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

Backyard beekeeper version (50 or fewer colonies on 1 October 2021)

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.)
① 50 or fewer colonies  ② 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.)
☐ Alabama  ☑ District of Columbia  ☐ Maine  ☐ New Mexico  ☐ Tennessee
☐ Alaska  ☐ Georgia  ☐ Maryland  ☐ New York  ☐ Texas
☐ American Samoa  ☐ Guam  ☐ Massachusetts  ☐ North Carolina  ☐ U.S. Virgin Islands
☐ Arizona  ☐ Hawaii  ☐ Michigan  ☐ North Dakota  ☐ Utah
☐ Arkansas  ☐ Idaho  ☐ Minnesota  ☐ Ohio  ☐ Vermont
☐ California  ☐ Illinois  ☐ Mississippi  ☐ Oklahoma  ☐ Virginia
☐ Colorado  ☐ Indiana  ☐ Missouri  ☐ Oregon  ☐ Washington
☐ Commonwealth of the Northern Mariana Islands  ☐ Iowa  ☐ Montana  ☐ Pennsylvania  ☐ West Virginia
☐ Connecticut  ☐ Kansas  ☐ Nebraska  ☐ Puerto Rico  ☐ Wisconsin
☐ Delaware  ☐ Kentucky  ☐ New Hampshire  ☐ Rhode Island  ☐ Wyoming
☐ Louisiana  ☐ Montana  ☐ New Jersey  ☐ South Carolina  ☐ Non US territory
**Time Period Covered by this Survey:**
The survey covers the period between 1 April 2022 and 1 April 2023.

**Summer 2022** is defined as the period from 1 April 2022 to the **morning of 1 October 2022**;
**Winter 2022-23** is defined as the period from 1 October 2022 to the **morning of 1 April 2023**.

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

### START OF SUMMER 2022:

- **Start date:** 1 April 2022

### START OF WINTER 2022-23:

- **Start date:** 1 October 2022

### START OF SUMMER 2023:

- **Start date:** 1 April 2023

<table>
<thead>
<tr>
<th></th>
<th>Did you make one or more <strong>split</strong> during 2022?</th>
<th>Did you make one or more <strong>split</strong> during 2023?</th>
<th>How many colonies did you own at each time?</th>
<th>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.)</th>
<th>How many colonies did you <strong>obtain</strong> 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.)</th>
<th>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.)</th>
<th>How many colonies did you sell or give away during each period?</th>
<th>How much was your net decrease in colonies due to intentionally combining your colonies?</th>
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</thead>
<tbody>
<tr>
<td>3*</td>
<td>✅ No ✗ Yes</td>
<td>If Yes, on what date did you start splitting in 2022?</td>
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<td>4*</td>
<td>✅ No ✗ Yes</td>
<td>If Yes, on what date did you start splitting in 2023?</td>
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<td>5*</td>
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<td>1 April 2022</td>
<td>1 October 2022</td>
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<td>6*</td>
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<td>1 April 2022</td>
<td>1 October 2022</td>
<td>1 April 2023</td>
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<tr>
<td>7*</td>
<td></td>
<td></td>
<td>Summer 2022</td>
<td>Winter 2022-22</td>
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<tr>
<td>8*</td>
<td></td>
<td></td>
<td>Summer 2022</td>
<td>Winter 2022-22</td>
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<tr>
<td>9*</td>
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<td></td>
<td>Summer 2022</td>
<td>Winter 2022-22</td>
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<tr>
<td>10*</td>
<td></td>
<td></td>
<td>Summer 2022</td>
<td>Winter 2022-22</td>
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</tbody>
</table>

Remember: ‘Summer 2022’ is defined as the period between 1 April 2022 and ‘1 October 2022’. ‘Winter 2022-23’ is defined as the period between 1 October 2022 and 1 April 2023.

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.

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)

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

Other, please specify: __________________________

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)

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

Other, please specify: __________________________

14. What was the ZIP code of your primary apiary during the survey period? (Please provide only one even if you keep bees in multiple locations.)

5-digit ZIP codes only

15. If you keep bees in additional apiaries, in which ZIP code(s) are they located?

5-digit ZIP codes only

(Q16-19 large-scale survey version questions)

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 Sep 2022 | 1 Oct 2022 | 1 Nov 2022 | 1 Dec 2022 | 1 Jan 2023 | 1 Feb 2023 | 1 Mar 2023 | 1 Apr 2023 |
|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|       |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
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|       |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |

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)

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

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 April 1, 2022 and April 1, 2023? (Select all that apply)

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

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 Late summer Early winter Late winter

- (Apr1-Jun30) (Jul1-Sept30) (Oct1-Dec31) (Jan1- Mar31)
- - - -
- - - -
- - - -
- - - -
- - - -

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+)

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Early summer (Apr1-Jun30)</th>
<th>Late summer (Jul1-Sept30)</th>
<th>Early winter (Oct1-Dec31)</th>
<th>Late winter (Jan1-Mar31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colony inspections</td>
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<tr>
<td>Varroa mite monitoring</td>
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<tr>
<td>Vairimorpha (Nosema) monitoring</td>
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</tbody>
</table>

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

34 How confident are you in your ability to perform the following actions? (Select one option per row)

<table>
<thead>
<tr>
<th>Action</th>
<th>Not Confident</th>
<th>Confident</th>
<th>Confident and I have done it in the past</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognizing eggs</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Estimating size of the adult bee population</td>
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<tr>
<td>Assessing if food stores are sufficient</td>
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<tr>
<td>Assessing quality of brood pattern</td>
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<tr>
<td>Identifying uncapped or cannibalized pupae</td>
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<td></td>
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<tr>
<td>Identifying bees with deformed wings</td>
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<td></td>
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<tr>
<td>Identifying European foulbrood</td>
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<td></td>
<td></td>
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<tr>
<td>Identifying American foulbrood</td>
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<td></td>
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</tr>
</tbody>
</table>

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?  ○ No  ○ Yes

43 If Yes, how did you start or obtain your new colonies during the survey period? (Select all that apply)
- Splits
- Swarms
- Packages
- Nucs
- Full colonies

44* Did you provide any new queens to your colonies during the survey period?  ○ No  ○ Yes
(Include queens provided both during splitting and requeening.)

45 If Yes, how many of each type of queen did you provide to your colonies during the survey period?

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mated queens</td>
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<tr>
<td>Queen cells</td>
<td></td>
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<tr>
<td>Virgin queens</td>
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<tr>
<td>Walk-away splits, or killed queen to allow colony to raise emergency queen</td>
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<tr>
<td>Other</td>
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</tbody>
</table>

Feeding

46* During the survey period, did you initiate a round of...

- ... supplemental carbohydrate/sugar feed?  ○ No  ○ Yes
- ... supplemental protein feed? (e.g., protein patties)  ○ No  ○ Yes

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

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Early summer (Apr1-Jun30)</th>
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</table>

A little bit about you

47 Why did you keep bees? (Select all that apply)
- For pollination contracts
- To produce queens or queen cells for sale
- To produce packages for sale
- To produce nucs for sale
- Other

- To produce honey/wax/pollen for sale
- To produce honey/wax/pollen/queen for personal use
- For enjoyment/hobby
- For teaching/education

48 To which age bracket do you belong? (Select one category)
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65-74 years old
- 75-84 years old
- 85 years or older

49 Approximately how many years have you been keeping bees?  | (in years)
Any comments? We would love to hear about what you like about our survey, but also how we can improve it.

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!