



Thank you for participating in the **2022-2023 Bee Informed Partnership Colony Loss and Management Survey**

Large-scale beekeeper version (51+ colonies on 1 October 2022)

Your participation in this research is confidential. All your answers will be stored in a secure, password protected database application that uses SSL encryption. No personally identifiable information will be disclosed in any publication or presentation resulting from this research. Mention of a beekeeping product/practice in this survey does not constitute an official endorsement or approval by the Bee Informed Partnership. Please only complete this survey if you are 18 years or older.

Please enter your answers electronically, on:

<https://beeinformed.org/take-survey/> (1 April – 30 April 2023)

Completion of this survey is voluntary. If you are not comfortable answering a question, please leave it blank. That said, questions marked by an asterisk (*) are very important! Without answers to them, your data will have limited value.

Loss Survey

For the purpose of this survey, a **'colony'** is defined as any unit of bees housed in a hive. That is, a full-sized colony, a nuc, a newly created split, a newly installed package or swarm, but NOT a mating nuc. It must be headed by a mated queen, or at least contain young brood, a queen cell, or a virgin queen. In other words, it should not be hopelessly queenless.

1* How many colonies did you own on 1 October 2022? (Please select one of the following.)

- 50 or fewer colonies 51 or more colonies

2* In what states and territories were your colonies stationed between 1 April 2022 and 1 April 2023?

(Please choose ALL options relevant to you, including areas visited for pollination services and indoor colony storage. Do not include areas passed through when transporting your colonies.)

- | | | | | |
|---|---|--|---|--|
| <input type="checkbox"/> Alabama | <input type="checkbox"/> District of Columbia | <input type="checkbox"/> Maine | <input type="checkbox"/> New Mexico | <input type="checkbox"/> Tennessee |
| <input type="checkbox"/> Alaska | <input type="checkbox"/> Florida | <input type="checkbox"/> Maryland | <input type="checkbox"/> New York | <input type="checkbox"/> Texas |
| <input type="checkbox"/> American Samoa | <input type="checkbox"/> Georgia | <input type="checkbox"/> Massachusetts | <input type="checkbox"/> North Carolina | <input type="checkbox"/> U.S. Virgin Islands |
| <input type="checkbox"/> Arizona | <input type="checkbox"/> Guam | <input type="checkbox"/> Michigan | <input type="checkbox"/> North Dakota | <input type="checkbox"/> Utah |
| <input type="checkbox"/> Arkansas | <input type="checkbox"/> Hawaii | <input type="checkbox"/> Minnesota | <input type="checkbox"/> Ohio | <input type="checkbox"/> Vermont |
| <input type="checkbox"/> California | <input type="checkbox"/> Idaho | <input type="checkbox"/> Mississippi | <input type="checkbox"/> Oklahoma | <input type="checkbox"/> Virginia |
| <input type="checkbox"/> Colorado | <input type="checkbox"/> Illinois | <input type="checkbox"/> Missouri | <input type="checkbox"/> Oregon | <input type="checkbox"/> Washington |
| <input type="checkbox"/> Commonwealth of the Northern Mariana Islands | <input type="checkbox"/> Indiana | <input type="checkbox"/> Montana | <input type="checkbox"/> Pennsylvania | <input type="checkbox"/> West Virginia |
| <input type="checkbox"/> Connecticut | <input type="checkbox"/> Iowa | <input type="checkbox"/> Nebraska | <input type="checkbox"/> Puerto Rico | <input type="checkbox"/> Wisconsin |
| <input type="checkbox"/> Delaware | <input type="checkbox"/> Kansas | <input type="checkbox"/> Nevada | <input type="checkbox"/> Rhode Island | <input type="checkbox"/> Wyoming |
| | <input type="checkbox"/> Kentucky | <input type="checkbox"/> New Hampshire | <input type="checkbox"/> South Carolina | |
| | <input type="checkbox"/> Louisiana | <input type="checkbox"/> New Jersey | <input type="checkbox"/> South Dakota | <input type="checkbox"/> Non US territory |

Time Period Covered by this Survey:

The survey covers the period between the start of summer 2022 and the start of summer 2023.

For commercial beekeepers, we consider the 'Start of Summer' to be the **morning of the date you made your first split** of the year. We want to know your number **before** you started splitting.

If you did not make any splits before April 1st, then we consider April 1st to be your 'Start of Summer'.

For example, if you started making your first splits of 2022 on 15 March 2022, your 'Start of Summer 2022' was 15 March 2022. BUT, if you started making your first splits of 2022 on 20 April 2022, then your 'Start of Summer 2022' was 1 April 2022.

If you started making your first splits of this year on 19 March 2023, your 'Start of Summer 2023' was 19 March 2023. If you have not made any splits by 1 April 2023, then we will consider your 'Start of Summer 2023' to be 1 April 2023.

Note that 1 October 2022 is always the 'Start of Winter 2022-23'.

Please refer to these definitions and the timeline below when completing the survey.



Your answers to the next two questions will determine what dates to use as your 'Start of Summer 2022' and 'Start of Summer 2023' for the rest of the survey.

3* Did you make one or more **split during 2022**?
 No Yes If Yes, on what date did you start splitting in 2022?
(1 April 2022 is your 'Start of Summer 2022')
(If this date is before 1 April 2022, this is your 'Start of Summer 2022'. Otherwise, 1 April 2022 is your 'Start of Summer 2022')

4* Did you make one or more **split during 2023**?
 No Yes If Yes, on what date did you start splitting in 2023?
(1 April 2023 is your 'Start of Summer 2023')
(This date is your 'Start of Summer 2023')

5* How many colonies did you own at each time?

Start of Summer 2022	1 October 2022	Start of Summer 2023
<input type="text"/>	<input type="text"/>	<input type="text"/>

6 How strong was your average colony at each time? Estimate the number of ‘frames of bees’.
(One ‘frame of bees’ = One deep Langstroth frame fully occupied by bees on both sides).

Start of Summer 2022	1 October 2022	Start of Summer 2023
<input type="text"/>	<input type="text"/>	<input type="text"/>

7* How many colonies did you **obtain** from outside your operation during each period?
(Please include both those that did AND did not successfully survive in your operation after your initial installation.)

Summer 2022	Winter 2022-22
<input type="text"/>	<input type="text"/>

Remember: ‘Summer 2022 is defined as the period between your ‘Start of Summer 2022’ and ‘1 October 2022’. ‘Winter 2022-22’ is defined as the period between 1 October 2022 and your ‘Start of Summer 2023’.

8* How much **net increase** in colonies did you make from splitting your own colonies during each period?
(Please include both those that did AND did not successfully survive. Also include packages, nucs, and splits that were eventually sold.)

Summer 2022	Winter 2022-22
<input type="text"/>	<input type="text"/>

*Examples of net increase by splitting:
 1) You might break down an entire colony while making splits. If you break down 1 colony into 3 smaller colonies, this represents a net increase of 2 colonies.
 2) You might take extra bees and brood from strong colonies. Two strong colonies results in one new colony AND the two original colonies. This represents a net increase of 1 colony.*

9* How many colonies did you **sell or give away** during each period?

Summer 2022	Winter 2022-22
<input type="text"/>	<input type="text"/>

Remember: our definition of a colony includes full-sized colonies, as well as newly made splits/nucs and packages.

10* How much was your **net decrease** in colonies due to intentionally combining your colonies?

Summer 2022	Winter 2022-22
<input type="text"/>	<input type="text"/>

Example of net decrease by combining: You might combine 2 weak colonies into one. This represents a net decrease of 1 colony.

11* What **percentage of loss** over the last **winter (Winter 2022-22)** would you consider acceptable? *Between 0-100%*

12 What factors do you think were the most prominent **cause(s) of colony death** in your operation in **Summer 2022?** *(Select up to 3)*

<input type="checkbox"/> I did not experience summer loss	<input type="checkbox"/> Natural disaster (e.g. hurricane, flood)	<input type="checkbox"/> Shipping stress (e.g. overheating, truck issues)
<input type="checkbox"/> Adverse weather (e.g. drought)	<input type="checkbox"/> Nutritional stress (pollen deprivation)	<input type="checkbox"/> Equipment failure (e.g. moisture, ventilation)
<input type="checkbox"/> Brood diseases (e.g. EFB, AFB)	<input type="checkbox"/> Starvation (honey/nectar/sugar water)	<input type="checkbox"/> Failure of environmental controls in sheds
<input type="checkbox"/> Queen issues	<input type="checkbox"/> Non-apicultural pesticides	<input type="checkbox"/> Predators (e.g. bears)
<input type="checkbox"/> I don't know	<input type="checkbox"/> Apicultural treatments (e.g. formic acid, amitraz)	<input type="checkbox"/> Scavenger pests (e.g. small hive beetle, wax moth)
<input type="checkbox"/> Other, please specify: <input type="text"/>		<input type="checkbox"/> Varroa mites and associated viruses

13 What factors do you think were the most prominent **cause(s) of colony death** in your operation in **Winter 2022-22?** *(Select up to 3)*

<input type="checkbox"/> I did not experience winter loss	<input type="checkbox"/> Natural disaster (e.g. hurricane, flood)	<input type="checkbox"/> Shipping stress (e.g. overheating, truck issues)
<input type="checkbox"/> Adverse weather (e.g. cold snap)	<input type="checkbox"/> Nutritional stress (pollen deprivation)	<input type="checkbox"/> Equipment failure (e.g. moisture, ventilation)
<input type="checkbox"/> Brood diseases (e.g. EFB, AFB)	<input type="checkbox"/> Starvation (honey/nectar/sugar water)	<input type="checkbox"/> Failure of environmental controls in sheds
<input type="checkbox"/> Queen issues	<input type="checkbox"/> Non-apicultural pesticides	<input type="checkbox"/> Predators (e.g. bears)
<input type="checkbox"/> I don't know	<input type="checkbox"/> Apicultural treatments (e.g. formic acid, amitraz)	<input type="checkbox"/> Scavenger pests (e.g. small hive beetle, wax moth)
<input type="checkbox"/> Other, please specify: <input type="text"/>		<input type="checkbox"/> Varroa mites and associated viruses

14 What was the ZIP code of your **base of operations** during the survey period?
(Please provide only one even if you keep bees in multiple locations.) 5-digit ZIP codes only

15 For each state you kept bees in, please give us a ZIP code that is centrally located in, or most representative of your beekeeping area.
(Include states that your bees were set down in, including for indoor wintering, but not states that you only bought bees from or passed through during transport.)

State	ZIP	
<input type="text"/>	<input type="text"/>	5-digit ZIP codes only
<input type="text"/>	<input type="text"/>	5-digit ZIP codes only
<input type="text"/>	<input type="text"/>	5-digit ZIP codes only
<input type="text"/>	<input type="text"/>	5-digit ZIP codes only

16 What **percentage** of the colonies you owned during the 2023 almond bloom were used to **pollinate almonds in California**? Between 0-100%

17 What **percentage** of the colonies you owned on 1 January 2023 were **stored indoors** on that date? Between 0-100%

18 If on 1 January 2023 you had colonies in indoor storage, in **what state(s)** were they stored indoors?

19* Did you move any of your colonies across state lines between your **Start of Summer 2022** and **Start of Summer 2023**?
(Do not include colonies you obtained from out of state before you installed them.)

No Yes If Yes, what percentage of your operation moved across state lines at least once: Between 0-100%

[Conditional: If Q19 is "NO"]

20 How many colonies on average share the same location (apiary)?

21 At the start of each month, how many colonies did you own in each state/territory?

State	1 Jan 2022	1 Feb 2022	1 Mar 2022	1 Apr 2022	1 May 2022	1 Jun 2022	1 July 2022	1 Aug 2022	1 Sept 2022	1 Oct 2022	1 Nov 2022	1 Dec 2022	1 Jan 2023	1 Feb 2023	1 Mar 2023	1 Apr 2023
-																
-																
-																
-																

22 Please provide your **email address**
*This email is requested for administrative purposes and will never be disclosed.
The Bee Informed Partnership does not share any email addresses.*

23 Would you be willing to be **contacted** regarding survey results and future surveys? Yes No

24 Would you like to receive additional updates from the Bee Informed Partnership and learn about its various programs? Yes No

Congratulations and thank you! You have just completed **Part 1** of the survey. Your information will be used to generate **colony loss** information that is critical to monitor the health of honey bee colonies in the country.

Please keep going! **Part 2** focuses on how you managed your colonies last year. This information allows us to understand how your management practices are connected to the health of your colonies.

Management Survey

Pest Management

This year's Management Survey focuses on practices related to **Pest Management** in your colonies. This includes questions on prevention, monitoring, and interventions, as well as why (and why not) you prefer some practices to others.

25* Which of the following physical or cultural practices to manage **Varroa** did you apply to any of your colonies between your **Start of Summer 2022** and **Start of Summer 2023**? *(Select all that apply)*

- | | | |
|--|--|--|
| <input type="checkbox"/> None of the following | <input type="checkbox"/> Indoor winter storage | <input type="checkbox"/> Splitting (without brood break) |
| <input type="checkbox"/> Bees bred for resistance to <i>Varroa</i> | <input type="checkbox"/> <i>Miticide in conjunction with brood break from indoor wintering</i> | <input type="checkbox"/> Splitting that induced a brood break |
| <input type="checkbox"/> Drone brood removal | <input type="checkbox"/> Location/strategic migration that induced a brood break | <input type="checkbox"/> <i>Miticide in conjunction with above brood break</i> |
| <input type="checkbox"/> Screened bottom boards | <input type="checkbox"/> <i>Miticide in conjunction with above brood break</i> | <input type="checkbox"/> Other method of inducing a brood break |
| <input type="checkbox"/> Other, please specify: <input type="text"/> | | |

26 Which, if any, of the following physical or cultural practices to manage **non-Varroa** pests or disease did you apply to any of your colonies between your **Start of Summer 2022** and **Start of Summer 2023**? *(Select all that apply)*

- None of the following
- Bees bred for resistance to disease
- Requeening after seeing disease
- Supplemental feeding to prevent disease
- Supplemental feeding in response to seeing disease
- Nonchemical traps for small hive beetle
- Other

27* Which of the following did you apply to any of your colonies between your **Start of Summer 2022** and your **Start of Summer 2023**? *(Select all that apply)*

- | | | |
|--|--|---|
| <input type="checkbox"/> None of the following | <input type="checkbox"/> Fluralinate-based product (Apistan) | <input type="checkbox"/> Oxalic Acid |
| <input type="checkbox"/> Amitraz-based product (Apivar/other) | <input type="checkbox"/> Fumagillin (Fumidil-B) | <input type="checkbox"/> Oxytetracycline (Terramycin, Oxytet) |
| <input type="checkbox"/> Coumaphos-based product (CheckMite+) | <input type="checkbox"/> Hop oil-based product (HopGuard) | <input type="checkbox"/> Thymol-based product (ApiLife VAR, ApiGuard) |
| <input type="checkbox"/> Essential oils | <input type="checkbox"/> Menthol-based product (Mite-A-Thol) | <input type="checkbox"/> Tylosin-based product (Tylan) |
| <input type="checkbox"/> Formic Acid (MiteAway QuickStrips – MAQS) | <input type="checkbox"/> Mineral oils | |
| <input type="checkbox"/> Other, please specify: <input type="text"/> | | |

28 **[CONDITIONAL: any treatment selected in Q27]** You indicated you used the treatment(s) below.

Please indicate, during each period, how many times did you initiate a round of... (Enter: 0 / 1 / 2 / 3 / 4 or 5+)

Products selected in Q27:	Early summer (Start of Summer 2022- Jun30)	Late summer (Jul1-Sept30)	Early winter (Oct1-Dec31)	Late winter (Jan1- Start of Summer 2023)
-				
-				
-				
-				
-				
-				
-				
-				

29 **[CONDITIONAL: Varroa chemical treatment selected in Q27]** You indicated you treated for *Varroa* last year.

What triggered your decision to use treatment(s)? *(Select all that apply)*

- As part of my regular maintenance / calendar treatment
- I measured *Varroa* levels above action threshold
- I visually observed signs of infestation
- I don't know

30 [CONDITIONAL: *Varroa* chemical treatment NOT selected in Q27] You indicated you did not treat for *Varroa* last year. What triggered your decision to not treat? (Choose one)

I intentionally did not treat for *Varroa*

I intended to treat but was unable to (cost, time, etc.)

I measured *Varroa* levels below action threshold

I visually observed no or limited signs of infestation

I don't know

31* If Yes, please indicate how many times you did during each time period (Enter: 0 / 1 / 2 / 3 / 4 or 5+)

During the survey period, did you initiate a round of...	Early summer ([Start Summer 22]- Jun30)	Late summer (Jul1- Sept30)	Early winter (Oct1-Dec31)	Late winter (Jan1-[Start of Summer 23])
... colony inspections? (including opening the hive and inspecting the surface of at least one frame)	<input type="radio"/> No <input type="radio"/> Yes			
.. <i>Varroa</i> mite monitoring? (only consider quantitative measures using an alcohol wash, sugar shake, sticky boards, counting mites in brood cells, etc.)	<input type="radio"/> No <input type="radio"/> Yes			
... <i>Vairimorpha</i> (<i>Nosema</i>) monitoring? (only consider quantitative measures using a microscope)	<input type="radio"/> No <input type="radio"/> Yes			

32 When inspecting your colonies last year, did you routinely record notes (colony condition, disease, pests, etc.) in the following ways? (Select all that apply)

I did not record notes

In a temporary manner (e.g., on the hive lid)

On paper

In an electronic format (Excel, Database, app)

33 [CONDITIONAL: Q32 take notes (any form)] You indicated you took notes from your colony inspections last year. When inspecting your colonies, on which of the following did you keep notes? (Select all that apply)

Colony size (frames of adult bees)

Queen status (or presence of eggs)

Signs of diseases

Amount of food stores

[Q34 backyard survey version only]

35 [CONDITIONAL: Q31 *Varroa* monitoring==Yes] You indicated you monitored for *Varroa* last year. Which monitoring method did you use most frequently? (Select all that apply)

Alcohol wash Sugar shake/roll Sticky board Counting mites in brood cells

Other

36 [CONDITIONAL: Q31 *Varroa* monitoring==NO] You indicated you did not measure *Varroa* loads last year. Why not? (Choose the main reason)

I do not think it is important

Not enough time

Lack of resources (equipment, cost, etc.)

I don't know how

I think visual observations are good enough

I don't want to kill bees / the queen

Other

37 **[CONDITIONAL: Q31 *Vairimorpha (Nosema)* monitoring==NO]** You indicated you did not quantitatively monitor for *Vairimorpha (Nosema)* last year.
 Why not? (Choose the main reason)

- I do not think it is important
- Not enough time
- Lack of resources (equipment, cost, etc.)
- I don't know how
- I think visual observations are good enough
- I don't want to kill bees / the queen
- Other

38 **Small Hive Beetles**

Did you observe Small Hive Beetles (SHB) in your operation last year? No Yes

Please describe the impact of SHB on your beekeeping. (Select all that apply)

- No noticeable impact
- Colonies lost or killed
- Decreased bee population or brood production
- Complicated honey harvesting/production
- Complicated protein feeding practices
- Complicated queen production
- Complicated colony divisions
- Other

39 **European foulbrood**

Did you observe European foulbrood (EFB) in your operation last year? No Yes

Please describe the impact of EFB on your beekeeping. (Select one)

- No noticeable impact
- Some negative impact
- Severe negative impact

40 **Chalkbrood**

Did you observe chalkbrood in your operation last year? No Yes

Please describe the impact of chalkbrood on your beekeeping. (Select one)

- No noticeable impact
- Some negative impact
- Severe negative impact

41 ***Vairimorpha (Nosema)***

Did you observe *Vairimorpha (Nosema)* in your operation last year? No Yes

Please describe the impact of *Vairimorpha (Nosema)* on your beekeeping. (Select one)

- No noticeable impact
- Some negative impact
- Severe negative impact

Thank you for answering our Pest Management questions as the special focus of our 2023 survey.
 The following questions are part of a longer-term effort to document changes in management practices through time.

New colonies & queens

Note that ‘**providing a new queen**’ includes giving a colony a mated queen, a queen cell, and even the opportunity to raise a new queen by making a walk-away split or removing the old queen.

42*	During the survey period, did you start or obtain any new colonies ?	<input type="radio"/> No	<input type="radio"/> Yes
43	If Yes, how did you start or obtain your new colonies during the survey period? <i>(Select all that apply)</i>		
	<input type="checkbox"/> Splits	<input type="checkbox"/> Swarms	<input type="checkbox"/> Packages
	<input type="checkbox"/> Nucs	<input type="checkbox"/> Full colonies	
44*	Did you provide any new queens to your colonies during the survey period? <i>(Include queens provided both during splitting and requeening.)</i>	<input type="radio"/> No	<input type="radio"/> Yes
45	If Yes, how many of each type of queen did you provide to your colonies during the survey period?		
	Type	Number	
	Mated queens	<input type="text"/>	
	Queen cells	<input type="text"/>	
	Virgin queens	<input type="text"/>	
	Walk-away splits, or killed queen to allow colony to raise emergency queen	<input type="text"/>	
	Other	<input type="text"/>	

Feeding

46*	During the survey period, did you initiate a round of...	If Yes , please indicate how many times you did during each time period (Enter: 0 / 1 / 2 / 3 / 4 or 5+)			
		Early summer <small>([Start Summer 22]- Jun30)</small>	Late summer <small>(Jul1- Sept30)</small>	Early winter <small>(Oct1-Dec31)</small>	Late winter <small>(Jan1-[Start of Summer 23])</small>
... supplemental carbohydrate/sugar feed?		<input type="radio"/> No <input type="radio"/> Yes	<input type="text"/>	<input type="text"/>	<input type="text"/>
... supplemental protein feed? (e.g., protein patties)	<input type="radio"/> No <input type="radio"/> Yes	<input type="text"/>	<input type="text"/>	<input type="text"/>	

A little bit about you

47	Why did you keep bees? <i>(Select all that apply)</i>		
	<input type="checkbox"/> For pollination contracts	<input type="checkbox"/> To produce honey/wax/pollen for sale	
	<input type="checkbox"/> To produce queens or queen cells for sale	<input type="checkbox"/> To produce honey/wax/pollen/queens for personal use	
	<input type="checkbox"/> To produce packages for sale	<input type="checkbox"/> For enjoyment/hobby	
	<input type="checkbox"/> To produce nucs for sale	<input type="checkbox"/> For teaching/education	
	<input type="checkbox"/> Other		
48	To which age bracket do you belong? <i>(Select one category)</i>		
	<input type="radio"/> 18-24 years old	<input type="radio"/> 35-44 years old	<input type="radio"/> 55-64 years old
	<input type="radio"/> 25-34 years old	<input type="radio"/> 45-54 years old	<input type="radio"/> 65-74 years old
			<input type="radio"/> 75-84 years old
			<input type="radio"/> 85 years or older
49	Approximately how many years have you been keeping bees?	<input type="text"/>	<i>(in years)</i>
50	On average how many years have your staff been keeping bees? <i>(if applicable)</i>	<input type="text"/>	<i>(in years/person)</i>
51	During Summer 2022 , on average how many full-time beekeepers worked taking care of your bees? <i>(Count two half-time beekeepers as the equivalent of one full-time beekeeper.)</i>	<input type="text"/>	

Thank You!

We appreciate your time in answering our Colony Loss and Management Survey!

The Bee Informed Partnership is a non-profit organization that works to improve honey bee health.

By answering these questions on colony loss and management, you are helping us describe a realistic picture of the losses in the US and better understand factors that contribute to colony losses, so that we can work together to reduce losses.

We rely on word of mouth to reach as many beekeepers as possible. Please share the survey announcement far and wide with your beekeeping friends and local clubs!

Please visit beeinformed.org for insights on how the results of this survey can improve your colony management decision making!

