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**AGRI-FOOD
& BIOSCIENCES
INSTITUTE**

Northern Ireland
Honey Bee
Husbandry Survey
2018-19



Northern Ireland Honeybee Husbandry Survey 2018-19

An AFBI research report

About the Agri-food and Biosciences Institute (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.

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Other Staff involved: Amanda Browne & Dave Matthews, AFBI Statistical Services Branch (website development)

Period of survey investigation: March to June 2019

Date of report: July 2019

Disclaimer: There are currently estimated to be 1400 active beekeepers in Northern Ireland (2018). The data presented in this report was volunteered from 94 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 25th 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.

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Summary

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

- Colony losses for the 2018-19 survey was 11% compared to 30% in 2017-18 and 10% in 2016-17.
- 64% of beekeepers reported no loss of colonies, which compares with 44% in 2017-18.
- Of the 54 colonies reported as lost by the respondents, 23 (5%) were attributed to queen problems.
- Products containing Oxalic acid and Thymol were the two most popular Varroa treatments used by 67% and 58% of beekeepers respectively.
- 7 beekeepers imported queens. They came from Great Britain, Republic of Ireland and Germany.
- There were 94 responses from beekeepers. This compares with 106 in 2017-18; 85 in 2016-17 and 93 in 2015-16.

Method

The honeybee husbandry survey was made available to beekeepers in various formats: by questionnaire paper copy including return stamp-addressed envelopes; by a fillable PDF file sent via e-mail and was also electronically online at the AFBI website (<https://www.afbini.gov.uk/articles/bee-health>). For the first time this year, the survey could be completed using mobile devices such as smartphones and tablets. The survey closed on 15th June 2019.

Questions and Responses

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

| County | Count of respondents |
|-------------------|----------------------|
| Antrim | 22 |
| Armagh | 5 |
| Down | 40 |
| Fermanagh | 13 |
| Londonderry/Derry | 13 |
| Tyrone | 1 |

94 in total

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 | 30 | 45 | 13 | 12 |

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

- The name of a city/town/village near to your apiary
- 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).

Q4. How many apiaries do you have?

65 beekeepers (69 %) had 1 apiary. The maximum was 10 apiaries (1 beekeeper).

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)

89 beekeepers responded 'Yes'; 5 beekeepers responded 'No'.

Q6. How many production colonies did you have before winter 2018-19?

Most of the respondent beekeepers had 1 - 2 production colonies. The total number was 493.

Table 1. The numbers of production colonies, divided into categories, maintained by individual beekeepers before winter 2018/19

| | No. of production colonies maintained | | | | |
|-------------------|---------------------------------------|-------|--------|---------|-----|
| | 1 - 2 | 3 - 5 | 6 - 10 | 11 - 20 | 20+ |
| No. of beekeepers | 39 | 28 | 17 | 9 | 1 |

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

1. Because they were alive but had unsolvable queen problems?..... 23 (5%)
2. Because of a natural hazard (e.g. storm/wind damage, floods)?..... 8 (1%)
3. Because they were dead?..... 23 (5%)

Overwintering losses in 2018/19 were **11%** compared to 30% in 2017/18, 10% in 2016/17 and 31% in 2015/16. Table 2 shows the breakdown per county.

Table 2. Colony losses during the winter of 2017/18 per county

| County | Live before winter | Colonies lost | % loss |
|-------------------|--------------------|---------------|--------|
| Antrim | 110 | 12 | 11 |
| Armagh | 34 | 1 | 3 |
| Down | 215 | 25 | 12 |
| Fermanagh | 67 | 9 | 13 |
| Londonderry/Derry | 57 | 7 | 12 |
| Tyrone | 10 | 0 | 0 |
| TOTAL | 493 | 54 | |

64% of respondent beekeepers had no losses. In 2017/18 it was 44% and in 2016/17 it was 71%.

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? 0
- b. Had no or only a few dead bees in or in front of the hive?..... 3
- c. Had dead workers in cells and no food present in the hive (signs of starvation)? ... 5
- d. Had dead workers in cells while food was present in the hive? 14
- e. Had none of the above or unknown symptoms?..... 1

Q9. How many of the wintered colonies were weak but queenright after winter 2018-19?

Of the 439 surviving colonies, 118 (27%) were reported as weak but queenright.

Q10. How many production colonies did you have in

- a. Spring 2018 (last year)? 353 in total.
- b. Spring 2019? 450 in total.

Q11. How many of your wintered colonies had a new queen in 2018?

73 beekeepers had a total of 285 wintered colonies with a new queen.

Q12. What are the origins of your queens?

Reared by the colony itself 57 beekeepers used home-bred colonies.

Reared by one of your own selected queens 22 used their own selected queens.

Acquired from local beekeepers 30 were acquired locally.

16 beekeepers used two or more of the above.

Imported Yes: 7 beekeepers No: 87 beekeepers.

If you answered 'Yes' to Imported, from which country did you import and how many queens?

| | | |
|---------------------|----|--|
| Republic of Ireland | 1 | * Please specify EU/Non EU country below |
| GB | 13 | |
| EU countries * | 8 | Germany |
| Non-EU countries * | 0 | - |

Q13. To what extent did you observe queen problems in your colonies during the foraging season of 2018 compared to what you usually have

More? 14%
 Normal? 60%
 Less? 14%
 Don't know 12%

Q14. Compared with your colonies with old queens, have your colonies with young queens survived winter

Better? 24%
 No differently? 49%
 Worse? 3%
 Don't know/not applicable 24%

Q15. How many of your surviving colonies had a large amount of faeces inside the hive after winter?

Yes: 1 No/Don't Know: 93

Q16. Did you treat your colonies for *Nosema* before overwintering in 2018?

Yes: 7 No/Don't Know: 87

3 beekeepers treated with HiveAlive; 2 beekeepers treated with Nozevit and 2 beekeepers used a solution of Thymol added to syrup.

Q17. Did you migrate any of your colonies at least once for honey production or pollination in 2018?

Yes: 4 (4%) No/Don't Know: 90 (96%)

Q18. Approximately what proportion of brood combs did you replace with comb foundation per colony in 2018?

0% 24 (26%)
 1-30% 49 (52%)
 31-50% 15 (16%)
 More than 50% 6 (6%)

Q19. Did the majority of your bee colonies have a significant flow on one or more of the following plants in 2018?

| | | | |
|-------------------------------|----------|---------|-----------------|
| a. Orchards | Yes: 21% | No: 59% | Don't Know: 20% |
| b. Oil seed rape | Yes: 9% | No: 70% | Don't Know: 21% |
| c. Maize | Yes: 2% | No: 76% | Don't Know: 22% |
| d. Sunflower | Yes: 4% | No: 79% | Don't Know: 17% |
| e. Heather | Yes: 14% | No: 68% | Don't Know: 18% |
| f. Autumn forage crops | Yes: 53% | No: 26% | Don't Know: 21% |

30% of beekeepers responded 'Yes' to two or more of the above.

Q20. What particular measures apply for the majority of your beekeeping?

| | | |
|---|----------|--------------------|
| a. Screened bottom board in winter | Yes: 67% | No/Don't Know: 33% |
| b. Insulated hives in winter (including double-walled hives) | Yes: 39% | No/Don't Know: 61% |
| c. Hives made from synthetic materials | Yes: 18% | No/Don't Know: 82% |
| d. Certified organic beekeeping | Yes: 3% | No/Don't Know: 97% |
| e. Queens bred from Varroa tolerant/resistant stock | Yes: 7% | No/Don't Know: 93% |
| f. Small brood cell size (5.1mm or less) | Yes: 6% | No/Don't Know: 94% |
| g. Comb without foundation | Yes: 9% | No/Don't Know: 91% |
| h. Purchase wax from outside own operation | Yes: 80% | No/Don't Know: 20% |
| i. Non-wax foundation in brood chamber | Yes: 1% | No/Don't Know: 99% |

Q21. Have you monitored your colonies for Varroa during the period April 2018 – April 2019?

69 out of 94 beekeepers (73%) responded ‘Yes’ to monitoring for Varroa.

Q22. Have you treated your colonies for Varroa during the period April 2018 – April 2019?

85 out of 94 beekeepers (90%) responded ‘Yes’ to treating for Varroa.

The top 5 treatments used were: Oxalic acid (67%); Thymol (58%); Drone brood removal (22%); Formic acid (15%) and Amitraz (Apivar) strips (14%).

Q23. Have you noticed bees with crippled/deformed wings in your colonies during the 2018 summer season? (These are signs of the presence of Deformed Wing Virus, which is spread by Varroa mites)

Not at all 68%
 To a limited extent 30%
 To a large extent 0%
 Don’t know 2%

Q24. Did you feed your colonies between April 2018 and April 2019?

Yes = 91 (97%) No = 3 (3%)

Table 3. Feeding methods used by beekeepers in Northern Ireland

| Feed for bees | Count of beekeepers (n = 91) | % of beekeepers |
|--|---------------------------------|-----------------|
| Ambrosia | 17 | 19 |
| Pollen/Patty feed product | 23 | 25 |
| Candy/Fondant | 76 | 84 |
| Feed supplement (e.g. Vita Feed, HiveAlive etc.) * | 19 | 21 |
| Honey | 9 | 10 |
| Sugar Syrup | 73 | 80 |
| Beet Sugar | 2 | 2 |
| Inverted Beet Sugar Syrup | 8 | 9 |
| High Fructose Corn Syrup (HFCS) | 0 | 0 |
| Other ** | 1 | 1 |

* HiveAlive was the most popular Feed supplement ** Reishi mushroom extract

Q25. If you gave your colonies a supplemental sugar feed (sugar solution or inverted sugar) last year to prepare for winter, how many kilograms of sugar (dry matter) did you give on average per production colony?

68 beekeepers (72%) gave their colonies a supplemental sugar feed. The average was 4.37 kg per colony.

Q26. Can you recognize and do you know any information about the following bee diseases and pests?

| | |
|----------------------------------|-----|
| a. Acarine..... | 60% |
| b. Nosema..... | 85% |
| c. Chalkbrood..... | 98% |
| d. Sacbrood..... | 68% |
| e. American Foulbrood (AFB)..... | 91% |
| f. European Foulbrood (EFB)..... | 95% |
| g. Varroa..... | 98% |
| h. Wax moths..... | 90% |
| i. Asian Hornet..... | 84% |

47 beekeepers (50%) recognised and/or knew information about all 9 diseases/pests.

Q27. 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.

Comments:

Q25 Hard to remember dry weight of sugar. Would know litre per colony better. Production colonies tricky too. I had a number of colonies last year that were building up from nuc size or after artificial swarms. Some would not gather a surplus in 2018 but would in 2019. Some colonies were treated with oxalic acid in the summer when broodless, but not all.

Q 21 "Monitored" suggests use of counting mite fall etc. I look for wingless bees at usual inspections and have considered this as monitoring. Q 22 "Oxalic Acid/trickling". This is applied when colonies are broodless ie hopefully Jan/Feb. I used this method but had no choice or these months. So hit "April". PS Glad to see this evaluation of a diff and complex subject questionnaire.

I did not know what to put for the supplement sugar feed but my bees were given sugar syrup.

Not every colony is treated the same. It depends on the hive. I think the questionnaire should have options to say how many hives treated with x product and why. It is too generalised and not painting a proper picture as a result, e.g. one colony overwintered in a cedar hive, the other one in a synthetic nuc which had double brood box on, so in effect, it was a poly hive. The one in the synthetic hive fared much better. There should be more options to show the methods used in each colony.

Reply:

Questions 3 – 11, 13 – 15, 17 – 23 and 25 are standardised by CoLOSS as part of their European survey and, unfortunately, cannot be changed. The other questions will be reviewed in response to other comments.