



**AGRI-FOOD  
& BIOSCIENCES  
INSTITUTE**

Northern Ireland  
Honey Bee  
Husbandry Survey  
2022-23



## **Northern Ireland Honey Bee Husbandry Survey 2022-23**

**An AFBI research report**

**About the Agri-food and Biosciences Institute ([www.afbini.gov.uk](http://www.afbini.gov.uk))**

The Agri-Food & Biosciences Institute (AFBI) was created on 1st April 2006 as an amalgamation of the Department of Agriculture and Rural Development (DARD) Science Service and the Agricultural Research Institute of Northern Ireland (ARINI). Based at seven sites around Northern Ireland, AFBI carries out research and development, statutory, analytical, and diagnostic testing functions for Government departments, public bodies and commercial companies.

**Report by:** Ivan Forsythe & Dr. Archie K. Murchie

**Other Staff involved:** Ashley Uprichard, afbi Analytics (website development)

**Period of survey investigation:** March to June 2023

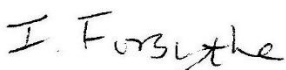
**Date of report:** July 2023

**Disclaimer:** There are currently estimated to be 1400 active beekeepers in Northern Ireland (c.2018). The data presented in this report was volunteered from 61 beekeeper respondents therefore it may not accurately reflect beekeeping husbandry practices during the period of investigation.

**Data Protection:** AFBI has processed the data from this survey in compliance with the EU General Data Protection Regulation (GDPR) which came into effect from 25<sup>th</sup> May 2018.

**Declaration:** We declare that this work was done under our supervision according to the procedures outlined and that the findings of this report are a true interpretation of the results obtained.

**Acknowledgements:** We gratefully acknowledge the assistance of Tom Williamson, DAERA Senior Bee Health Inspector; the Chairman and Hon. Secretary of the Ulster Beekeepers' Association; the Institute of Northern Ireland Beekeepers; the secretaries of all the local beekeeping associations and of course the beekeepers who gave up their time to fill in our questionnaire.



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**Ivan Forsythe**



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**Dr. Archie K. Murchie**

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## **Summary**

This is the fifteenth annual survey of beekeeping husbandry issues in Northern Ireland.

- Colony losses for the 2022-23 survey was 14% compared to 11% in 2021-22 and 16% in 2020-21.
- 54% of beekeepers reported no loss of colonies, which compares with 60% in 2021-22 and 51% in 2020- 21.
- Of the 49 colonies reported as lost by the respondents, 17 (35%) were attributed to queen problems.
- Oxalic acid; products containing Amitraz; products containing Thymol; Formic acid and products containing Tau-fluvalinate were the five most popular Varroa mite treatments used by 68%, 41%, 39%, 20% and 11% of beekeepers respectively.
- 3 beekeepers imported queens. They came from GB (England, Scotland & Wales) and Romania.
- There were 61 survey responses from beekeepers. This compares with 57 in 2021-22; 74 in 2020-21 and 117 in 2019-20.

## **Method**

The honey bee husbandry survey was made available to beekeepers in a questionnaire format available online at the AFBI website (<https://www.afbini.gov.uk/articles/bee-health>). The survey was exclusively completed electronically using PCs, laptops and mobile devices such as smartphones and tablets.

The survey closed on June 12<sup>th</sup> 2023.

## Questions and Responses

**Q1. In which county do you keep your bees in the majority of the season?**

County	Count of respondents
Antrim	19
Armagh	0
Down	31
Fermanagh	3
Londonderry/Derry	7
Tyrone	1
<b>61 in total</b>	

For the first time, since this annual survey began in 2008-09, there were no respondents from Armagh.

**Q2. How many years have you kept bees?**

Number of year's beekeeping divided into categories				
Number of years keeping bees	1 - 3	4 – 10	11 – 20	>20
% of beekeepers	25	24	8	4

**Q3. To describe the location of your main apiary or operation, please state**

- a. The name of a city/town/village near to your apiary
- b. The post code of the apiary (or a post code nearby)

All answers received are confidential and are processed according to the AFBI Privacy Notice in compliance with the EU General Data Protection Regulation (GDPR), 2018.

**Q4. How many apiaries do you have?**

43 beekeepers (70%) had 1 apiary.

18 beekeepers (30%) had from 2 - 5 apiaries.

**Q5. If you have more than one apiary, are all your apiaries within a distance of about 15km (9 miles) of each other? (If you have only one apiary, please answer Yes)**

13 beekeepers responded 'Yes' to having more than one apiary within a 15km distance.

5 beekeepers responded 'No'.

**Q6. How many production colonies did you have before winter 2022-23?**

The majority of respondent beekeepers had 1 - 2 production colonies. The total number was 339.

The numbers of production colonies, divided into categories, maintained by individual beekeepers before winter 2022-23

	No. of production colonies maintained				
	1 - 2	3 - 5	6 - 10	11 - 20	20+
No. of beekeepers	27	15	10	5	4

**Q7. How many of these colonies (in Q6.) did you lose**

1. Because they still had live bees present but had unsolvable queen problems? ..... 17
2. Because of a natural hazard (e.g. storm/wind damage, floods)?..... 1
3. Because they were dead or the hive was empty?..... 31

Overwintering losses in 2022-23 were **14%** compared to 11% in 2021-22, 16% in 2020-21 and 19% in 2019-20.

The table below shows the breakdown figures per county.

Colony losses during the winter of 2022-23 per county

County	Live before winter	Colonies lost	% loss
Antrim	102	16	16
Armagh	-	-	-
Down	168	23	14
Fermanagh	9	1	11
Londonderry/Derry	58	9	16
Tyrone	2	0	0
<b>TOTAL</b>			<b>X =14</b>

54% of respondent beekeepers had no losses; in 2021-22 it was 60% and in 2020-21 it was 51%.

**Q8. How many of the dead colonies or empty hives (in Q7. 3.)**

- a. Had many dead bees in or in front of the hive?..... 2
- b. Had no or only a few dead bees in or in front of the empty hive?..... 7
- c. Had dead workers in cells and no food present in the hive (signs of starvation)?..... 6
- d. Had dead workers in cells while food was present in the hive?..... 10
- e. Had none of the above or unknown symptoms?..... 6

**Q9. How many of the wintered colonies (in Q6.) were weak but queenright after winter 2022-23?**

Of the 290 surviving colonies, 70 (24%) were reported as weak but queenright.

**Q10. How many production colonies did you have in**

- a. Spring 2022 (last year)? 243 in total.
- b. this year, Spring 2023? 290 in total.

**Q11. How many of your wintered colonies had a new queen in 2022?  
Why were they replaced?**

48 beekeepers had a total of 208 wintered colonies with a new queen.  
The main reasons given for new queen replacement were old age, swarming, colony splits, supersedence and drone layers.

**Q12. What are the origins of your queens?**

- Reared by the colony itself** 24 beekeepers used only their own colony.
- Reared by one of your own selected queens** 5 used only their own selected queens.
- Acquired from local beekeepers** 18 only acquired locally.
- Imported** **Yes:** 3 beekeepers. **No:** 58 beekeepers.

**If you answered ‘Yes’ to Imported, please give the number of queens you imported and from which country?**

	Total Number of Queens	
GB (England, Scotland & Wales)	10	* Please specify EU/Non EU countries below
Other Non-EU countries *	0	
EU countries (inc. ROI) *	6	Romania

12 beekeepers used two or more of the above origins.

**Q13. To what extent did you observe queen problems in your colonies during the foraging season of 2022 compared to what you usually have?**

**More** ..... 18% of beekeepers  
**Normal** ..... 52% of beekeepers  
**Less** ..... 10% of beekeepers  
**Don't know** ..... 20% of beekeepers

**Q14. How many of your surviving colonies had a large amount of faeces inside the hive after winter?**

51 beekeepers had no colonies with a large amount of faeces inside the hive after winter.  
8 beekeepers replied 'Don't know'.  
2 beekeepers replied 'Yes' for 8 colonies.

**Q15. Did you treat your colonies for *Nosema* before overwintering in 2022?**

**Yes:** 3 beekeepers.      **No/Don't know:** 58 beekeepers.

All 3 beekeepers treated with the same product, HiveAlive.

**Q16. Did you migrate any of your colonies at least once for honey production or pollination in 2022?**

**Yes:** 5 beekeepers (8%).      **No/Don't know:** 56 beekeepers (92%).

**Q17. Approximately what proportion of brood combs did you replace with comb foundation per colony in 2022?**

**0%** ..... 29% of beekeepers  
**1-30%** ..... 51% of beekeepers  
**31-50%** ..... 15% of beekeepers  
**More than 50%** ..... 5% of beekeepers



**Q18. Have you noticed bees with crippled/deformed wings in your colonies during the 2022 summer season? (These are signs of the presence of Deformed Wing Virus, which is spread by Varroa mites)**

**Not at all** ..... 62% of beekeepers  
**To a limited extent** ..... 33% of beekeepers  
**To a large extent** ..... 2% of beekeepers  
**Don't know** ..... 3% of beekeepers

**Q19. What particular measures apply for the majority of your beekeeping?**

	<u>Percentage of beekeepers</u>	
<b>a. Screened bottom board in Winter</b>	<b>Yes: 80%</b>	<b>No/Don't Know: 20%</b>
<b>b. Insulated hives in Winter (including double-walled hives)</b>	<b>Yes: 39%</b>	<b>No/Don't Know: 61%</b>
<b>c. Hives made from synthetic materials</b>	<b>Yes: 23%</b>	<b>No/Don't Know: 77%</b>
<b>d. Certified organic beekeeping</b>	<b>Yes: 3%</b>	<b>No/Don't Know: 97%</b>
<b>e. Queens bred from Varroa tolerant/resistant stock</b>	<b>Yes: 10%</b>	<b>No/Don't Know: 90%</b>
<b>f. Small brood cell size (5.1mm or less)</b>	<b>Yes: 11%</b>	<b>No/Don't Know: 89%</b>
<b>g. Comb without foundation</b>	<b>Yes: 7%</b>	<b>No/Don't Know: 93%</b>
<b>h. Purchase wax from outside own operation</b>	<b>Yes: 75%</b>	<b>No/Don't Know: 25%</b>
<b>i. Non-wax foundation in brood chamber</b>	<b>Yes: 5%</b>	<b>No/Don't Know: 95%</b>

**Q20. Have you monitored your colonies for Varroa during the period April 2022 – March 2023?**

44 out of 61 beekeepers (72%) responded 'Yes' to monitoring for Varroa.  
4 beekeepers monitored continuously throughout the period.

**Q21. Have you treated your colonies for Varroa during the period April 2022 – March 2023?**

56 out of 61 beekeepers (92%) responded 'Yes' to treating for Varroa.

The top 5 treatments used by these beekeepers were:

- |  |     |
|--|-----|
| 1. Oxalic acid - trickling and sublimation (evaporation).....                          | 68% |
| 2. Amitraz - (Apivar / Apitraz) strips .....   | 41% |
| 3. Thymol (Apiguard / ApiLife Var) .....   | 39% |
| 4. Formic acid – short term and long term, e.g. MAQS (Mite Away Quick Strips)<br>..... | 20% |
| 5. Tau-fluvalinate (Apistan) .....   | 11% |

**Q22. What method did you use to monitor your production colonies for Varroa during the 2022-23 season?**

- |  |                   |
|--|-------------------|
| Mite fall on bottom board .....  | 84% of beekeepers |
| Visual inspection of the colony .....  | 59% of beekeepers |
| De-capping brood .....   | 23% of beekeepers |
| Adult bees (Sugar shake/roll, washing with detergent, CO <sub>2</sub> )..... | 7% of beekeepers  |
| Sent sample to laboratory .....  | 3% of beekeepers  |
| None of the above .....  | 10% of beekeepers |

36 beekeepers (59%) used two or more of the above methods.

**Q23. Did you feed your colonies between April 2022 and March 2023?**

Yes = 57 beekeepers

No = 4 beekeepers

Feeding methods used by beekeepers in Northern Ireland

Feed for bees	Count of beekeepers (n = 57)	% of beekeepers
Ambrosia	4	7
Pollen/Patty feed product	10	18
Candy/Fondant	50	88
Feed supplement (e.g. Vita Feed, HiveAlive etc.)	23	40
Honey	11	19
Sugar Syrup	46	81
Beet Sugar	1	2
Inverted Beet Sugar Syrup	5	9
High Fructose Corn Syrup (HFCS)	1	2
Other	0	0

**Q24. Can you recognize and/or do you know any information about the following bee diseases and pests?**

- a. **Acarine**..... 33% of beekeepers
- b. **Nosema**..... 84% of beekeepers
- c. **Chalkbrood**..... 95% of beekeepers
- d. **Sacbrood**..... 56% of beekeepers
- e. **American Foulbrood (AFB)**..... 93% of beekeepers
- f. **European Foulbrood (EFB)**..... 90% of beekeepers
- g. **Varroa**..... 98% of beekeepers
- h. **Wax moths**..... 80% of beekeepers
- i. **Asian Hornet**..... 75% of beekeepers

16 beekeepers (26%) recognised and/or knew information about all 9 diseases/pests.

**Q25. Have you made use of any of the following services, provided by DAERA and/or AFBI, in 2022-23?**

- A bee health apiary visit by DAERA Bee inspectors ..... 0 beekeepers**
- Sent a sample of bees/brood comb for laboratory examination to AFBI ..... 4 beekeepers**
- Asked for advice from either DAERA or AFBI ..... 5 beekeepers**
- Registered on DataBees ..... 15 beekeepers**
- None of the above ..... 40 beekeepers**

**If you would like information about registering on DataBees, please go to <https://www.daera-ni.gov.uk/articles/beekeepers-voluntary-registration>**

3 out of 61 beekeepers (5%) made use of one or more of the above services.

**Q26. If you found it difficult to answer the questionnaire, please indicate which question(s) you found difficult to answer and say why they were difficult to answer.**

**Comment**

Just like to add that my answers apply to majority, not all of my hives...

**Reply**

If you have more than one hive in your apiary/apiaries, then yes please give an answer which applies to the majority of your hives.

**Comment**

It might make it easier to recall accurately if we were asked in advance what to look out for and record. Also, I counted as 'feeding' honey, the situations where I just 'left' the ivy honey that was in the brood box.

**Reply**

The bulk of the questions asked each year will not change. In Q23 'Feeding' honey would apply to using an external source as a food supplement; however not harvesting it all and leaving some as food stores for the bees could equally apply.

**Comment**

To complete the survey, I had to resort to using a laptop - when using my phone, I had almost finished and hit the "Back" button but all answers disappeared. I would suggest it genuinely takes a little more than 5/10 mins to complete.

**Reply**

These problems will be assessed and adjusted for next year's survey.

Other questions will be reviewed in response to further comments made.

Questions 3, 6-9, 11, 16, 18 & 20-21 are standardized by COLOSS, a Europe based honey bee research association, as part of their world-wide survey and unfortunately cannot be changed.

**Once again, thank you to all the beekeepers who participated in this survey. Without your help we would have little knowledge of Northern Ireland beekeeping practices and the various challenges that beekeepers face. Your responses will contribute to future departmental policy for the sustainability of honey bee health.**