The National Bee Unit Husbandry survey

The Food and Environment Research Agency

Honey bees are subject to infection and/or infestation by various bacteria, viruses, and parasites. Each of these agents, to a greater or lesser extent, impact on the strength and productivity of affected hives. However, the overall health of a colony and the likelihood that it will survive and prosper, are not simply matters of whether or not any particular pest or pathogen is present. Common sense tells us that the ability of a colony to thrive is affected by many other things such as nutritional status, local climate and, of course, the way in which bees are managed. This "picture of health" is further complicated by the fact that such influencing factors are not independent, but interact with each other to create circumstances more or less conducive to honey bee survival. To properly understand the relationship between apiculture practices and ultimate colony condition, we need to compile firm facts about not just incidence of disease, but also a variety of aspects of colony management. Such consistent data about beekeeping practices in the UK has been lacking. For these reasons, in 2009 the NBU launched its first annual national bee husbandry survey. Ultimately, data obtained will compliment that gathered through other surveys compiling beekeeping statistics, by providing a comprehensive assessment of current beekeeping practices in England and Wales.

The NBU husbandry survey poses 13 key questions about beekeeping, and is open to all beekeepers in England and Wales. To reach as many people as possible, and to make the survey as random as possible, it is distributed in different ways. Sometimes paper copies are offered to beekeepers by Inspectors during apiary visits, others are made available at training events, but most tend to be completed online by beekeepers accessing the survey through BeeBase (the award-winning IT system/database supporting our bee health programme). In all cases responses have been voluntary. Almost 1,700 questionnaires have been completed. Preliminary analysis of responses are summarised below:

- We have obtained useful information about beekeeping practices from 57 counties. The greatest proportion of beekeepers who have responded so far, keep their bees in North Yorkshire (~6%), although comparable levels of response have also been obtained from Dyfed, Norfolk, and Lincolnshire.
- The average length of time for which respondents have kept bees is 14 years. However, the most typical response is just one year, indicating that beekeeping is currently attracting new practitioners. Expressed as a percentage, the proportion of respondents who are new to beekeeping (i.e. who have been keeping bees for two or less years) is 21%. Nevertheless, the community also includes a fair proportion (14%) of extremely experienced practitioners, who have kept bees for over 30 years. Many respondents (43%), maintain less than 30 colonies, with most (56%) having between one and four hives, confirming that in England and Wales, beekeeping is generally undertaken on a comparatively small scale.
- A minority of beekeepers (15%) move their bees during the year for the purposes of, for example, apple pollination.
- Regarding the use of imported queen bees, almost all respondents (98%) utilise queens of UK origin (obtained either though commercial breeders, own-rearing, or by natural replacement by bees). However, some beekeepers (8.6%) also import queens from elsewhere. Most imports are EU-origin; non-EU sources include Hawaii, New Zealand, and/or Australia (0.4%).
- Three quarters of respondents monitor for *Varroa.*
- Ninety five percent of respondents treat for *Varroa*. To capture information about management practices, the survey records incidence of use of 17 control methods, including a range of varroacides (pesticides, acid solutions) as well as biotechnical means (drone comb removal). Those who treat for *Varroa* generally choose to apply Apiguard (61%), usually administered between August and October. Common supplementary methods include applications of Oxalic acid (self-or pre-mixed) (41%), and open mesh floor (41%), dusting with icing sugar/ground rice (22%) and drone comb removal (21%).

defra
Department for Environment Food and Rural Affairs

Sand Hutton, York
YO41 1LZ, UK
Tel +44 (0)1904 462 000
Fax +44 (0)1904 462 111
E-mail info@fera.gsi.gov.uk
www.defra.gov.uk/fera

- Almost three quarters of respondents (74%) who have carried out the appropriate test detect pyrethroid resistance in their colonies. Proportionally speaking, levels of resistance vary greatly between counties (0%-100%), but such extremes reflect the fact that comparatively few surveys were completed in some areas, potentially biasing the data. Further analysis is necessary before we can draw conclusions about any regional trends.
- Regarding general husbandry, 83% of respondents replace at least one comb with new foundation each spring, and 87% feed their colonies with at least one form of supplement. The most widely used is sugar, followed by Ambrosia (86% and 53%, respectively). Sugar is given throughout the year, but generally towards the end of the beekeeping season (peak applications in September and October: 67% and 44% respondents respectively). Further feeding may also be carried out in late spring (e.g. March, 24% respondents), to support newly emerging bees. It would not be usual practice to provide supplemental feeding during a good summer. However, these responses reflect the fact that colonies should be checked regularly in times of dearth, and provided with nutritional support as needed.
- At the time of answering the survey, almost half of respondents (48%) believed their bees to be disease free. Just less than 2% perceive that their bees have Acarine, 18% perceive infection with *Nosema*, 43% suspect infection with Chalkbrood, and 3.5% consider that Sacbrood is present in their hive(s). Note, however, that the above diseases are not notifiable, which means that beekeepers would not necessarily invite an inspector to visit, or seek formal diagnosis. Interestingly, of those who have had their bees screened for disease agents during the year, almost 5% have actually been diagnosed as positive for Acarine, and nearly 38% are positive for *Nosema*. At face value, such data suggest some discrepancies between disease perception (and possibly the need to intervene with treatment), and actual incidence of infection.
- In terms of incidence of notifiable diseases requiring statutory intervention, 9.5% of respondents had been diagnosed with European foulbrood, and 1.6% were confirmed positive for American foulbrood.
- Twenty one percent of repondents treat for *Nosema* with Fumidl-B.
- Just under half of respondents (49%) reported that they did not loose any of their colonies over the winter of 2008/09. Four percent stated that they lost all their colonies.
- When considering the proportion of changes (losses or gains) in colony numbers between September 2008-April 2009, there was an overall fall of 13.8%. It is important to note that this colony loss figure has been obtained not by averaging losses at the apiary level as presented by individual respondents, but by calculating the overall percentage changes in colony numbers across all colonies and counties. This gives a fairer picture of colony losses, as otherwise a beekeeper who had one colony and lost it would be recorded as 100% loss; equally, if he/she obtained just one more hive, this would be a 100% gain; on the other hand, if a beekeeper with 50 colonies loses, this would be recorded as a 2% loss. Given that so many survey-respondents have only one or two colonies, if their individual changes (losses or gains) were averaged, this could potentially alter (artificially inflate or deflate) losses by several percents. Information from the husbandry survey will be fed into COLOSS, the international network for prevention of Colony Losses.

The survey is closed for 2009, but further data analysis is exploring the complex interactions between husbandry practices and colony condition in the UK. If you didn't get chance to fill in the questionnaire this season, we encourage you to take part next year. The survey recommences in May 2010. We intend to gather data annually and will continue to monitor trends in UK beekeeping. We gratefully acknowledge the help of all of those who have taken the time to complete the survey. You have made a really important contribution to apiculture research.

Sand Hutton, York
YO41 1LZ, UK
Defra

Tel +44 (0)1904 462 000
Fax +44 (0)1904 462 111

E-mail info@fera.gsi.gov.uk
www.defra.gov.uk/fera

Fera is an Executive Agency of