

Project *Apis m.* Survey Summary

February 20, 2025

With Gratitude and Acknowledging MANY collaborators, especially USDA scientists

Press Release today

<https://mailchi.mp/keystone.org/colonylosssurvey?e=a6264eb837>

Webinar 28 Feb noon EST:

<https://www.projectapism.org/events/i8yr94doxarjvh453lchfhr0xf3bvq>

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A note to participating beekeepers:

Project *Apis m.* appreciates the trust beekeepers placed in us to give their time and confidential information in this survey. We know beekeepers get tired of surveys, especially if there is no information provided back.

The analysis of the information you provided is ongoing, and more complex data will be shared as it is available.

For now, here are some relatively raw summaries that participants may find interesting, which will accompany the press release summary for more general audiences.

Thank you!

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Free Public Webinar on February 28 to Share Updates

To help beekeepers, farmers, and policymakers understand the scale of these losses and ongoing research efforts, a free public webinar will be held on **February 28, 2025**, 9am Pacific, hosted by Project Apis m. to share information with stakeholders about progress analyzing the survey data and the samples taken. The webinar will provide updates on:

- Preliminary findings from field samples
- Emerging trends from beekeeper survey data
- Potential management recommendations based on early analyses

• Use this link to attend the webinar:

<https://www.projectapism.org/events/i8yr94doxarjvh453lchfhr0xf3bvq>

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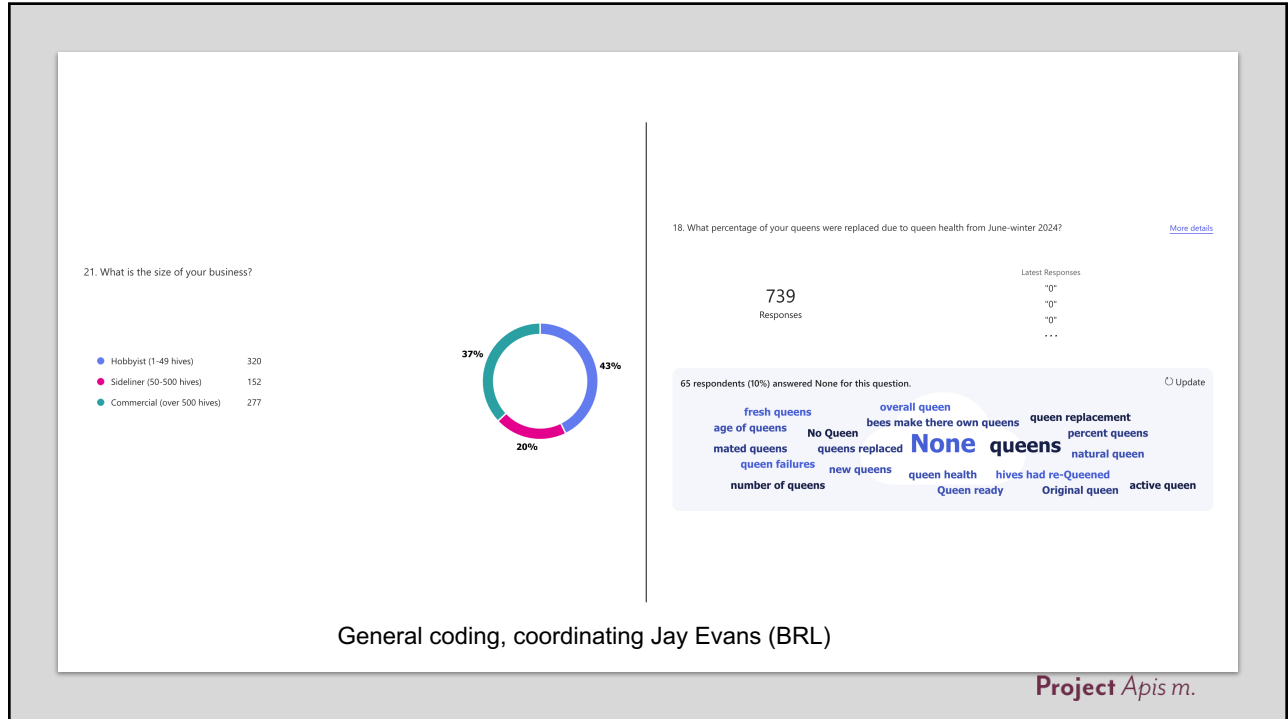
PAm Surveys (still active for input)

- Jan 28 posted, Feb 10 n = 702:
 - name (optional), class, questions about losses June Feb in 3 periods-fall, winter and post winter check. Col size, location (3 periods), suspected factors (and detail), mite trts, fall Varroa levels, other pests, supplemental feed (syrup, protein, when and what), queen replacement, indoor vs outdoor wintering and loss comparison, financial concern scale, contact consent.
- Feb 12 n = 97:
 - Name, June col #, Feb col #, expected pollination units, able to fulfil? If not, how many short? Date finished placing bees.

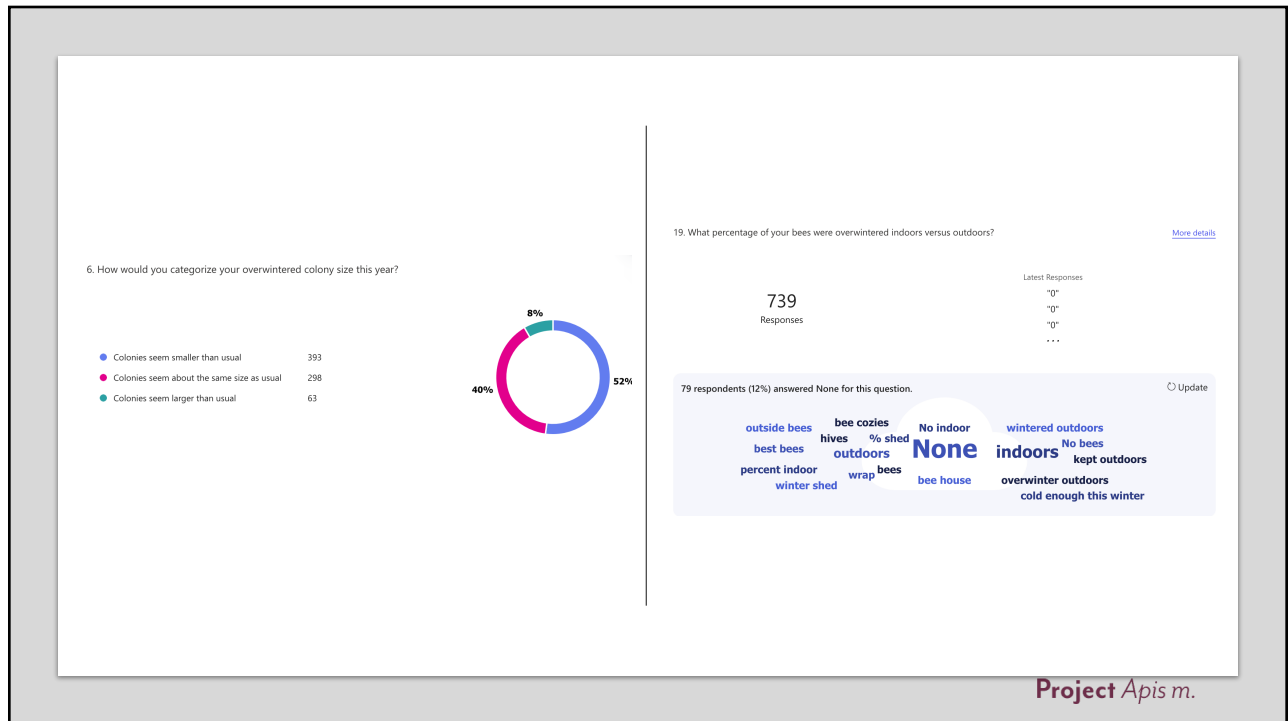


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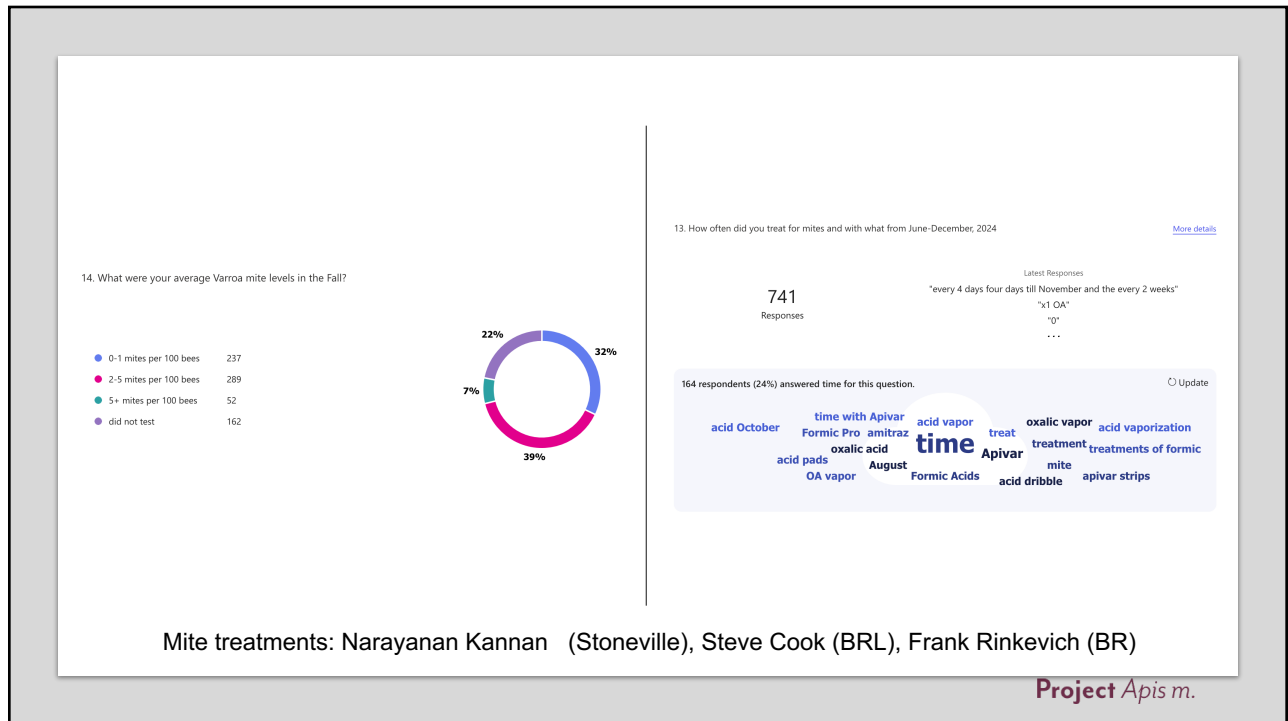
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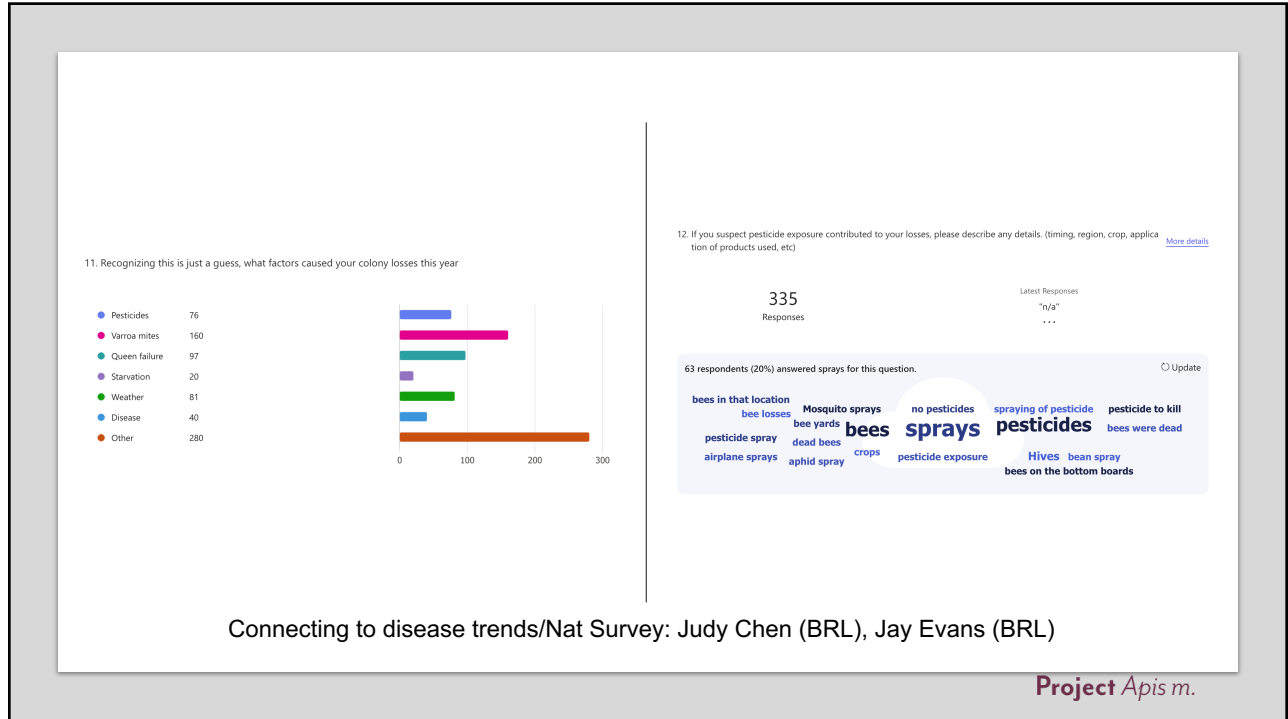
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Second Survey

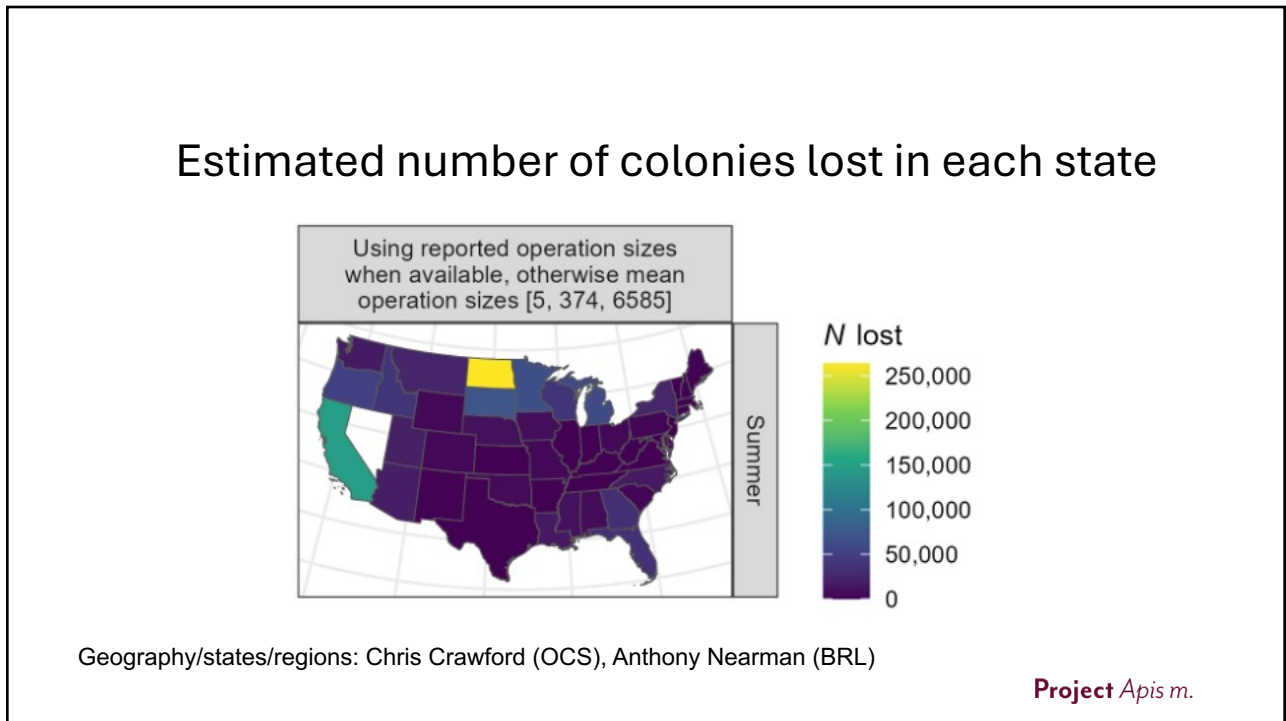
- 97 responses from Commercial/Sideline who consented to be contacted. This allowed us to link data lines, and create averages for these classes to more accurately estimate the losses in Survey #1.
- Colonies in June: 622,176
- Colonies in Feb: 312,883
- Expected to take to almonds: 399,991 (NASS estimate 1.8million 2024)
- Number of colonies short: 84,699 (4 had extra, one tbd)
- NASS estimate of US colonies in June 2024: 2,709,370
- **Estimate of colonies represented in PAm survey: 1,835,000 (68% of US total)**
- **Survey respondents losses are 41% of total US colonies.**

Economics: Izzy Hill (OCS)

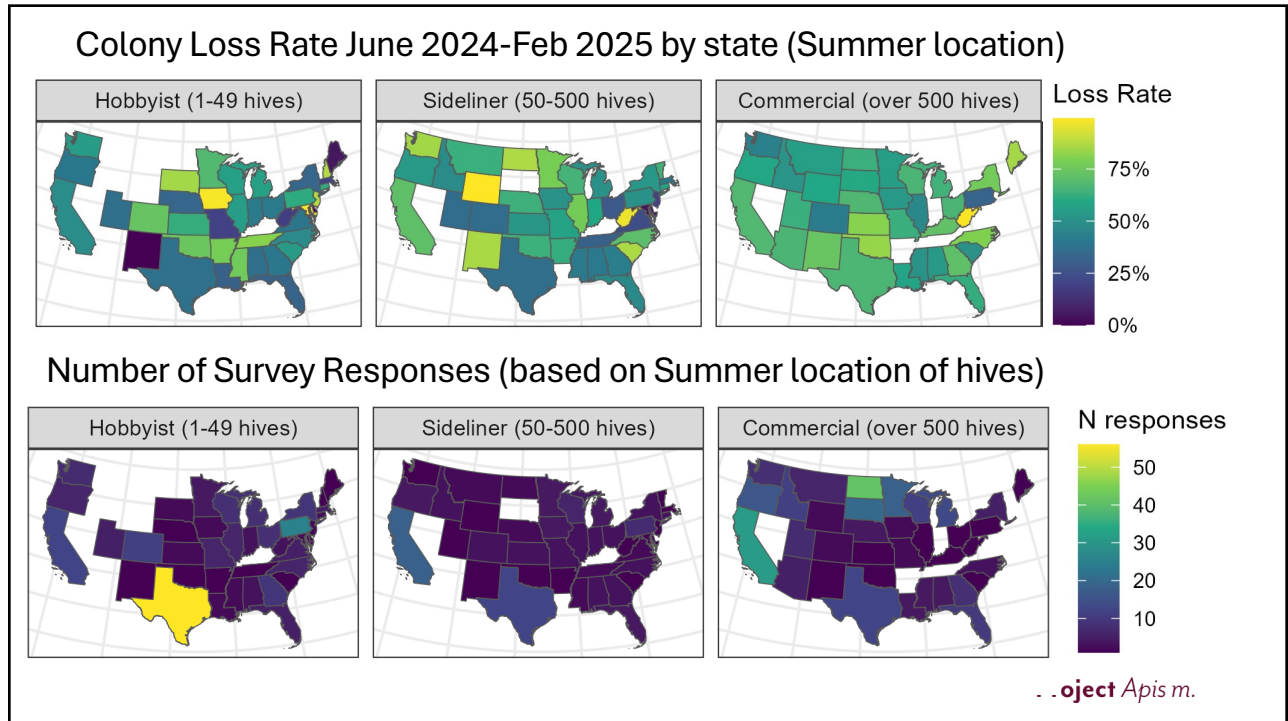
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Estimating Total Colony Loss			
Beekeeper Class	Mean Loss Rate	Using number of colonies reported OR if not reported average colony number was Hobby=5, Sideline=374, Commercial=6585	Number of responses
Hobbyist (1-49 hives)	50%	717	287
Sideline (50-500 hives)	54%	28,282	139
Commercial (over 500 hives)	62%	1,094,960	270
Not listed	46%	-	6
TOTAL		1,123,959	702

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Commercial (500+ colonies) Total Colony Loss Estimates June 2024- Feb 12, 2025 Project Apis m.

Beekeeper Class	State (Summer 2024)	Mean Loss Rate	Using reported operation sizes when available, otherwise mean operation size of 6585 colonies	Number of responses
Commercial (over 500 hives)	AL	54%	6,373	4
Commercial (over 500 hives)	AZ	66%	18,666	5
Commercial (over 500 hives)	CA	68%	149,090	31
Commercial (over 500 hives)	CO	42%	3,988	Less than 4
Commercial (over 500 hives)	FL	62%	34,938	10
Commercial (over 500 hives)	GA	71%	33,518	8
Commercial (over 500 hives)	IA	54%	7,105	Less than 4
Commercial (over 500 hives)	ID	52%	38,372	11
Commercial (over 500 hives)	IL	47%	515	Less than 4
Commercial (over 500 hives)	KS	81%	485	Less than 4
Commercial (over 500 hives)	KY	72%	468	Less than 4
Commercial (over 500 hives)	LA	58%	15,624	4
Commercial (over 500 hives)	ME	85%	1,531	Less than 4
Commercial (over 500 hives)	MI	64%	59,604	13
Commercial (over 500 hives)	MN	56%	65,991	18
Commercial (over 500 hives)	MO	63%	5,429	Less than 4
Commercial (over 500 hives)	MS	51%	9,509	4
Commercial (over 500 hives)	MT	55%	24,328	6
Commercial (over 500 hives)	NC	80%	15,793	Less than 4
Commercial (over 500 hives)	ND	63%	263,898	41
Commercial (over 500 hives)	NE	67%	9,446	4
Commercial (over 500 hives)	NM	74%	962	Less than 4
Commercial (over 500 hives)	NY	77%	25,258	5
Commercial (over 500 hives)	OH	66%	4,363	Less than 4
Commercial (over 500 hives)	OK	83%	5,479	Less than 4
Commercial (over 500 hives)	OR	59%	50,170	16
Commercial (over 500 hives)	PA	32%	2,137	Less than 4
Commercial (over 500 hives)	SC	50%	3,301	Less than 4
Commercial (over 500 hives)	SD	60%	70,423	20
Commercial (over 500 hives)	TX	67%	45,663	12
Commercial (over 500 hives)	UT	63%	19,538	7
Commercial (over 500 hives)	WA	43%	16,820	8
Commercial (over 500 hives)	WI	66%	38,730	11
Commercial (over 500 hives)	WV	99%	431	Less than 4
Commercial (over 500 hives)	WY	59%	4,525	Less than 4
Commercial (over 500 hives)	None listed	58%	42,490	11

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Hobbyist (0-49 colonies) Total Colony Loss Estimates **Project Apis m.**
June 2024- Feb 12, 2025

Beekeeper Class	State (Summer 2024)	Mean Loss Rate	Colonies Lost assuming operation size of 5	
			Number of responses	Less than 4
Hobbyist (1-49 hives)	AL	37%	5	Less than 4
Hobbyist (1-49 hives)	AR	78%	4	Less than 4
Hobbyist (1-49 hives)	CA	49%	29	12
Hobbyist (1-49 hives)	CO	73%	40	11
Hobbyist (1-49 hives)	CT	61%	9	Less than 4
Hobbyist (1-49 hives)	DE	0%	-	Less than 4
Hobbyist (1-49 hives)	FL	32%	8	5
Hobbyist (1-49 hives)	GA	39%	18	9
Hobbyist (1-49 hives)	HI	0%	-	Less than 4
Hobbyist (1-49 hives)	IA	98%	10	Less than 4
Hobbyist (1-49 hives)	IL	55%	17	6
Hobbyist (1-49 hives)	IN	41%	6	Less than 4
Hobbyist (1-49 hives)	KS	62%	6	Less than 4
Hobbyist (1-49 hives)	LA	31%	3	Less than 4
Hobbyist (1-49 hives)	MA	19%	5	5
Hobbyist (1-49 hives)	MD	99%	10	Less than 4
Hobbyist (1-49 hives)	ME	5%	0	Less than 4
Hobbyist (1-49 hives)	MI	57%	23	8
Hobbyist (1-49 hives)	MN	68%	14	4
Hobbyist (1-49 hives)	MO	19%	6	6
Hobbyist (1-49 hives)	MS	76%	8	Less than 4
Hobbyist (1-49 hives)	NC	48%	14	6
Hobbyist (1-49 hives)	NE	33%	2	Less than 4
Hobbyist (1-49 hives)	NH	87%	4	Less than 4
Hobbyist (1-49 hives)	NJ	88%	9	Less than 4
Hobbyist (1-49 hives)	NM	0%	-	Less than 4
Hobbyist (1-49 hives)	NY	33%	15	9
Hobbyist (1-49 hives)	OH	41%	16	8
Hobbyist (1-49 hives)	OK	74%	4	Less than 4
Hobbyist (1-49 hives)	OR	40%	6	12
Hobbyist (1-49 hives)	PA	61%	76	25
Hobbyist (1-49 hives)	SC	55%	3	Less than 4
Hobbyist (1-49 hives)	SD	85%	9	Less than 4
Hobbyist (1-49 hives)	TN	81%	4	Less than 4
Hobbyist (1-49 hives)	TX	37%	104	56
Hobbyist (1-49 hives)	UT	37%	9	5
Hobbyist (1-49 hives)	VA	39%	10	5
Hobbyist (1-49 hives)	WA	55%	19	7
Hobbyist (1-49 hives)	WI	56%	23	8
Hobbyist (1-49 hives)	WV	18%	3	Less than 4
Hobbyist (1-49 hives)	None listed	65%	160	49

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Sidelineer (50-500 colonies) Total Colony Loss Estimates **Project Apis m.**
June 2024- Feb 12, 2025

Beekeeper Class	State (Summer 2024)	Mean Loss Rate	Using reported operation sizes when available, otherwise mean operation size of 374	
			Number of responses	Less than 4
Sidelineer (50-500 hives)	AL	40%	449	Less than 4
Sidelineer (50-500 hives)	AR	62%	232	Less than 4
Sidelineer (50-500 hives)	CA	71%	4,803	18
Sidelineer (50-500 hives)	CO	35%	398	Less than 4
Sidelineer (50-500 hives)	CT	58%	656	Less than 4
Sidelineer (50-500 hives)	FL	48%	716	4
Sidelineer (50-500 hives)	GA	43%	481	Less than 4
Sidelineer (50-500 hives)	IA	51%	756	4
Sidelineer (50-500 hives)	ID	48%	539	Less than 4
Sidelineer (50-500 hives)	IL	77%	865	Less than 4
Sidelineer (50-500 hives)	IN	59%	666	Less than 4
Sidelineer (50-500 hives)	KS	52%	585	Less than 4
Sidelineer (50-500 hives)	MA	41%	151	Less than 4
Sidelineer (50-500 hives)	MD	4%	15	Less than 4
Sidelineer (50-500 hives)	MI	51%	758	4
Sidelineer (50-500 hives)	MN	78%	1,170	4
Sidelineer (50-500 hives)	MO	58%	646	Less than 4
Sidelineer (50-500 hives)	MS	41%	306	Less than 4
Sidelineer (50-500 hives)	MT	63%	471	Less than 4
Sidelineer (50-500 hives)	NC	70%	789	Less than 4
Sidelineer (50-500 hives)	ND	87%	648	Less than 4
Sidelineer (50-500 hives)	NE	64%	475	Less than 4
Sidelineer (50-500 hives)	NJ	19%	72	Less than 4
Sidelineer (50-500 hives)	NM	86%	322	Less than 4
Sidelineer (50-500 hives)	NY	53%	596	Less than 4
Sidelineer (50-500 hives)	OH	28%	314	Less than 4
Sidelineer (50-500 hives)	OK	63%	237	Less than 4
Sidelineer (50-500 hives)	OR	54%	805	4
Sidelineer (50-500 hives)	PA	51%	1,324	7
Sidelineer (50-500 hives)	SC	86%	323	Less than 4
Sidelineer (50-500 hives)	TN	31%	234	Less than 4
Sidelineer (50-500 hives)	TX	36%	1,623	12
Sidelineer (50-500 hives)	UT	35%	132	Less than 4
Sidelineer (50-500 hives)	VA	24%	177	Less than 4
Sidelineer (50-500 hives)	VT	64%	239	Less than 4
Sidelineer (50-500 hives)	WA	85%	317	Less than 4
Sidelineer (50-500 hives)	WI	65%	1,457	6
Sidelineer (50-500 hives)	WV	97%	361	Less than 4
Sidelineer (50-500 hives)	WY	99%	371	Less than 4
Sidelineer (50-500 hives)	None listed	51%	2,651	14

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Investigating the Causes: USDA-ARS Analyses Underway

In response to the crisis, the U.S. Department of Agriculture's Agricultural Research Service (USDA-ARS) has mobilized researchers to analyze field samples collected from 114 colonies in California, including both failing and surviving colonies. Scientists are conducting a four-tiered investigation to determine potential causes:

1. **Pathogen Screening** – Testing for all known honey bee pathogens using molecular methods.
2. **Pesticide Residues & Pollen Diversity** – Examining stored pollen for pesticide contamination and plant diversity.
3. **Metagenomic Analysis** – Identifying previously unknown pathogens in colonies with high disease prevalence.
4. **Microbiome & Host-Pathogen Interactions** – Assessing gut bacterial diversity and potential links to colony health.

Additionally, USDA-ARS labs across the are analyzing potential contributing factors, such as:

- **Varroa mite resistance to amitraz**, commonly used to manage Varroa mites.
- **Environmental factors**, including weather conditions affecting colony health.
- **Management factors** such as queen replacement, supplemental nutrition and winter management.
- **Chemical exposures**, including interactions between pesticides and bee immunity.

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The following represents stories we heard from beekeepers. Each story represents multiple operations.

We put so much money into my business to keep these bees healthy. When we saw mite levels were higher than we liked in the summer, we immediately stopped, harvested honey off the whole operation. Within a week every colony was treated for mites. That was the summer. When the fall was warm and dry, we fed pollen sub to replace what wasn't coming in from the land. we fed everything, and invested into probiotics. We lost 50%, we lost 100%. What is going on? Even if you did nothing you wouldn't lose 100%, would you?

We used to bring medium strength colonies here for the winter. They would build up on natural pollen, and then just before almonds they would be so strong we could split them. Now we bring our strongest colonies here, and they get smaller. What is happening? Our equipment is clean, our wax is new, it's not mites. Now our strong colonies die, when before our medium colonies could recover.

What do back-to-back losses mean? We already bought back in. We borrowed from our house, from our retirement, from family. We borrowed back in to keep the business going. Now those bees are gone. This is what it means to have back to back losses on a farm. We took a large loss two years ago. We borrowed against our long term investments to buy back into bees. We ran our bees again. We focused on their health. We asked for help. We did what we are supposed to do. But when the losses hit again, there is no way to recover. It's all gone. The equity on the house is gone, our retirement is gone, the family member's money is gone. All that's left are empty boxes. We don't even have the dead bees. They are gone too. This is what back to back losses mean for us.

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