**
- Weak Colony displaced Varroa Mites as the top reason for loss.
- Other was in the top 5 reasons for loss for the second time since 2016. These reports included several comments of:
  - Mice, Shrews, Skunks & Weasels
  - Poor fall conditions for raising winter bees
- 88% of the colonies were treated at least one time for varroa mites.
- 2021 Honey Crop
  - Above Average: 39 apiaries
  - Average: 81 apiaries
  - Below Average: 119 apiaries

2021-22 Survey Notable Changes from Previous Years

- Best survival rates since we have been doing the survey.
- Weak Colony was listed as the #1 reason for loss
  - Varroa Mites,#1 for the previous 5 years, was #2 this year
- 78% of apiaries (~88% of hives) used commercial varroa treatment at least 1 time
- 80% of apiaries report doing varroa mite testing at least once
- Increasing number of comments/notes about hives being in a building for the winter
- Coos County hives reported significantly more issues with Yellow Jackets, Wasps, etc.. than others
- Nosema treatments increased back to levels seen in 2016-2019.

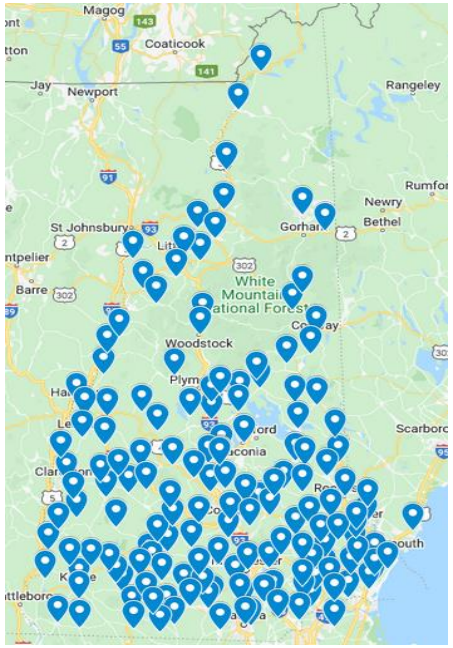


Source :http://climod2.nrcc.cornell.edu/

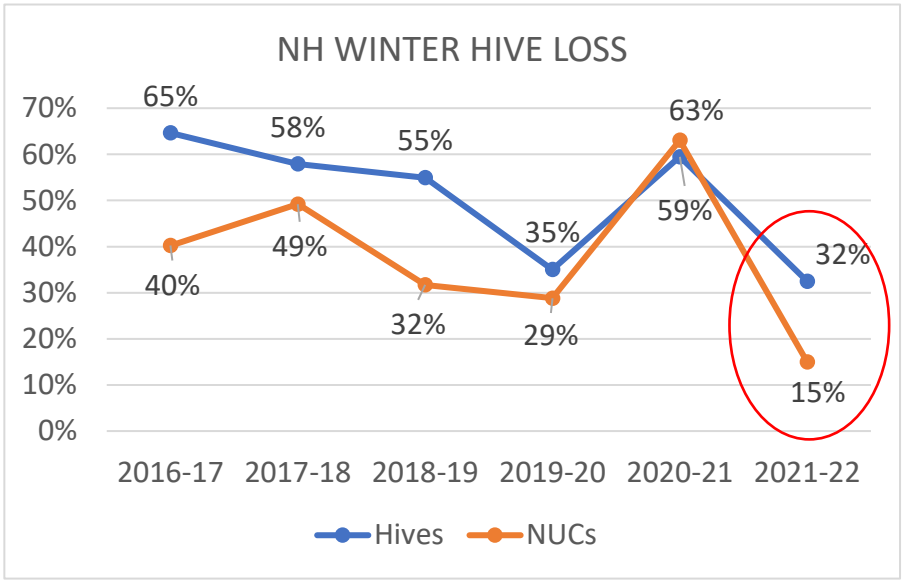
2021-22 Hive Loss Survey Recommendations & Request for Approval

- 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
- Submit an article to ABJ and/or Bee Culture describing our findings
- Determine if there continues to be value in collecting this survey data. If so, Run this survey in 2023

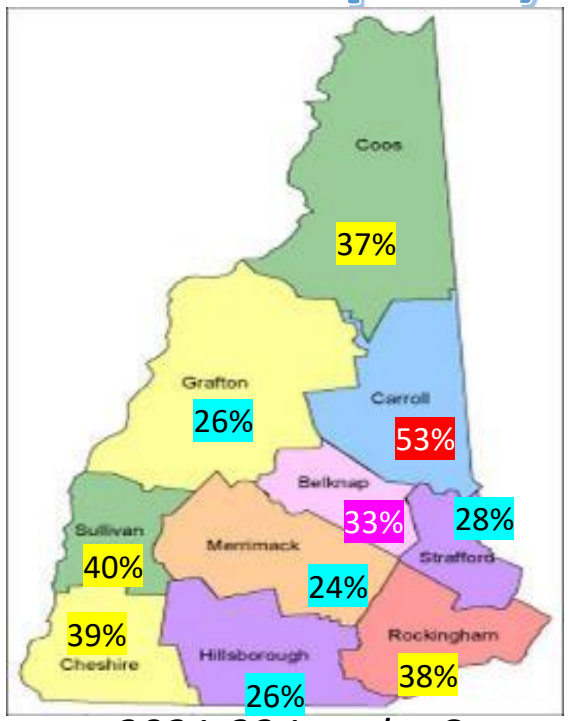
2021-22 NH Winter Hive Survival (Oct 1→Apr 1)



2021-221: 159 towns/369apiaries

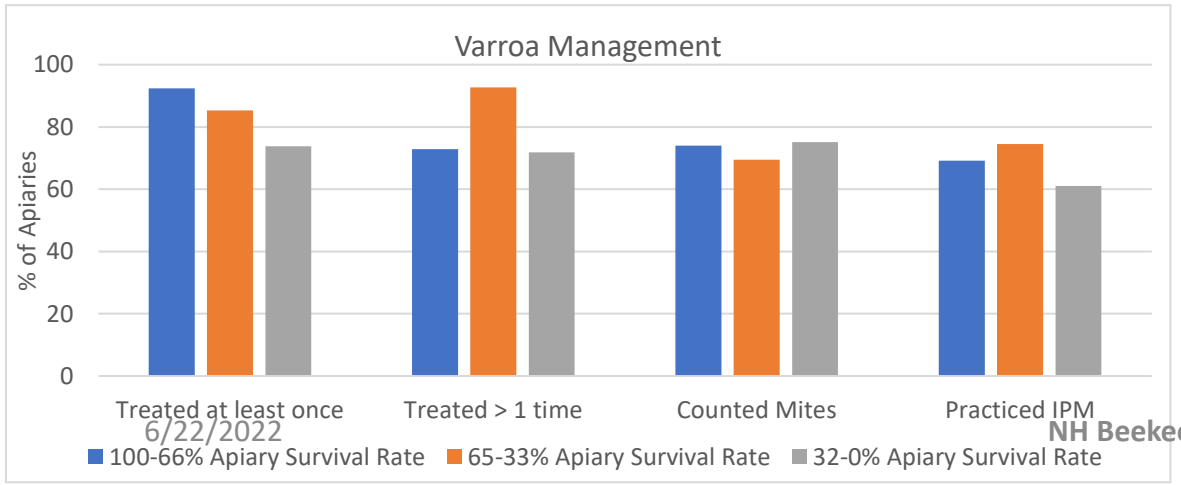


32% Hive Loss & 16% NUC loss over the Winter of 2021-21



2021-22 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

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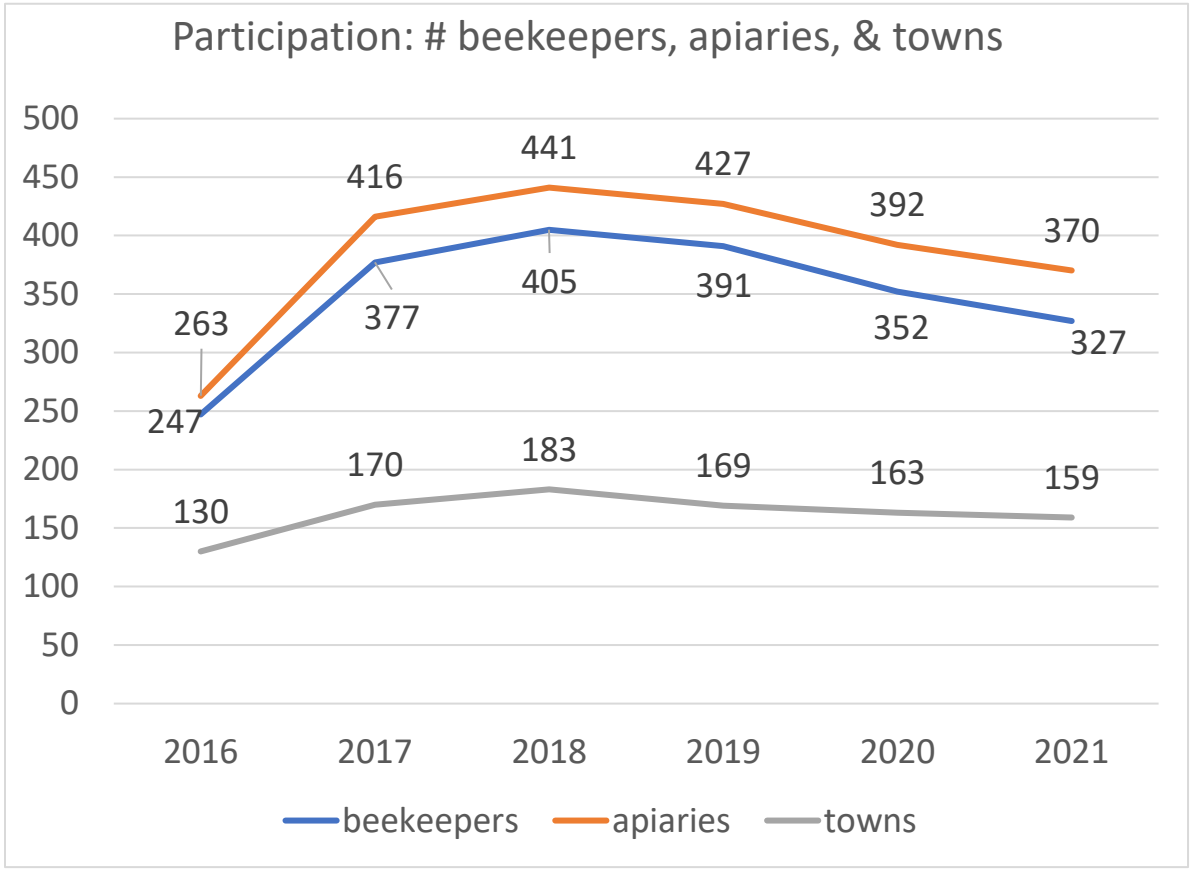
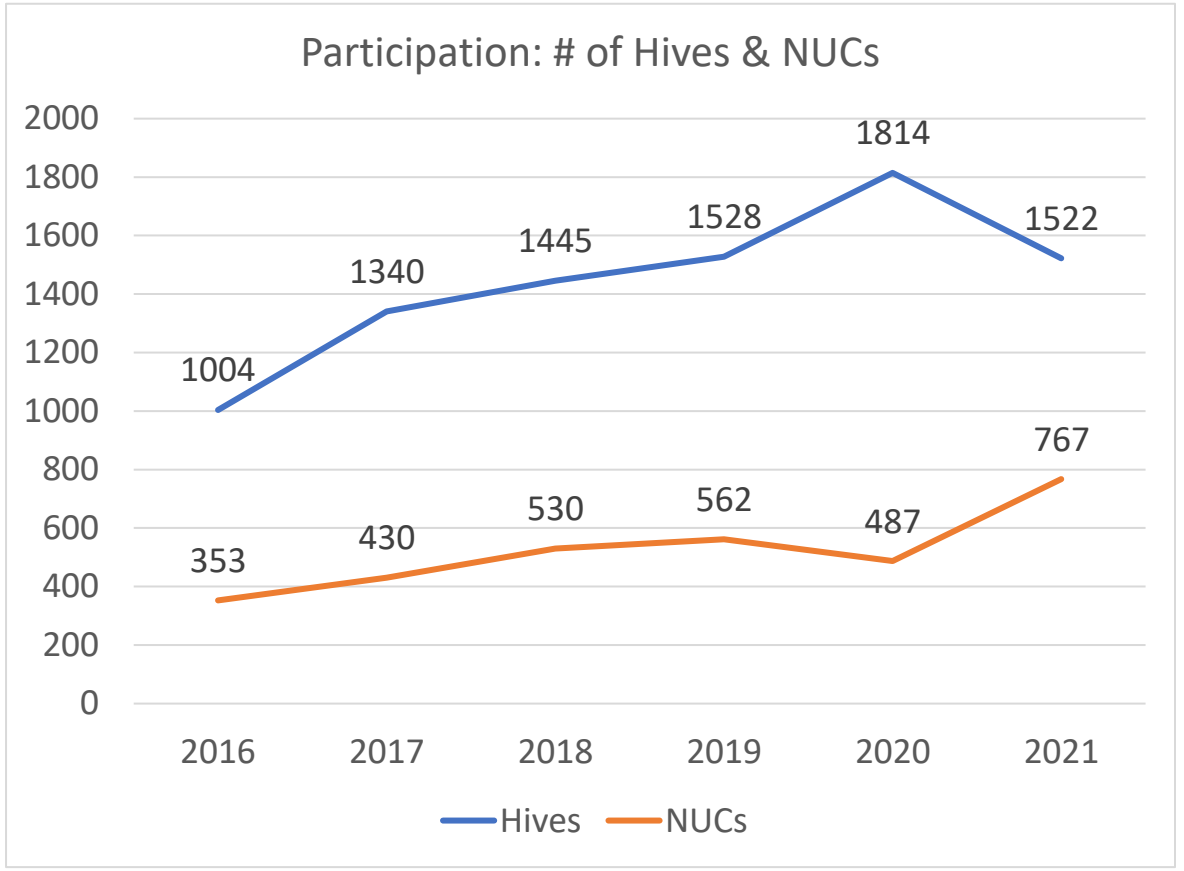
Participation & Demographics

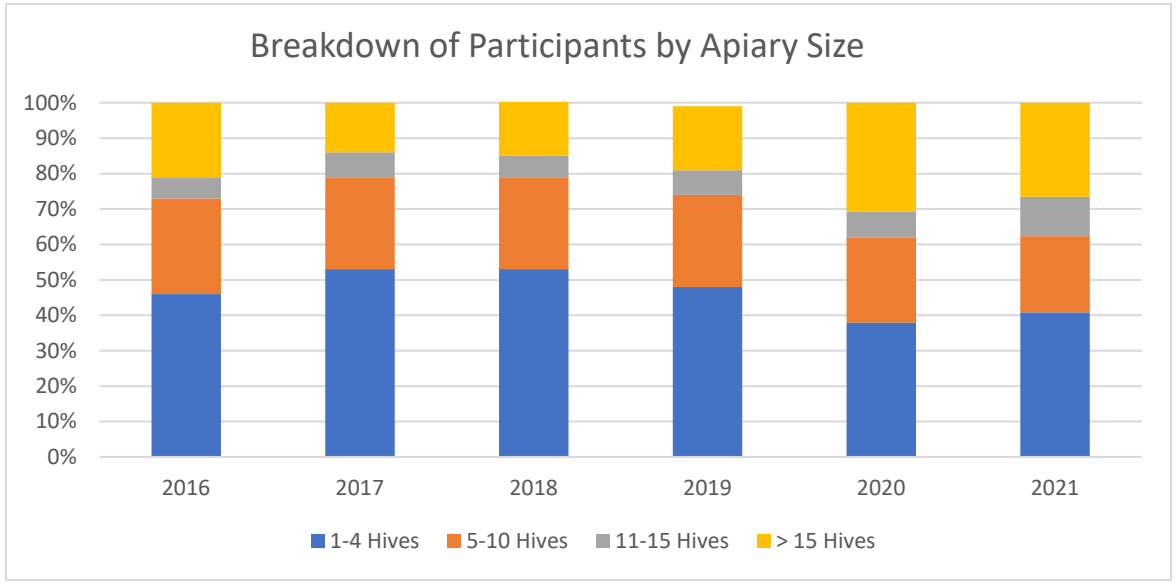
Survey Participation Over the Years

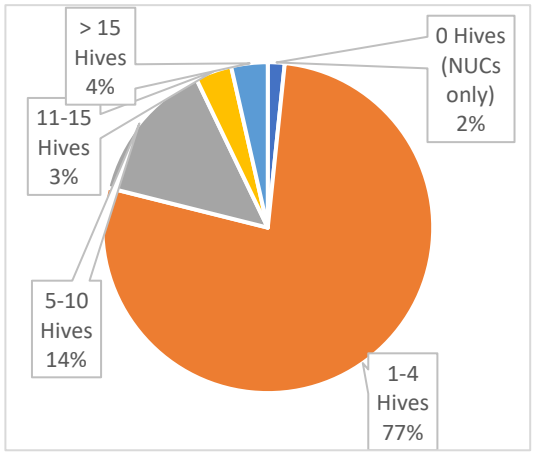




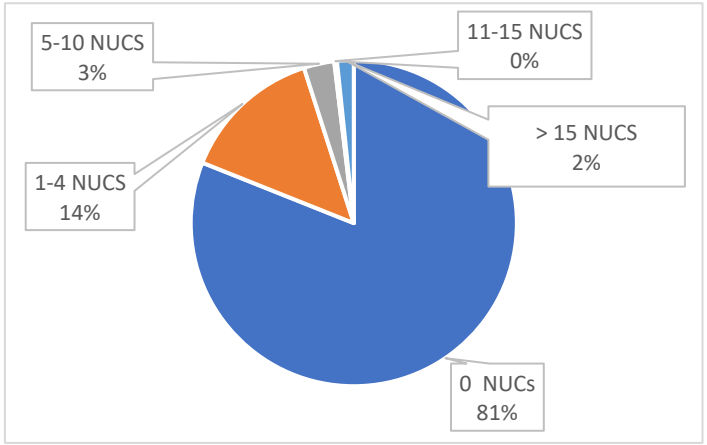
2021-22 Survey : Very Good Response!
Out of state Participants: MA: 1 apiary (2 Hives), ME: 1 apiary(2 Hives)

Size of Apiaries Participating in Survey





2021 Hives - Apiary Size Breakdown**



2021 NUC Apiary Size Breakdown

Apiary representation in Survey by number of hives

	2016	2017	2018	2019	2020	2021
1-4 Hives	46%	53%	53%	48%	38%*	41%
5-10 Hives	27%	26%	26%	26%	24%	22%
11-15 Hives	6%	7%	6%	7%	7%	11%
> 15 Hives	21%	14%	16%	18%	31%	26%

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

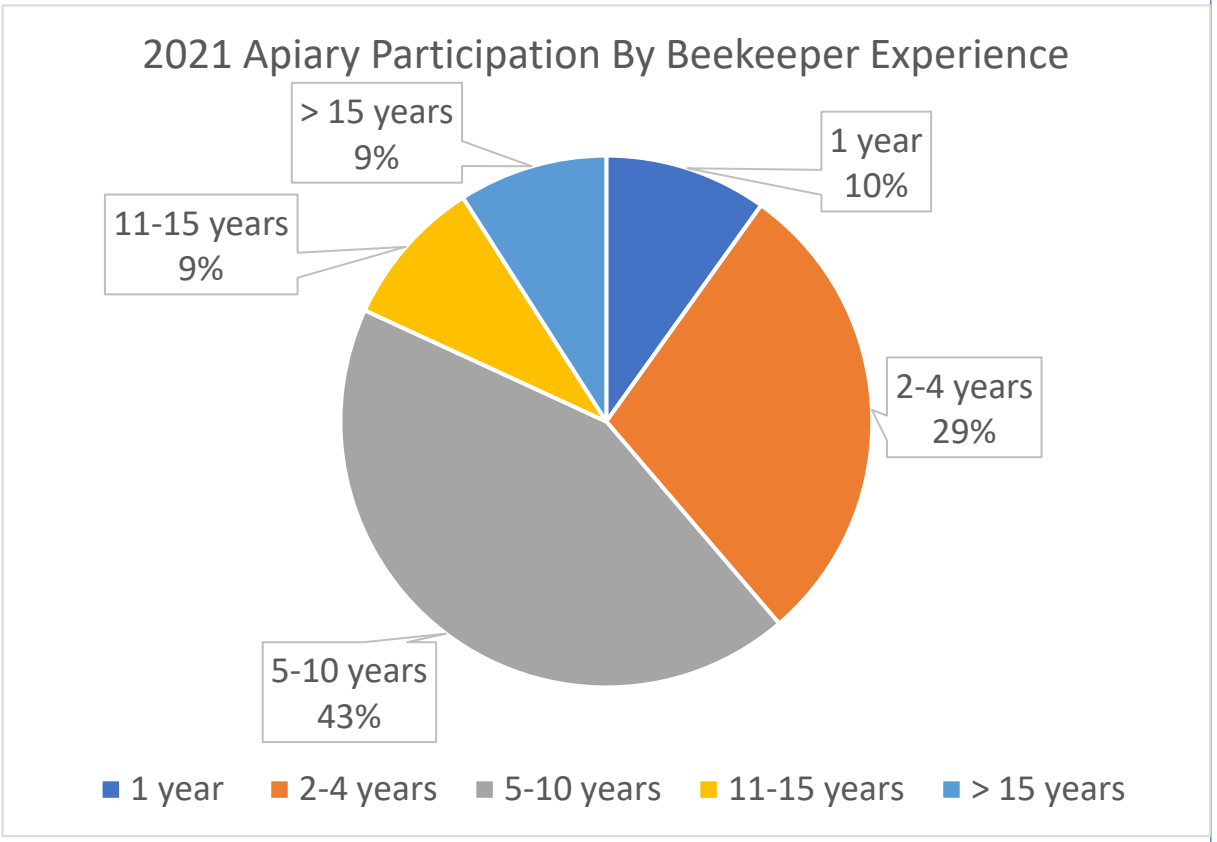
2021-22 : average hives per apiary: 4.17

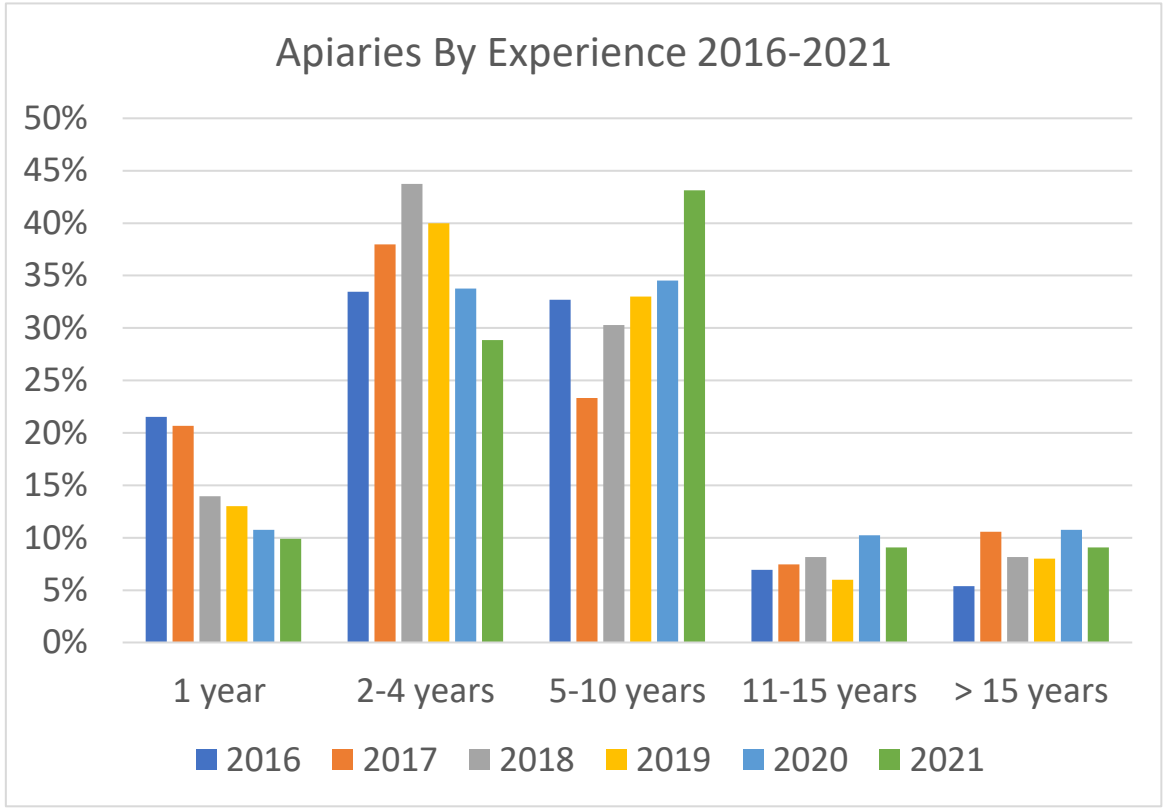
Apiaries with > 15 hives continue to have larger representation than in the past

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 2021
- ~10% managed by first year beekeepers
- ~72% managed by beekeepers with 2-10 years experience
- ~18% are managed by beekeepers with > 11 years experience

Respondent's Club Affiliations

328 Respondents:

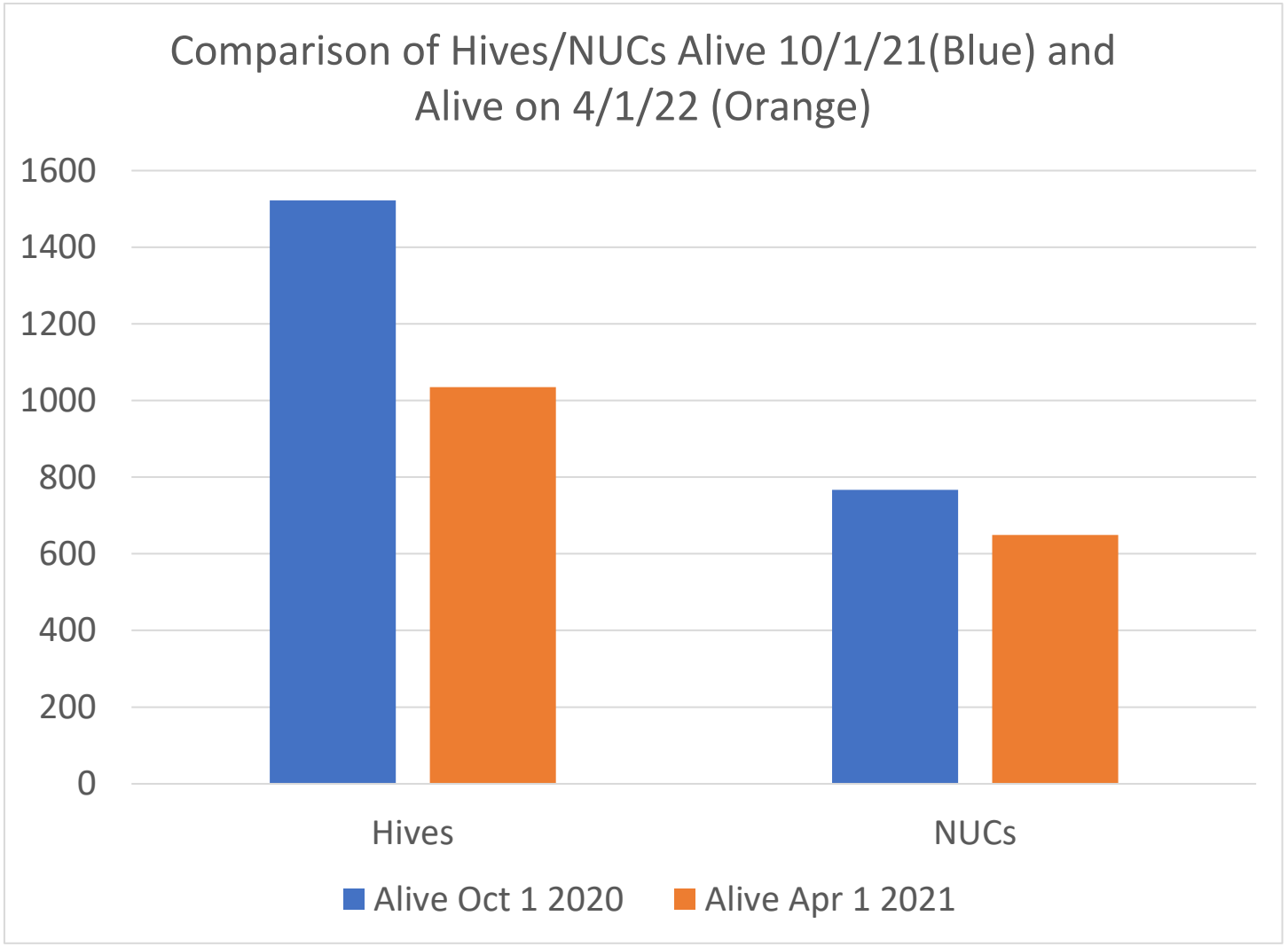
- 77 belong to NO Bee Club (~24%)
- 18 belong only to NHBA
- Other clubs mentioned:
  - Worcester County
  - Franklin county
  - Western Apiculture Society
  - South Western Ohio Oxford Hill (ME)
  - White Mountain Beekeepers
  - Middlesex county MA
  - Grafton county
  - Western Maine Beekeepers Association

Club	Respondents	Participation Rate
KBA	35	61%
PBA	46	51%
Monadnock	30	50%
MVBA	39	46%
CABA	42	40%
North Country	13	36%
PBBA	21	34%
Seacoast	30	34%
CT River Valley	3	4%
Winni	21	?

Club	Respondent
NHBA	89
EAS	9
ABF	3
VT Beekeepers	4
MA Beekeepers	6
ME Beekeepers	10

Winter Hive Loss

2021-22 Hive and NUC Winter Loss

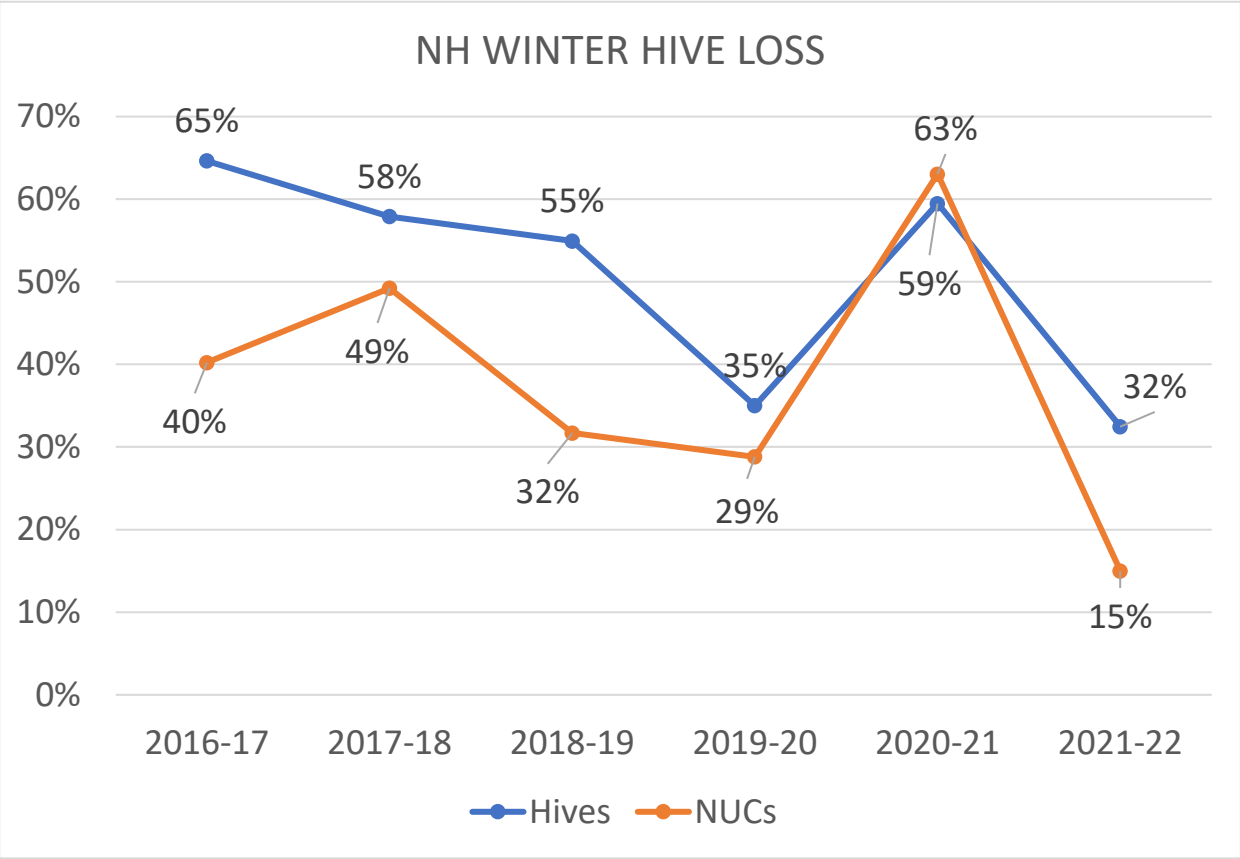


	# Hives	#NUCS
Alive Oct 1 2021	1487	679
Alive Apr 1 2022	1522	767

2021 Winter Loss:
32% Hive & 15% NUC Loss

Of the hives lost:
- 100 were overwintered
- 258 were packages
- 52 were caught swarms
- 96 were splits

2021-22 Hive and NUC Winter Loss

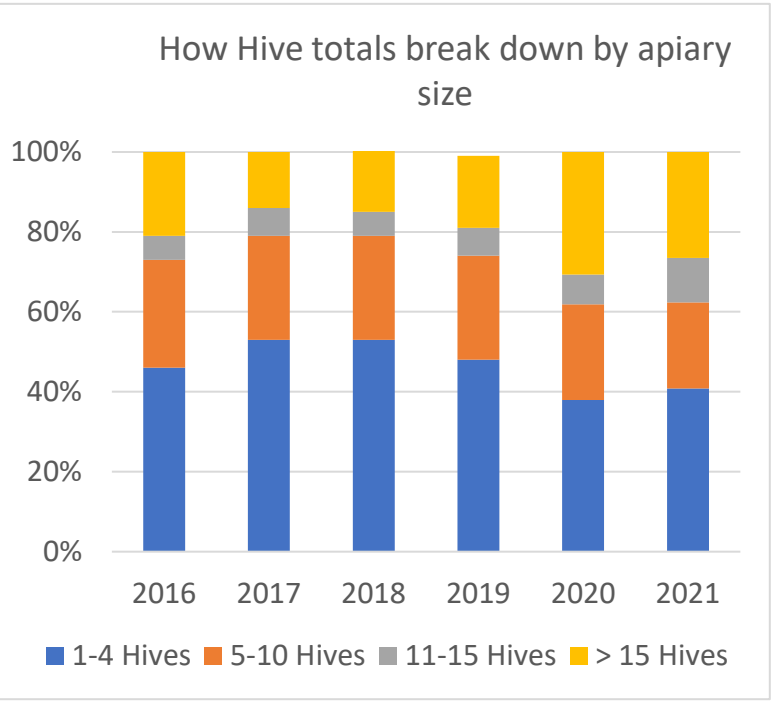


	# Hives alive on 10/1	# NUCS alive on 10/1
2016	1007	353
2017	1340	323
2018	1445	530
2019	1528	559
2020	1814	487
2021	1522	767

Lowest Loss since we've done the survey
Why was 2021 so much better than the previous year?
Theories?

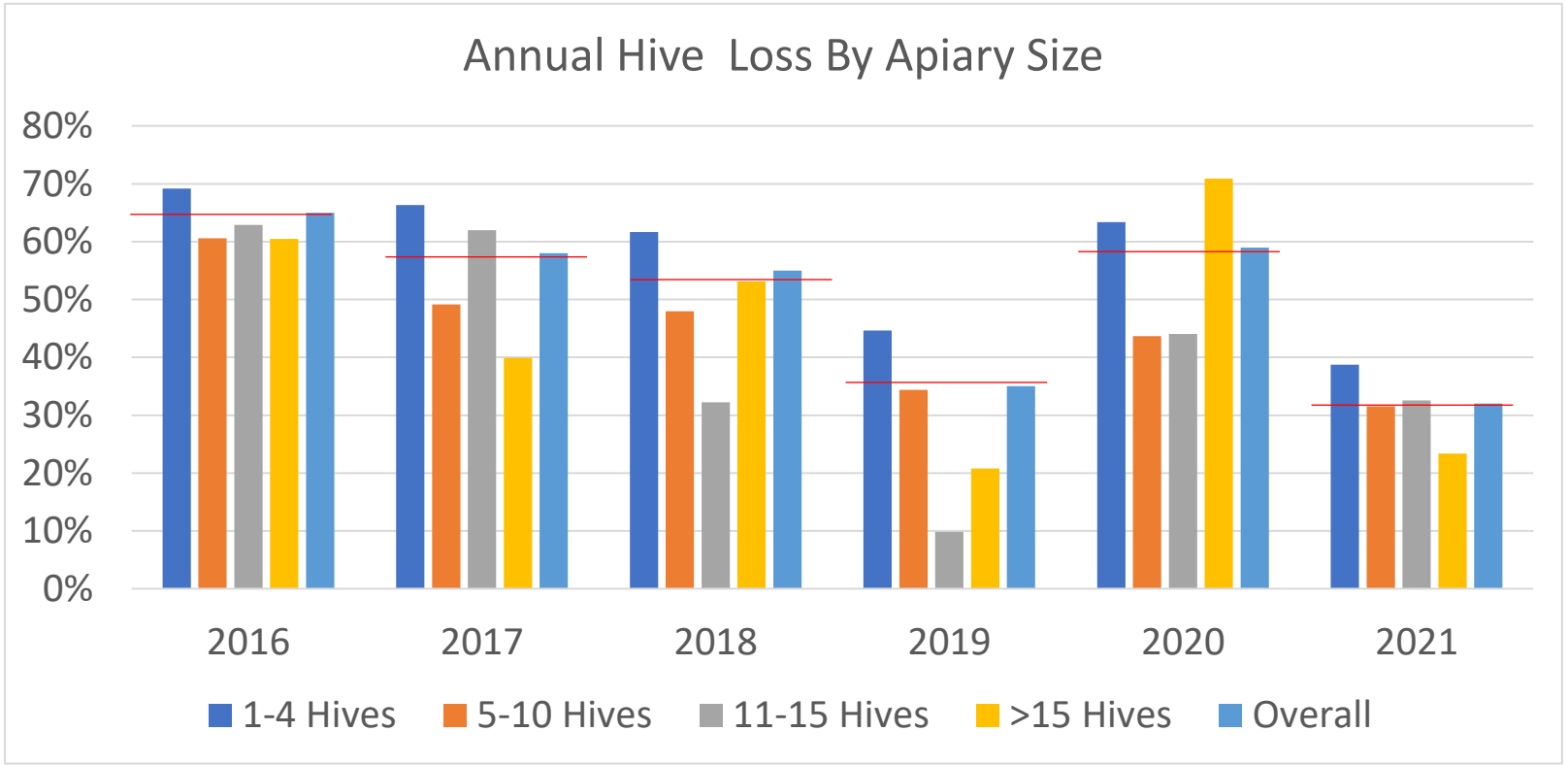
2016-2021 Hive and NUC Winter Loss By Apiary Size

Redline = Overall loss rate
Lower bar is better!



Hive Total Breakdown by Apiary Size

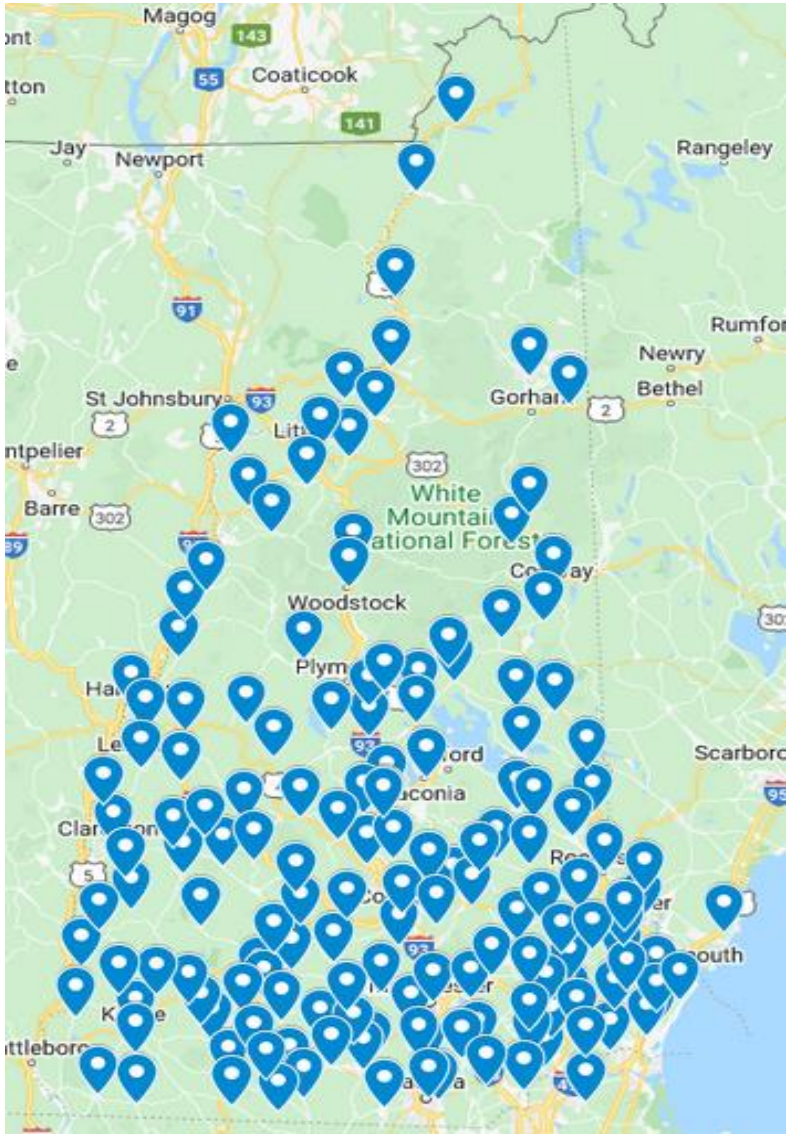
	2016	2017	2018	2019	2020	2021
1-4 Hives	46%	53%	53%	48%	38%	41%
5-10 Hives	27%	26%	26%	26%	24%	22%
11-15 Hives	6%	7%	6%	7%	7%	11%
> 15 Hives	21%	14%	16%	18%	31%	26%



Our loss totals are slanted toward smaller apiaries (< 11 colonies) as they represent 63% of the hives in the 2021-22 survey

In 2020 & 2021 , 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.

2021-22 Reported Hive and NUC Loss by County

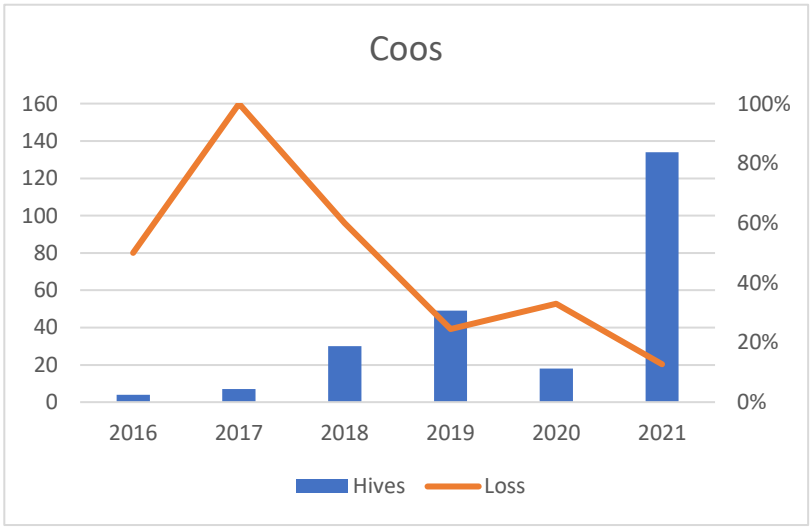


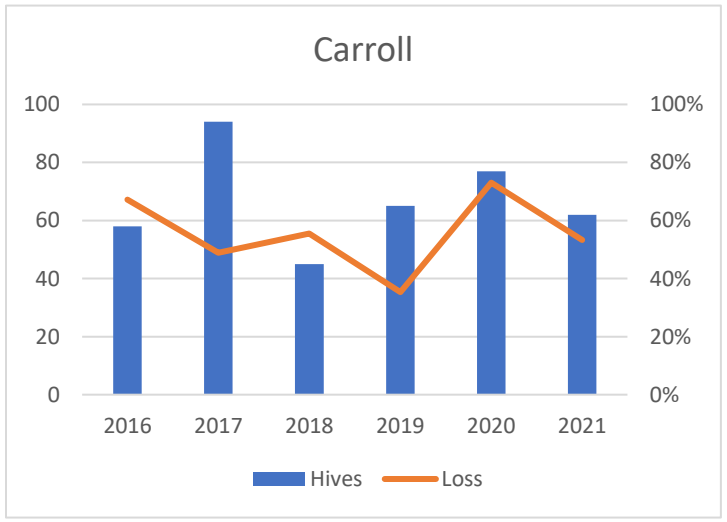
Each pin represents
a town with at least 1 hive

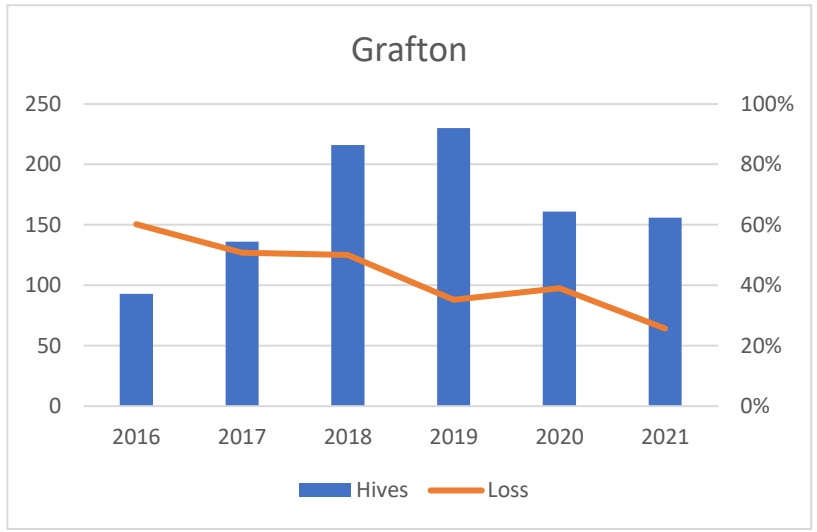
	# Hives Reported	Hive Loss	# NUCs reported	NUC Loss
Carroll	62	53%	12	50%
Sullivan	126	40%	301	12%
Cheshire	149	39%	32	31%
Rockingham	217	38%	30	30%
Coos	102	37%	134	13%
Belknap	104	33%	43	35%
Strafford	83	28%	10	20%
Grafton	156	26%	44	9%
Hillsborough	285	26%	60	17%
Merrimack	234	24%	101	10%

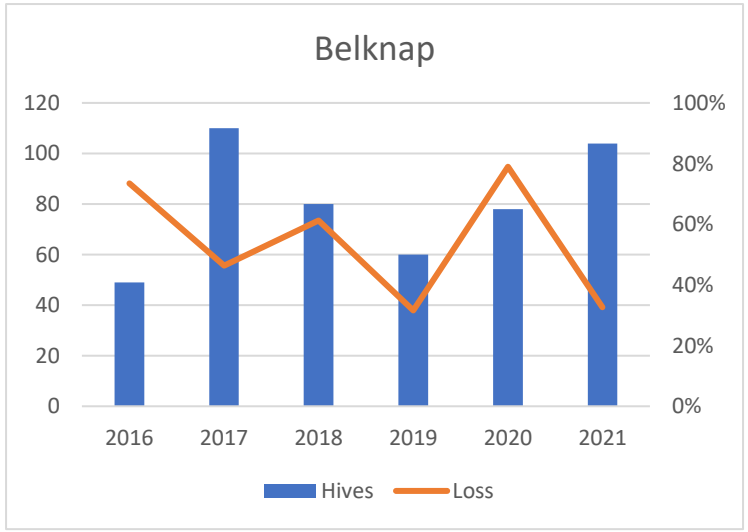
MA: 2 hives (0% loss);
ME: 2 hives (0% loss)

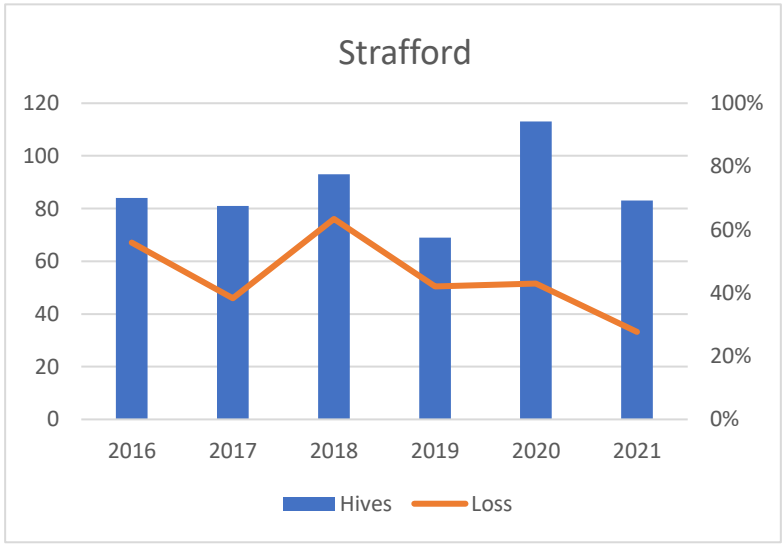
Hives Reported & Loss Rate Year to Year (by County)







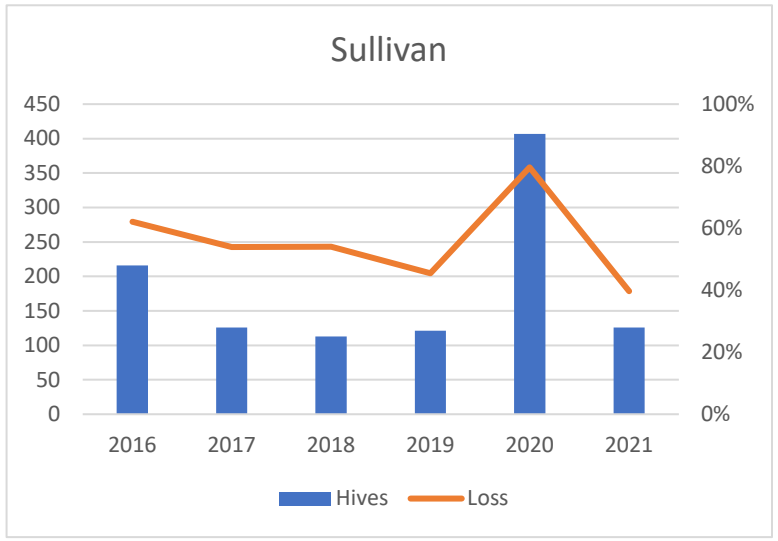


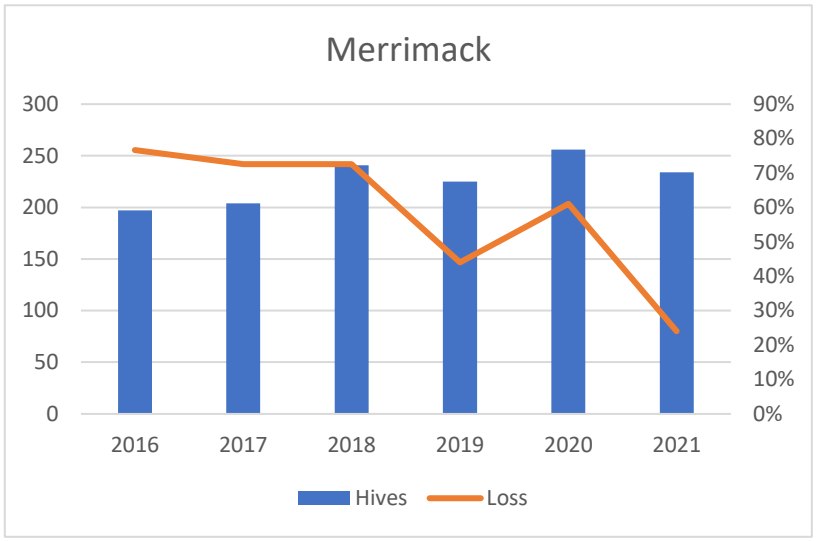


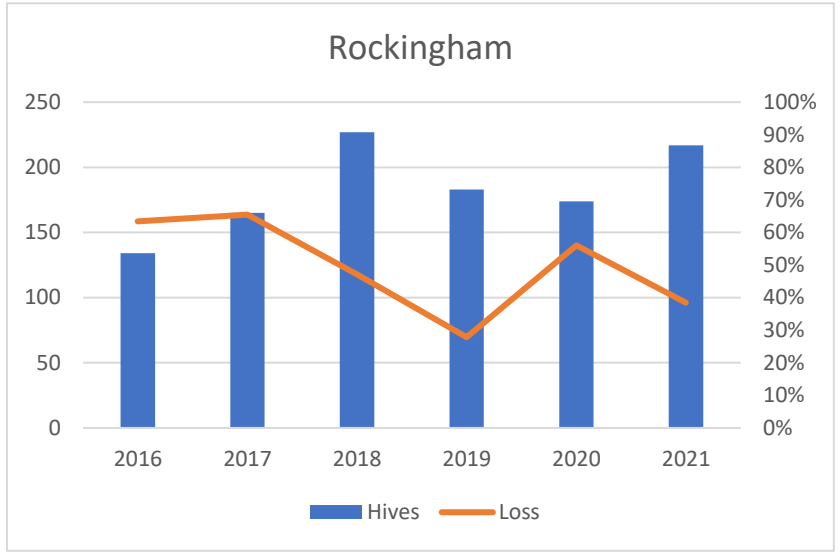
# of hives :

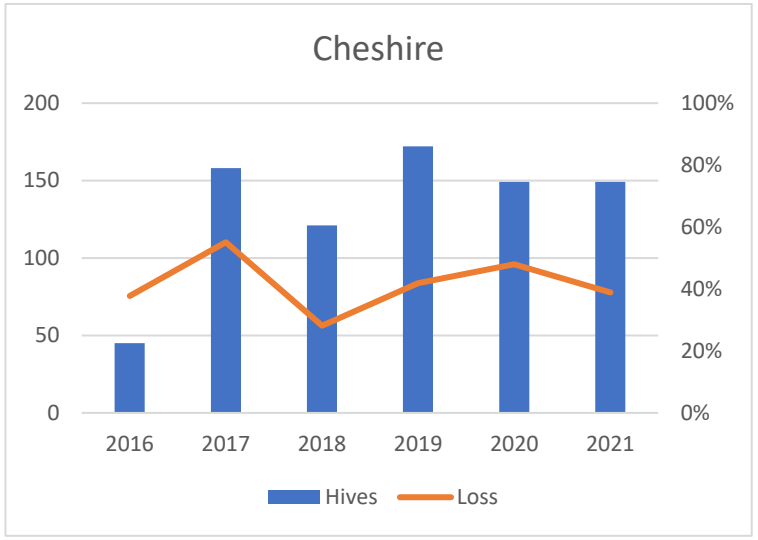
Hive loss :

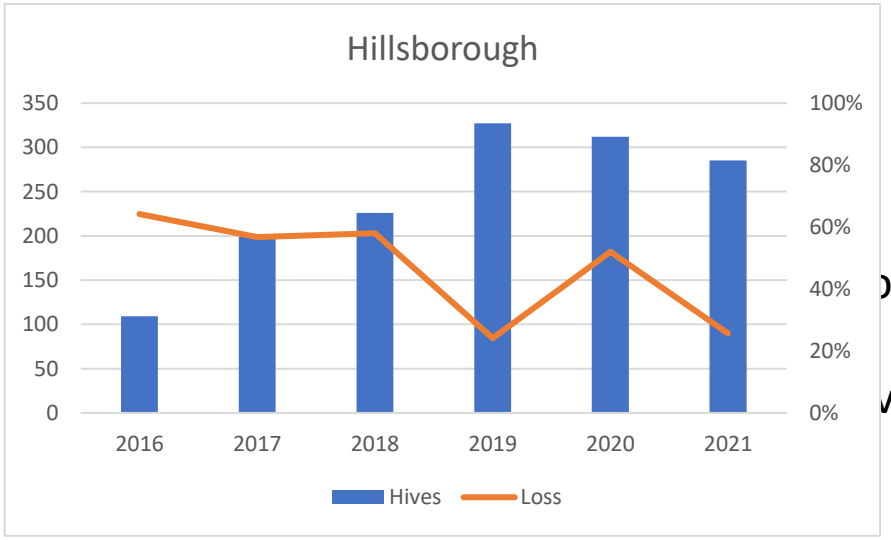
Hives Reported & Loss Rate Year to Year (by County)







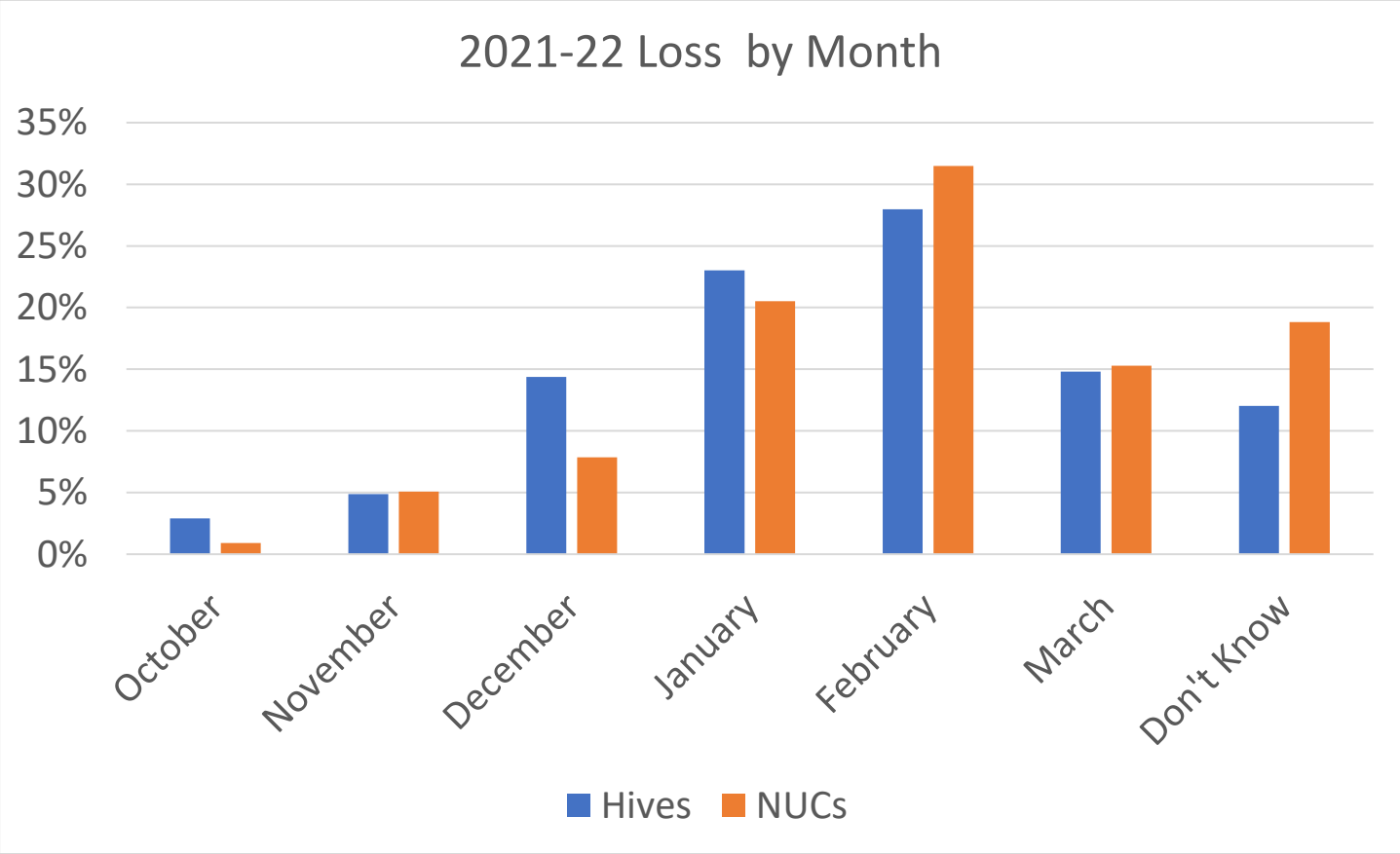




of hives :

ve loss :

Hive and NUC Loss By Month

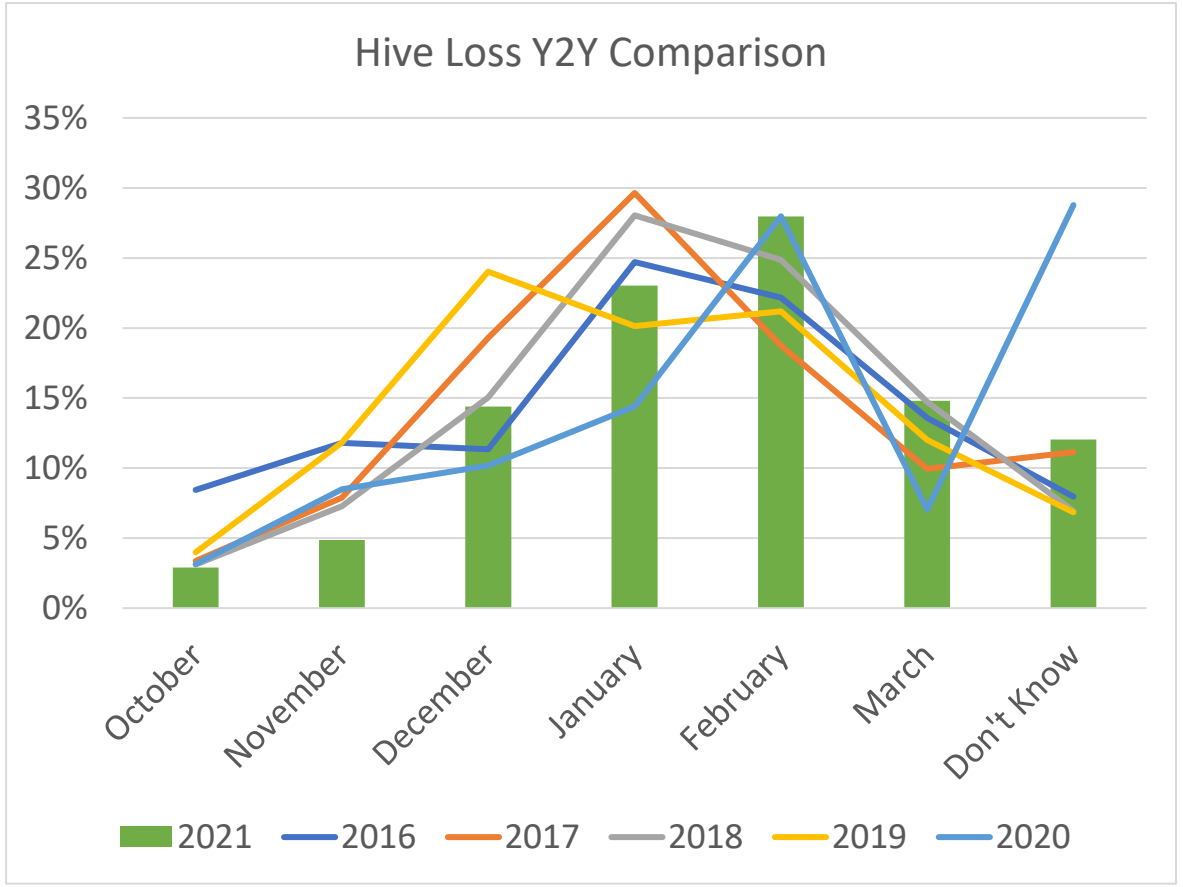


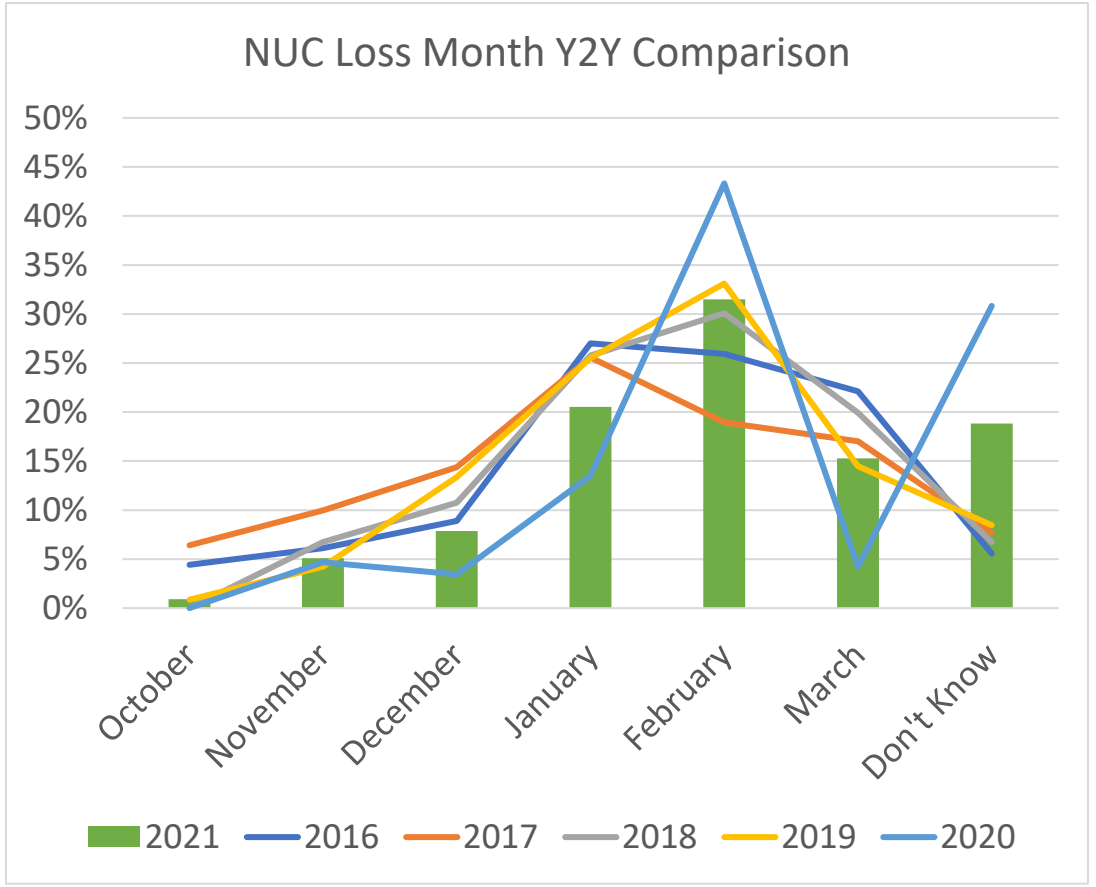
	# Hives Lost	# NUCs Lost
October	14	1
November	24	6
December	69	9
January	111	22
February	135	34
March	71	17
April	58	20
Don't Know	14	1

*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

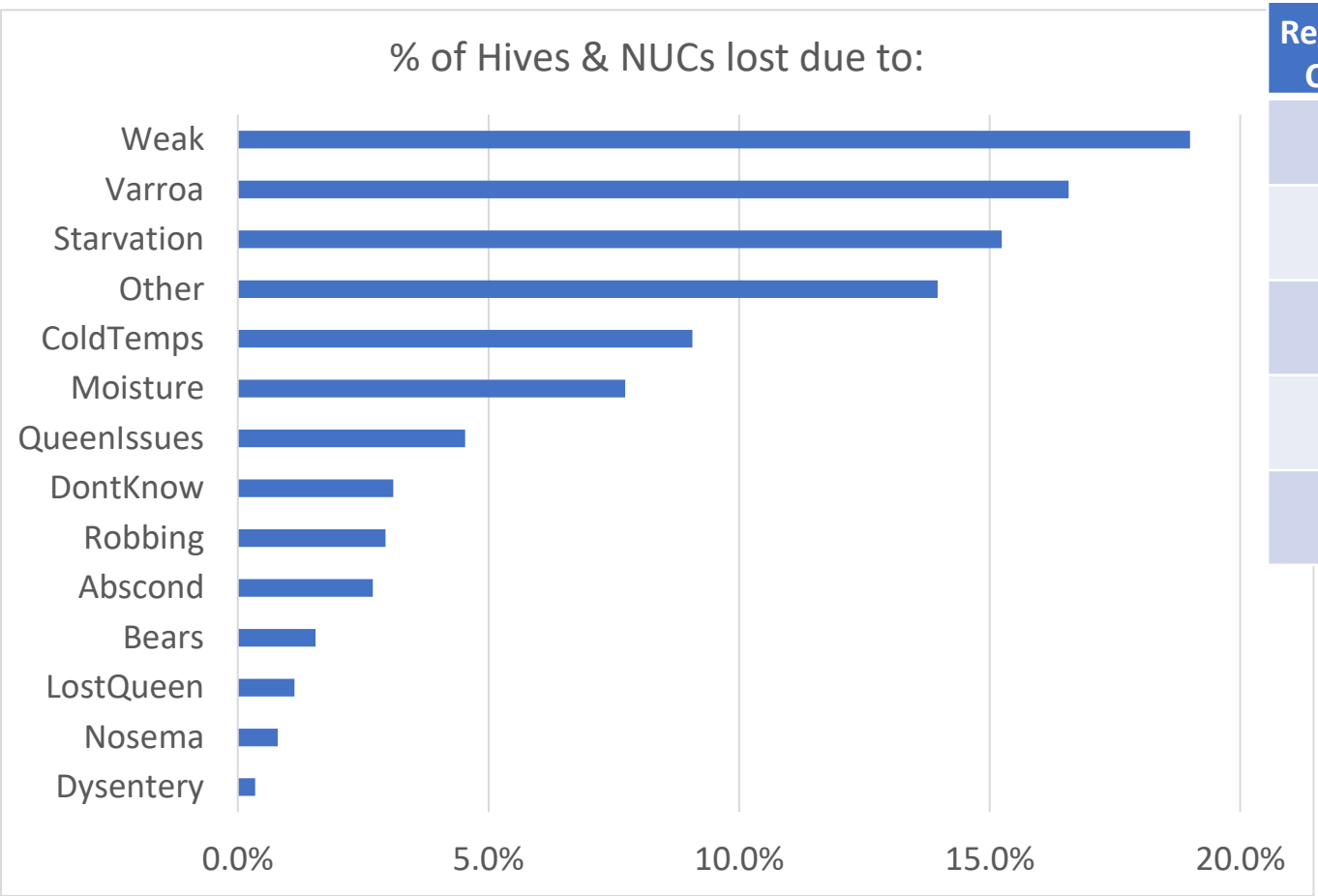




January losses were inline with previous years; February's were a bit higher

- Feb NUC Losses were in line with previous years
- The percentage of "don't know" so these could easily shift the results

Reported Cause of Loss



Reported Cause	2016	2017	2018	2019	2020	2021
#1	Varroa	Varroa	Varroa	Varroa	Varroa	Weak Colony
#2	Don't Know	Don't Know	Starvation	Weak colony	Other	Varroa
#3	Starvation	Starvation	Moisture	Cold Temps	Weak colony	Starvation
#4	Other	Moisture	Don't Know	Queen Issues*	Abscond	Other
#5	Weak colony	Cold Temps	Cold Temps	Moisture	Cold Temps	Cold temp

"Weak Colony" is the number one reason for displacing Varroa

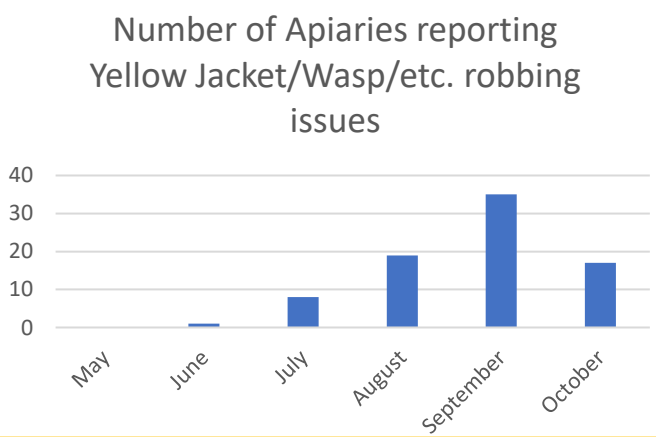
**The number of notes about mice in Hive

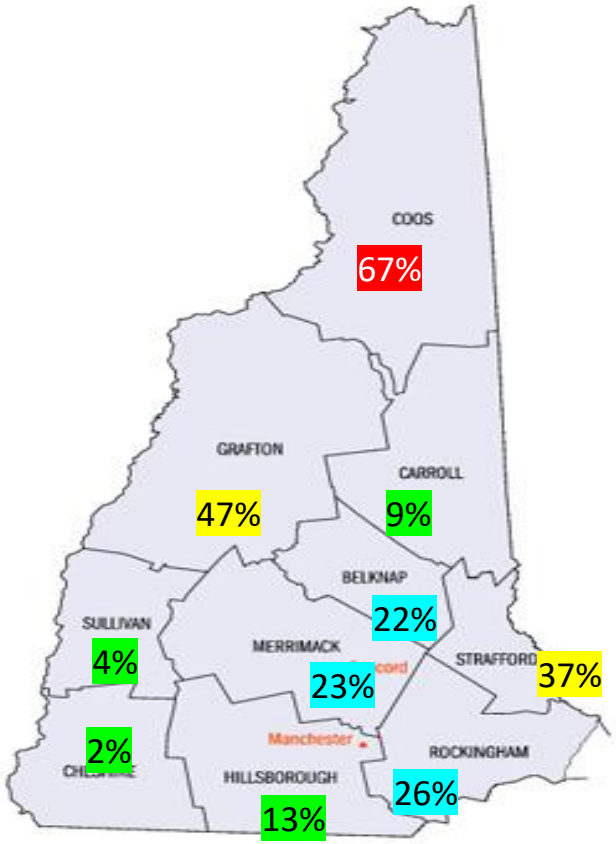
**note –When multiple causes were listed for the loss in the apiary, the number of hives+NUCs lost was divided by the number of causes listed & then applied equally to each cause

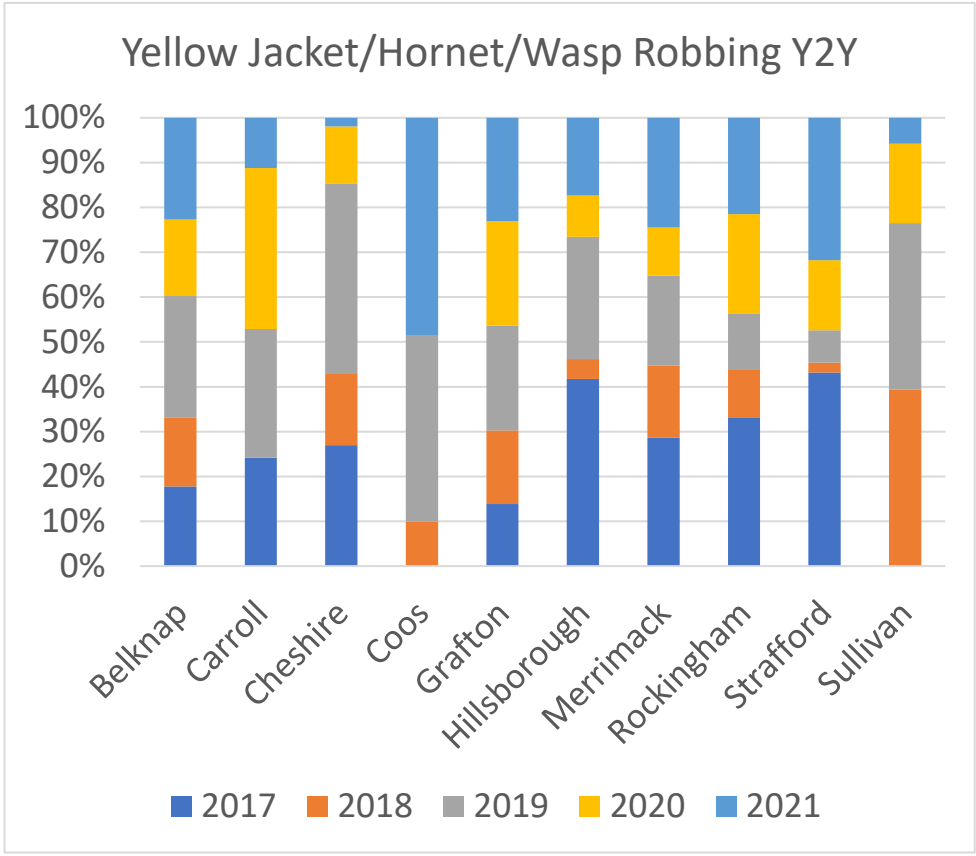
"Other": Mice, Windy Site, Hive beetles, Shrews, not enough winter bees (aka population too small for winter), too much space in the hive, extreme temperature changes, skunk or weasel, left screen bottom boards open by mistake, poor fall conditions for raising winter bees, late swarm, pesticide spraying

Yellow Jacket/Hornet/Wasp Robbing Issues

	% of hives that had robbing issues	# hives
Coos	67%	95
Grafton	47%	143
Strafford	37%	76
Rockingham	26%	174
Merrimack	23%	125
Belknap	22%	45
Hillsborough	13%	262
Carroll	9%	57
Sullivan	4%	114
Cheshire	2%	102

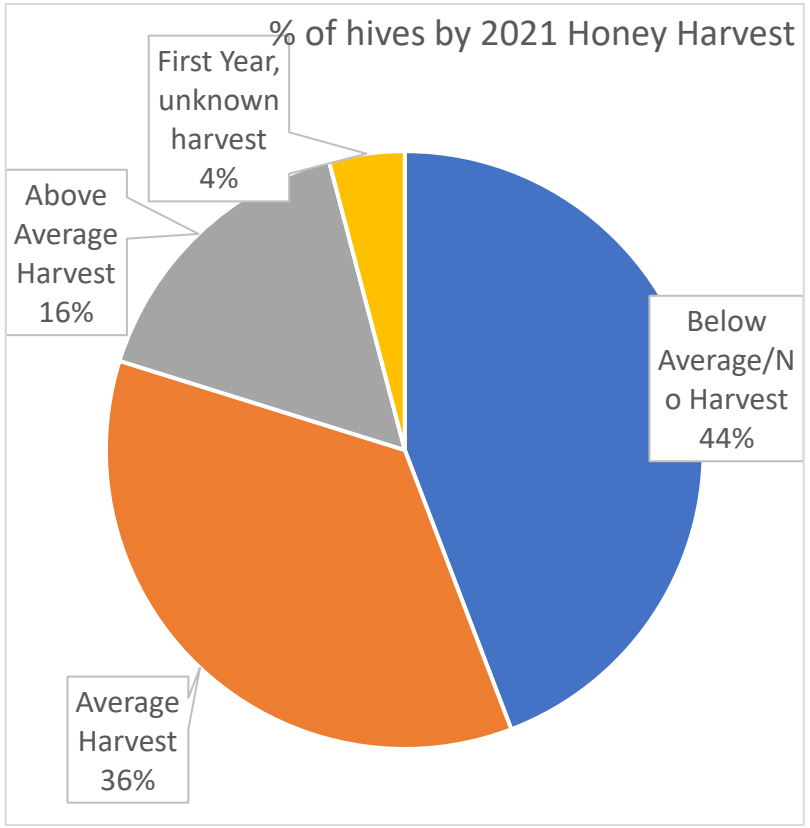


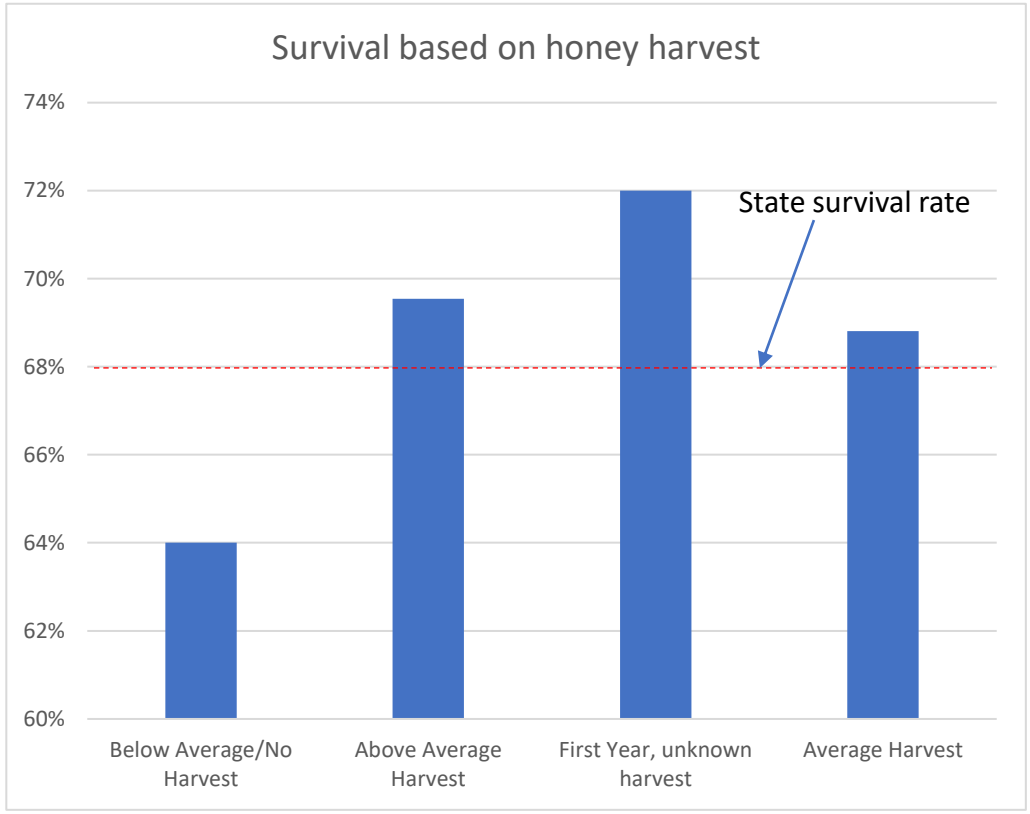




Coos and Grafton counties reported the most issues with Yellow Jacket/Hornet/Wasp Robbing
September was the worst month for this type of Robbing.

2021 Honey Harvest





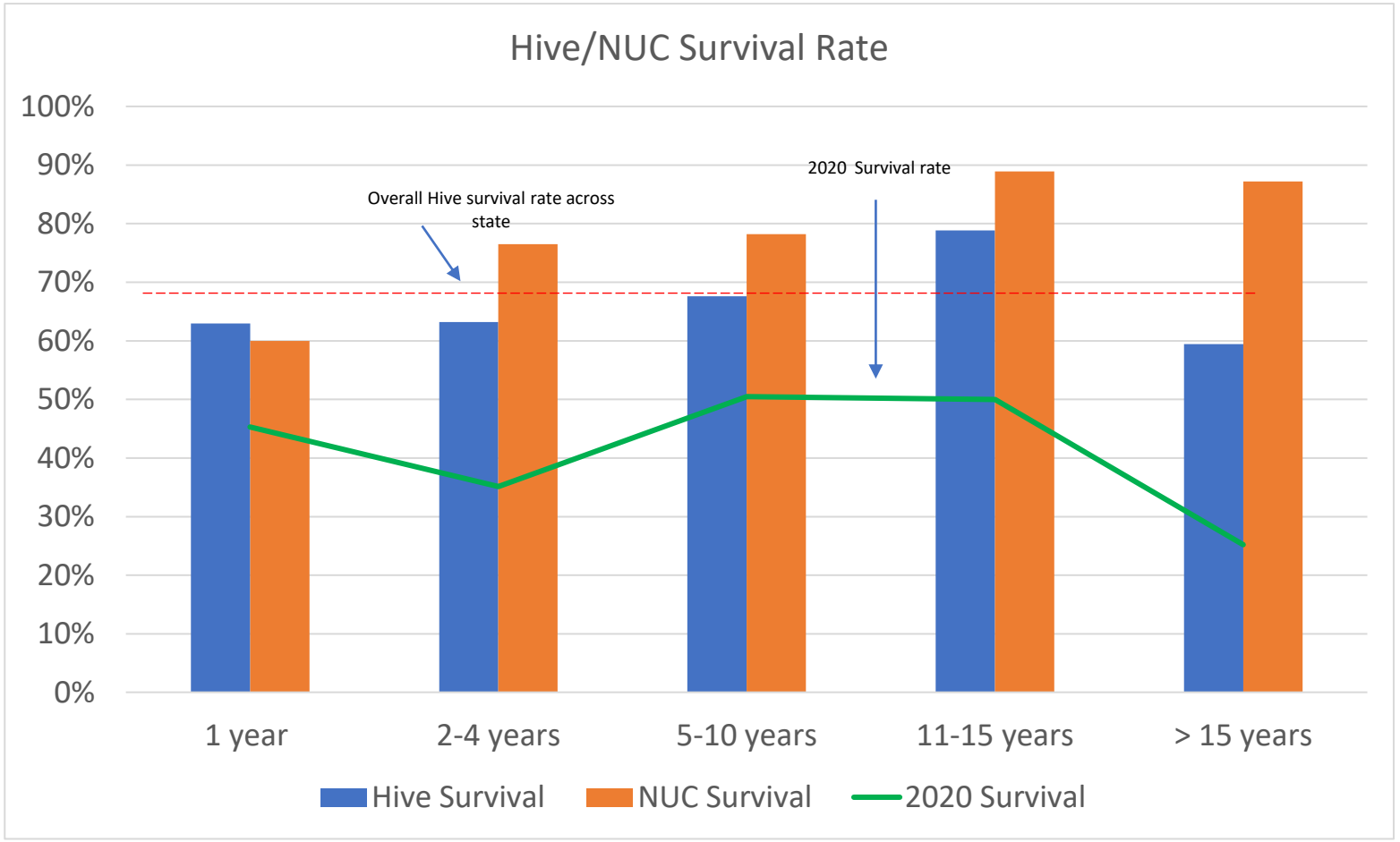
	# Hives
Below Average/No Harvest	541
Average Harvest	436
Above Average Harvest	197
First Year, Unknown	50

- 44 % of the colonies had below average honey harvest. (2020 – 58% had below average rate)
- Several comments about only spring honey – none in the fall

Next sets of graphs are SURVIVAL RATES

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

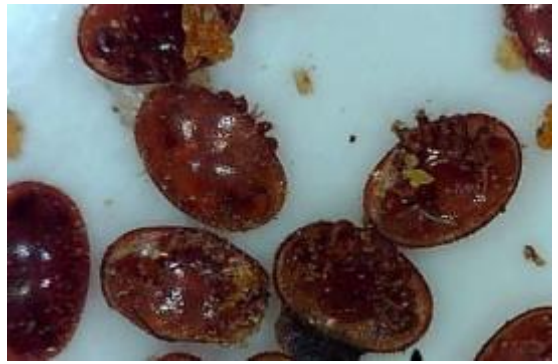
Do the Years of Experience Affect Survival Rate?



	# Hives On 10/1	# NUCs On 10/1
1 Year	54	5
2-4 Years	288	17
5-10 years	679	234
11-15 years	321	261
> 15 years	180	250

5 years experience seems to improve survival rate (consistent with previous years)

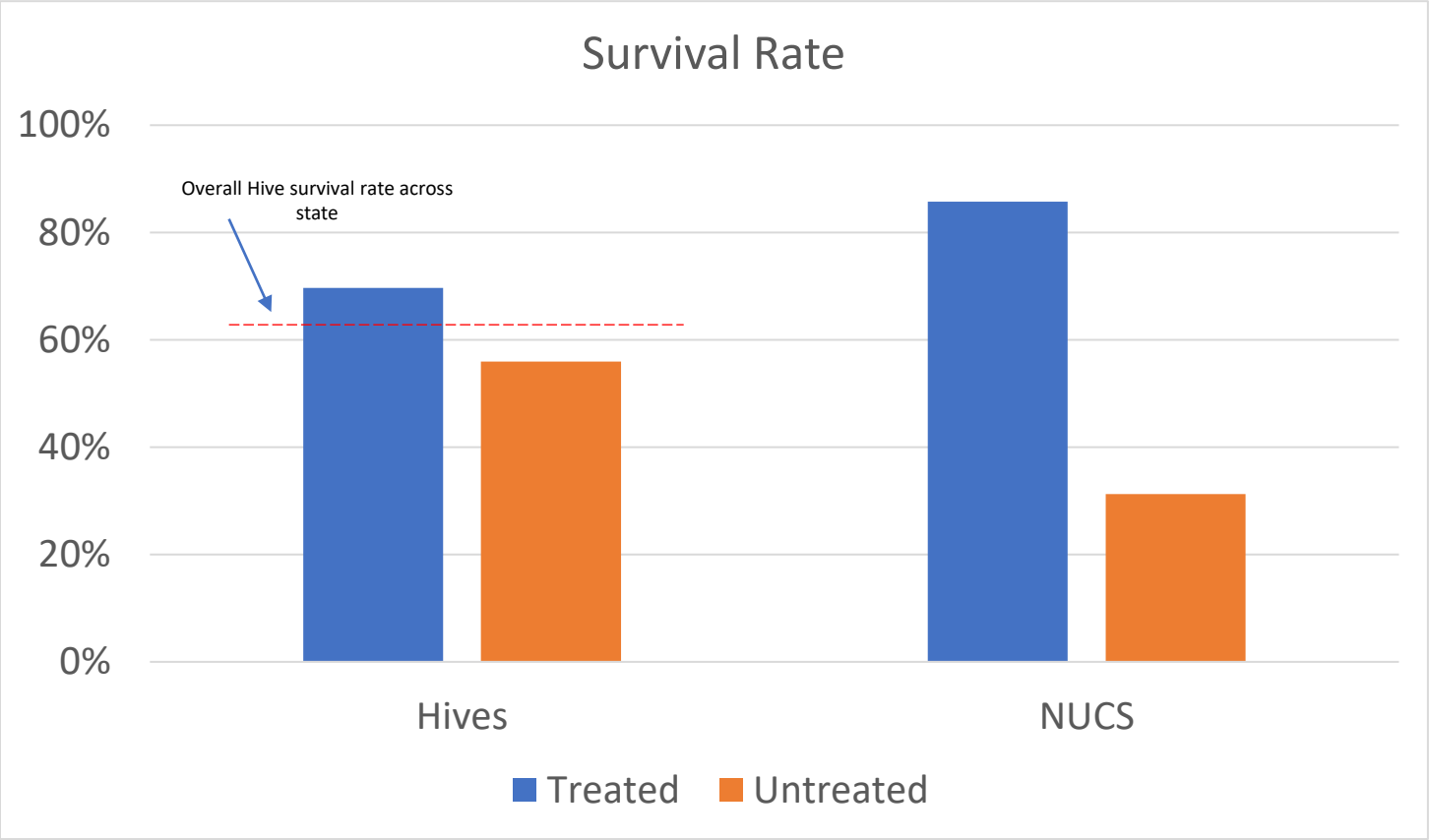
Varroa Management



2021-22 Highlights:

- Hive Survival:
  - Survival of hives treated with Commercial treatment was 14% better than those untreated(Slide 27)
  - Survival of NUCs treated with a commercial treatment was 57% better than those treated (Slide 27)
  - Hives treated > 2 times had the highest survival rate at 80% (Slide 29)
- 78% of the apiaries representing ~88% of the total hives used a commercial varroa treatment at least 1 time (Slide 28)
- ~68% of the hives were treated 2 or more times (up from 65% (2020),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 30)
- Treatment types:
  - Oxalic Acid Vapor & Formic Acid (MAQS/Formic Pro) continue to be the most popular treatment types (Slide 31)
  - 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 →80% in 2021 (Slide 36)

How does treating with commercial varroa treatments affect survival rate?

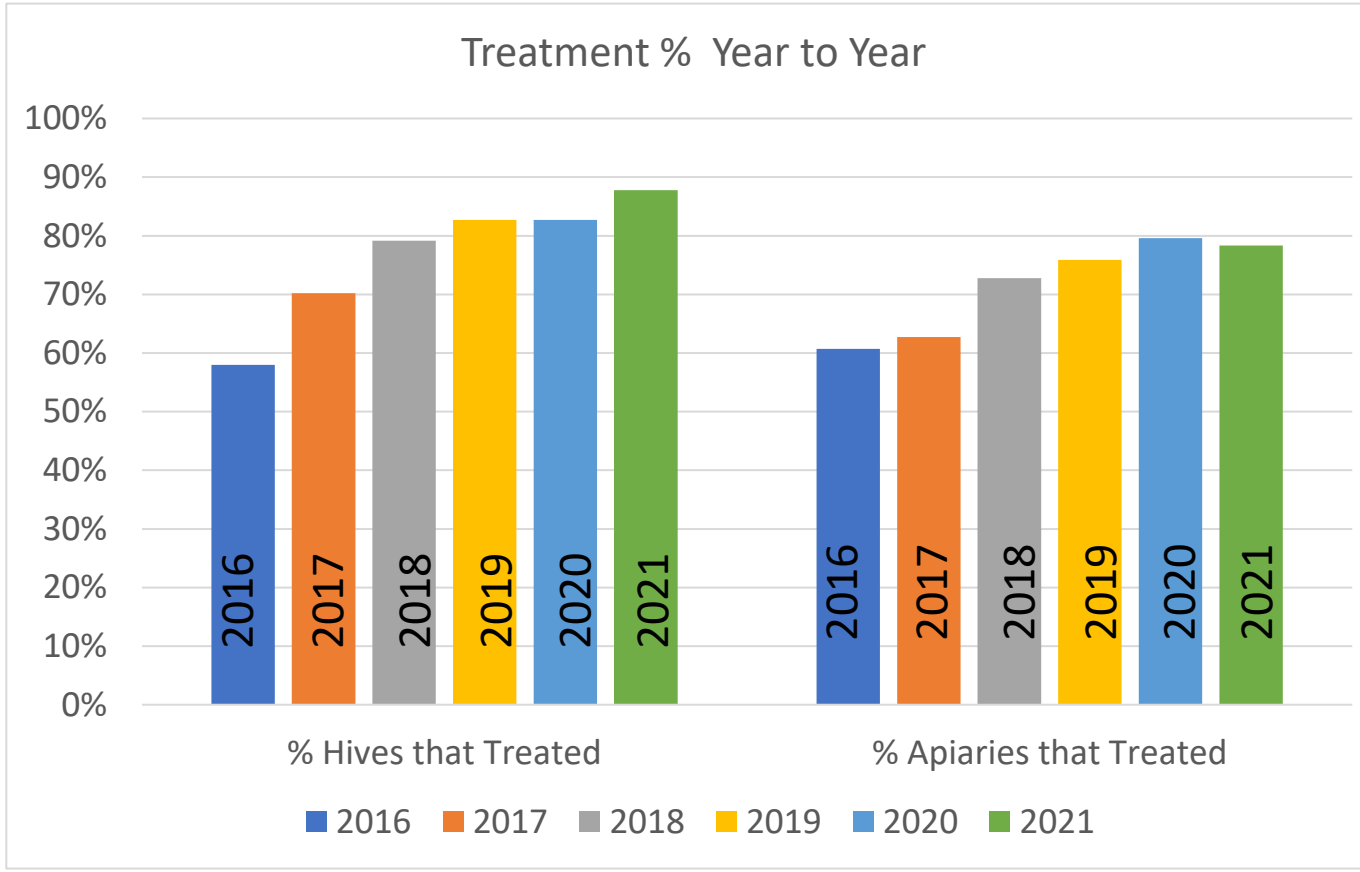


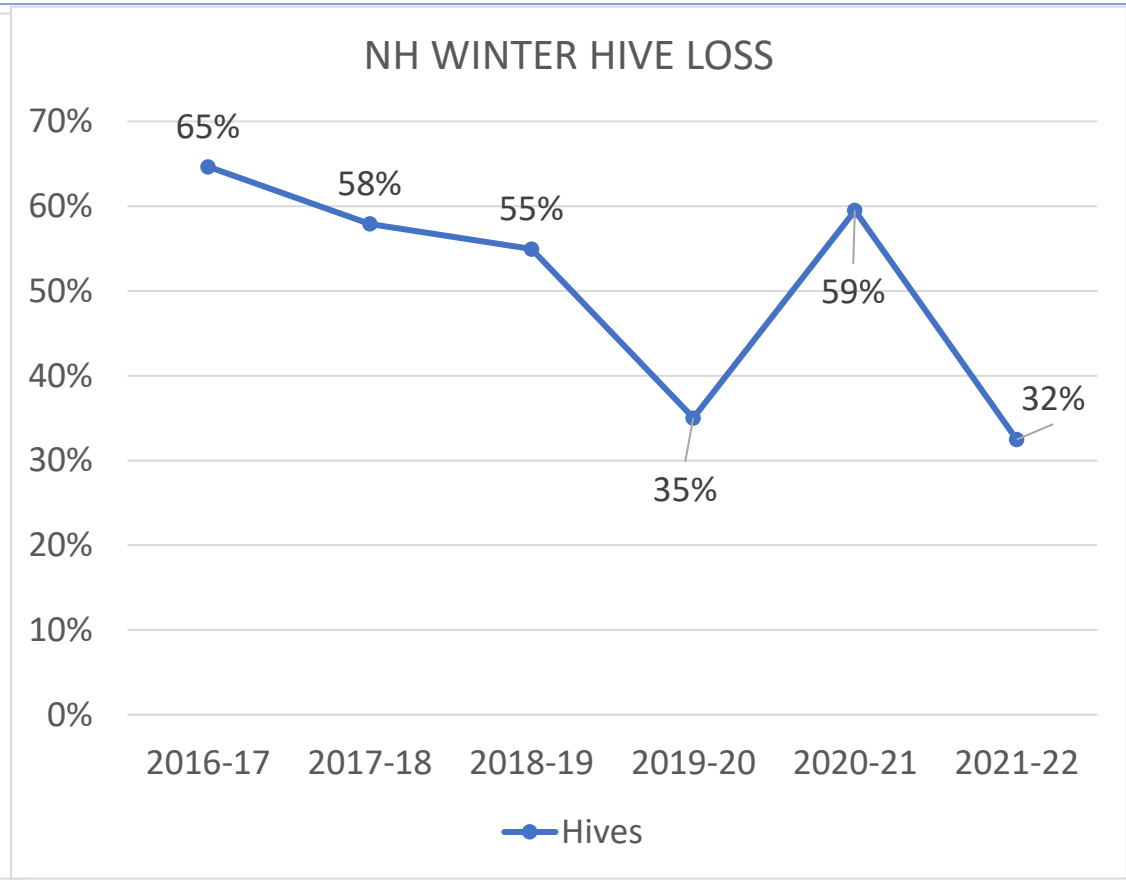
	# Hives on 10/1	# NUCs On 10/1
Treated	1336	751
Untreated	186	16

- Hives treated with commercial treatments had a better survival rate.
- 88% of the colonies in the survey had been treated at least 1 time with commercial varroa treatments.

*"commercial varroa treatment" refers to registered products

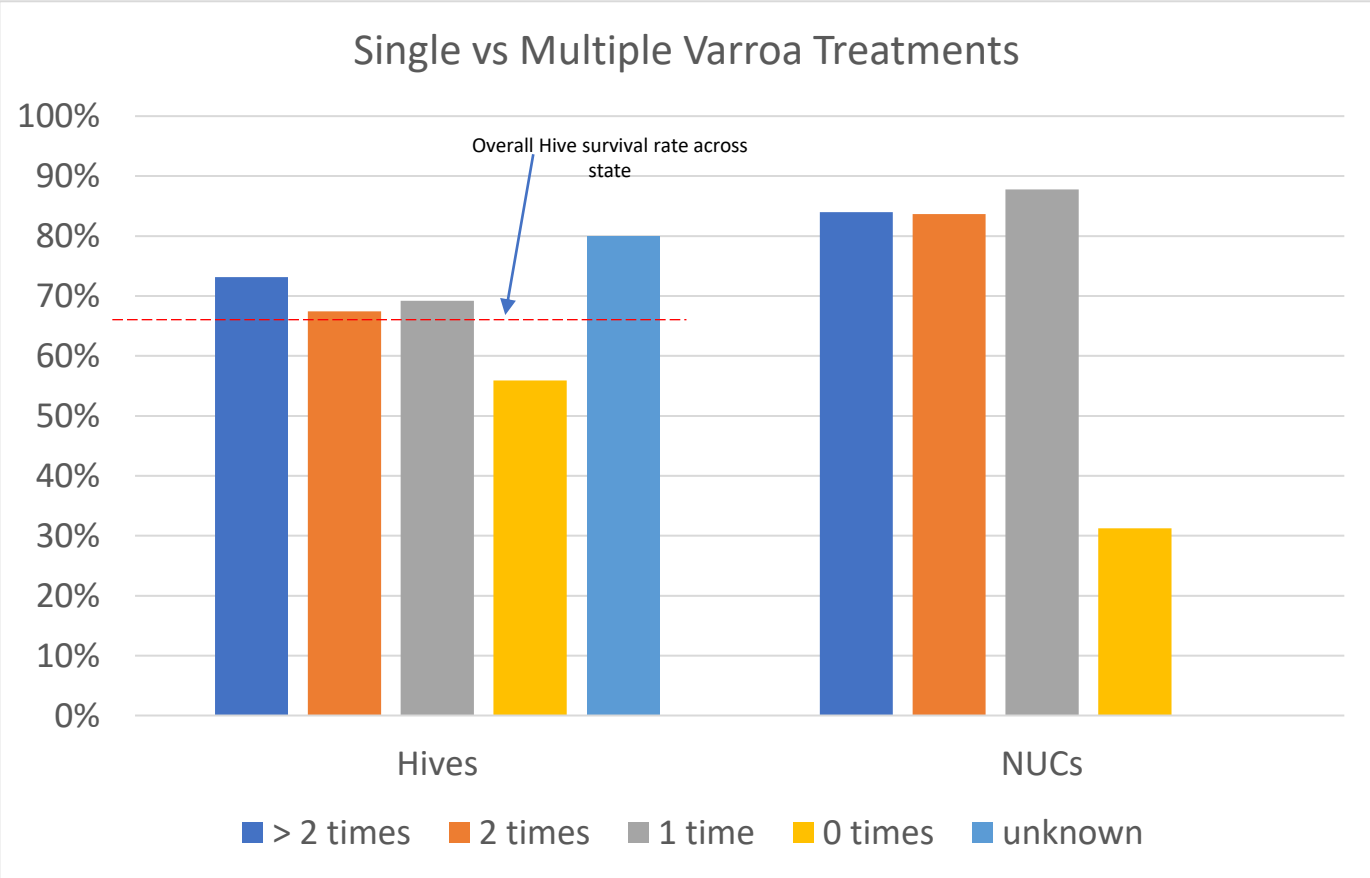
Has the percentage of hives/apiaries using treatments changed?





- Percentage of hives that are treated increased in 2021. (Could this be due to observed & perceived high viral loads in 2020?)
- The percentage of apiaries that treated dropped slightly in 2021

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

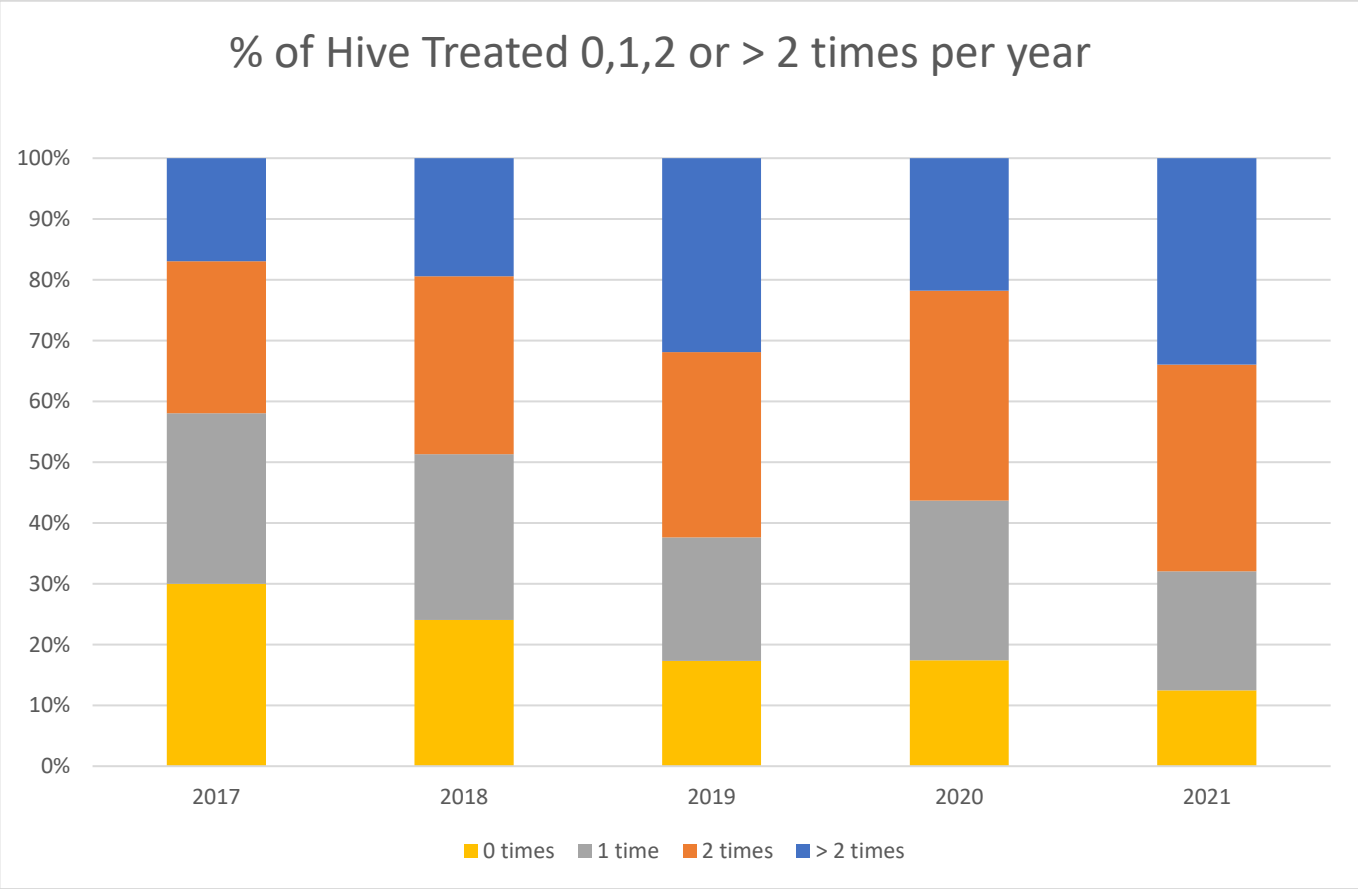


	# Hives On 10/1	# NUCs On 10/1
> 2 times	506	370
2 times	507	342
1 time	292	202
No treatments	186	104

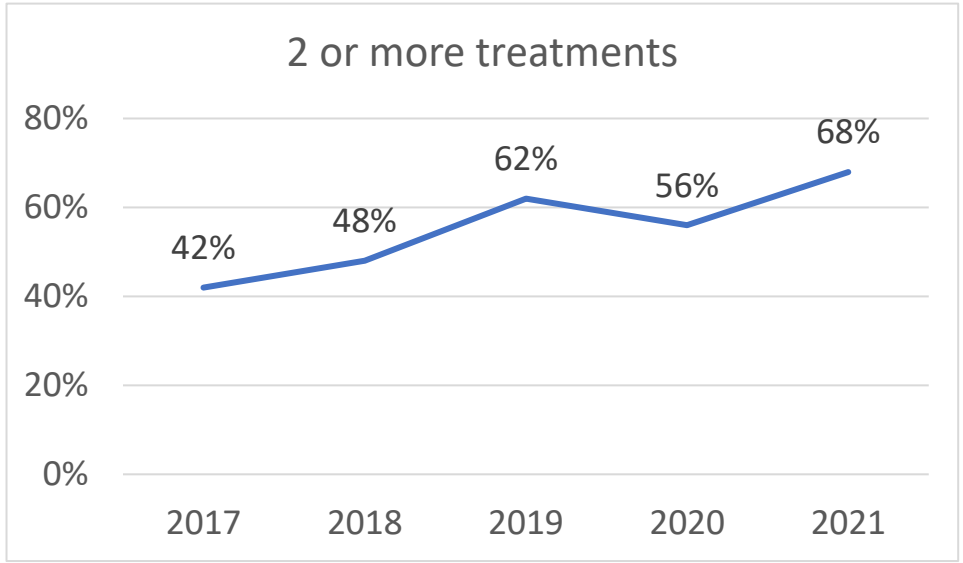
Note: only 12% of the colonies were not treated with commercial varroa products.

Treating Hives more than 1 time through the season increased survival rates . (consistent with previous years)
Untreated colonies did better than previous years.
Total number of untreated colonies has been dropping over the years of the survey (12% this year)

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

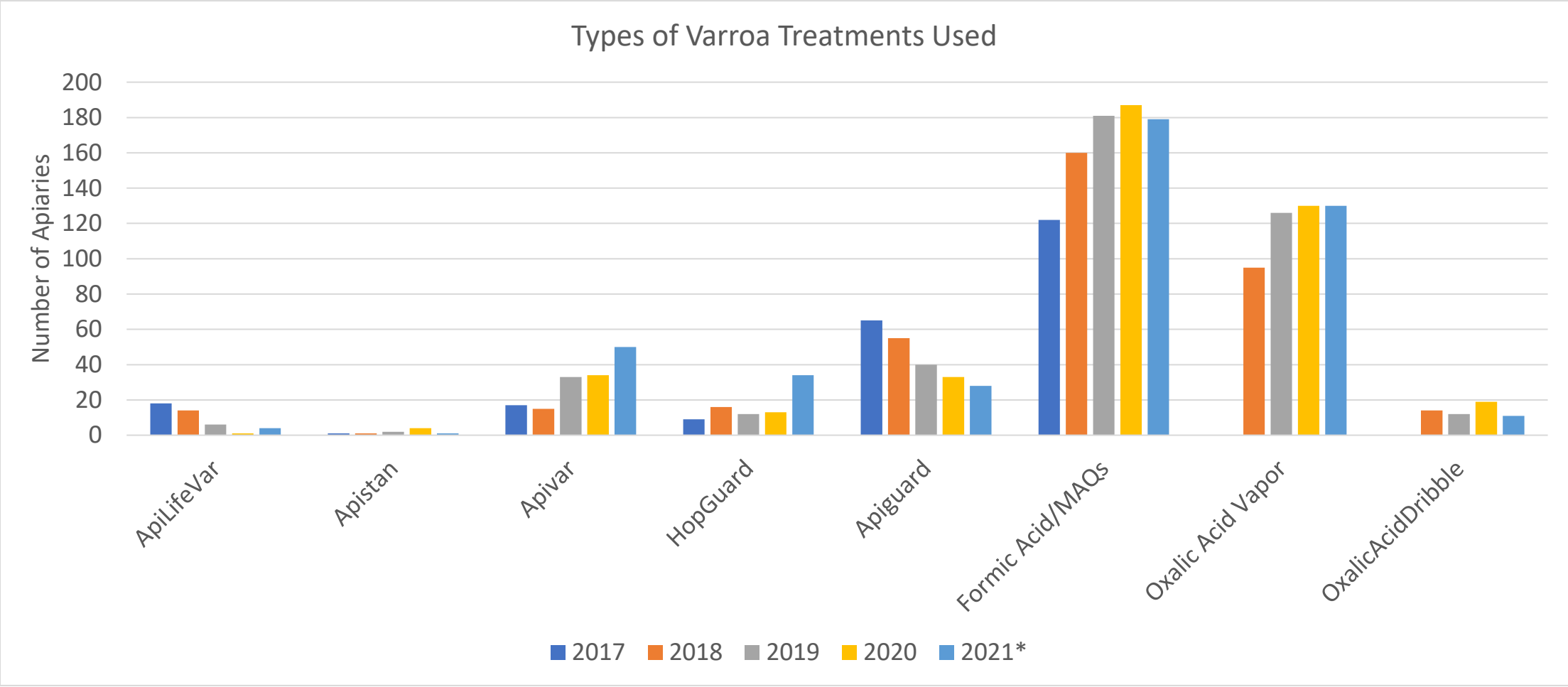


	2017	2018	2019	2020	2021
> 2 times	17%	19%	32%	22%	34%
2 times	25%	29%	30%	34%	34%
1 time	28%	27%	20%	26%	20%
0 times	30%	24%	17%	17%	12%



In 2021, ~68% of the hives were treated for varroa 2 times or more during the season.
Years with highest percentage of 2 or more treatments (2019 & 2022) had best survival rates.

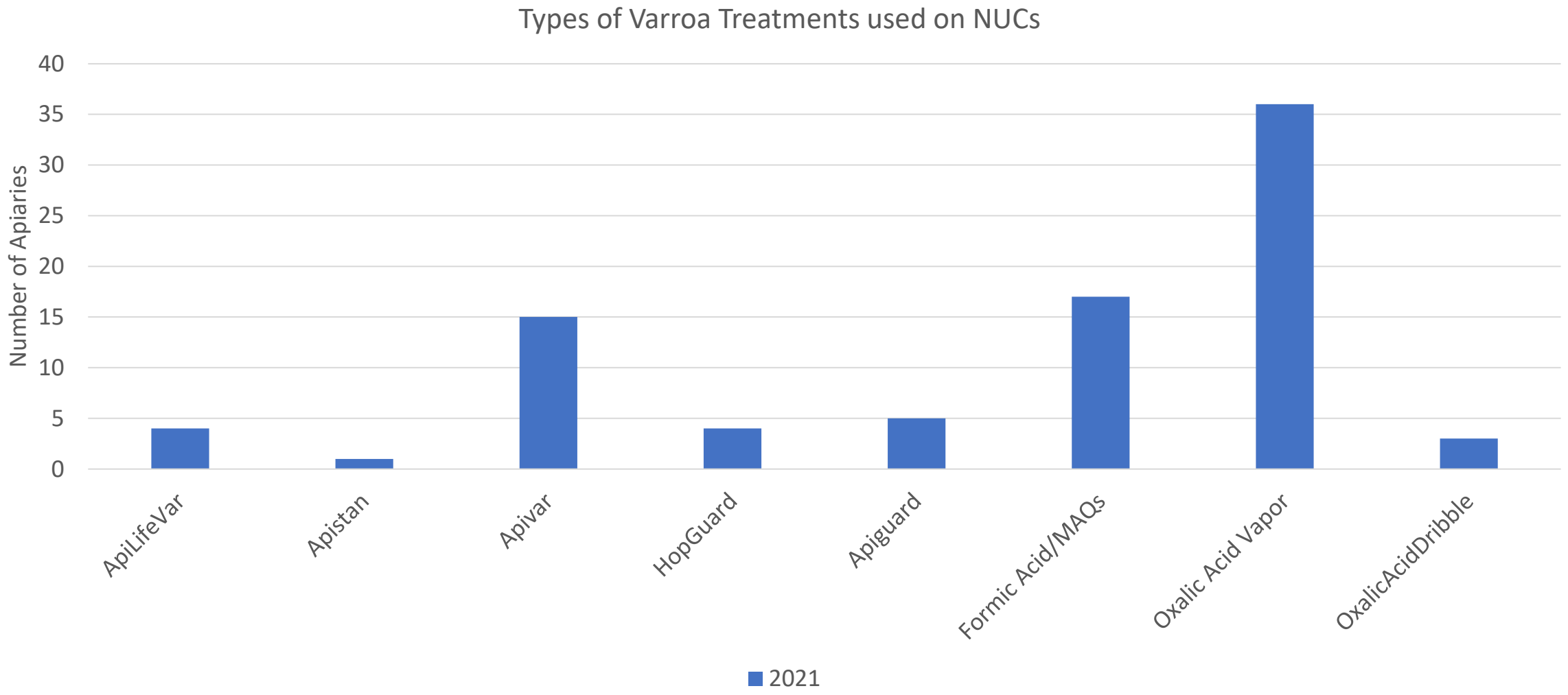
What Types of Treatments are Used in our Apiaries - Hives?



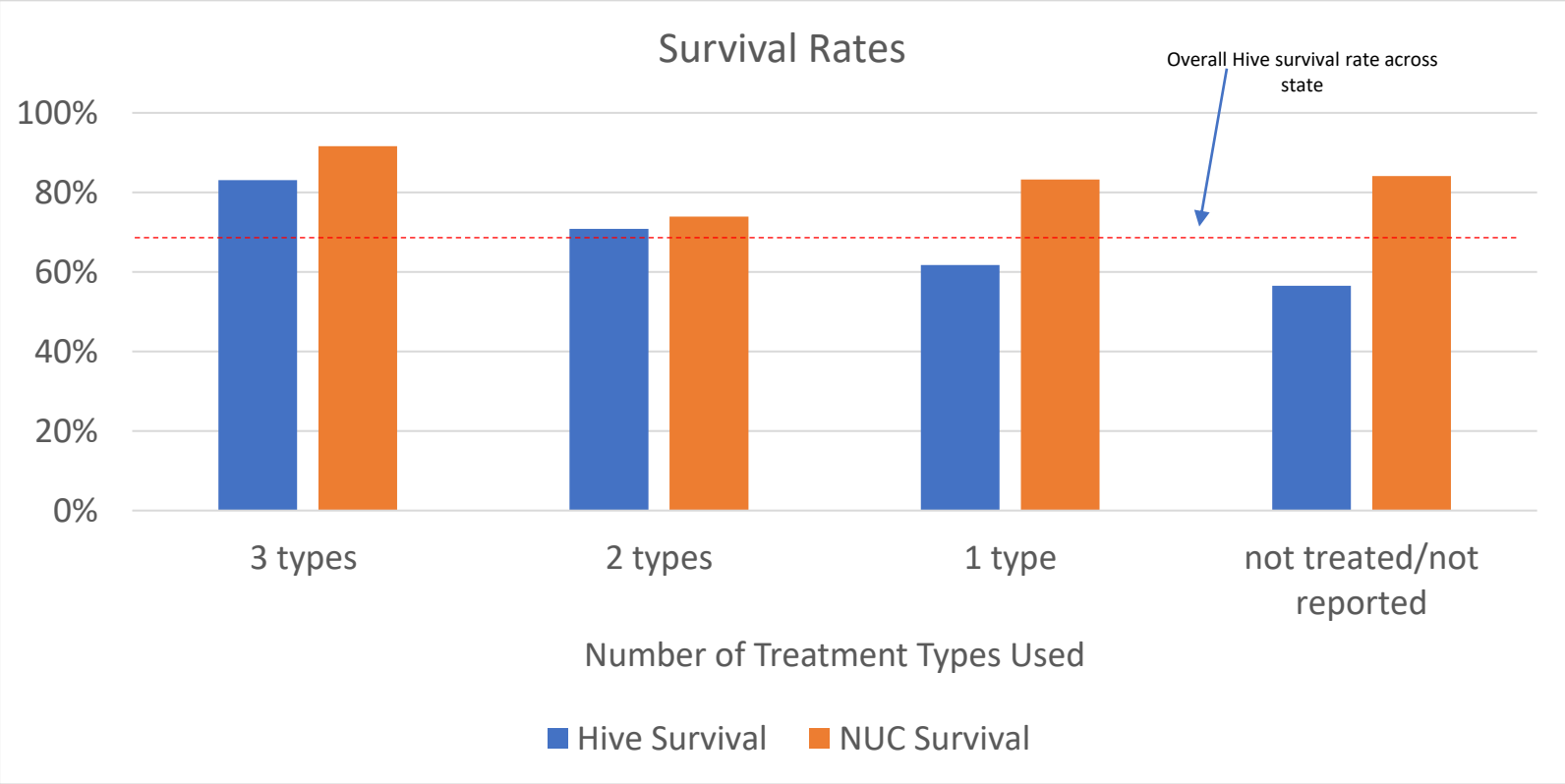
*2021 data represents only HIVE treatments. Prior years represents hive and NUC treatments
We collected data separately for Hives and NUCs in 2021

New Question

What Types of Treatments are Used in our Apiaries - NUCs?



Does the Number of Different Types of Treatments Affect Survival?



	# Hives	# NUCS
3 types	302	144
2 types	429	23
1 type	625	316
not treated or not reported	161	278
Total	1517	761

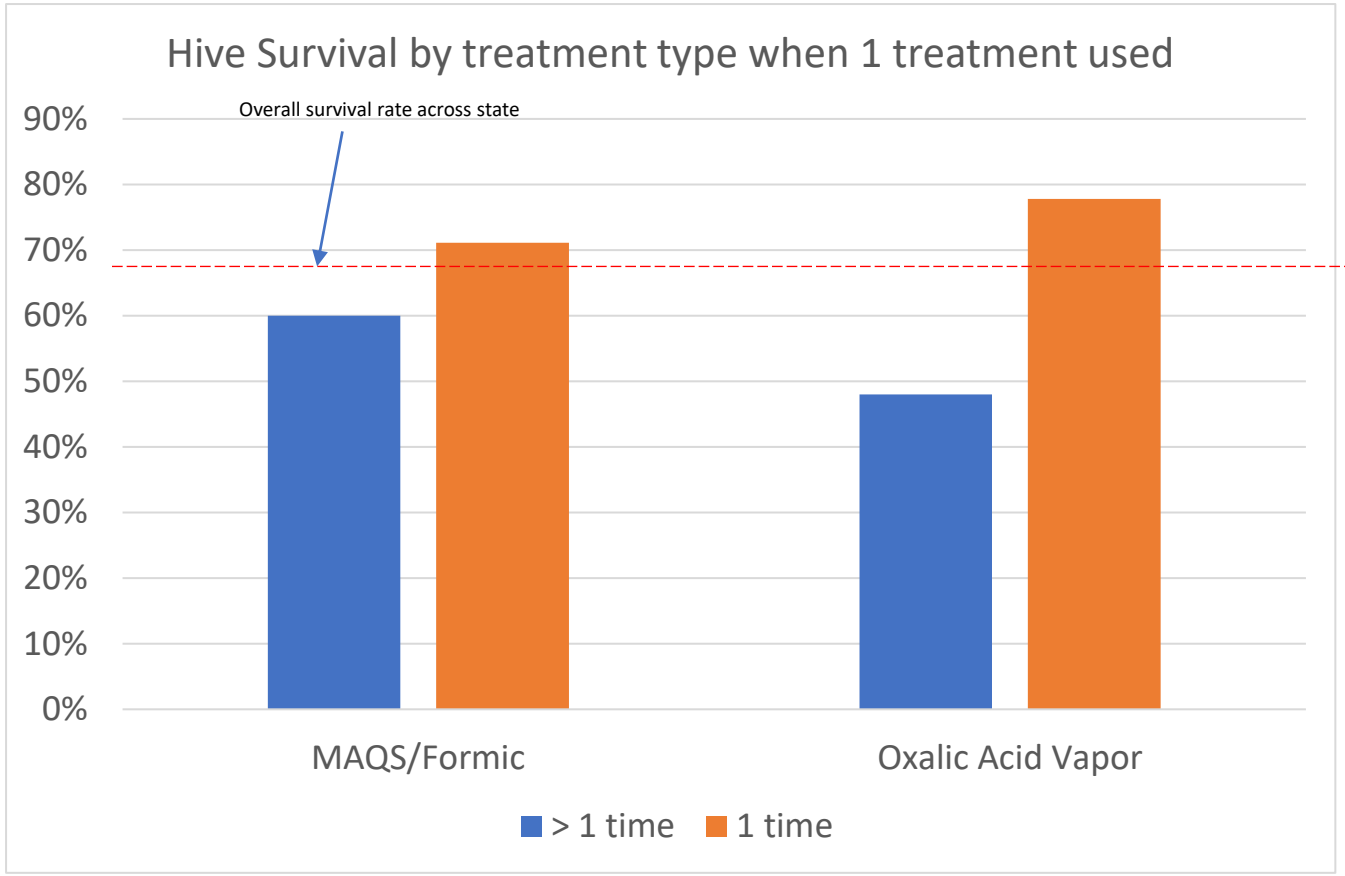
Unclear if the number of different treatment types affects survival – it is more likely that the number and timing of treatments is more important

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

- 578 hives

Does one commercial treatment help survival better than others?

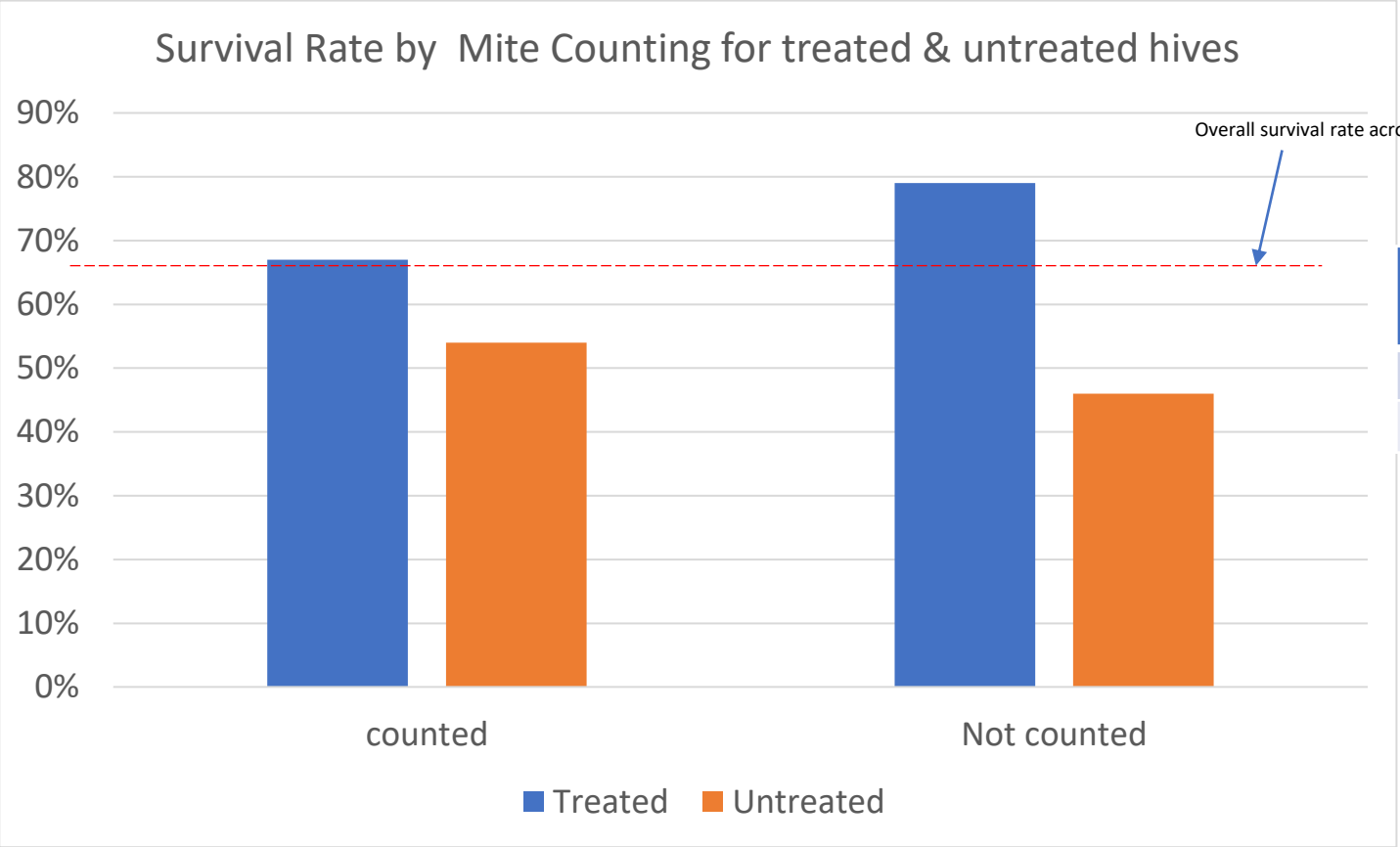


Unclear that a particular product improves survival rate – it is more likely the timing of the treatments.

	# 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	5	20
ApiLifeVar	0	0
Apistan	0	0
Apivar	9	13
HopGuard	3	6
MAQS/Formic Pro	125	225
Other	0	0
Oxalic Acid Vapor	150	18
Oxalic Acid Dribble	0	4
Unknown	0	0
Total	**292**	**286**

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

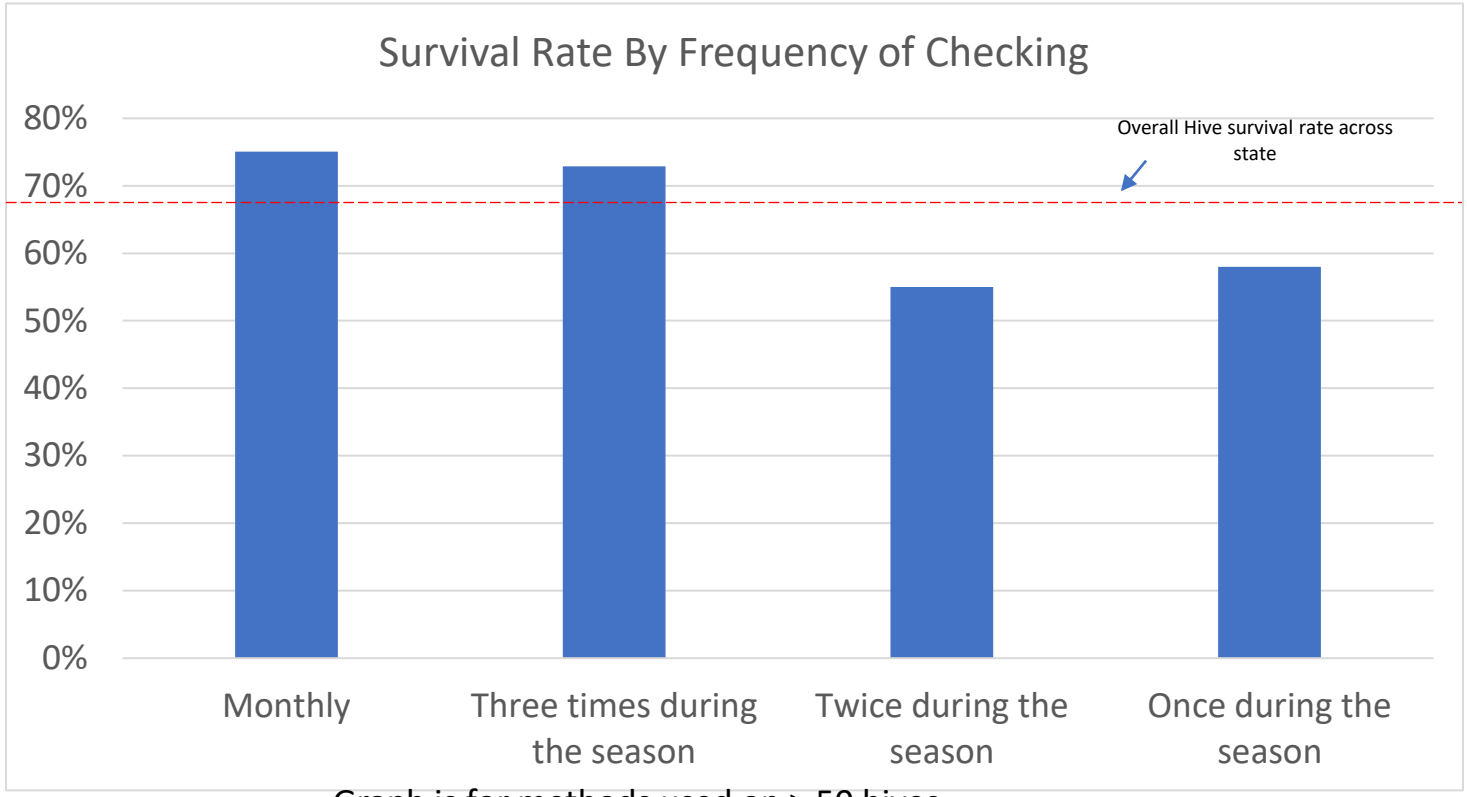
Was hive survival rate better because mites were counted and hives were treated with commercial treatments?



	# Hives Treated by 10/1	# Untreated Hives by 10/1
Counted	857	81
Didn't Count	229	63

79% of treated hives counted for mites at least 1 time (up from 65% in 2020)

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

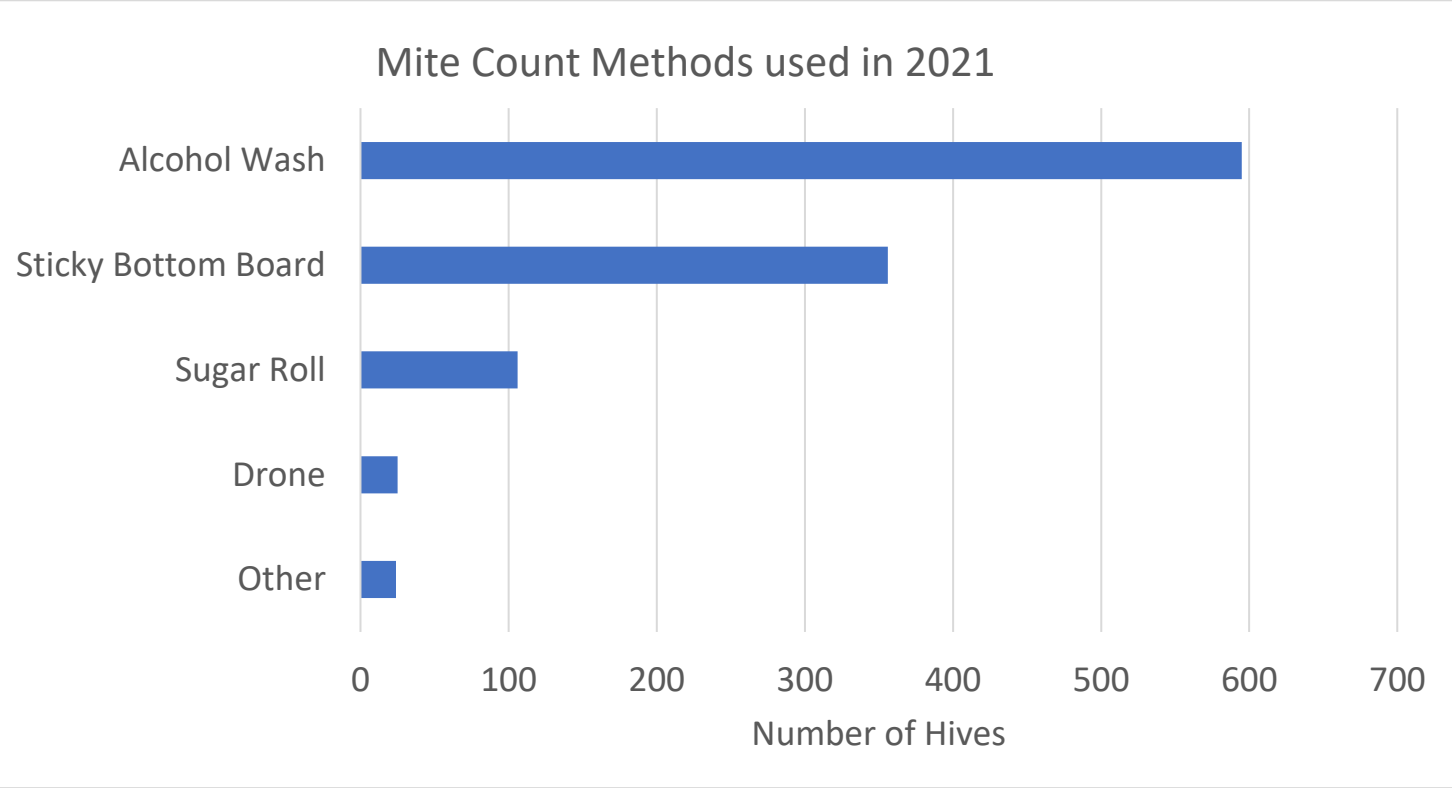
Mite Count Frequency	2017	2018	2019	2020	2021
Monthly	21%	24%	21%	24%	21%
Twice during the season	6%	9%	18%	19%	21%
Three times during the season	2%	2%	12%	9%	14%
Once during the season	21%	18%	8%	11%	8%
drone	5%	1%	3%	1%	1%
Twice a month	5%	6%	2%	4%	3%
Weekly	1%	2%	1%	1%	1%
No Testing	39%	39%	34%	30%	29%
Other			3%	4%	3%

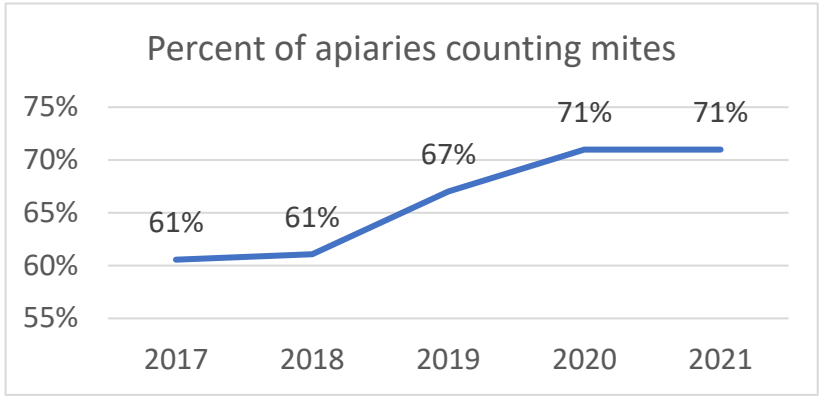
~71% of 285 apiaries reporting counted mites at least 1 time (71% in 2020)

*Note: Mite counting includes sticky bottom boards

More frequent testing yielded better survival rates
% of Apiaries doing monthly testing has been consistent for the last 5 years.
The % of apiaries that count more frequently continues to increase while % of apiaries that do no counting has continued to drop

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





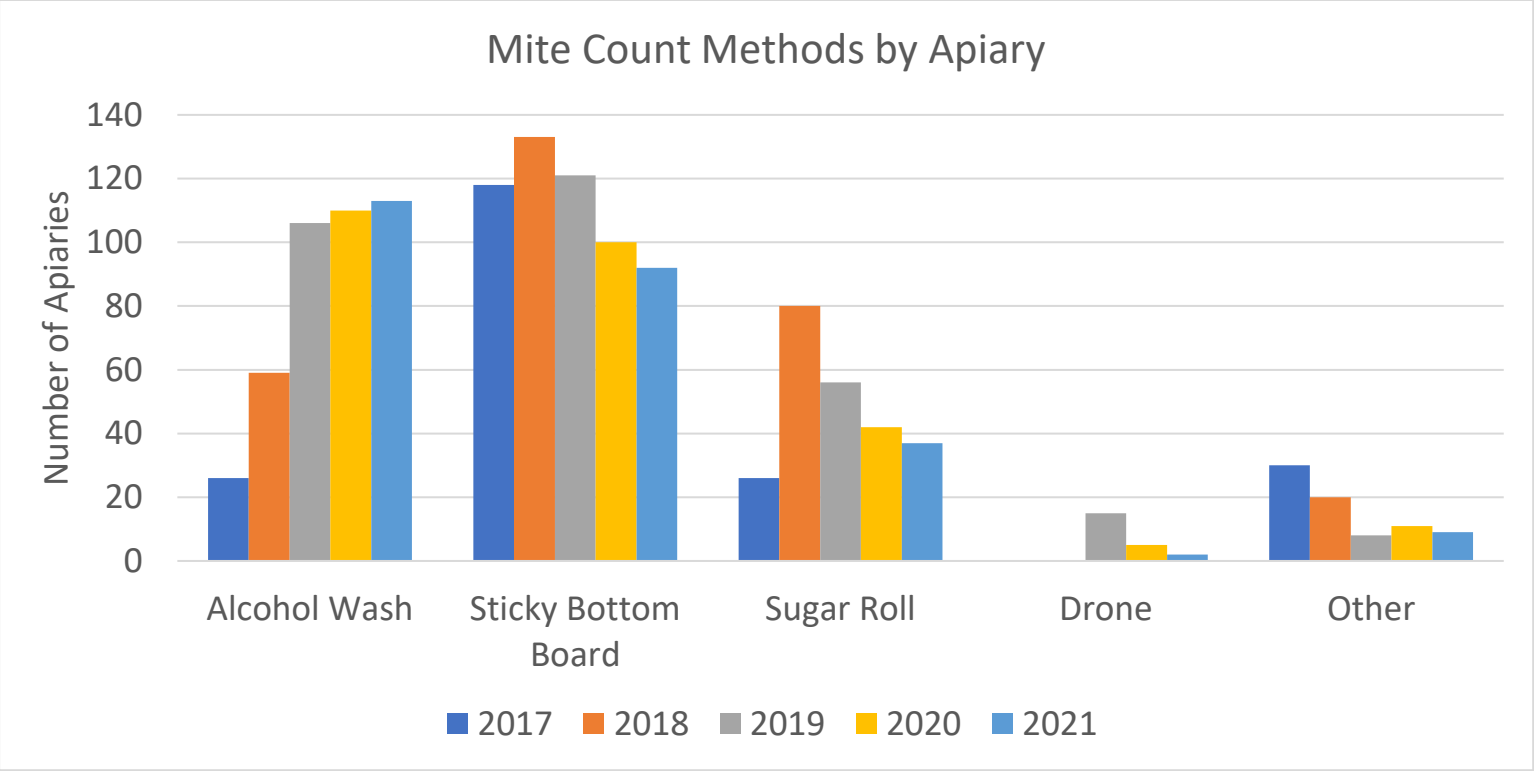
# colonies	2017	2018	2019	2020	2021
Alcohol Wash	169	255	495	510	595
Sticky Bottom Board	428	411	473	363	356
Sugar Roll	234	265	180	137	106
Drone	N/A	N/A	60	25	25
Other	155	72	35	40	24

Other methods:

- Bee Scan App, Randy Oliver Dawn/Detergent Wash, visual inspection, microscope, check bottom board occasionally, sentinel program

Number of hives tested with Alcohol wash increased in 2021
71% of apiaries reported counting mites at least 1 time (2019:71%)

How have Mite Counting methods changed over the last 5 years?



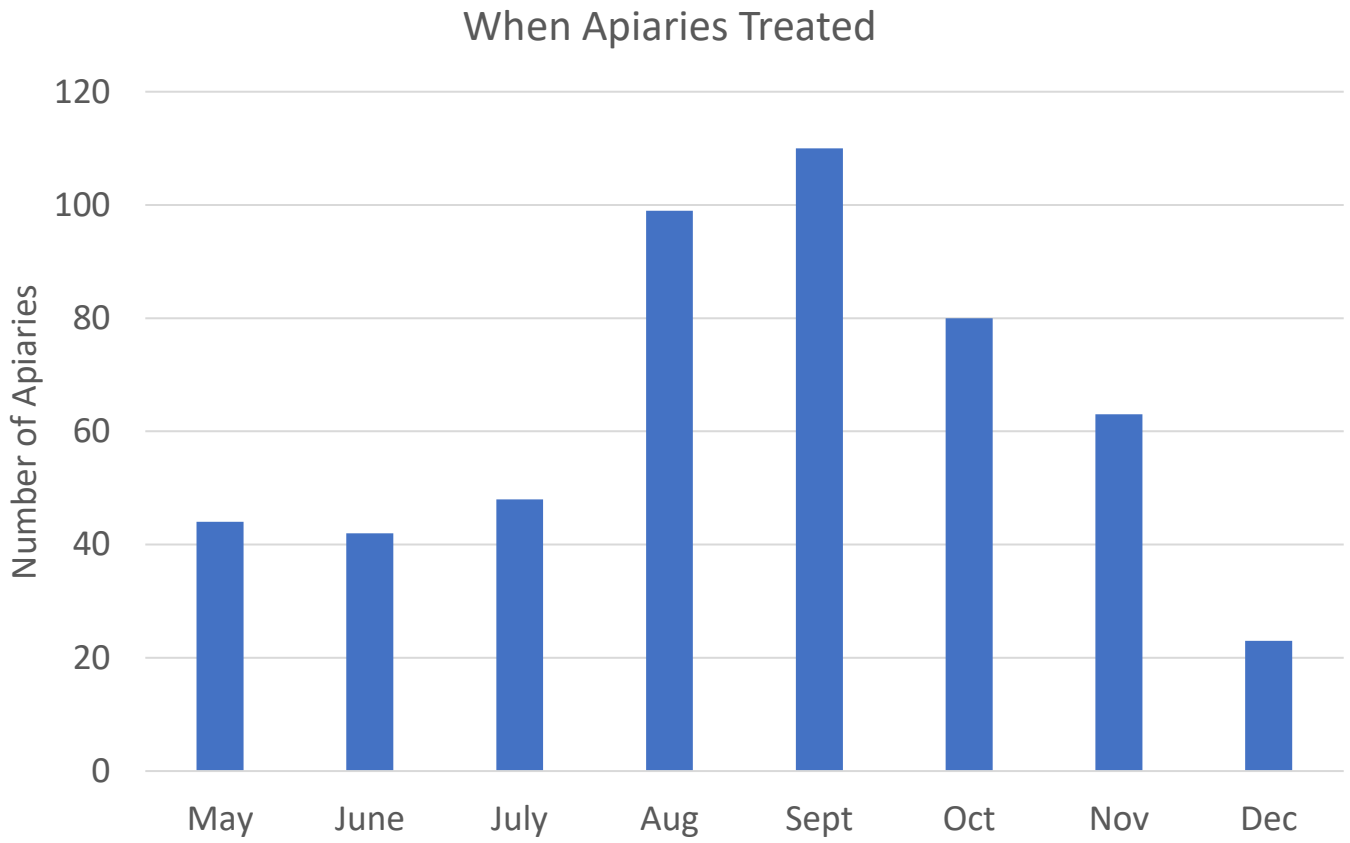
	# apiaries
3 methods	1
2 methods	45
1 method	160
not counted or didn't report	159

Other methods:

- Bee Scan App, Randy Oliver Dawn/Detergent Wash, visual inspection, microscope, check bottom board occasionally, sentinel program

Number of Apiaries using Alcohol Wash Method Continues to increase

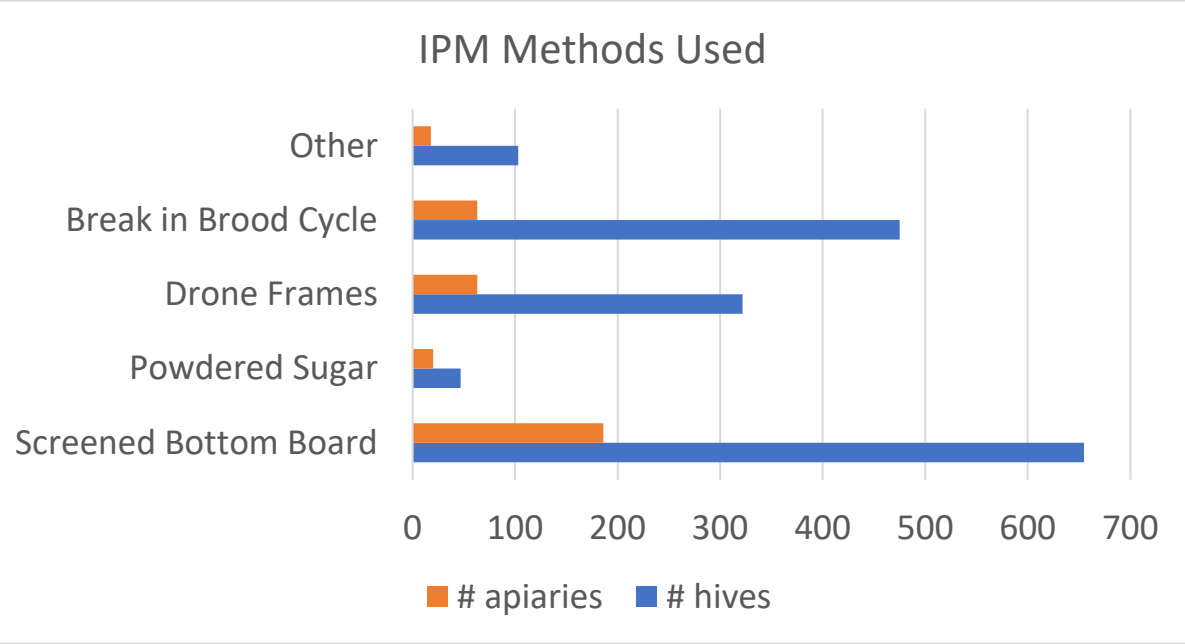
New Question What Months Did Apiaries Treat for Varroa Mites?



	# of Apiaries
May	44
June	42
July	48
Aug	99
Sept	110
Oct	80
Nov	63
Dec	23

August and September where the most common months for Treatment

What Non-Chemical Control Methods were used?



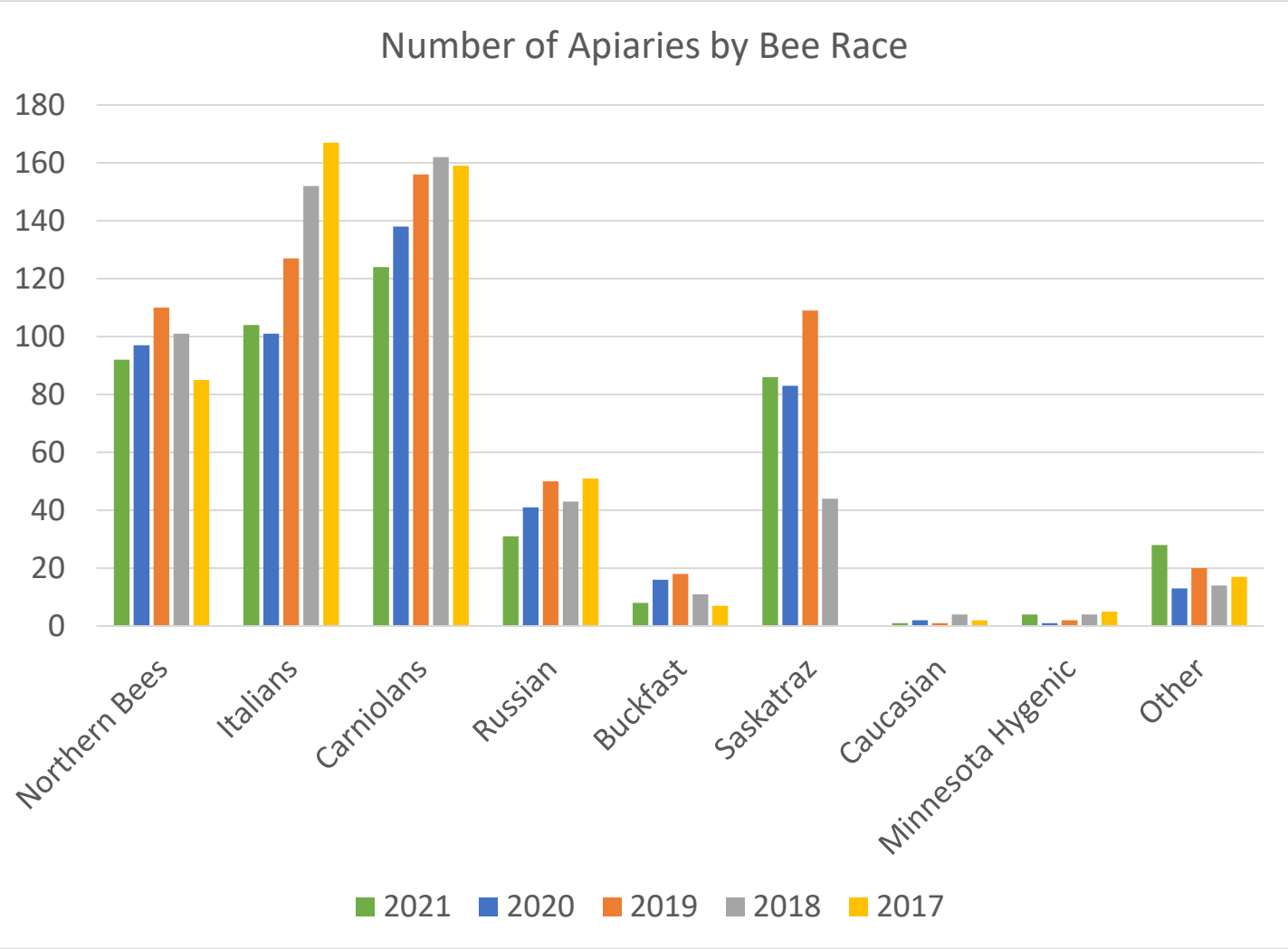
	# Hives	# Apiaries
Screened Bottom Board	655	186
Powdered Sugar	47	20
Drone Frames	322	63
Break in Brood Cycle*	475	63
Other	103	18

*Splits were combined with Break in brood cycle

- **Numbers are similar to previous years**
- **Many apiaries use multiple Non-Chemical Control methods**
- "Other" responses:
  - Fogging with mineral oil
  - Essential oils
  - Sugar water with essential oils and/or Thyme
  - Rhubarb Leaves

Bee Races

What kinds of bees do our apiaries have?



2021: 284 Apiaries

- 169 have 1 race of bees
- 71 have 2 races
- 33 have 3 races
- 8 have 4 races
- 3 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, VSH

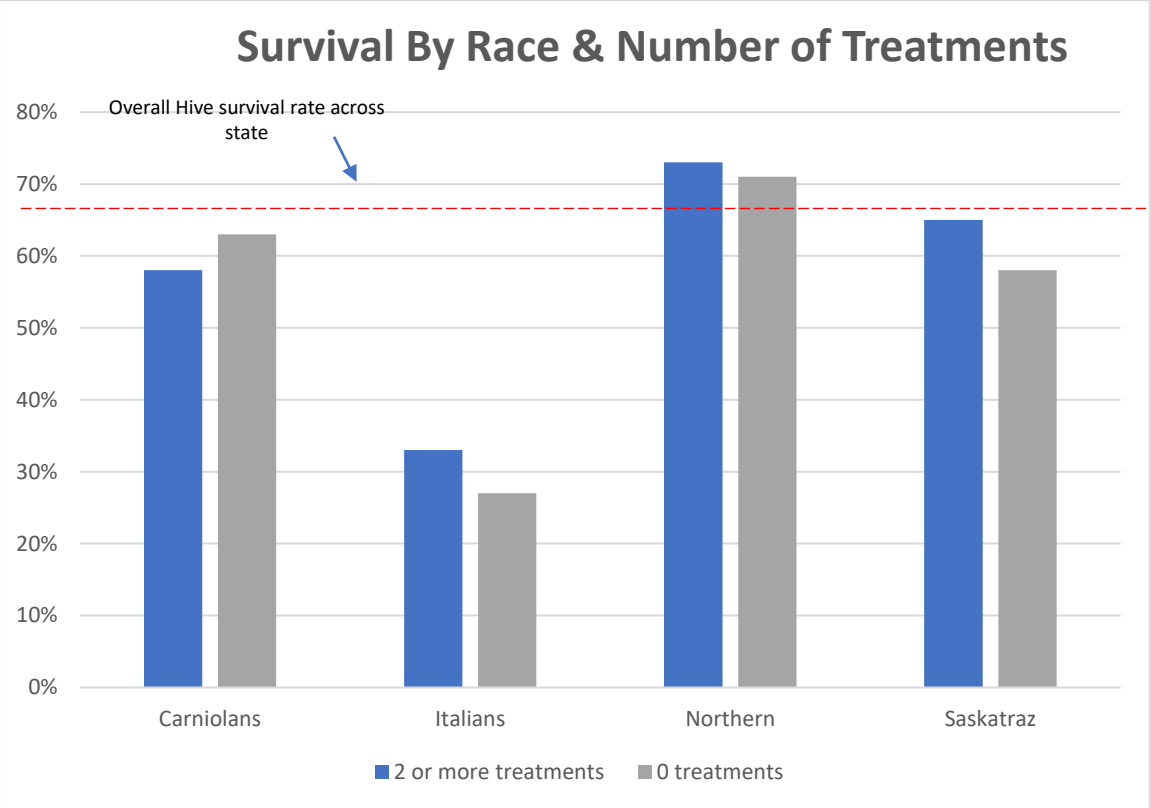
Does the “race” of bees affect survival rate?

- To answer this question -
  - **Only used data from apiaries that reported only 1 race of bees (169 apiaries of 284 reporting race information)**
    - For apiaries with multiple races, our data was not fine grain enough to understand which races survived and which didn’t

- 448 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	74	63	60	33	52	282
1 treatment	15	13	15	0	12	55
0 treatments	34	33	30	2	12	111

% of Hives in each Treatment category

	Northern	Italians	Carni	Russian	Saskatraz	All Hives
2 or more treatments	60%	58%	57%	94%	68%	63%
1 treatments	12%	12%	14%	0%	16%	12%
0 treatments	28%	30%	29%	6%	16%	25%

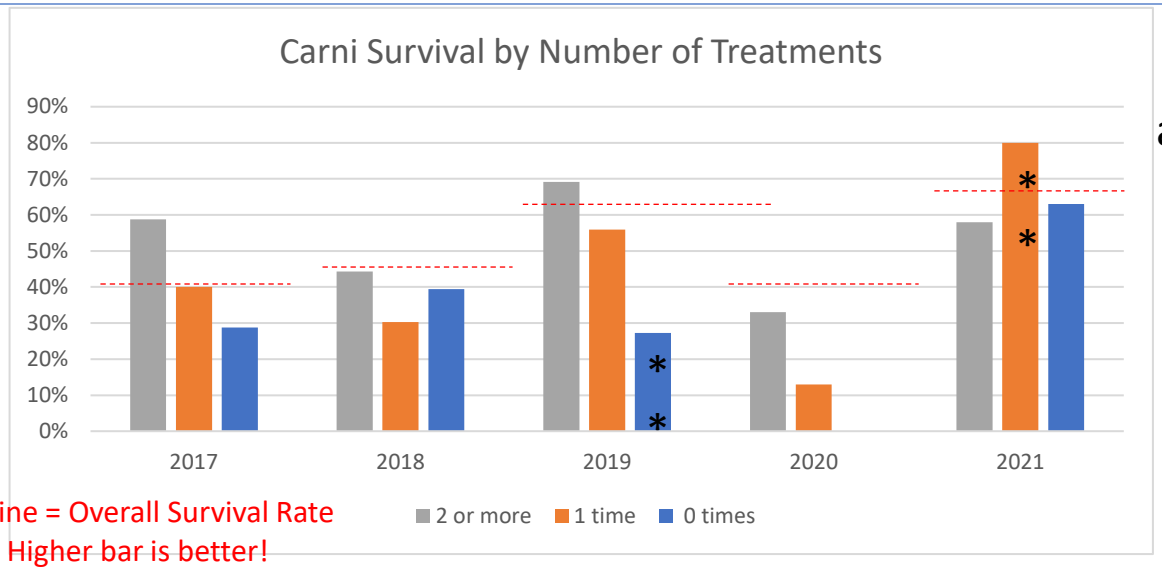
- Russian Survival not shown because of the small number of colonies
- 1 treatment not shown because of the small number of colonies
- Generally, using 2 or more treatments help survival no matter what race of bees.

- 448 Hives represented; 63% treated 2+ times; 12% treated 1 time; 25% 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)



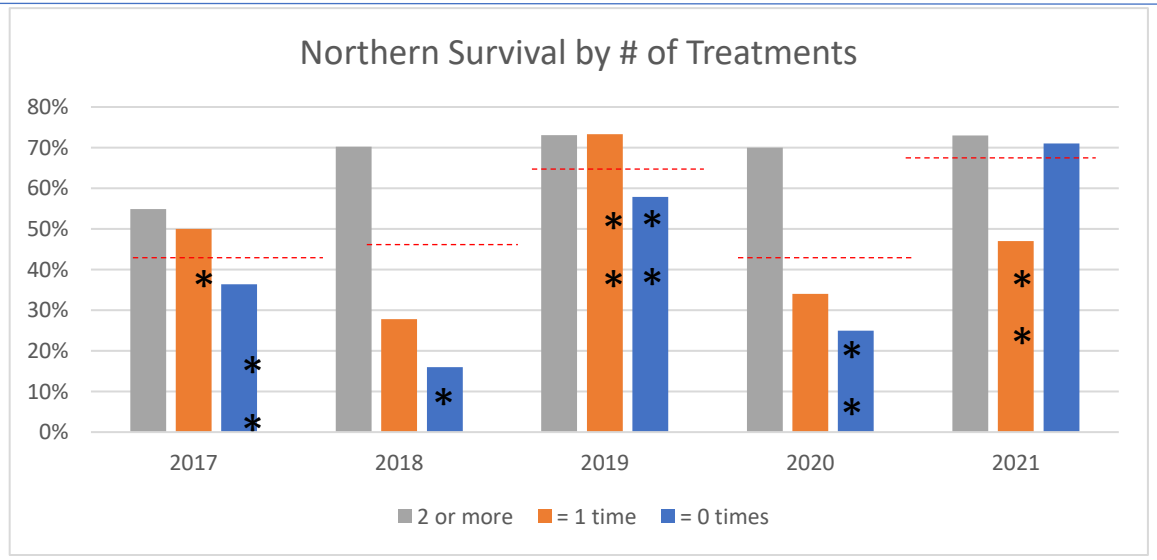
Redline = Overall Survival Rate
Higher bar is better!

Data from apiaries with only 1 race

Carni number of Hives

Treatments	2017	2018	2019	2020	2021
2 or more	63	61	81	55	60
1 time	30	33	34	31	15
0 times	59	33	11	22	30

*Less than 30 colonies
** Less than 20 colonies

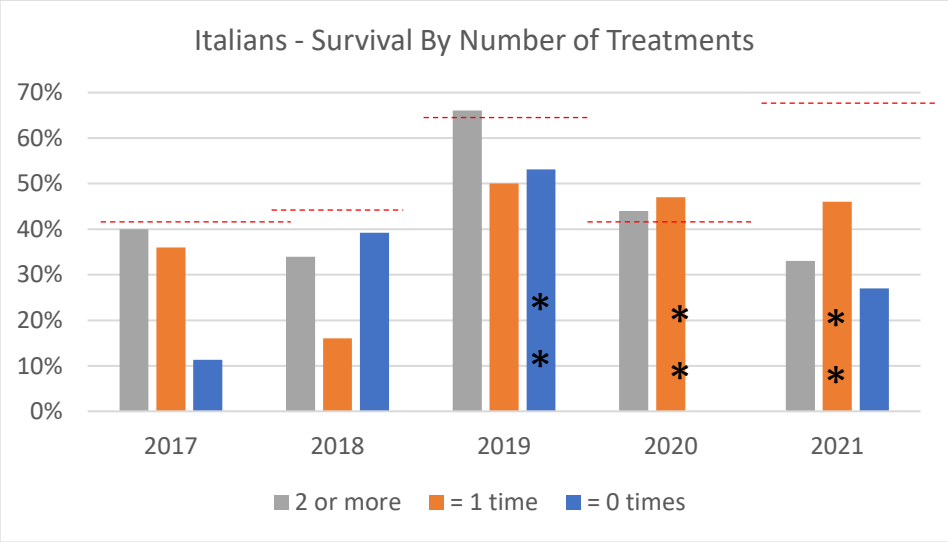


Northern number of Hives

Treatments	2017	2018	2019	2020	2021
2 or more	102	94	78	93	74
1 time	23	54	15	204	15
0 times	11	25	19	12	34

Two+ treatments seems to help survival, but
Be careful about drawing conclusions as several of the colony counts are small (as indicated by the *)

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

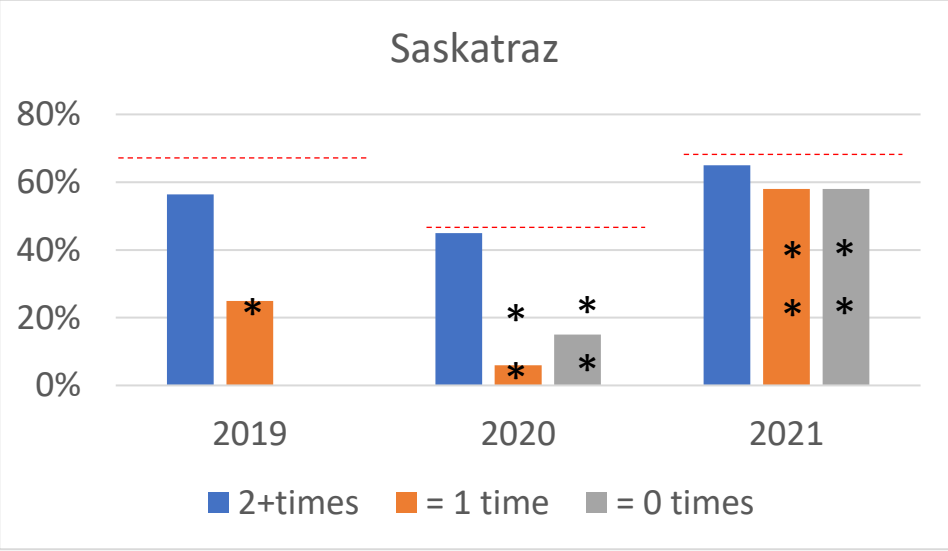


Data from apiaries with only 1 race

Italian number of Hives

Treatments	2017	2018	2019	2020	2021
2 or more	63	61	81	85	63
1 time	30	33	34	17	13
0 times	59	33	11	11	33

*Less than 30 colonies
** Less than 20 colonies



Redline = Overall Survival Rate
Higher bar is better!

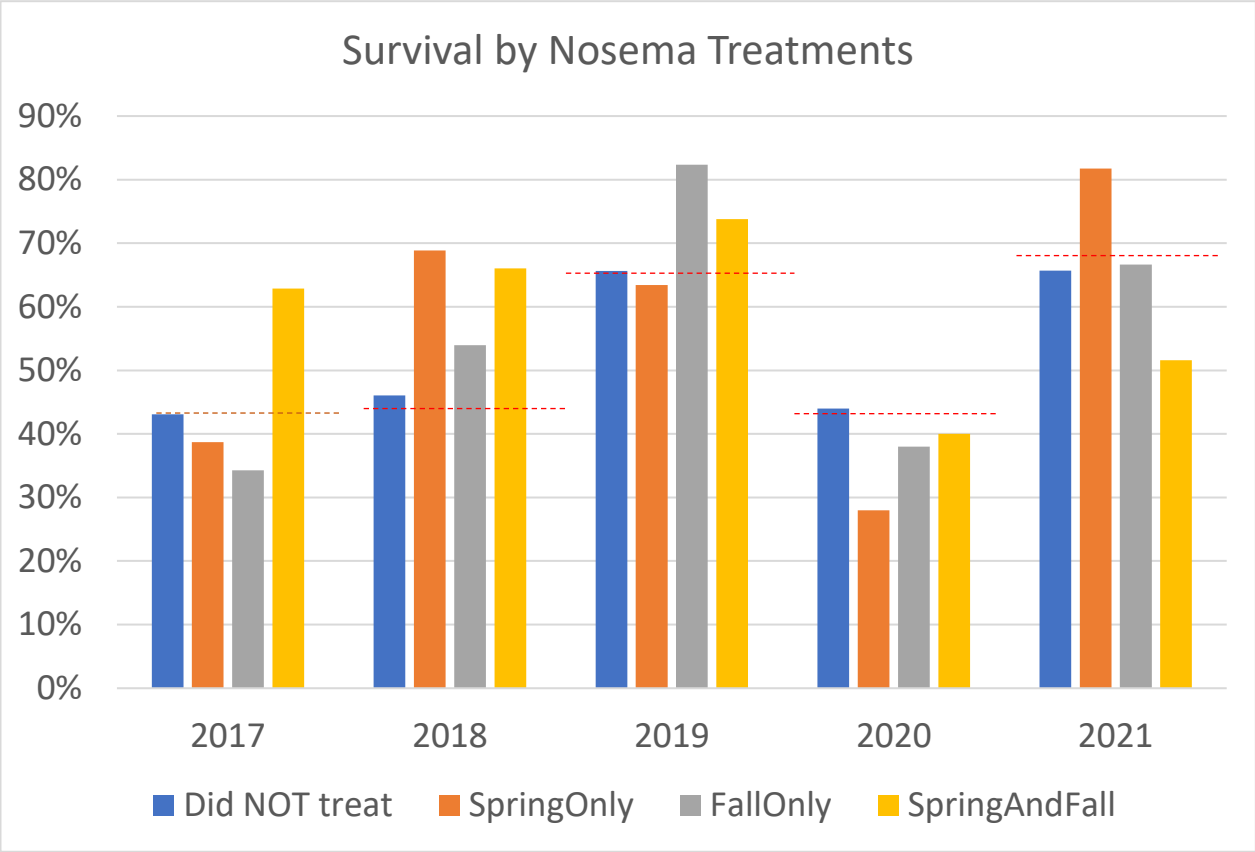
Saskatraz number of Hives

Treatments	2019	2020	2021
2 or more	39	47	52
1 time	23	18	12
0 times	24	13	12

Two+ treatments seems to help survival, but
Be careful about drawing conclusions as several of the colony counts are small (as indicated by the *)

Nosema Treatments

Did Nosema treatment affect survival?



	2017 Hives 10/1	2018 Hives 10/1	2019 Hives 10/1	2020 Hives 10/1	2021 Hives 10/1
Did Not Treat	947	953	1089	1128	1005
Spring Treatment only	62	61	93	47	159
Summer	0	3	7	17	8
Fall Treatment only	73	63	17	72	36
Spring & fall Treatment	105	103	145	40	31
Total	**1187**	**1183**	**1351**	**1304**	**1239**

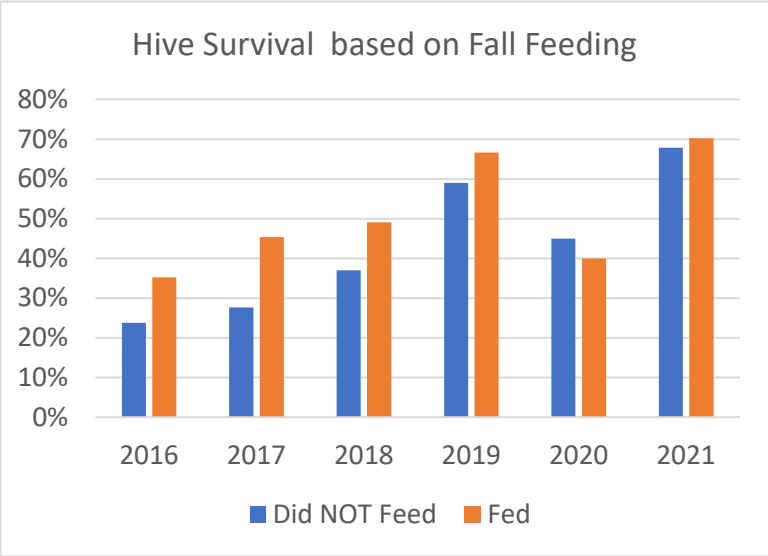
Dotted lines represent the survival rate each year:

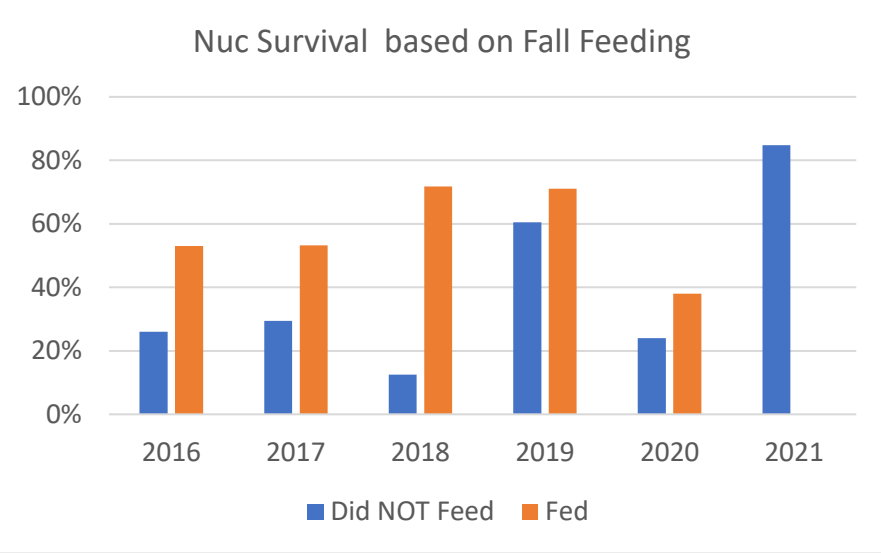
Only ~19% of hives were treated for Nosema in 2021 – Higher than 2020 (~13%) but in line with the 19-20% that we saw in 2017-19

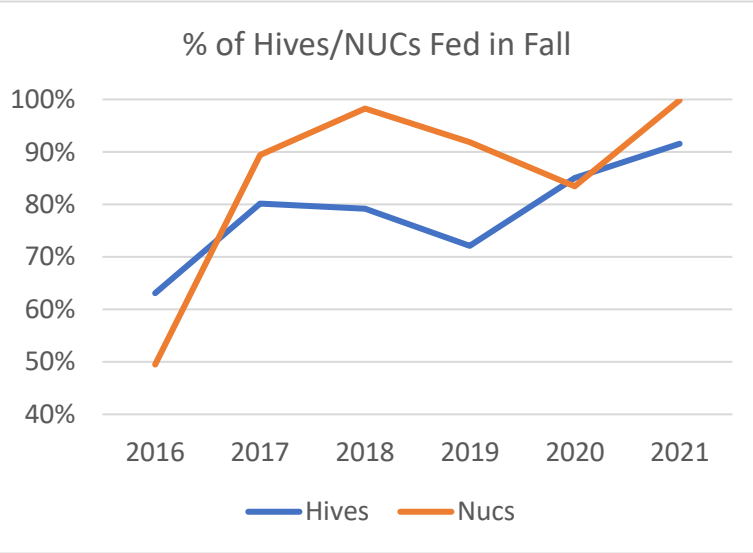
Could this be due to Fumidil-B being off the market in 2020?

Feeding (Fall, Winter & Protein Supplements)

Did fall feeding help survival rate?





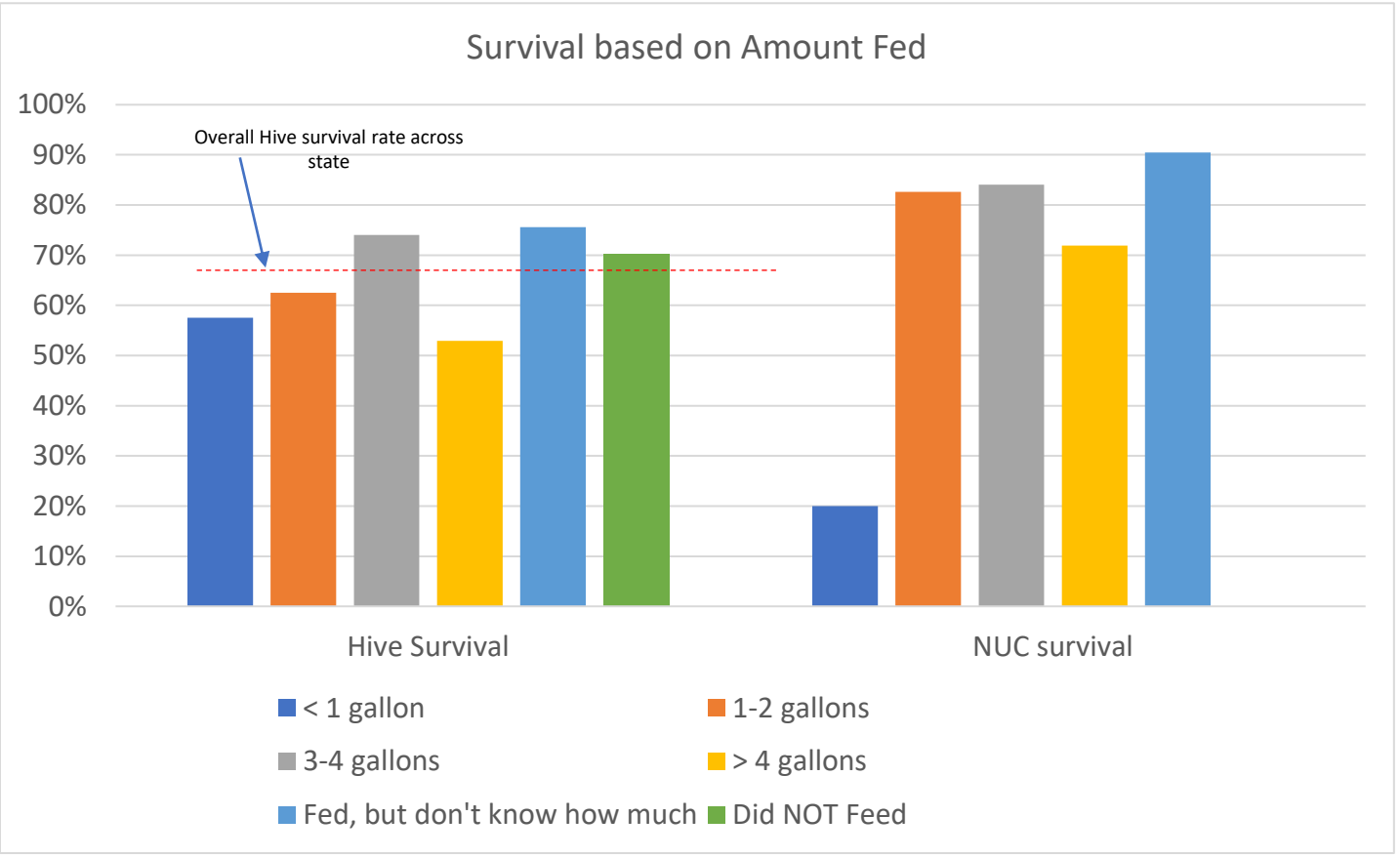


	# Hives on 10/1/21	# NUCs on 10/1/21
Fed	1388	764
Did Not Feed	128	1

	2016	2017	2018	2019	2020	2021
Hives	63%	80%	79%	72%	85%	92%
NUCs	49%	89%	98%	92%	83%	100%

- % of hives fed in fall highest since we've been doing the survey whereas in 2019 fall feeding % was the lowest in 3 years.
- Many of the colonies that didn't feed fall syrup noted the bees had plenty of honey stores.

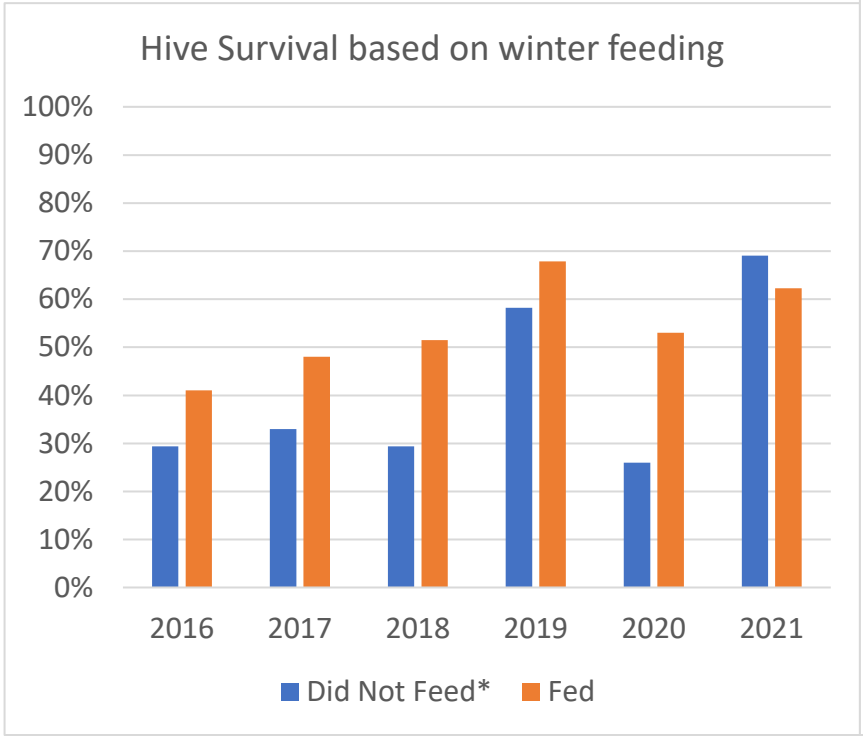
Did the amount of sugar syrup fed affect survival rate?

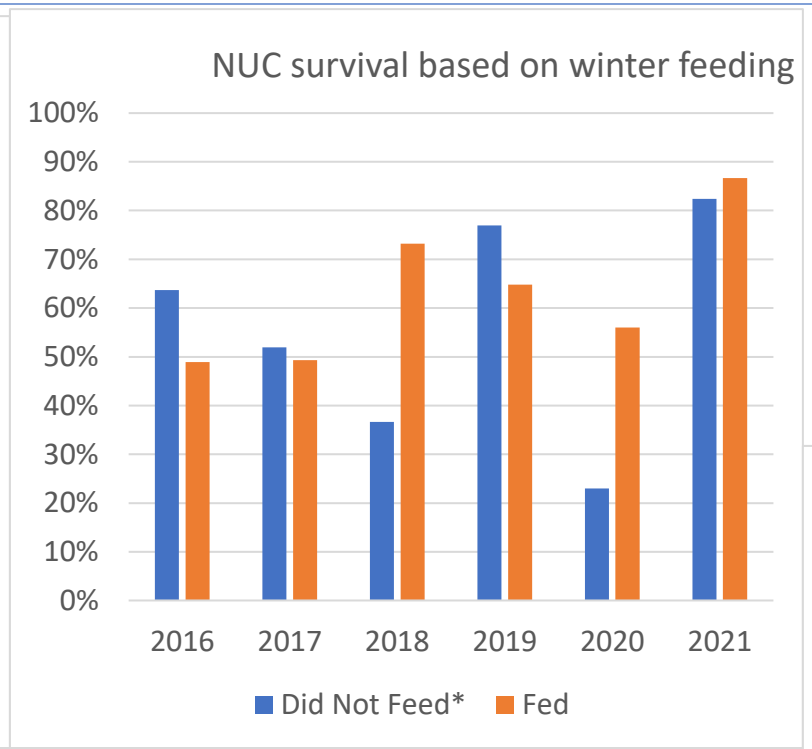


	# Hives on 10/1/21	# NUCs on 10/1/21
Did Not Feed	128	1
< 1 gallon	73	5
1-2 gallons	392	167
3-4 gallons	520	319
> 4 gallons	153	32
Fed but don't know how much	250	241

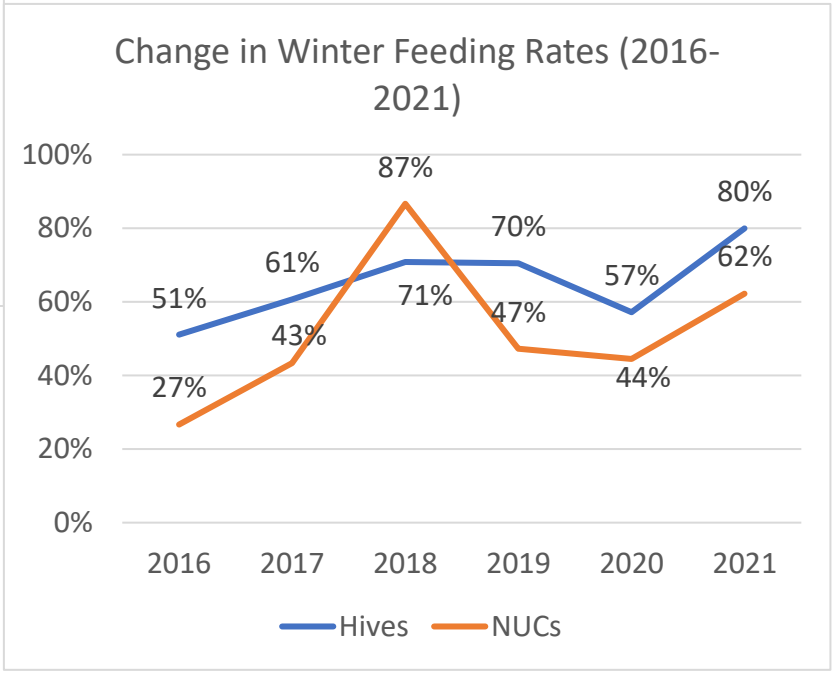
Hives & NUCs were fed between 3-4 gallons of sugar syrup in the fall.

Did winter feeding help survival rate?





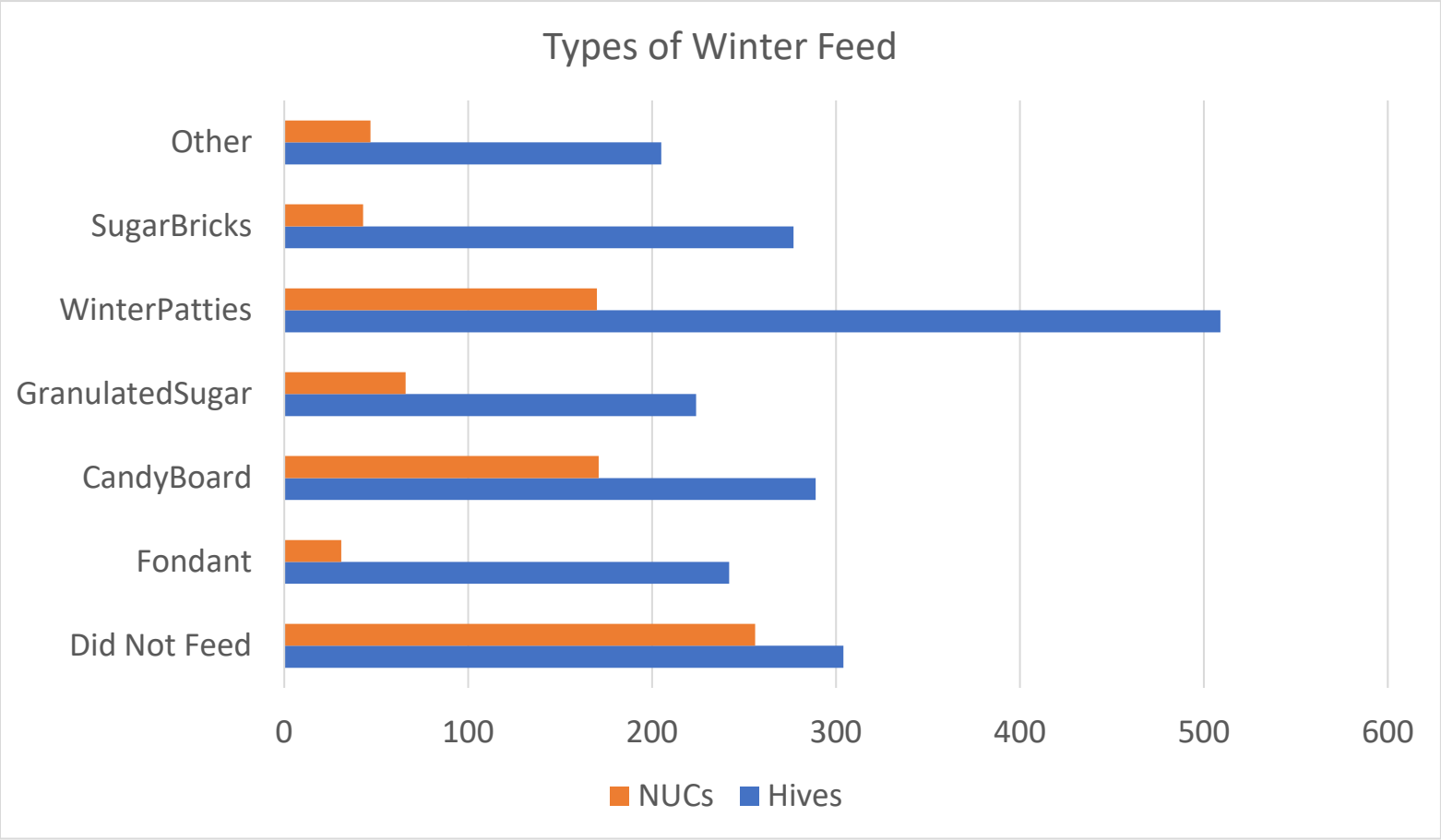
	# Hives on 10/1/21	# NUCs on 10/1/21
Fed	1181	420
Did Not Feed	297	255
unknown	44	92



*Many that did not feed in 2021 commented the bees had plenty of honey

Feeding rates increased significantly in 2021. Could this be because in 2020 bees died early in the winter so there was no need to feed?

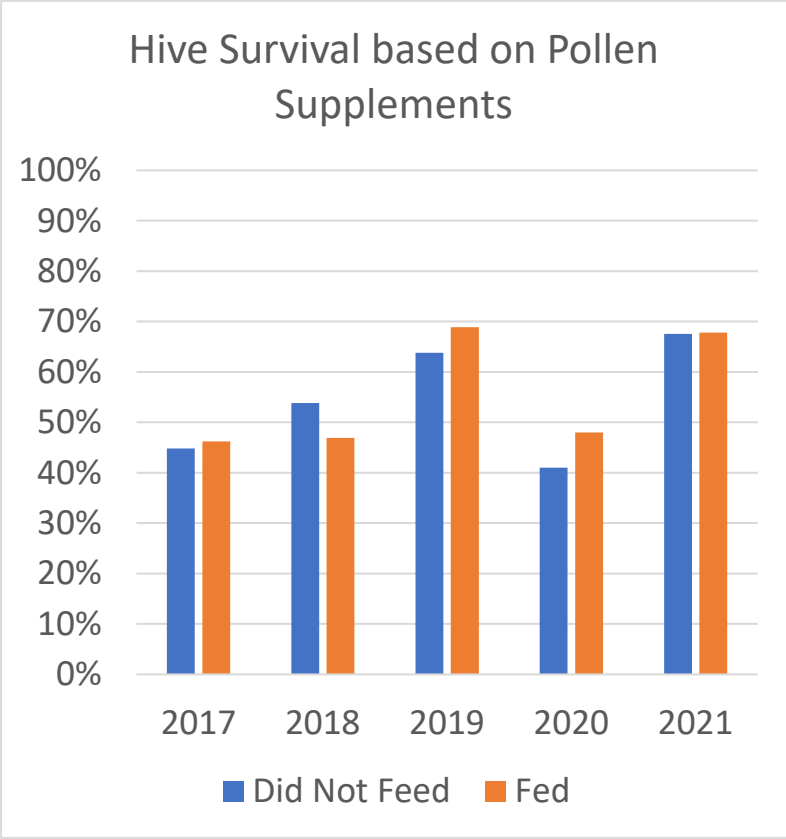
What types of winter feed were used?

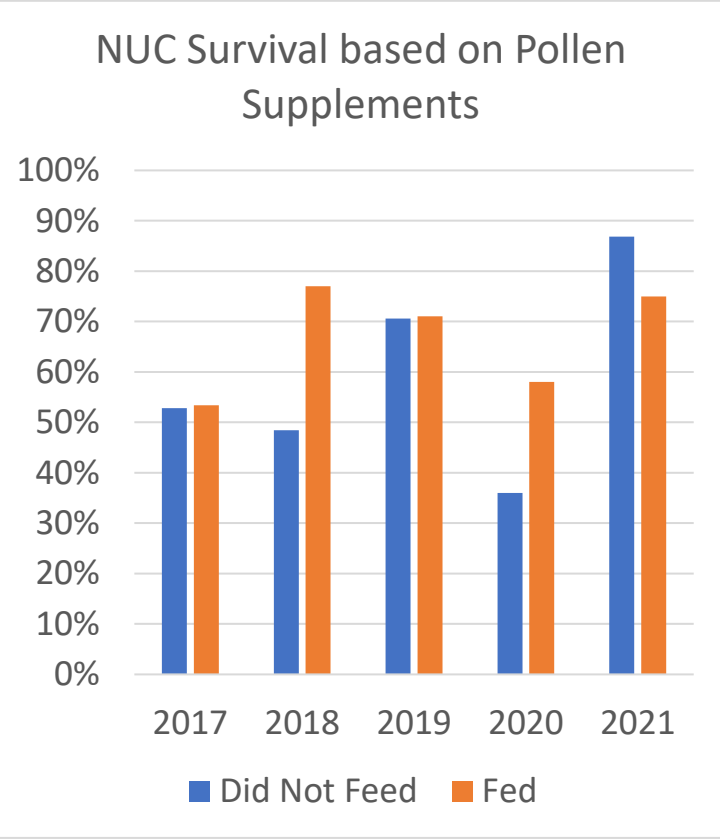


	# Apiaries
1 Type of Feed	197
2 types of feed	72
3 types of feed	8
4 types of feed	5

Other includes: left their own honey, patties made with honey, honey baggies, sugar water

Does feeding protein supplements help survival?

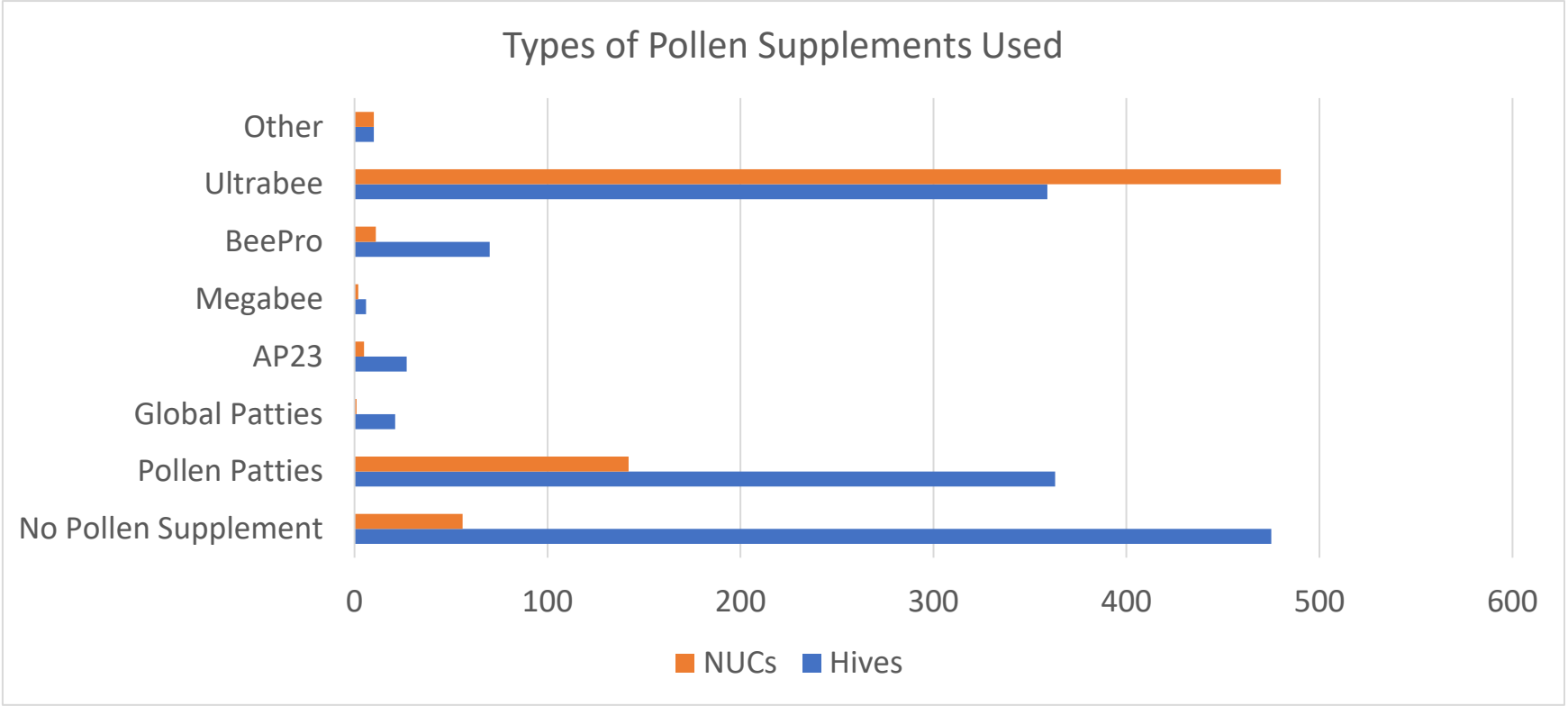




	# Hives on 10/1/21	# NUCs on 10/1/21
Fed	755	562
Did Not Feed	475	56

Unclear that feeding pollen supplements in 2021 helped survival of either NUCs or Hives

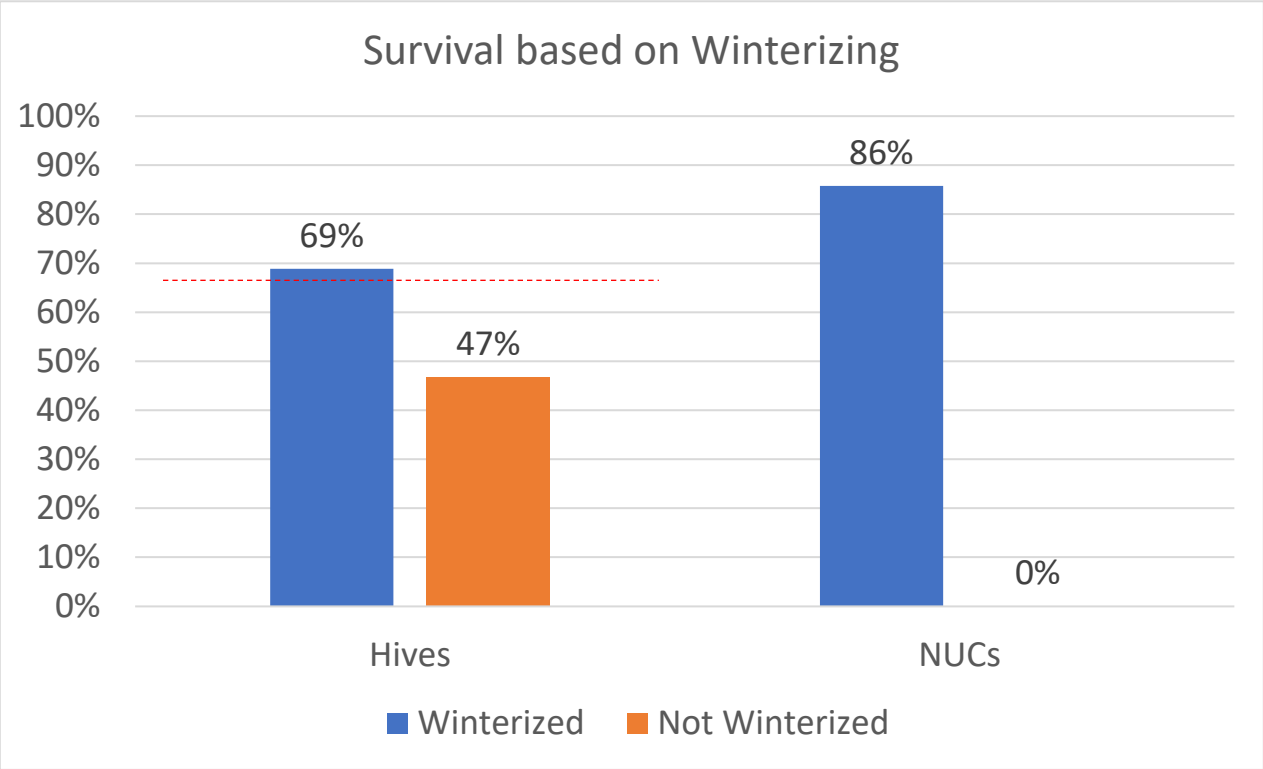
What types of protein supplements were used?

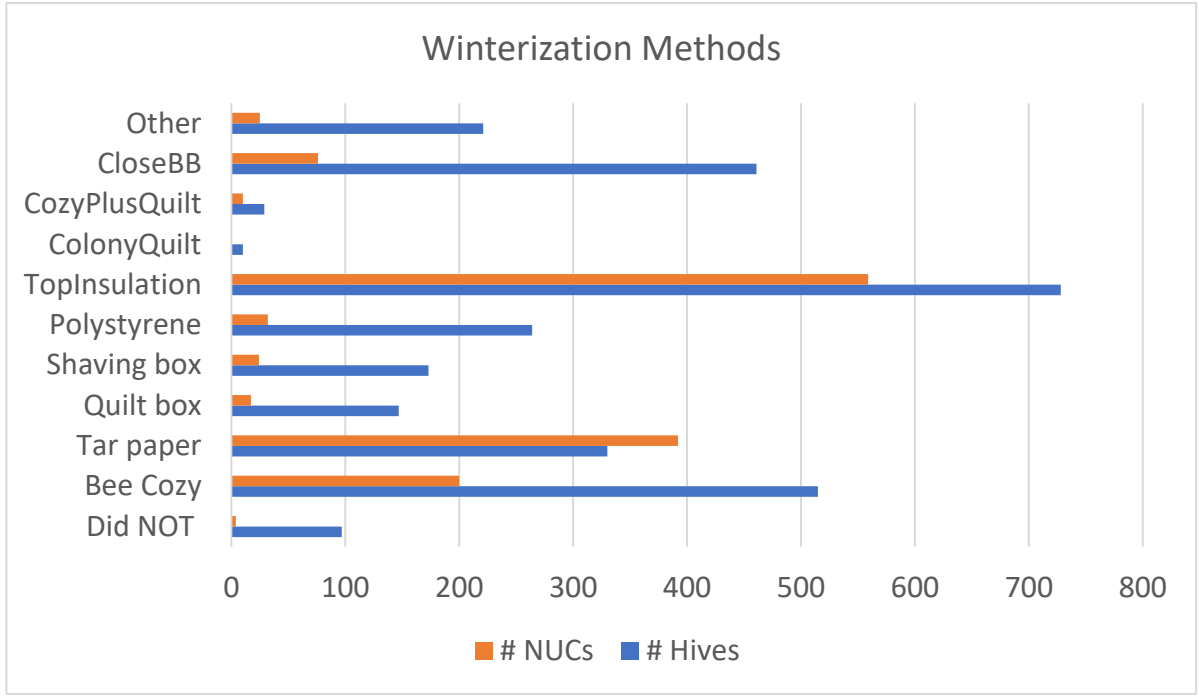


Other included: Spirulina, Pollen patties sold by local suppliers

Winterizing & Moisture Control

Winterizing Hives





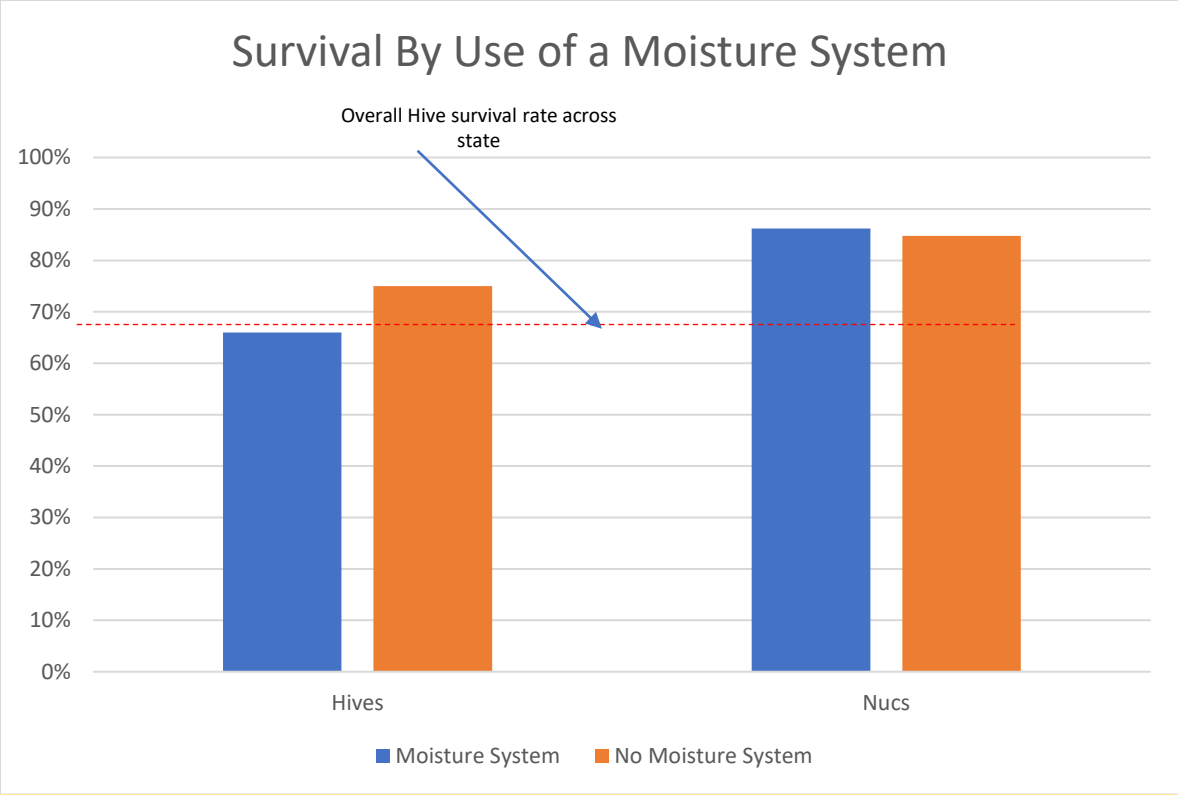
93.7% of hives & 99% of NUCs were winterized in 2021

New Question: 68% of colonies use an upper entrance in the winter.

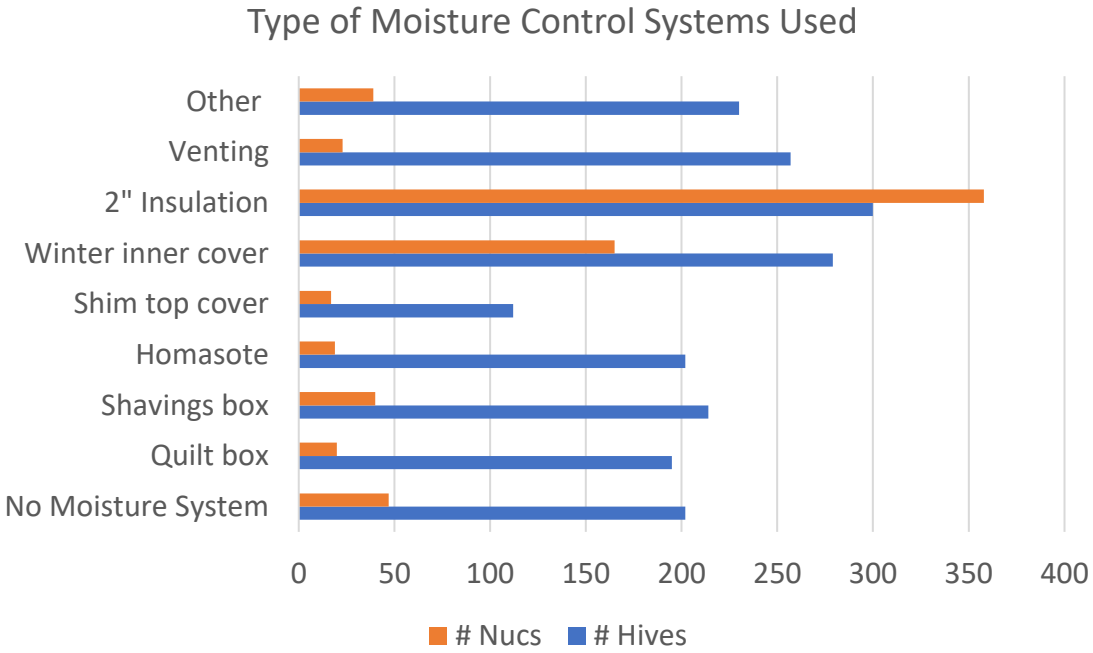
Other includes:

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

Winter Moisture Control



~84% of the reported hives used a moisture system
~92% of the reported NUCs used a moisture system

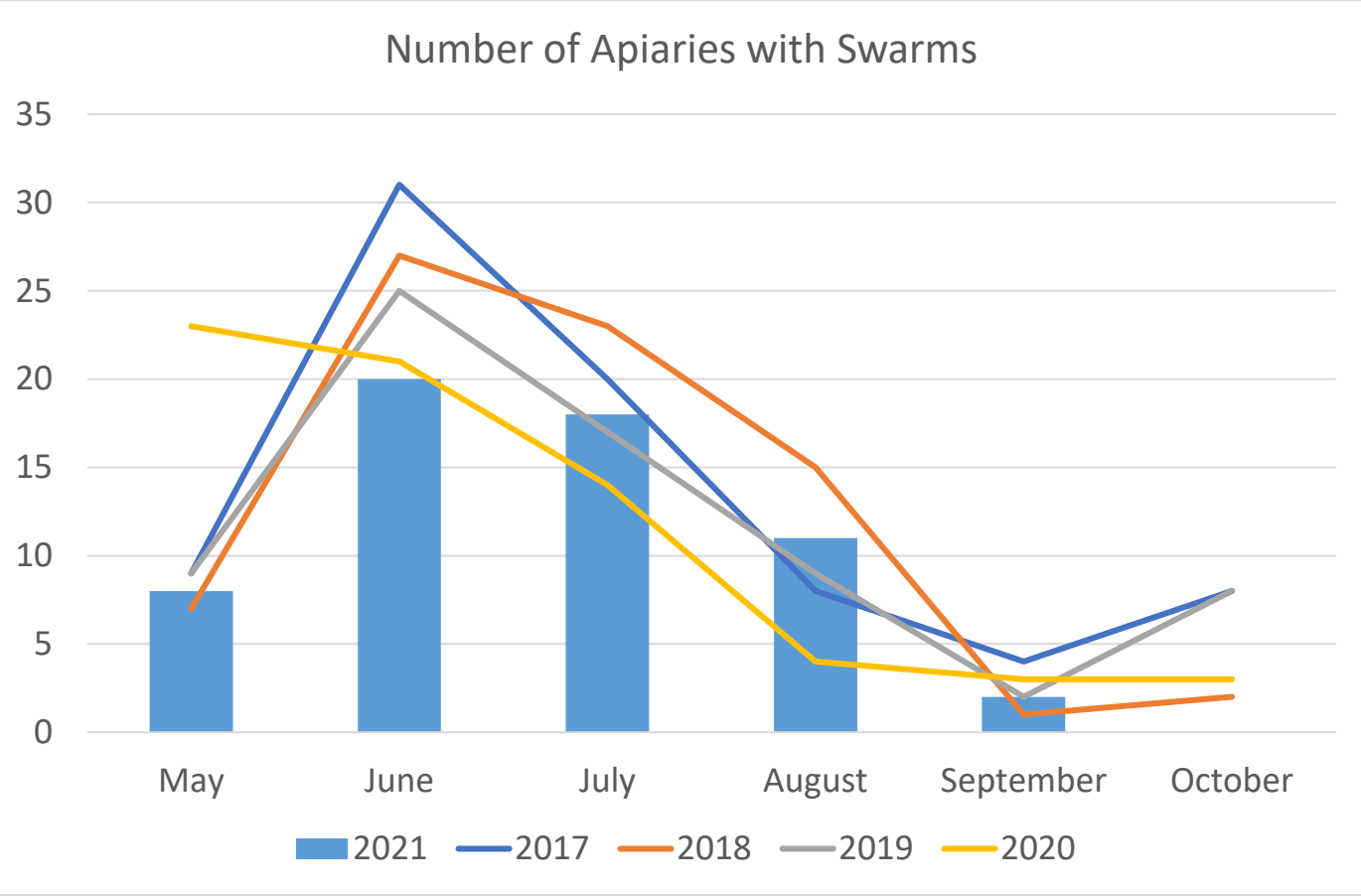


102 apiaries used 2 or more type of moisture control system

- Moisture board includes homasote, sound insulation
- Venting includes vent holes & open screen boards
- Other includes:
  - Vivaldi board, dome cover, dry sugar/candy boards
  - Open bottom board with “Basement”, Tilted Hives
  - Shavings, newspaper, Apimaye Hive with ventilation,
  - Wool, burlap, foam, partially closed bottom board,
  - Mountain Cap

Swarming

Apiaries reporting swarms



- 59 apiaries reported swarms (25%)
- 175 apiaries (664 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
2021	175

Less Swarming in June 2021 than previous years. Other Months were consistent Swarming has been reported by 23-25% of the apiaries each year.

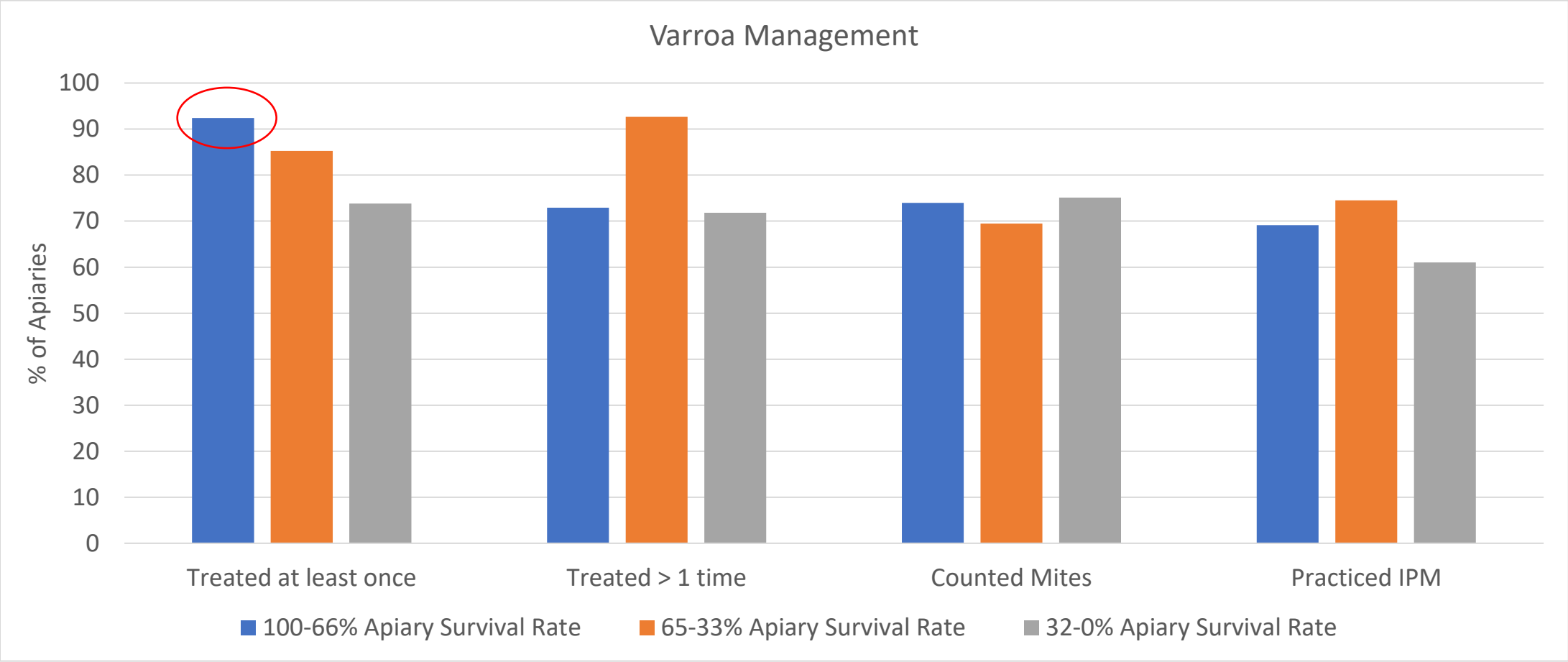
Big Picture: Can we determine "best management" practices from those apiaries that had high survival rate?

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: ~66% of hives
    - 65-33% survival: ~15% of hives
    - 100-66% survival: ~19% 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.

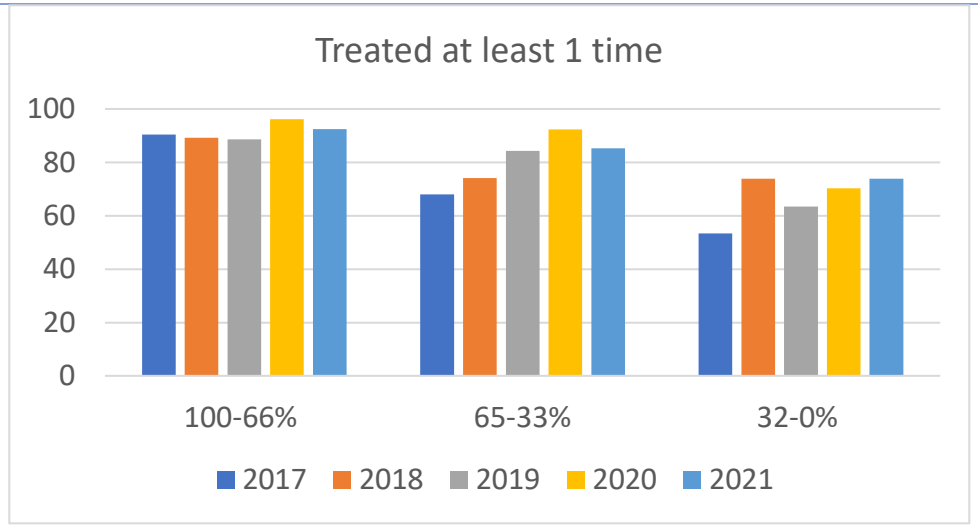
Big Picture: Varroa Management (2021)

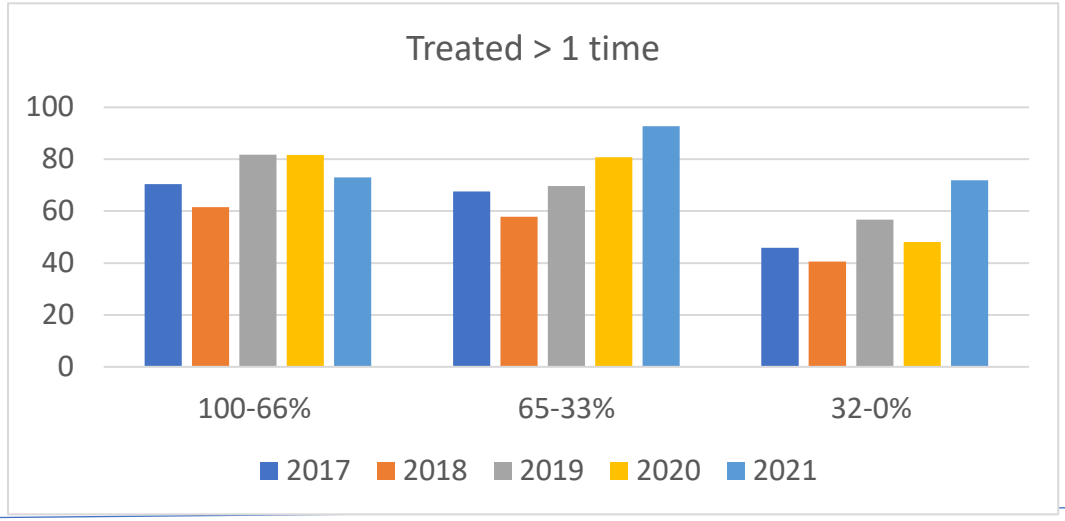


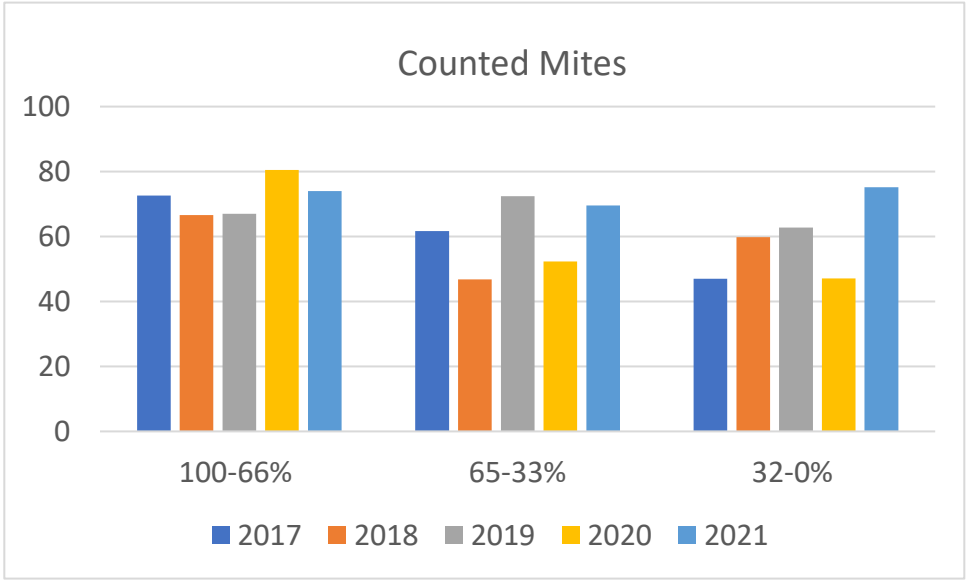
Hives in Apiaries with the best survival rates used a commercial varroa treatment at least one time

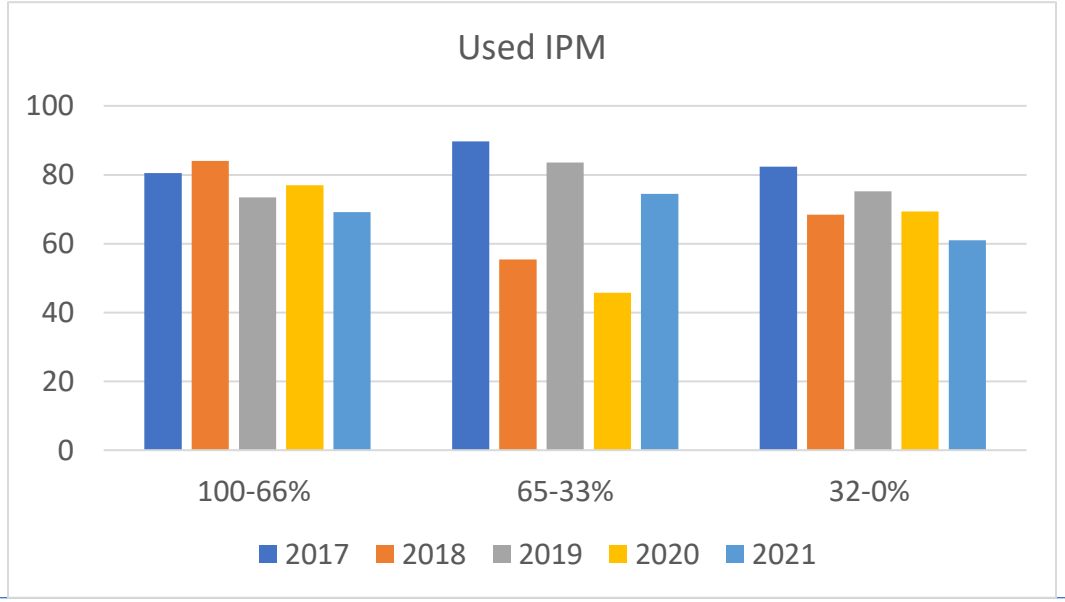
90% of the hives in the high survival group treated at least one time.

Big Picture: Varroa Management – comparing 2017-2021

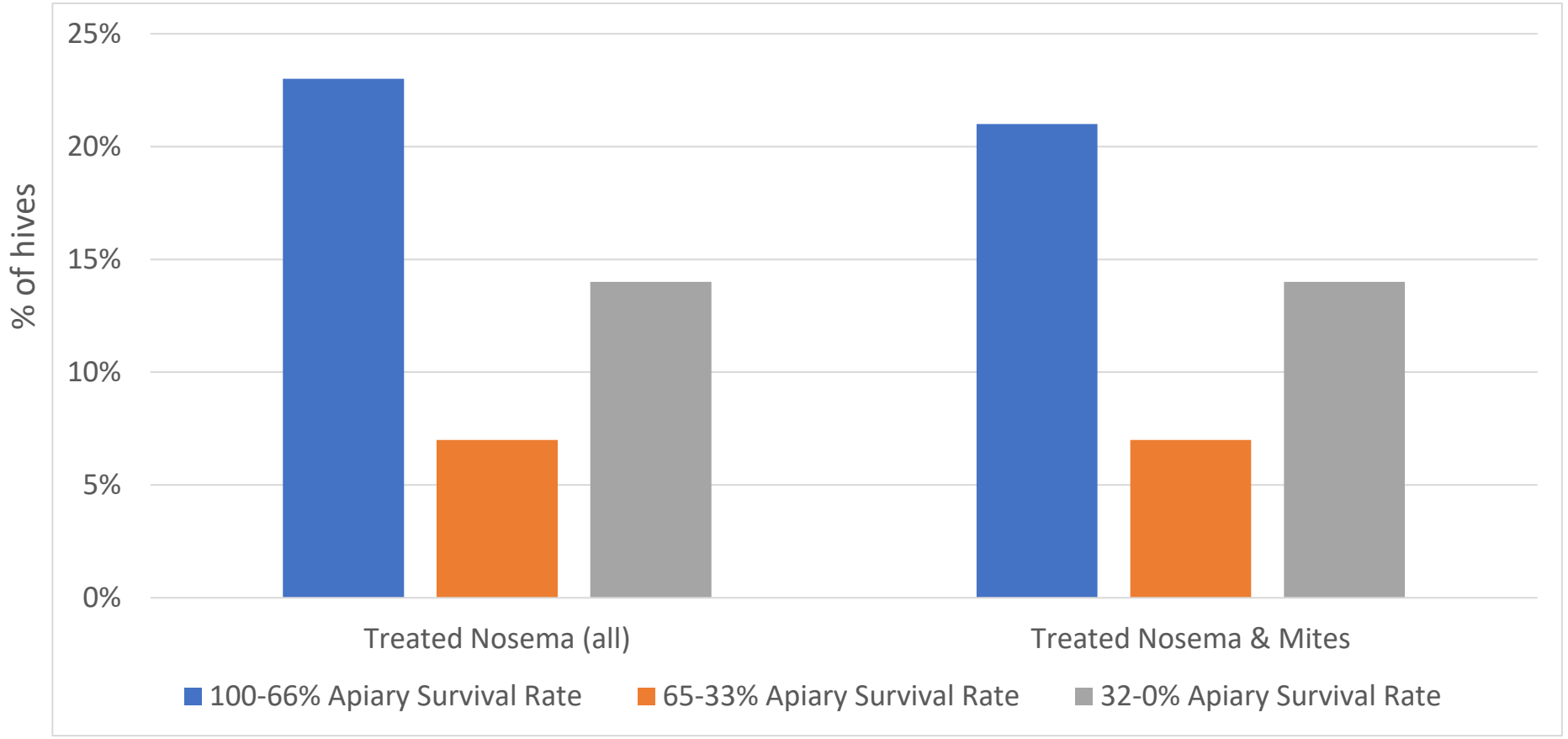




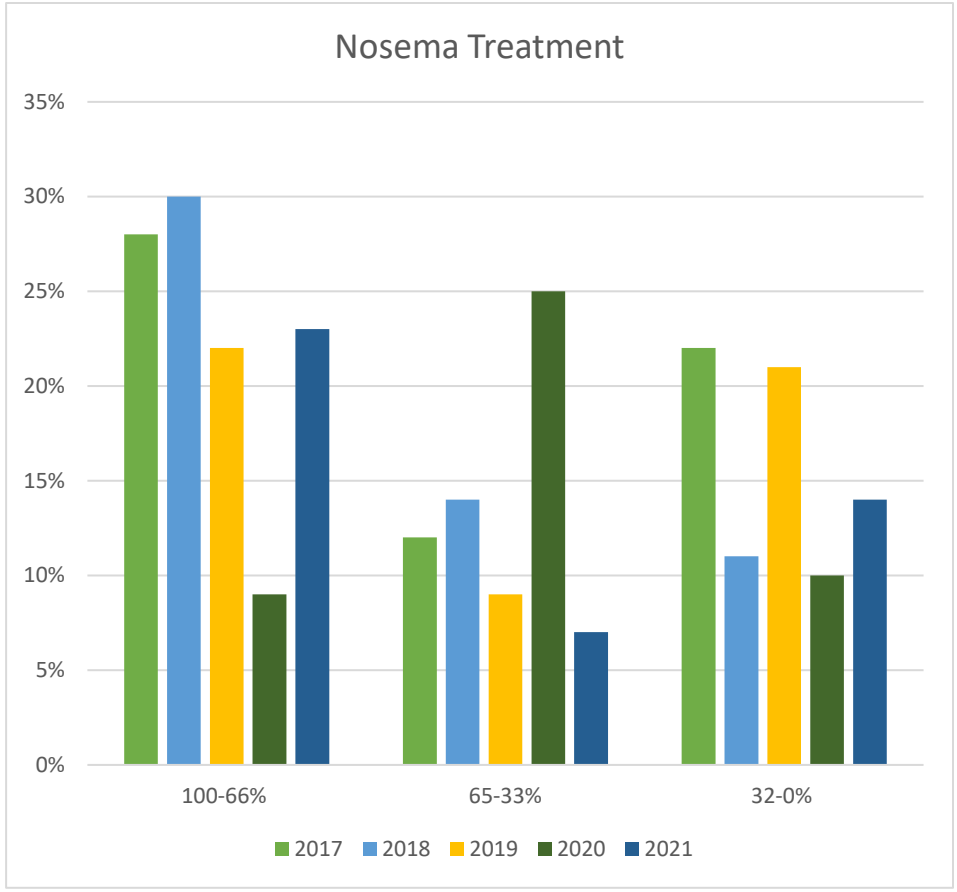


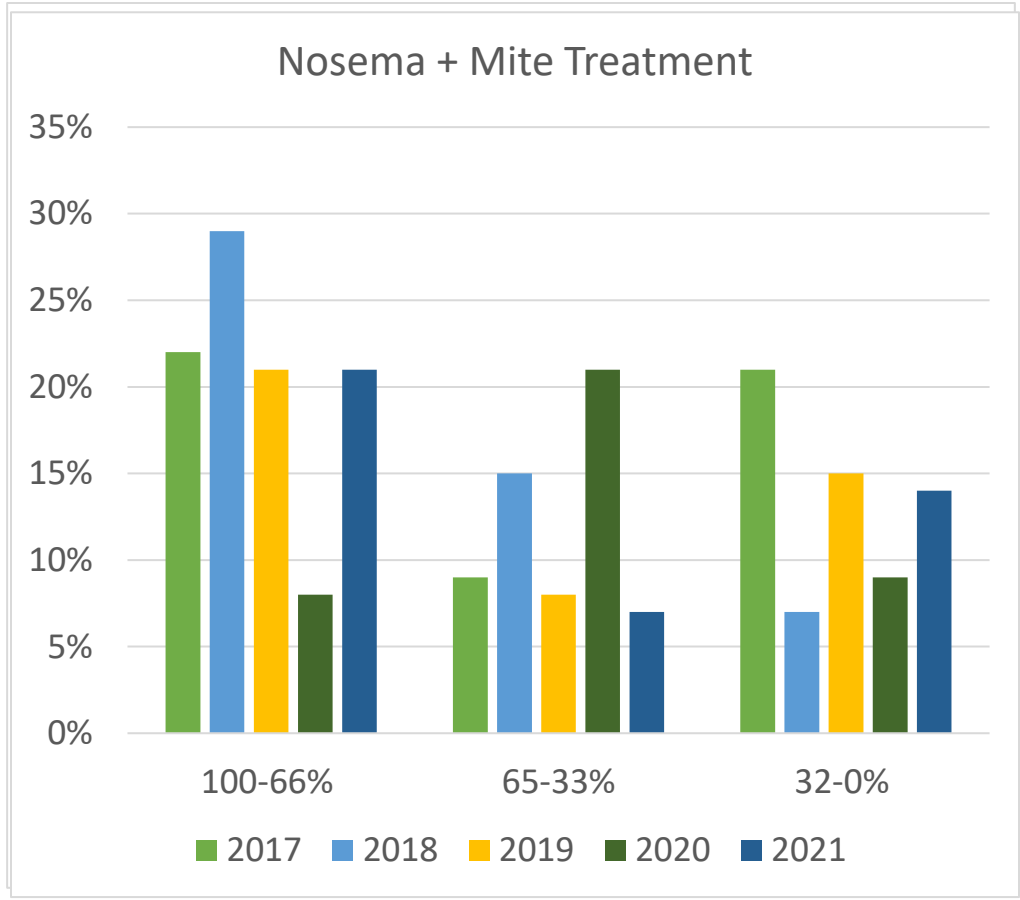


Big Picture: Nosema Management (2021)



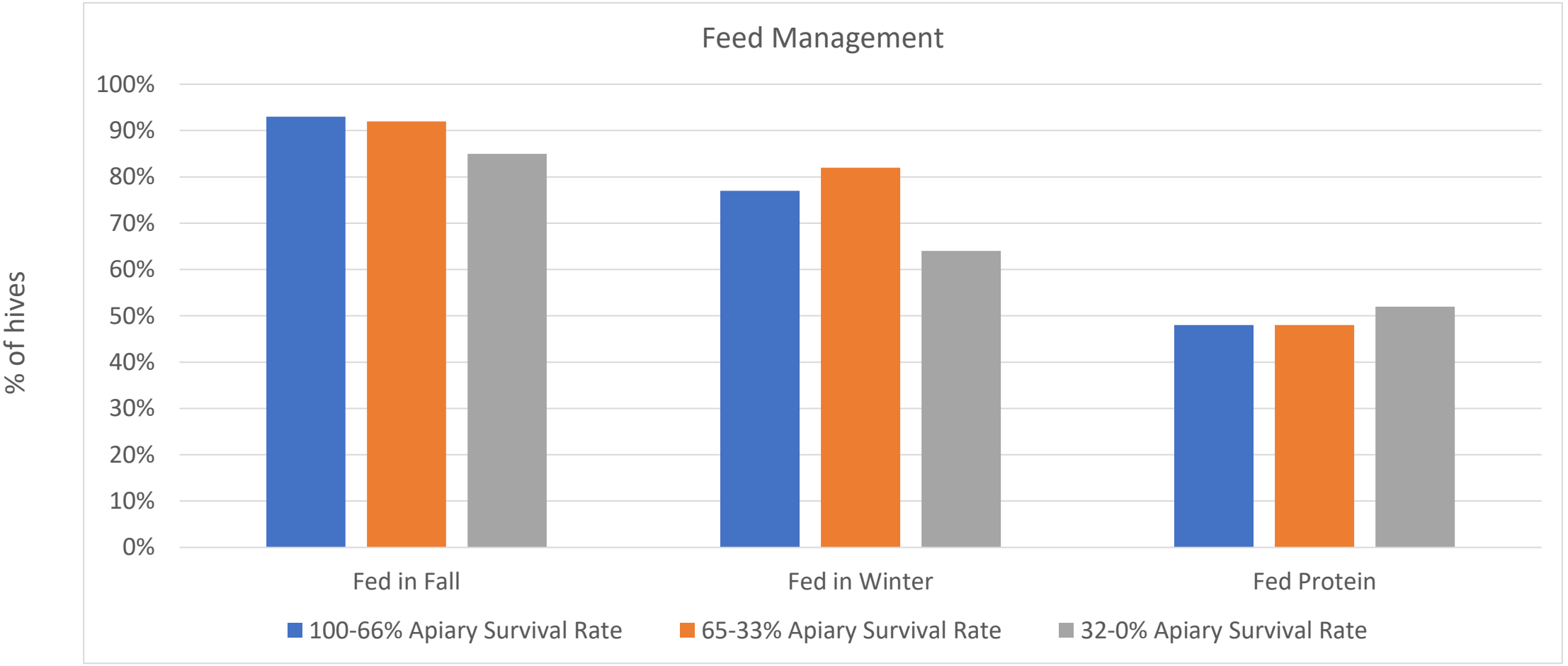
Big Picture: Nosema Management – comparing 2017 -2021





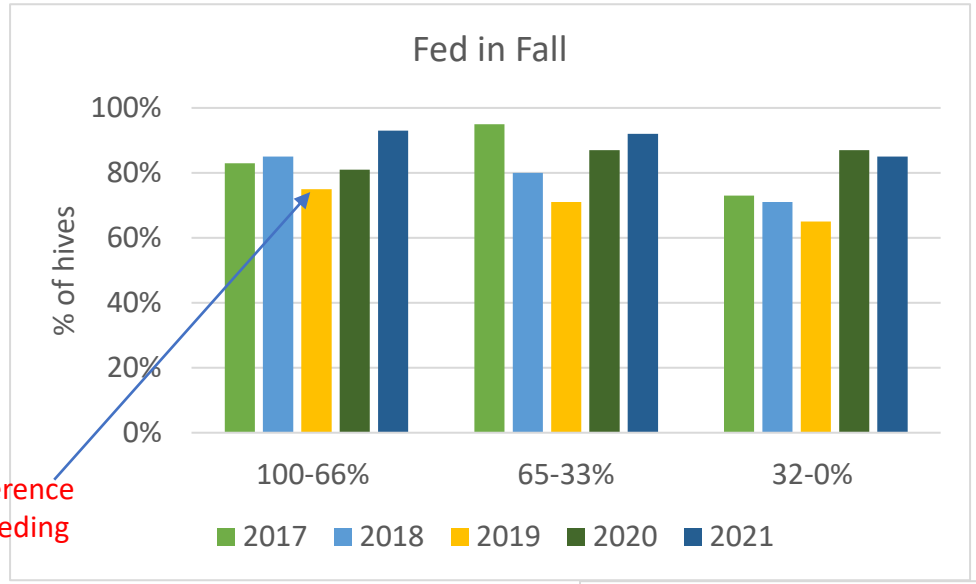
- For the “High” group, 2020 had the lowest % treated for Nosema of the 5 years.
- 2021 Nosema treatments were in line with previous years.

Feed Management

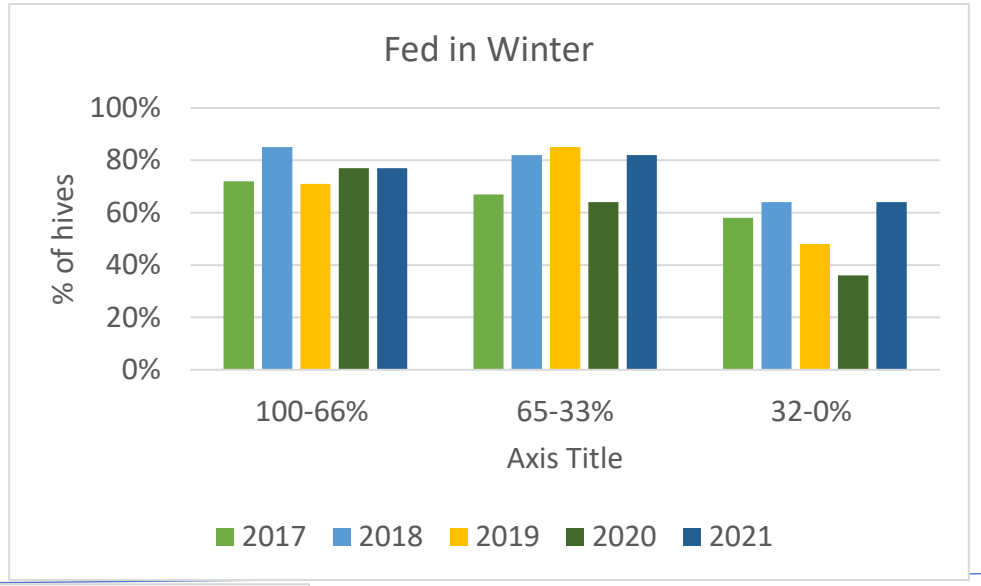


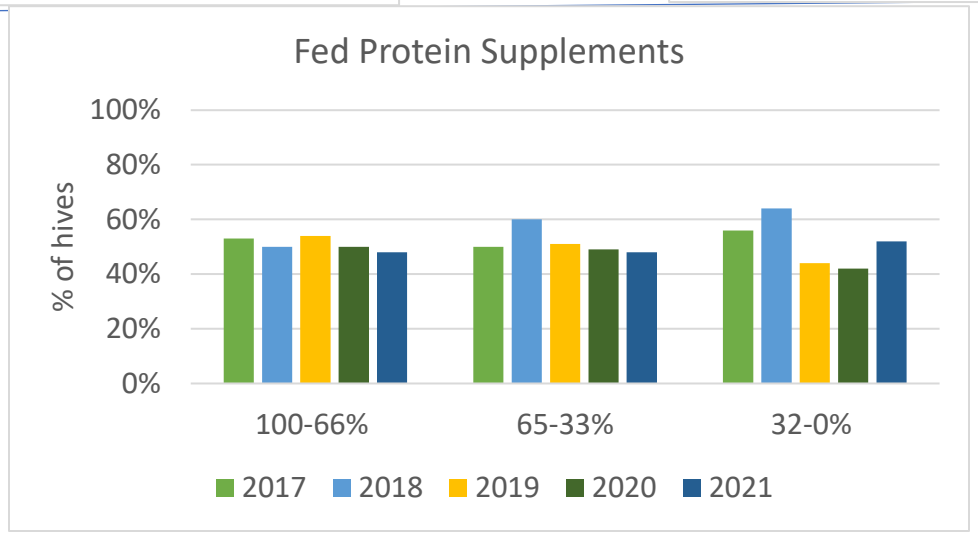
*Since feeding needs are so hive & region specific, in the future should look at data more regionally

Big Picture: Feed Management – comparing 2017-2021

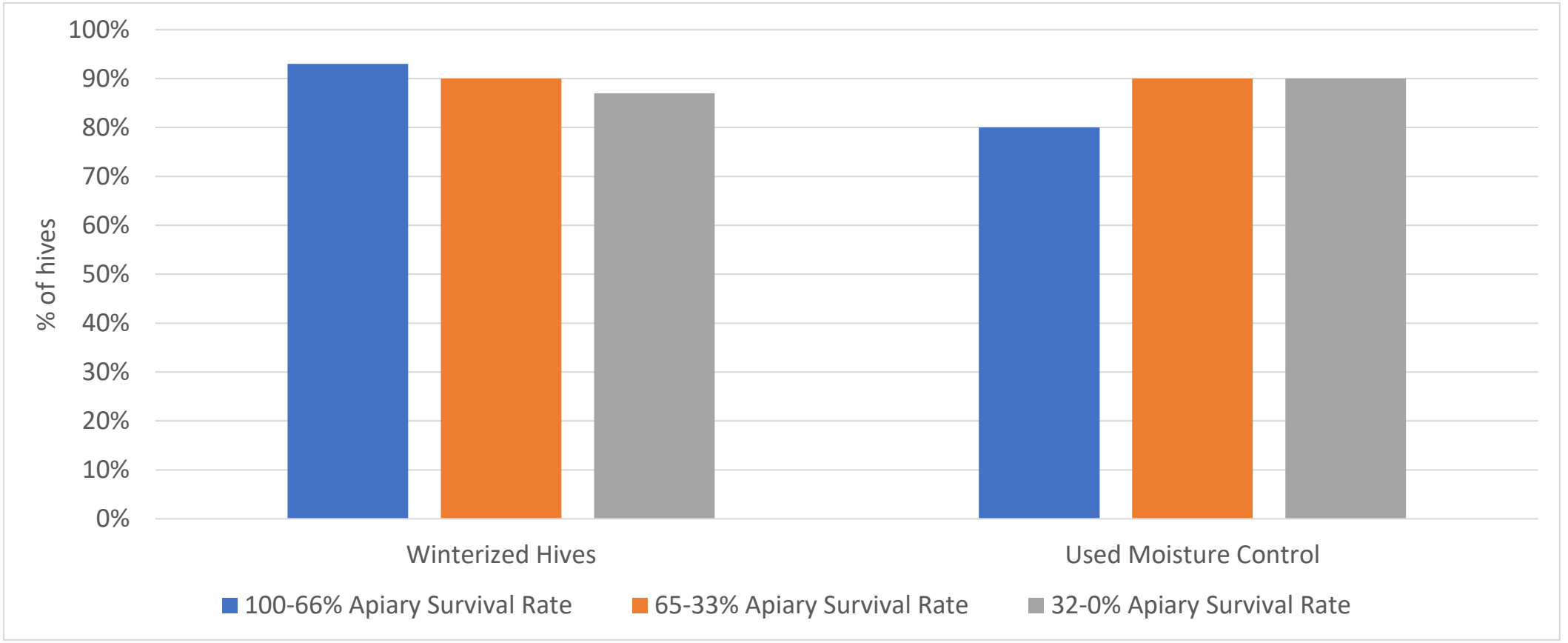


Note the difference
In 2019 fall feeding



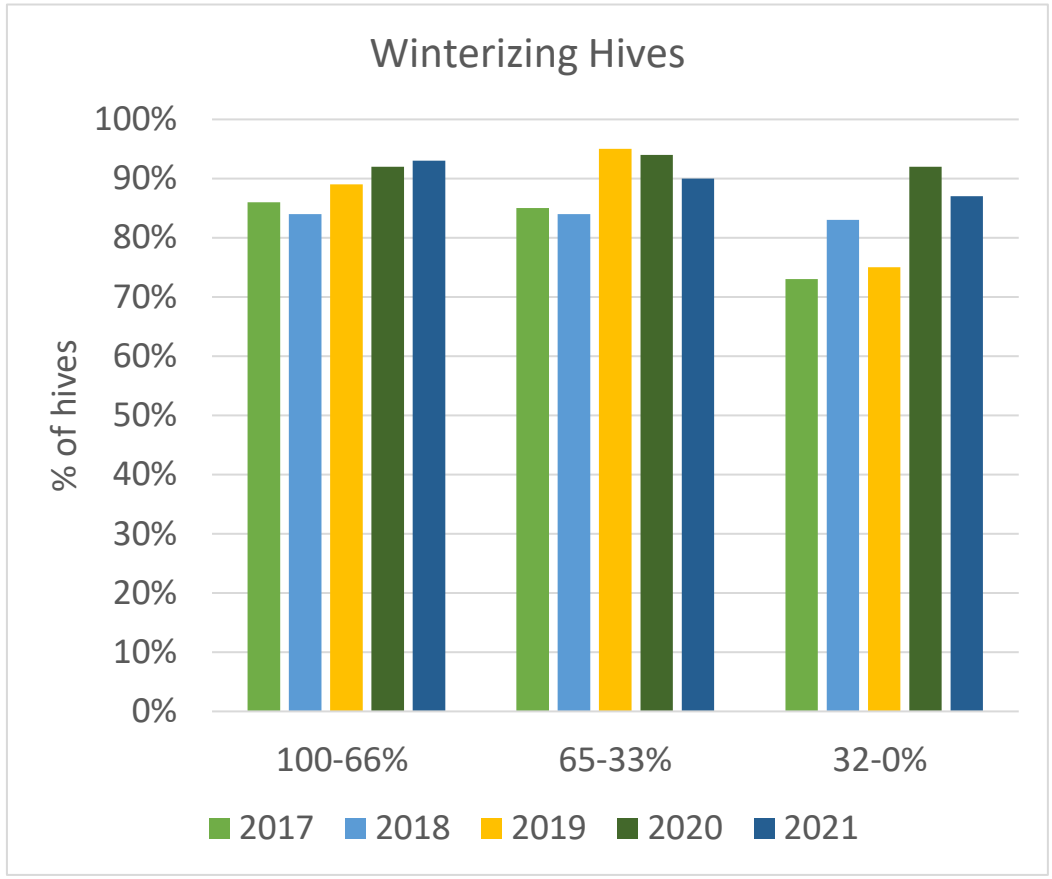


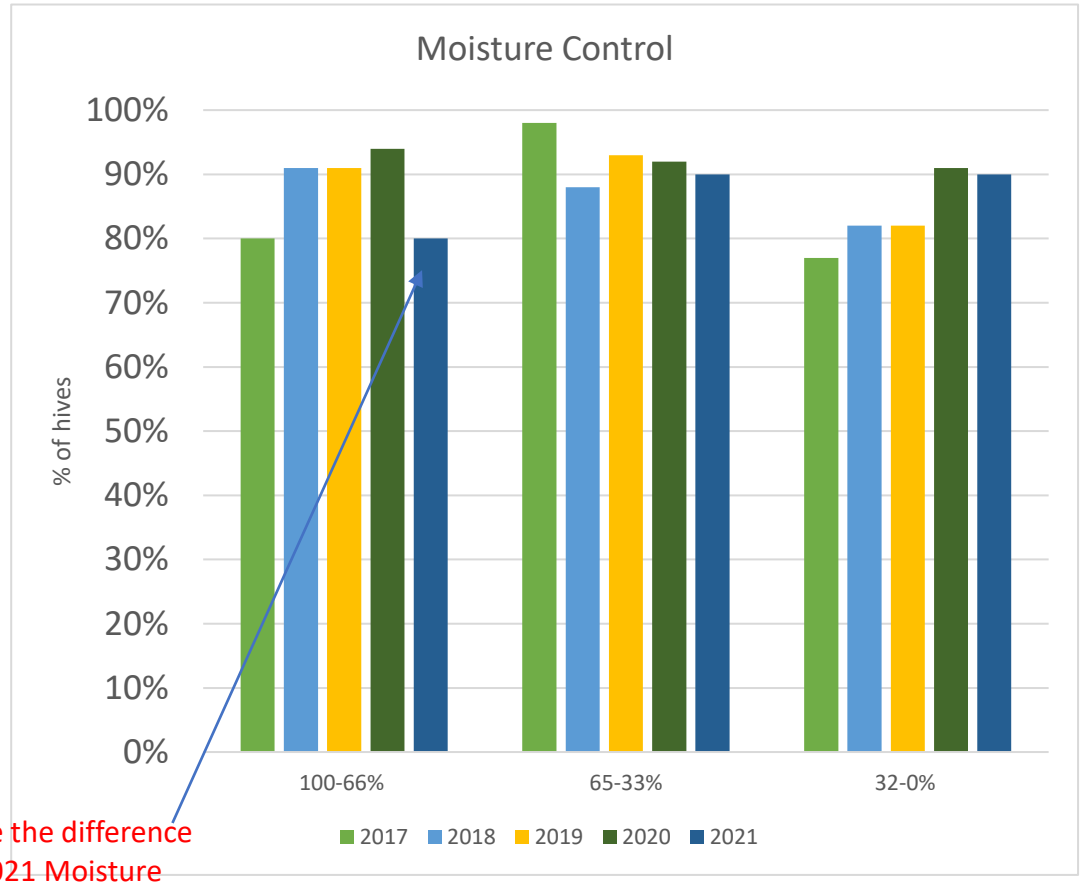
Big Picture: Winterizing & moisture control systems



The high survival rate group winterized a slightly higher percentage of colonies than the other groups. Also, a smaller percentage of its colonies had moisture control systems – which is a change from the past

Big Picture: Winter Management – comparing 2017-2021



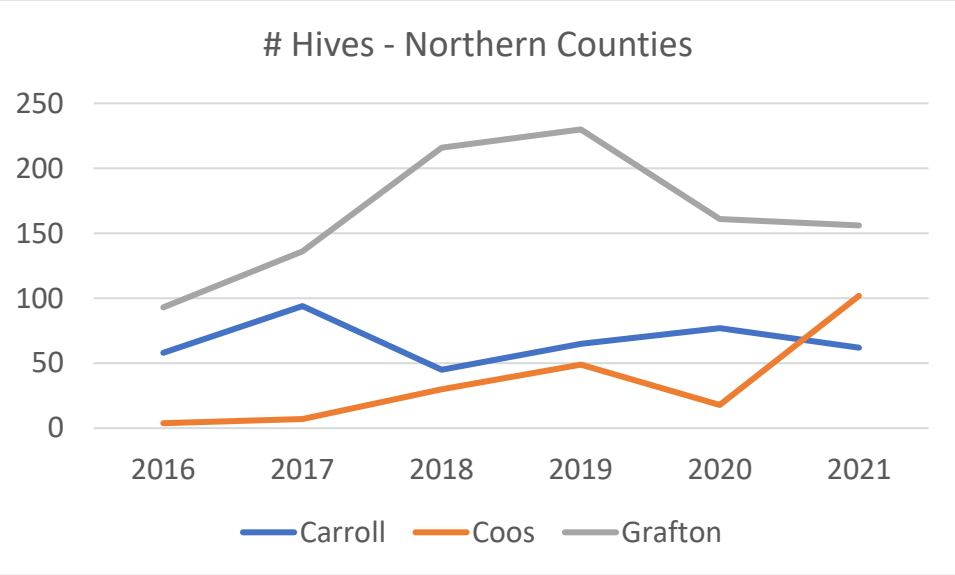


Note the difference In 2021 Moisture control

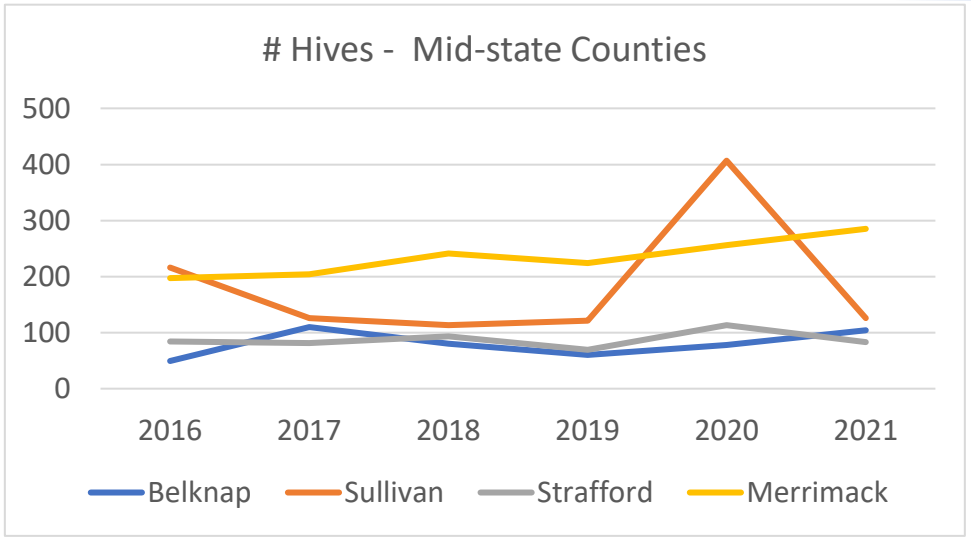
The percentage of winterized colonies in the high survival group has increased for the last several years.

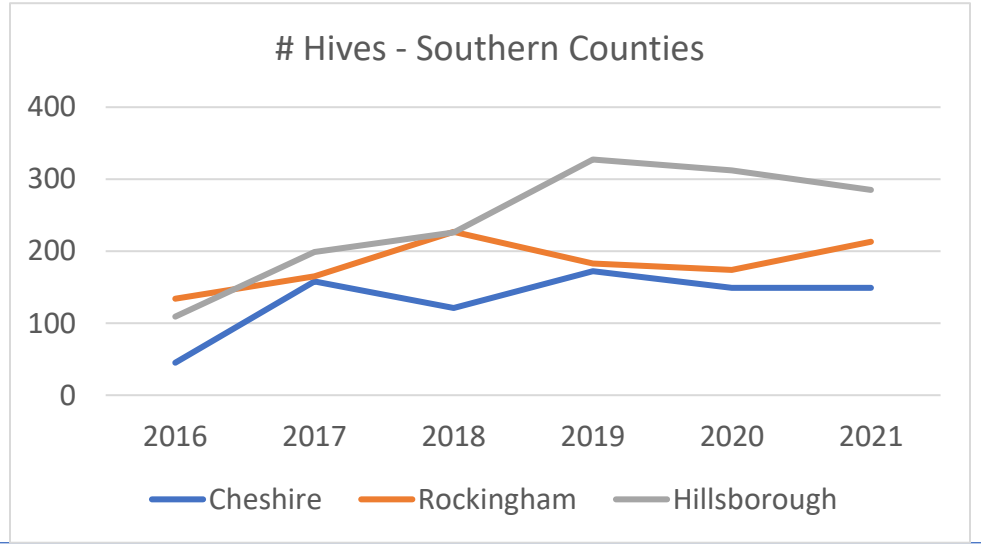
By County Analysis

Survey Participation Over the Years – By County

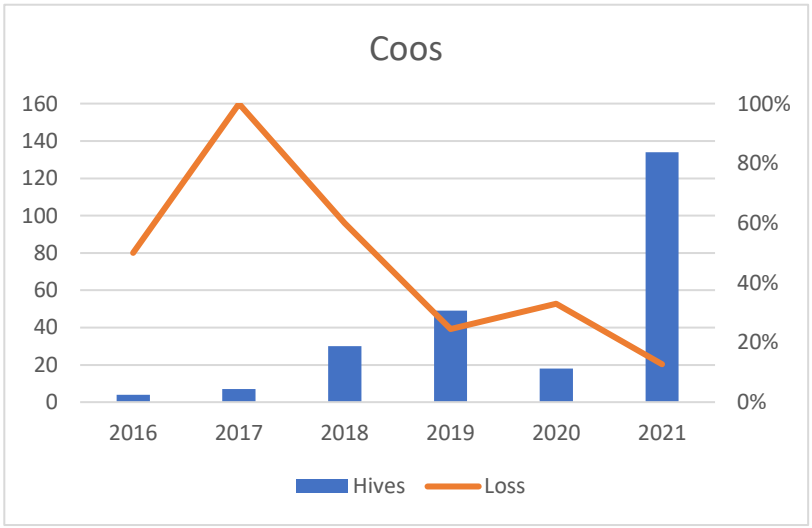


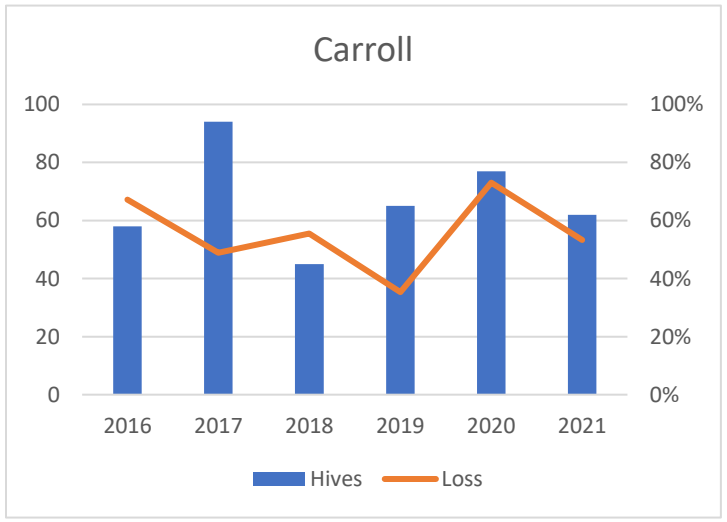
	2016	2017	2018	2019	2020	2021
Belknap	49	110	80	60	78	104
Carroll	58	94	45	65	77	62
Cheshire	45	158	121	172	149	149
Coos	4	7	30	49	18	102
Grafton	93	136	216	230	161	156
Hillsborough	109	199	226	327	312	285
Merrimack	197	204	241	224	256	234
Rockingham	134	165	227	183	174	213
Strafford	84	81	93	69	113	83
Sullivan	216	126	113	121	407	126
MA	13	14	15	12	30	2
VT	2	8	9	12	37	0
ME	2	3	9	0	2	2

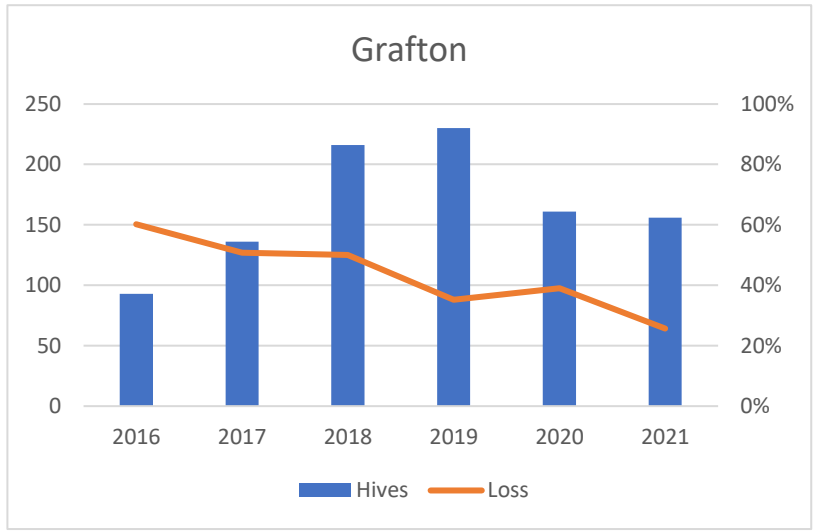


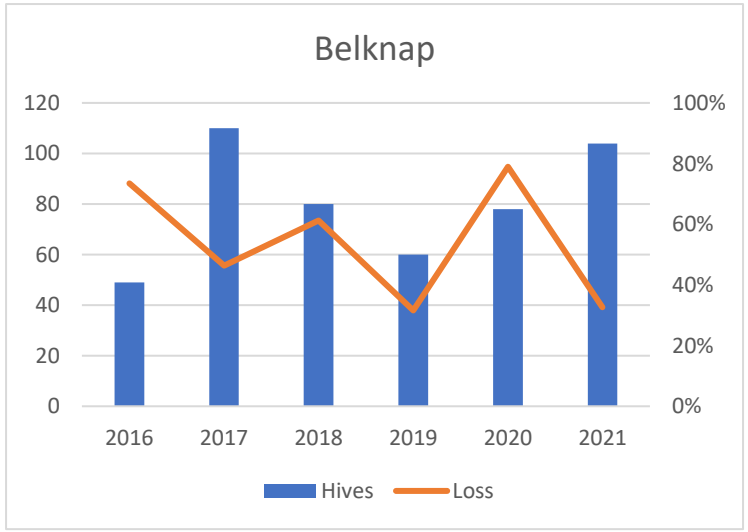


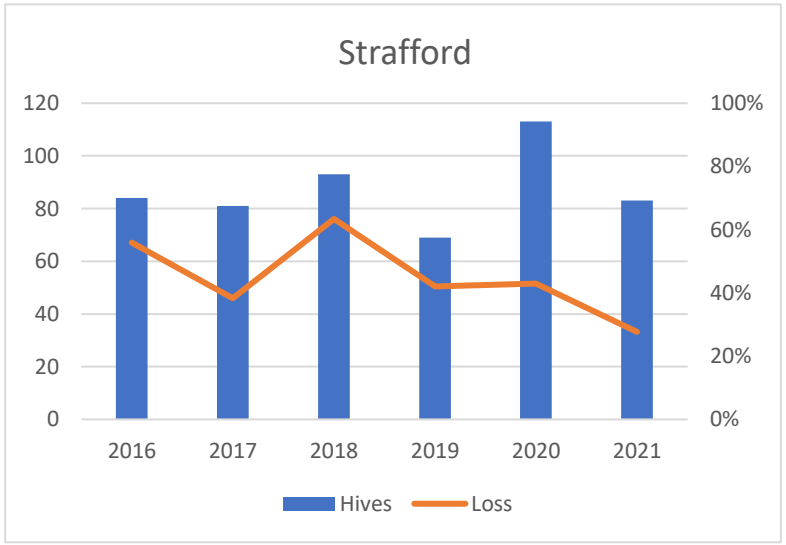
Hives Reported & Loss Rate Year to Year (by County)









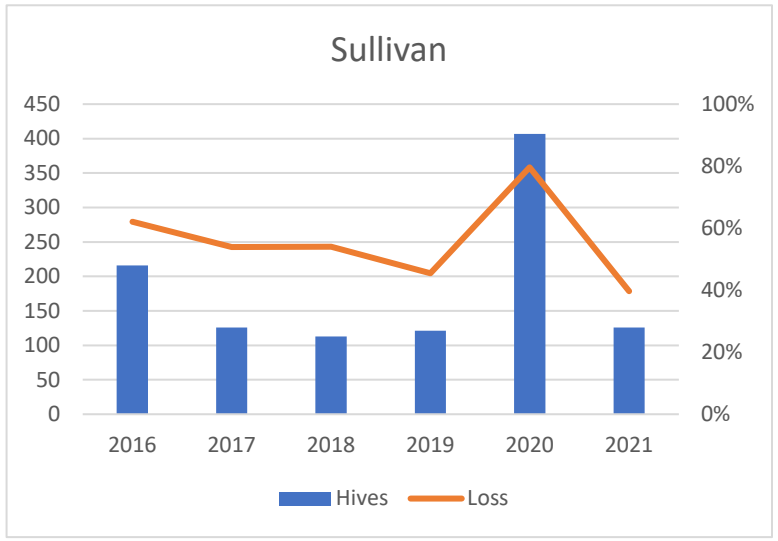


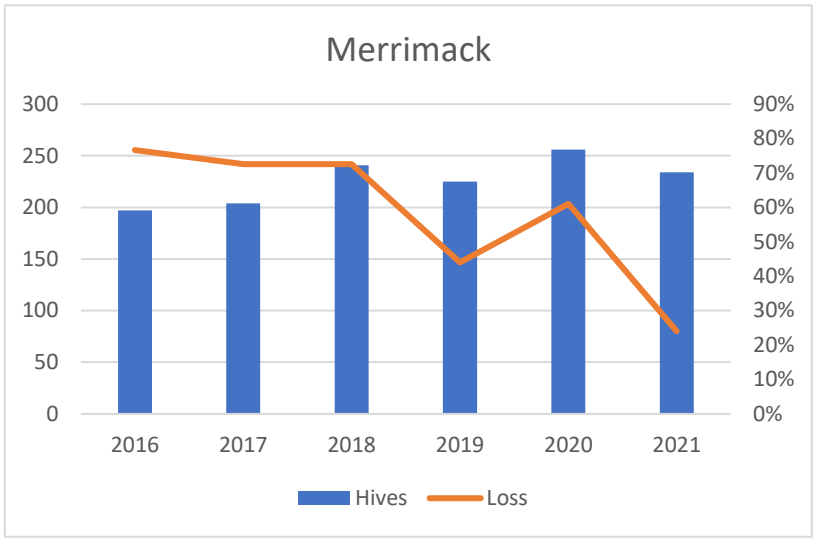
# of hives :

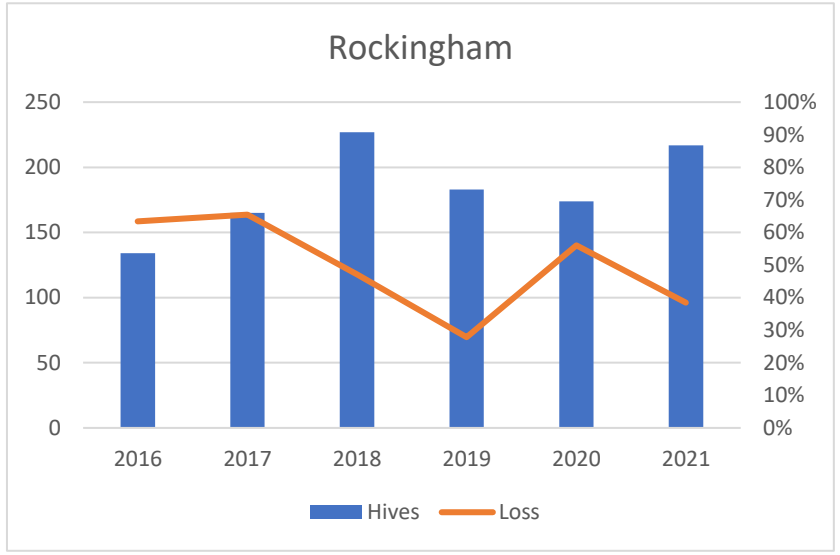
Hive loss :

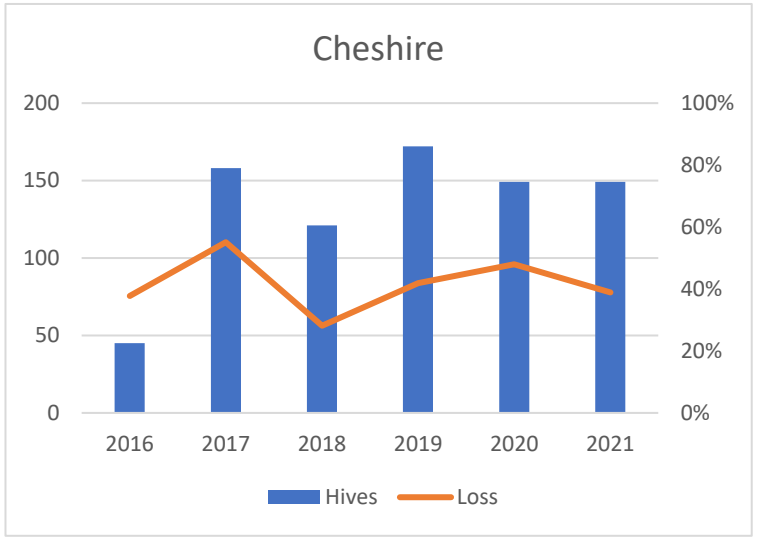
*very small sample size

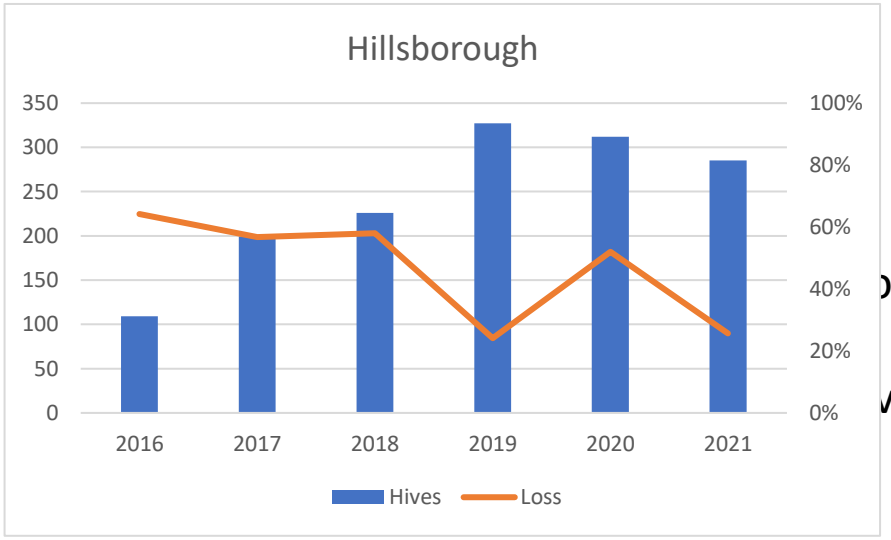
Hives Reported & Loss Rate Year to Year (by County)







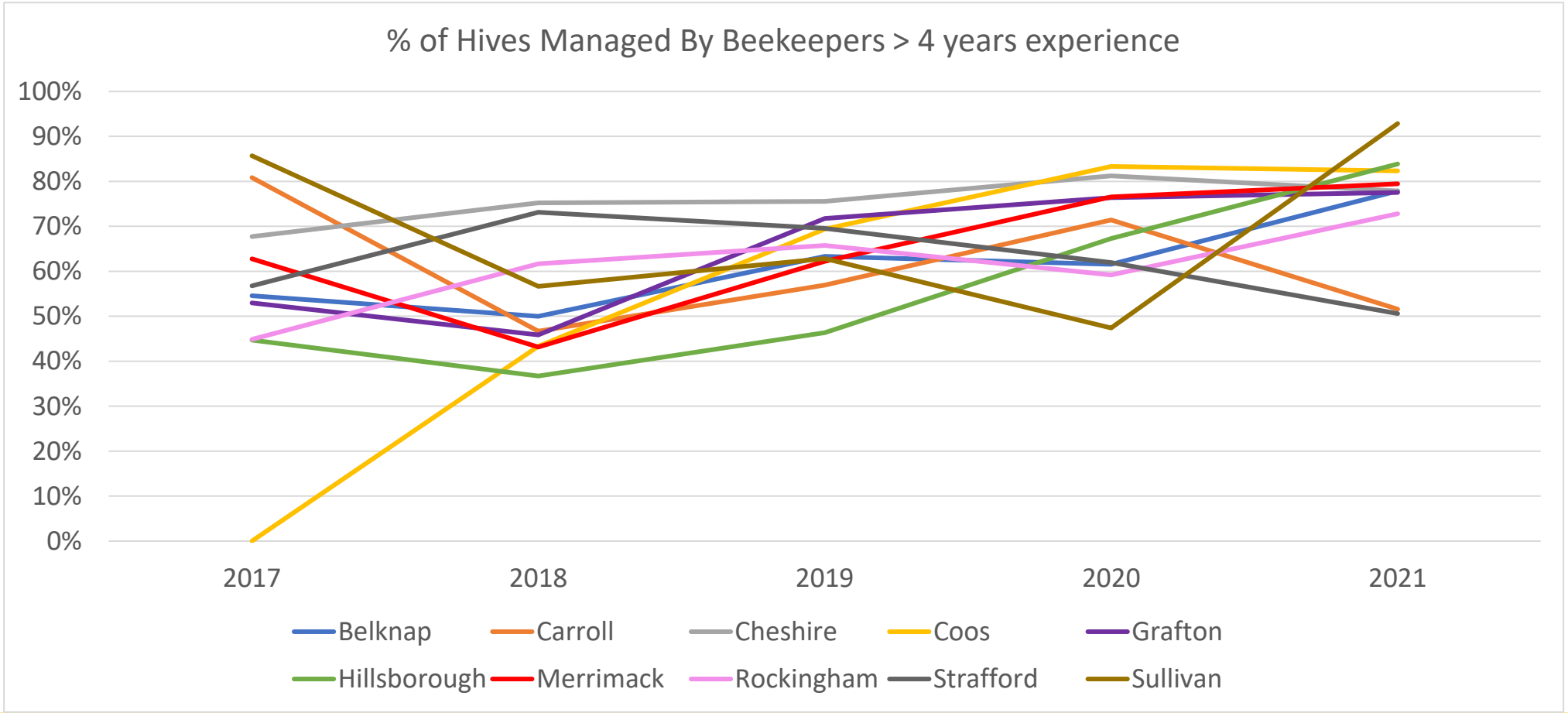




of hives :

ve loss :

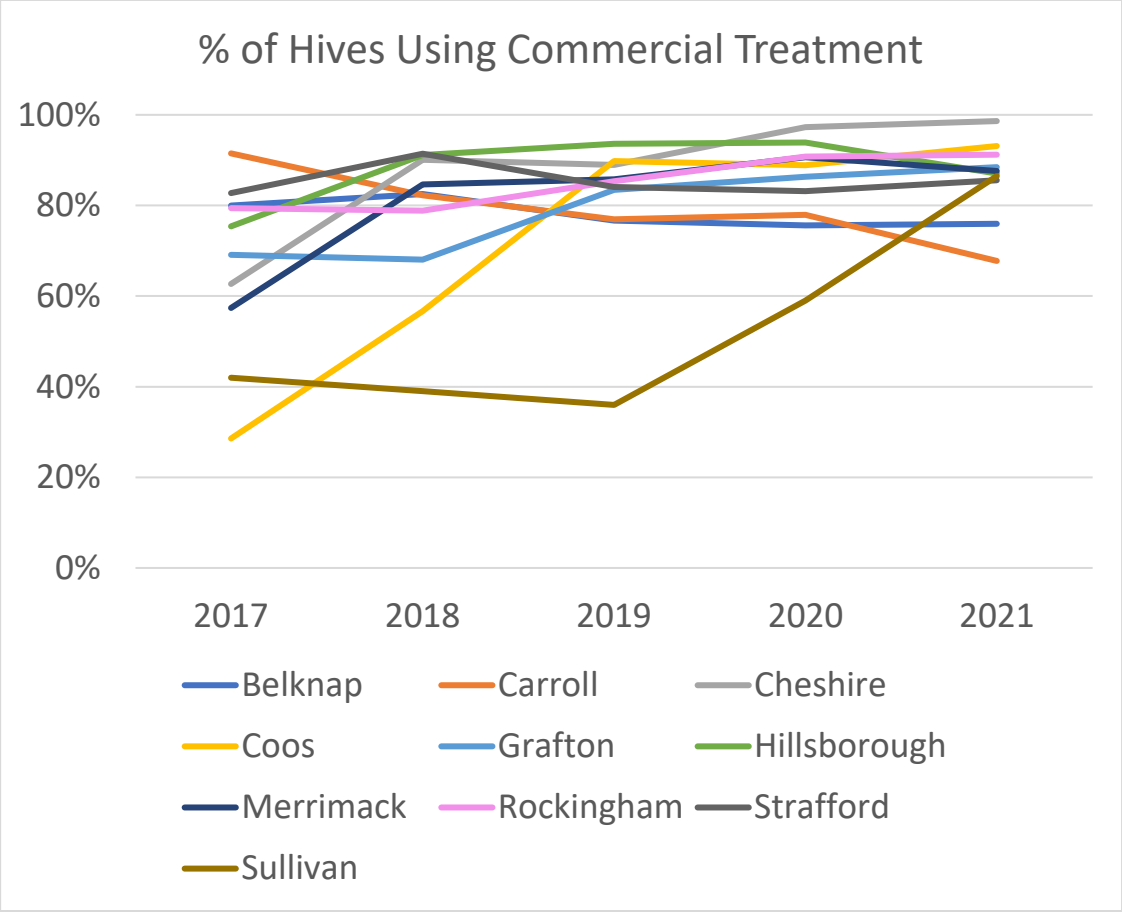
Years of Experience By County

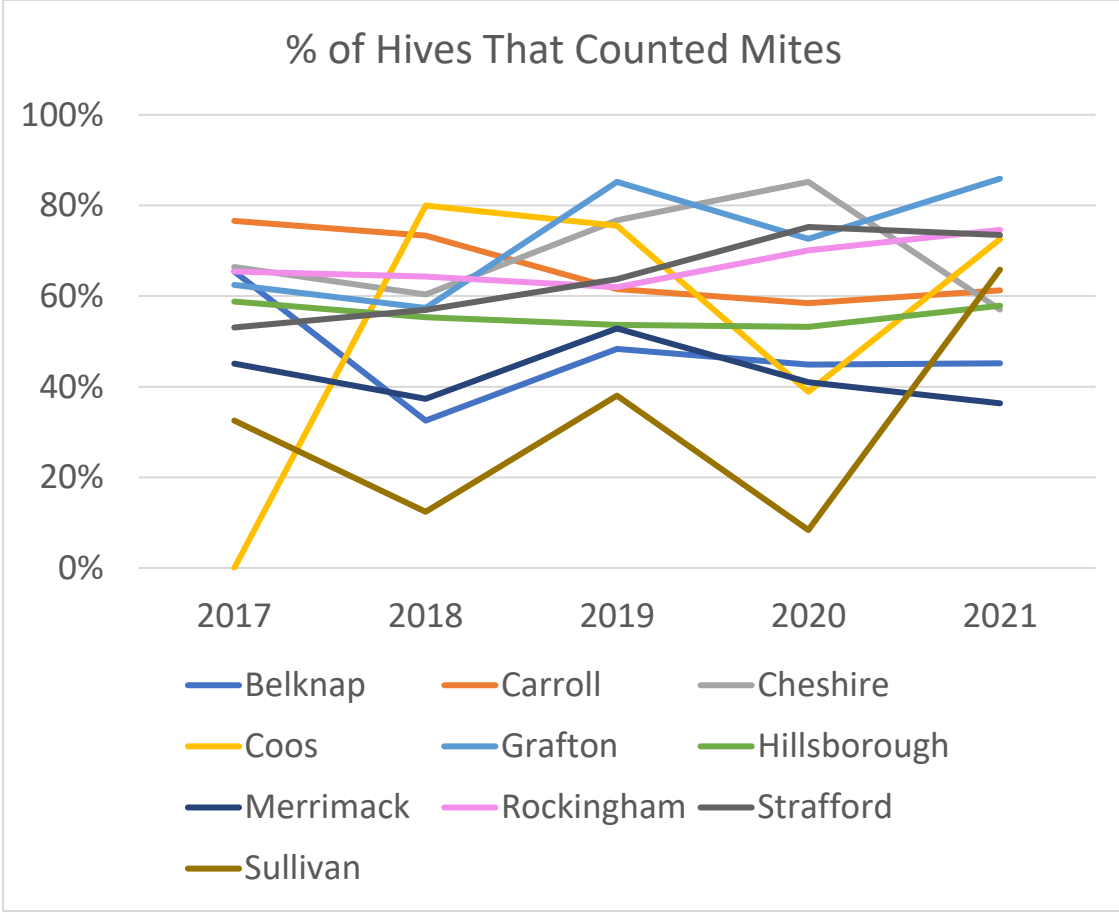


Until 2020, Hillsborough consistently has the lowest percentage of beekeepers with 5 or more years of experience. In 2021 it had one of the highest percentages.

Since 2018, Cheshire has consistently had a high percentage of beekeepers with 5 or more years of experience

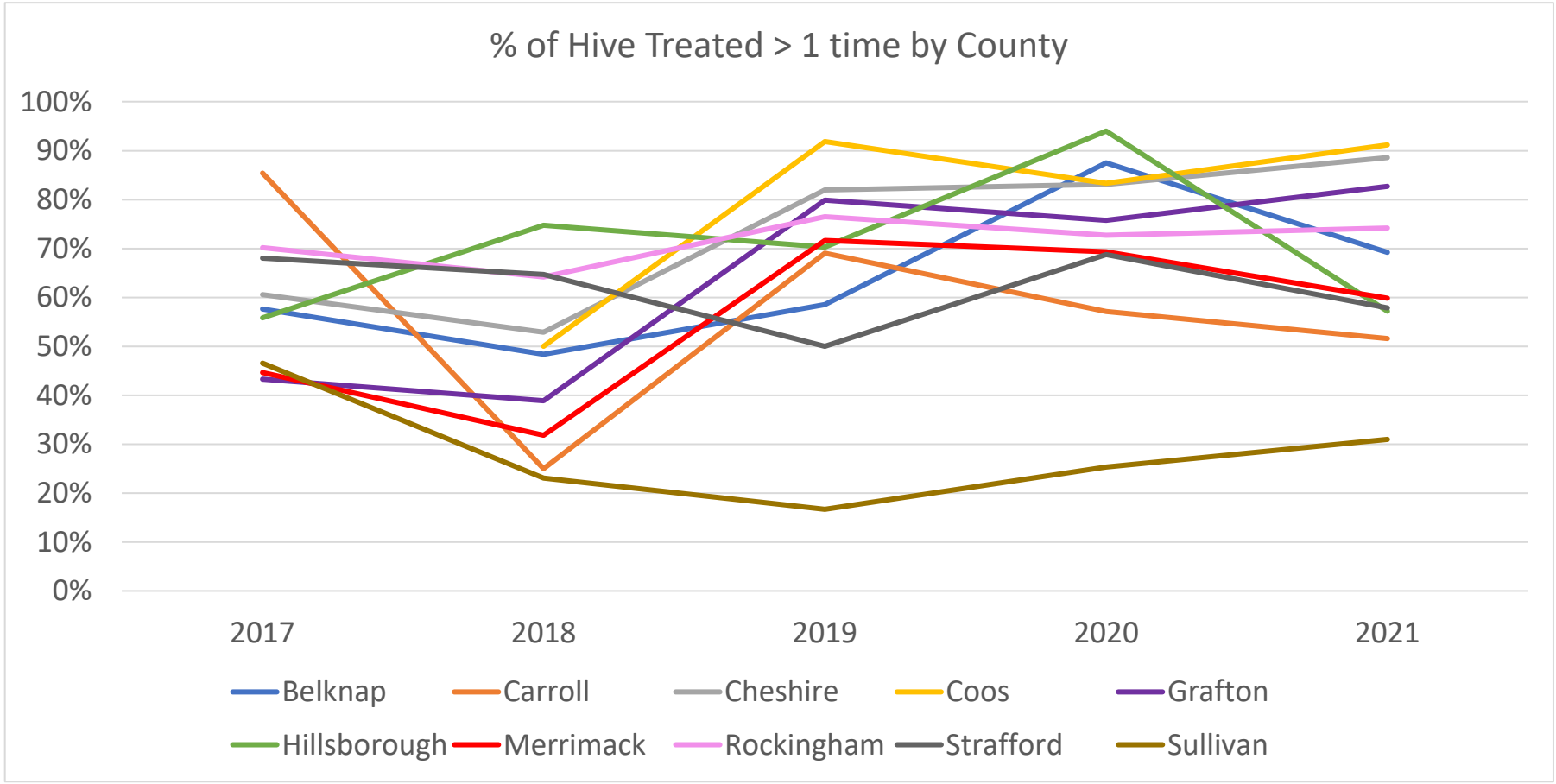
Varroa Management By County





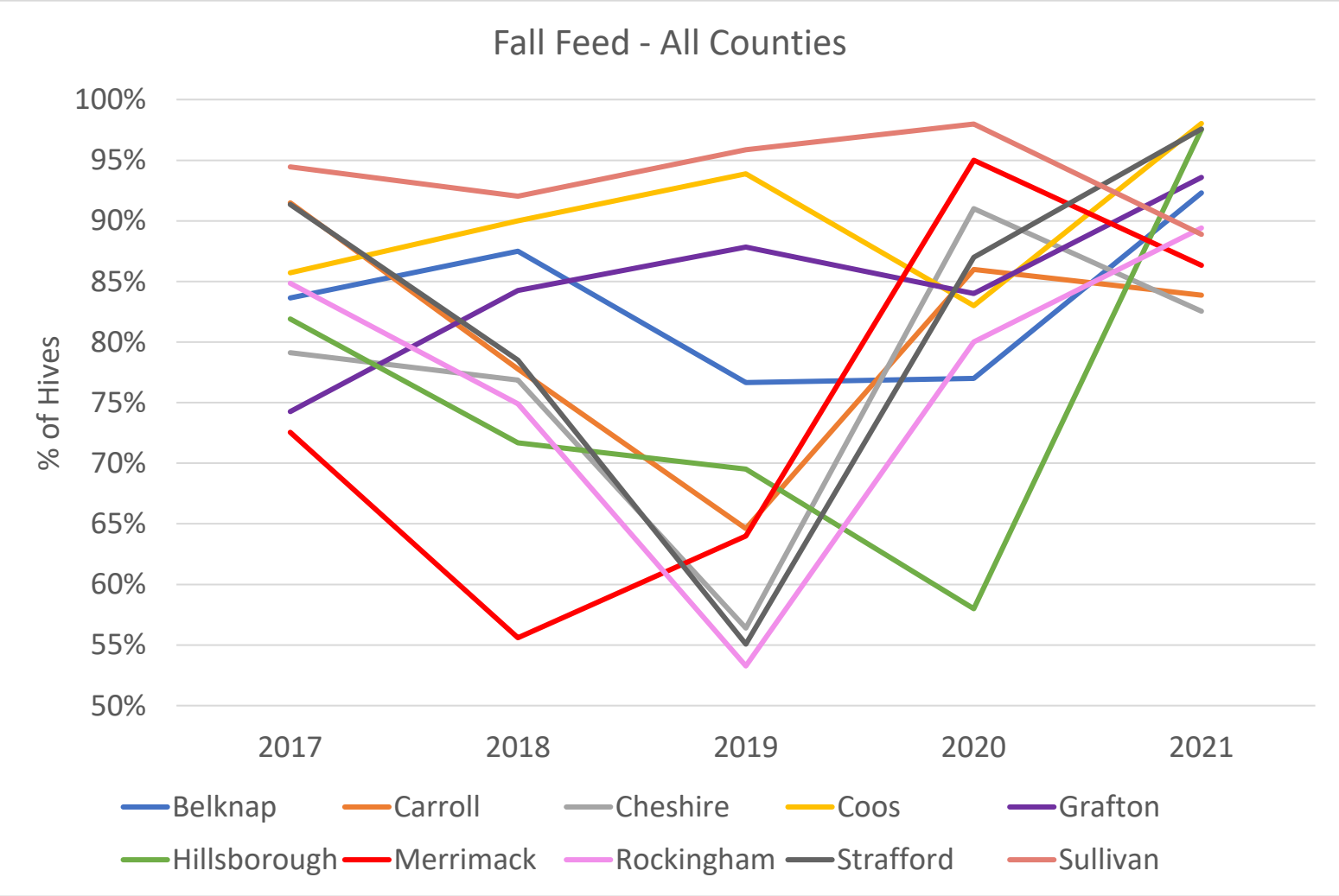
- Merrimack & Belknap in bottom 3 for counting mites in all years
- Commercial treatments use pretty consistent from 2019-2021

Varroa Management By County



- Since 2019, Cheshire, Grafton & Coos consistently has a high % of colonies treated more than 1 time.

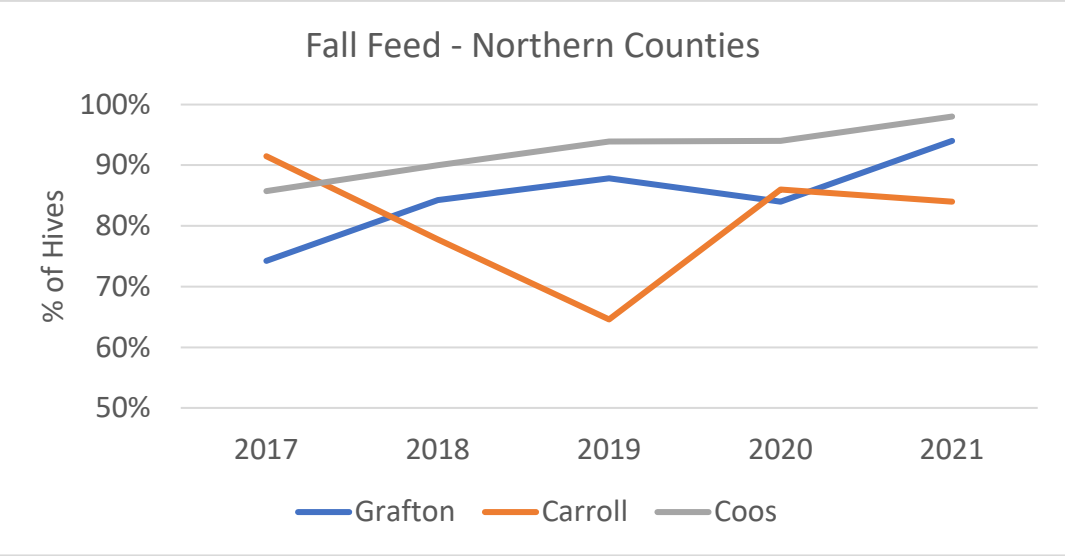
% of Colonies Fed in Fall By County

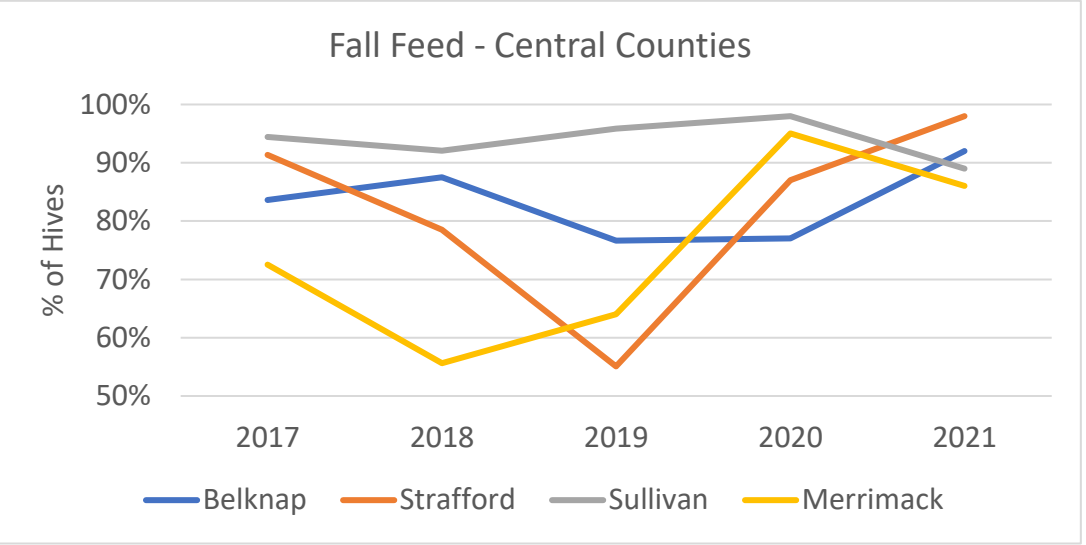


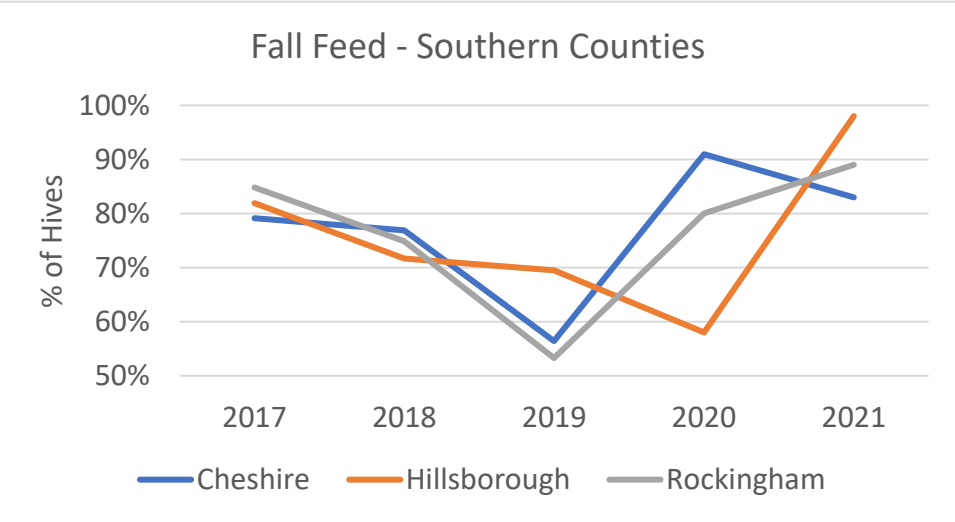
*In 2021, 6 of 10 counties did more fall feeding than in 2020

	Hive Loss
Carroll	53%
Sullivan	40%
Cheshire	39%
Rockingham	38%
Coos	37%
Belknap	33%
Strafford	28%
Grafton	26%
Hillsborough	26%
Merrimack	24%

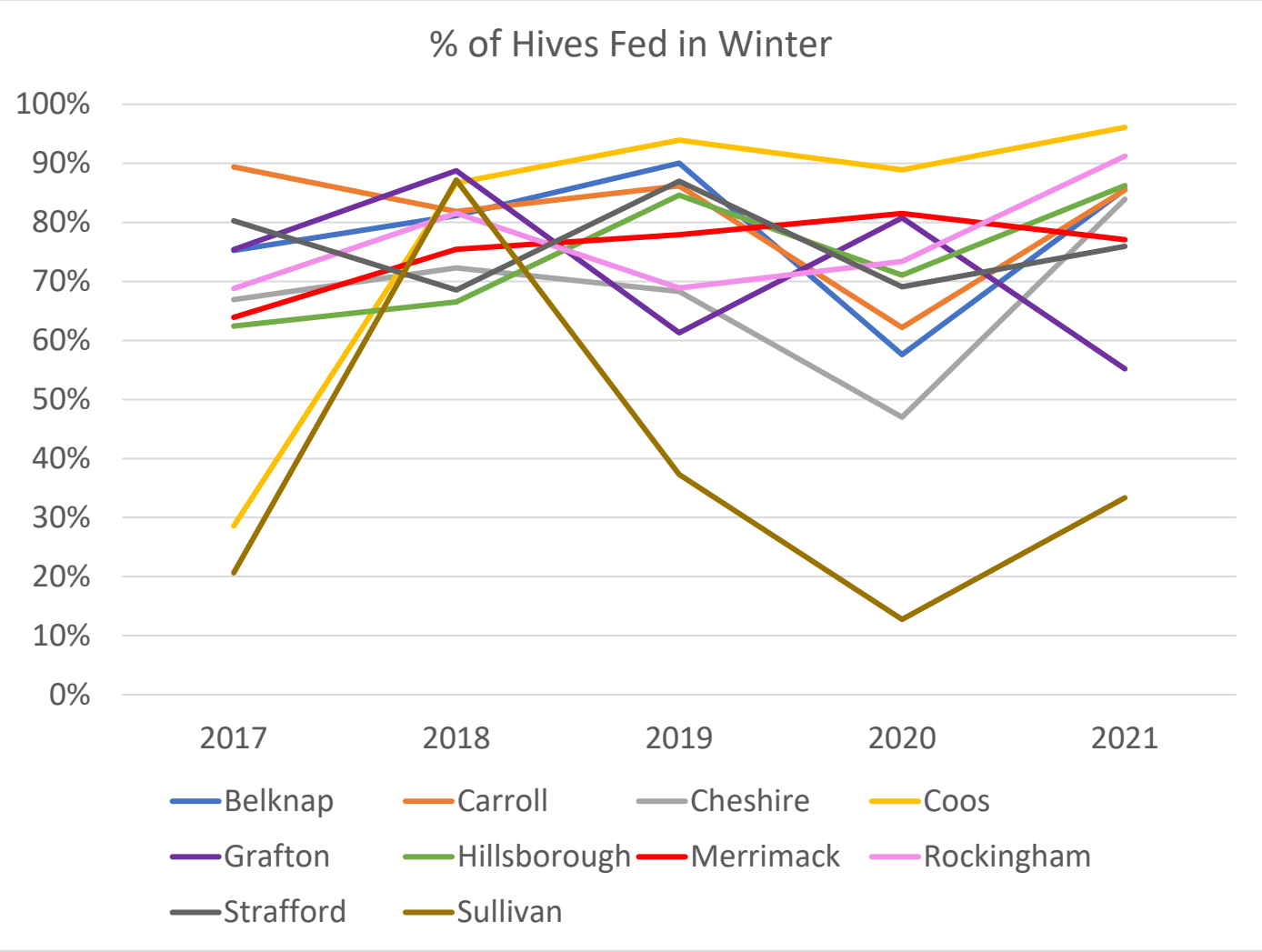
% of Colonies Fed in Fall By County







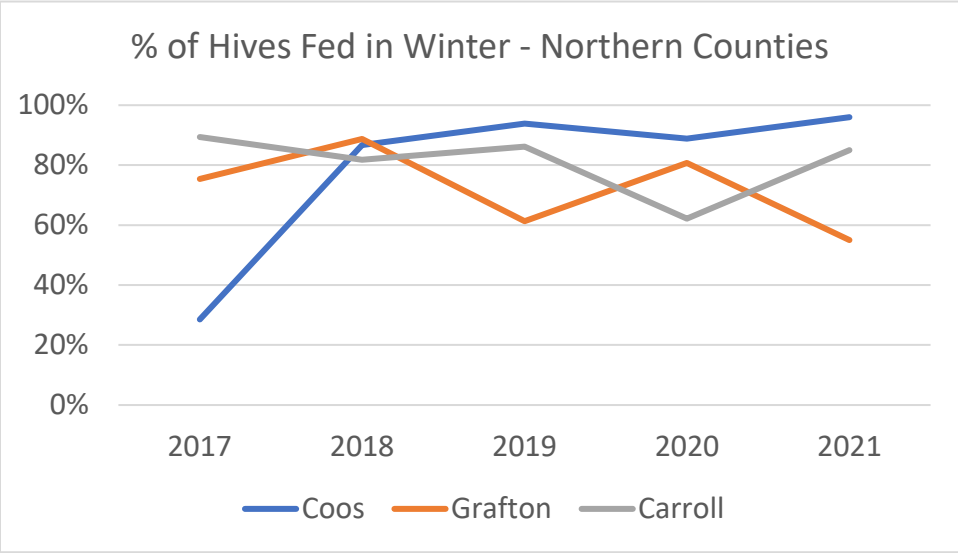
% of Colonies Fed in Winter – All Counties

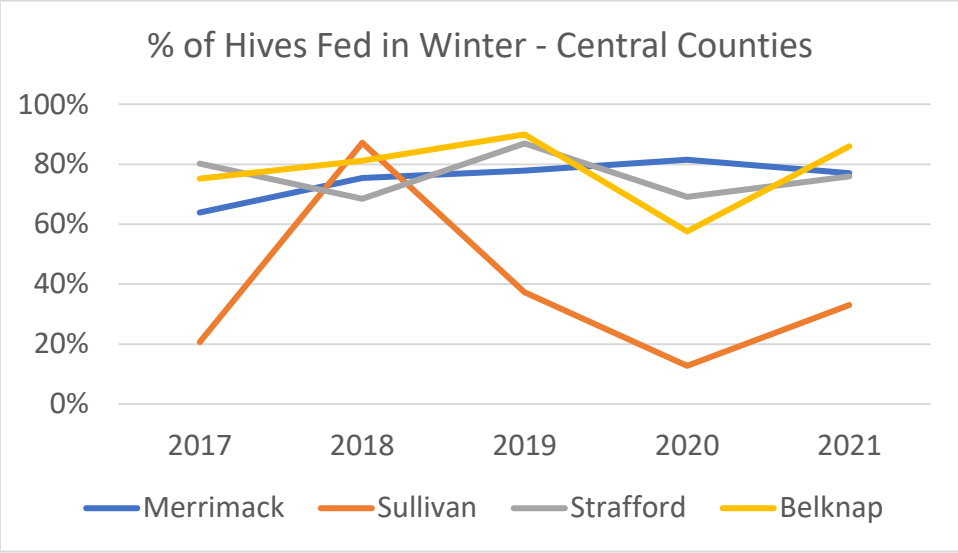


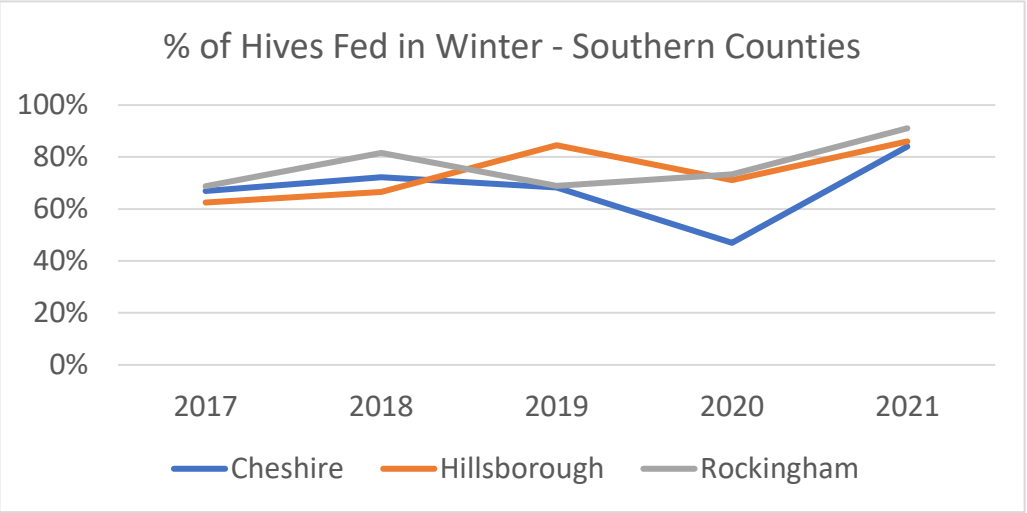
In 2021, 6 of the 10 counties fed more in winter than in 2020

	Hive Loss
Carroll	53%
Sullivan	40%
Cheshire	39%
Rockingham	38%
Coos	37%
Belknap	33%
Strafford	28%
Grafton	26%
Hillsborough	26%
Merrimack	24%

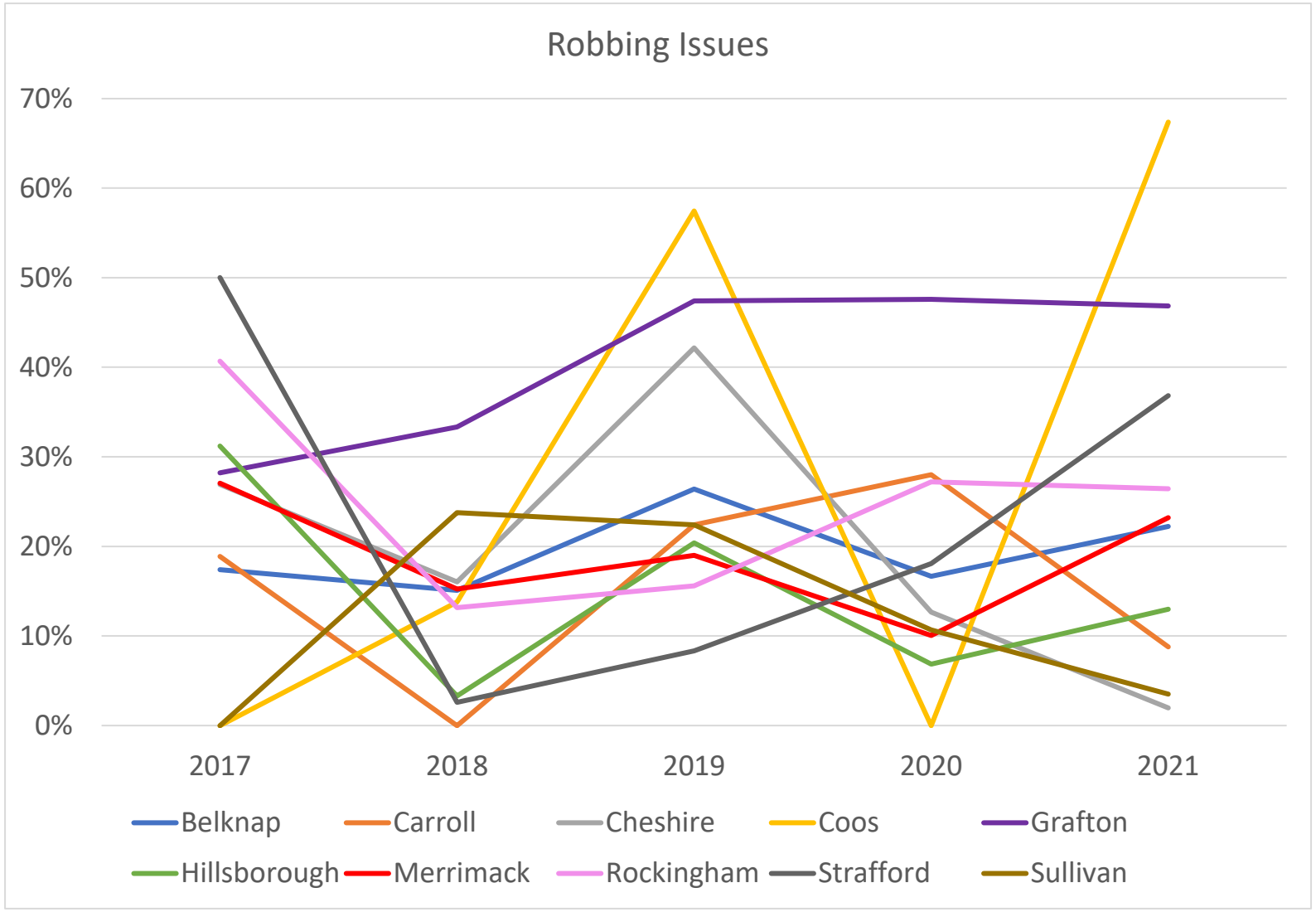
% of Colonies Fed in Winter By County







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



Grafton County (purple) has consistently reported robbing issues for the last 3 years

2020-21 Survey Executive Summary

- **2021-22 Winter Survival is the BEST we've seen since doing the survey : 68% (32% loss)**
- Weak Colony displaced Varroa Mites as the top reason for loss.
- Other was in the top 5 reasons for loss for the second time since 2016. These reports included several comments of:
  - Mice, Shrews, Skunks & Weasels
  - Poor fall conditions for raising winter bees
- 88% of the colonies were treated at least one time for varroa mites.
- 2021 Honey Crop
  - Above Average: 39 apiaries
  - Average: 81 apiaries
  - Below Average: 119 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