

The National Bee Unit annual bee husbandry survey

An annual survey of beekeepers in England and Wales providing data on beekeeping practices, bee diseases, colony losses, education and training has been conducted by the National Bee Unit (NBU) since 2009, when the Healthy Bees Plan began. The survey has changed over the past ten years with the addition of more questions, particularly regarding honey production and products derived from beekeeping. However, many of the questions and areas where data have been sought have remained the same.

10

number of years
of bee husbandry
surveys

How the survey is organised

The survey aims to obtain responses from 5% of the beekeeping population registered on BeeBase. To achieve that target, surveys are sent to approximately 17% of all registered beekeepers. Sampling is stratified by groups of beekeepers with fewer than 40 colonies and those with 40 colonies or more. In addition, beekeepers are stratified into groups: those with email addresses and those without. Then we select beekeepers at random from within each stratum.

To account for any potential differences between the postal and email groups, the email group is further divided so that 50% receive the survey by email and 50% receive the survey by post.

The final proportion of each group sampled therefore represents those beekeepers registered on BeeBase in that particular year. For example, in 2019, 6,556 surveys were sent out for completion: 4,160 by post and 2,396 for completion electronically with the link delivered by email. Each year the anonymised responses are analysed and a report is prepared; the results are sent to Defra Bee Health Policy.

This article provides an overview of some of the data provided from the annual survey from 2009 to 2019. In this summary, data are presented as the proportion (%) of beekeepers that chose to respond to the question. It must be borne in mind when looking at this data that observations come from the minority of beekeepers registered on BeeBase who receive the survey and then choose to respond. While the beekeepers who receive the survey are selected at random, the ones who choose to respond might not be a random sample of *those* beekeepers; it is possible that the beekeepers who choose to respond are not typical. This is why it is a good idea to respond if you get the chance!

A different anonymous random sample is used each year. Assuming that responders are fairly typical, we can use the survey to tell us, say, the annual change in the proportion of beekeepers who had chalkbrood, or the annual change in the proportion of beekeepers using a treatment against varroa. Because it is anonymous, we can't establish connections between applying treatment in one year and experiencing infestation in the next, or vice versa.

5995

live colonies
included in
2019 survey

Colony losses

The annual husbandry survey has collected data on winter and summer losses (Table 1). Summer losses are those that occur between 1 April and 1 October. Winter losses are those that occur between 1 October and 31 March of the following year. The losses reported in each year's annual summary report are those which occurred in the previous year. For example, the husbandry

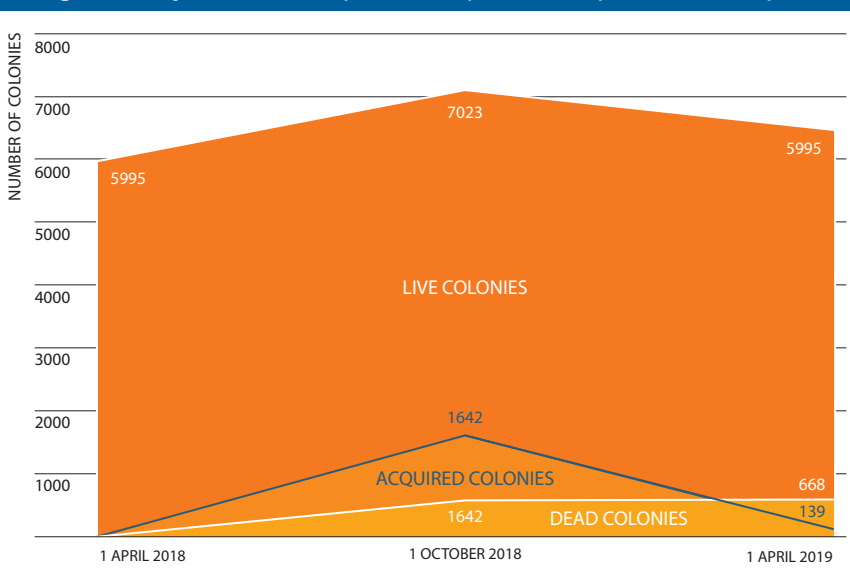
survey report in 2019 focused on summer losses that occurred between 1 April and 1 October 2018 and winter losses that occurred between 1 October 2018 and 31 March 2019. A representative example of the data from the 2019 husbandry survey report illustrating the number of live, dead and acquired colonies reported at the three time points is shown in Diagram 1 (overleaf).

Table 1 Winter and summer losses (%) calculated from annual husbandry survey returns

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Winter losses	13.2	20.3	19.1	16.5	29.5	8.2	14	18.5	12.9	21.1	10.2
Summer losses	–	–	5.2	–	14.5	9	7.5	9.7	8	7.1	9.5

– indicates not determined

Diagram 1
Changes in colony numbers from April 2018 to April 2019 as reported in the sample



The data collected on colony losses have also been reported to COLOSS (Prevention of honey bee COLony LOSSes) for use in the colony losses monitoring project. This project involves participating countries carrying out an annual survey from a nationally representative sample of beekeepers. The data collected from around 30 countries are used to examine the risk factors for colony losses (www.coloss.org/core-projects/colony-losses-monitoring)



Association membership, qualifications, use of literature and training

Beekeepers are asked if they are a member of a beekeeping association and, if so, to provide information on the associations that they belong to. In each year that the question has been asked, most beekeepers have responded that they are a member of an association. The proportion of responders reporting membership has remained fairly constant from 2011 to 2019. For those beekeepers that reported membership, the majority were also a member of the British Beekeepers Association (Diagram 2).

In all years (2009–2019), the proportion of beekeepers that responded to the surveys that did not hold a qualification was greater than those with a qualification. The proportion of beekeepers responding to the survey that reported holding a beekeeping qualification ranged from 26.3% (2011) to 36.3%

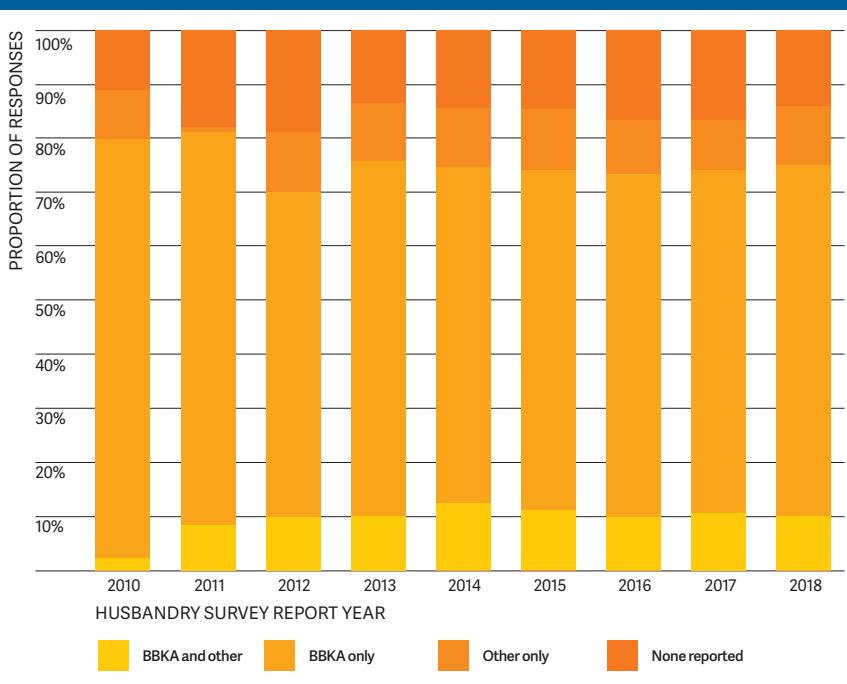
(2018). The BBKA basic assessment is the most commonly held qualification among respondents.

In all years, the majority of beekeepers reported that they use literature produced by the National Bee Unit. The *Managing Varroa* leaflet was the most frequently used item in all survey years. Overwhelmingly, beekeepers that responded described the literature as useful (88.9% to 100% of responses).

The proportion of beekeepers responding to the annual surveys and who attended training events was fairly constant across all survey years, ranging from 50.3% to 57.8%. Of those that reported attending NBU training, the disease recognition course was attended by most beekeepers. However, most beekeepers attended non-NBU organised training events. The majority of beekeepers responding reported that they had found both the NBU and non-NBU organised training useful.



Diagram 2
Proportion of beekeepers reporting membership of an association



Problems reported by beekeepers

The husbandry survey provides an opportunity to collect data on the key pest and disease problems encountered by beekeepers. In each year, the majority of beekeepers responding (greater than 79.3%) reported a problem with their colonies. Varroosis, failing queens, and wasps were the most frequently reported problems (Table 2).

In each year when the question has been asked, the majority of beekeepers have reported that they did not have any testing performed on their colonies. Where a diagnosis was made, this was primarily for varroosis (Diagram 3).

The annual husbandry survey also collects data on whether beekeepers treat their colonies for varroa and, if so, what treatments are used. In each year where this data has been collected, the majority of beekeepers responding (greater than 86.6%) said that they treated their colonies for varroa. The products registered for use for varroa treatment have altered during the period covered by the surveys. However, in all years, Apiguard has been the product used by the majority of beekeepers that responded for the treatment of varroa. The majority of beekeepers have also reported that they monitor their colonies for varroa – the main method used being counting mite drop, either as the sole method or in combination with other methods.

Feeding and comb replacement

In each year of the survey, the majority of beekeepers reported that they had provided additional feed for their colonies in the previous year. The majority of beekeepers provided candy/fondant and sugar syrup as feeds.

Beekeepers have also reported that they regard comb replacement as an important intervention in their beekeeping. When asked about the proportion of brood combs that were replaced in most of the colonies in the past year, the majority of those who changed comb reported that they had replaced up to 30%.

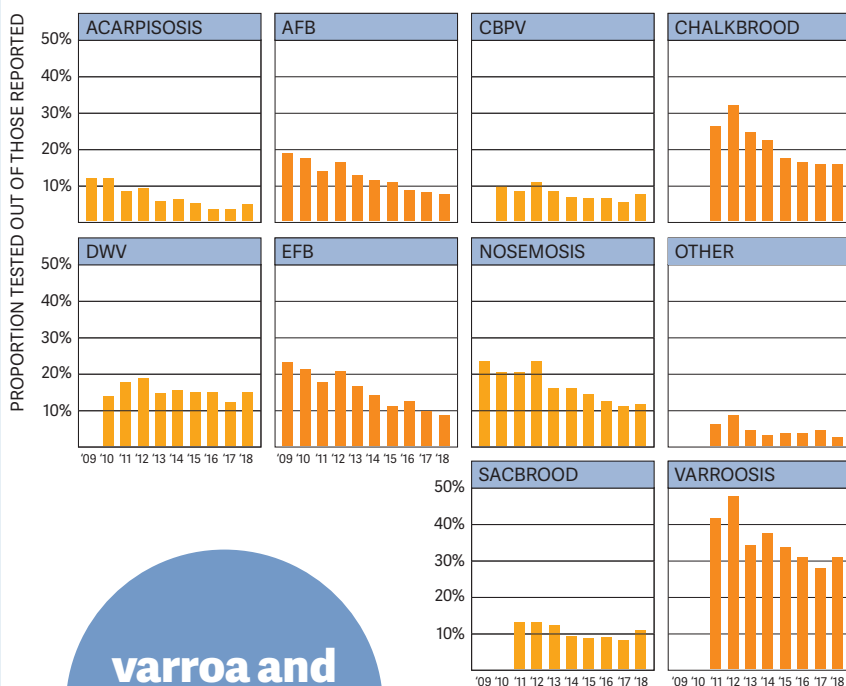
Beekeeping and beekeepers

The survey also provides data on more general beekeeping practices, including the race of bees kept, if colonies are moved for pollination or honey production purposes, and honey production and sales. We ask a few questions about the beekeepers themselves, including age, number of years that the beekeeper has kept bees and whether help is received for their beekeeping operation. The data provided generates useful information and a large dataset about beekeeping practices and colony health in England and Wales.

Table 2
Proportion (%) of respondents reporting a specific problem from husbandry surveys conducted from 2011 to 2018. Figures in blue in each column highlight the most commonly reported problem that year.

	2011	2012	2013	2014	2015	2016	2017	2018
Acarapisosis	0.6	1.3	0.1	0	0.1	0.1	0.3	0
American foulbrood	0.7	1.9	0.1	0	0	0	0	0
Ants	8.8	6.4	9.4	8.3	8.8	10.1	8.6	8.7
Chalkbrood	33.2	43.5	34.3	32.2	31.8	27.9	29.0	28.0
Deformed wings	29.4	35.7	23.3	20.3	34.0	29.9	28.4	33.9
European foulbrood	2.1	6.4	1.7	1.4	1.2	1.1	0.6	0.6
Failing queen	26.7	29.2	38.3	24.4	32.0	39.9	37.9	37.0
Mice	11.7	21.6	11.8	7.7	12.2	9.5	8.2	12.1
Nosemosis	14.4	19.7	10.7	6.8	9.6	8.5	7.4	8.2
Paralysis	1.4	1.7	1.5	0.8	1.1	2.6	3.5	2.9
Rats	1.6	1.3	1.4	0.6	0.9	1.6	1.3	1.0
Sacbrood	1.6	1.9	1.9	1.4	2.4	3.5	3.2	3.1
Vandalism or theft	4.6	6.8	3.2	2.1	2.5	2.0	1.6	2.1
Varroosis	50.6	49.5	37.1	35.6	43.5	32.9	31.0	36.7
Wasps	43.1	46.6	22.6	41.3	26.7	43.0	33.3	28.8
Woodpeckers	19.4	19.8	10.3	6.7	5.8	4.5	5.5	5.7
Other	10.1	7.2	10.3	8.6	7.2	7.5	8.4	6.6

Diagram 3
Proportion of respondents undertaking diagnosis of various bee pests and diseases



varroa and failing queens
most common problems 2018/19

The National Bee Unit would like to thank all beekeepers who have participated in the annual husbandry surveys since 2009 and we hope that we can continue to count on your support in future years.