Varroa has Lost its Sting

By Clive and Shân Hudson, Lleyn and Eifionydd BKA

The debate about whether to treat for varroa infestations or not has rumbled on for several years now. So, Clive and Shân Hudson have been collecting data in Wales to assess the effect of treating on local bee winter losses and they present their findings here.

We have reported Winter Losses Surveys in *The Welsh Beekeeper* for the last four years.[1] From the beginning of collecting this data we discovered that a large proportion of beekeepers in our survey area of northwest Wales were not using any chemical treatment for varroa, and were experiencing fewer losses than beekeepers who were treating. Chiming with our own experience of not treating we posed the question in our 2012 article, 'Is it time to ask if varroa has lost its sting?' We were gently reprimanded by a small number of beekeepers who believed that chemical treatment was the right way to fight varroa. However, it was our surprise at finding so many beekeepers successfully keeping bees without treating that led us to pose this question, perhaps prematurely, on a relatively small amount of evidence. In the following years we concentrated on carrying out good surveys and documenting the results and comments of participants. The survey results continued to show no increase in winter survival rates for colonies treated with varroacides. The question, 'to treat or not to treat', is however, still a very live issue.[2]

This article is a summary of our experience with our bees and their varroa, the background to our winter losses surveys, and a suggestion to fellow beekeepers wondering about whether to treat or not treat their bees.

How the surveys began

The initiation of this data collecting started at a meeting of Lleyn and Eifionydd BKA in April 2011. David Heaf asked members present at that meeting what their winter loss figures were for the 2010–2011 winter. We heard about this from David, and asked the same question at the next meeting of Meirionnydd BKA. Additionally, we asked members what kind of hives their colonies were kept in, and whether they were treating, and if so what treatment they were using.

Back in 2011 honey bees and beekeeping appeared to be heading for a world-wide disaster. Massive colony losses were being reported from the USA and to some extent in Europe. CCD (Colony Collapse Disorder) was the much used and doom-laden abbreviation for the many and varied problems that were affecting or perceived to be affecting honey bees. The 'bottom line' was that no one could easily explain what was harming, or possibly harming, honey bees. Our surveys were a local attempt to collate information from fellow beekeepers to try and further our own knowledge about our bees and beekeeping, especially relating to 'winter losses'. We continued to do this survey for the following four years, the focus on varroa and the 'treat or not to treat' question arose out of the survey data, and not from any predetermined position. David Heaf continued his interest in our surveys and

Winter Losses Surveys Data 2010–2015

Winter	Survey Participants			Colonies				
	Total	Treating	Not Treating	Total	Treating	%Loss	Not Treated	%Loss
2010–2011	14	10*	5*	71	44	27	27	11
2011–2012	40	11*	31*	355	180	8	175	7
2012–2013	53	8*	46*	251	75	41	176	32
2013–2014	65	12*	55*	396	81	9	315	6
2014–2015	77	17*	65*	500	97	8	403	8
				Total	**Total**	**Average**	**Total**	**Average**
				1573	477	19	1096	13

**some participants treated some colonies and not others*

with our collaboration published a short article for *BBKA News* in August 2015.[3] On examining the data David had cautiously concluded, '*…these results for over 1,500 colony winters show that no reduction in winter losses was gained by chemically treating*'. A further article was published in the December edition of *BBKA News* by Dorian Pritchard, Hexham BKA.[4] Dorian Pritchard subjects our data to serious statistical analysis using the χ^2 (chi-squared) test, and states: '*I have analysed the data statistically and conclude that these differences are actually significant. In other words, taken as they are, they suggest that chemical treatment against Varroa is indeed associated with significantly higher winter losses than occur when no treatment is applied*'.

Good surveys, data and statistics are great, particularly for seeing the wider view. We are mindful, however, that behind every bit of data collected is a unique experience of beekeeping. This is a summary of our experience with bees and their varroa.

Our rationale for not treating

By 2006 we had been treating our colonies with Bayvarol for eight years. Around that time the National Bee Unit (NBU) was cautioning against the use of flumethrin-based varroacides (e.g. Bayvarol) because of the increasing resistance to this chemical in varroa mites. This was clear evidence that the mite was evolving to cope with this chemical. In 2007 and 2008 we treated our colonies with thymol, administered either in cooking oil on tissue or with two teaspoons of crystals on a strip of coarse fabric placed across the top of brood frames. In January 2008 we also applied oxalic acid as a 5ml dribble per seam of bees. In March 2009 we treated only some of our colonies with thymol crystals; since that date we have not treated our bees with any varroacides.

Our reasons for stopping treatment are as follows:

- The increasing resistance of mites to flumethrin was inhibiting the use of Bayvarol. We did not like opening a hive in mid-winter to apply oxalic acid, and because of concerns of damage to larvae and possibly to mature bees, including queens, attached to this chemical. Neither did we like the way bees reacted to an application of thymol or our detection of thymol taint in honey.
- Realising that wild/ feral bees had not died out. This applied to visual observation of colonies in buildings and trees, and examination of colonies taken from fallen trees or out of buildings in the course of commercial building work. These revealed healthy brood with no obvious damage from varroa, although some varroa could usually be found if you looked hard enough.
- Noticing that the presence of varroa and varroa-initiated damage was decreasing in our hives season-on-season. This observation was particularly on our minds during the 2009 season when we treated some hives and not others, and could see no difference in the colonies as the season unfolded.

It is now seven years, eight years for some hives, since we last applied any treatment for varroa. To the best of our knowledge, observation, experience and judgement our bees are absolutely fine!

As the first, then the second, then the third year of our non-treating experiment came and went we listened to occasional words of caution concerning the build-up of mites or the virus-load in non-treated bees. We had been keeping bees for thirteen years before finding varroa in our hives, and we think that experience has been useful in assessing the overall condition and health of colonies beyond the evidence from a varroa count. We know what colonies with huge varroa mite infestations look like. Those days are long gone. All our colonies have some varroa, but generally you have to look quite hard to find them.

We are aware that many beekeepers across the UK are struggling to keep their bees alive because of varroa or other problems facing honey bees. Our motivation for writing this article is to share our experience of keeping bees without the need to treat colonies for varroa, and to highlight the paradox between our experience and the advice given to beekeepers by the NBU. For example, '*All beekeepers must manage varroa in their stocks. If they fail their colonies will collapse and die*', or, '*Varroa mite … it is the main contributor to the poor health of honey bee colonies and if left uncontrolled, can cause the collapse of colonies within a few weeks*'. This last statement by the NBU is immediately followed by the heading '*Pesticide treatments for varroa*'.[5] What are we to make of this paradox? When we stand by a hive and look at our bees on a lovely sunny day we feel that we are on a different planet from these statements!

Reported causes for our winter losses

With regard to reasons for colony losses it may be useful to summarise what we found over the five years of our Winter Losses Surveys. Weather was the dominant factor. From the table you can see that the losses of the winter of 2012–2013 stand out. This was a harsh winter with a late and particularly cold spell during the beginning of March that killed many colonies that had started brood rearing. After weather the main causes of colony losses given by survey participants was queen failure in one form or another, and starvation. Given reasonable weather we would suggest our surveys indicate that in the order of 6%–9% is a background loss of over-wintered honey bee colonies in our area. They cannot all survive! Interestingly no participants in our surveys ever mentioned varroa as a possible cause of a colony loss.

Our experience is far from unique. For our last Winter Losses article in summer 2015, 65 beekeepers informed us that they did not apply any chemical treatments to a total of 403 colonies. We know many of these beekeepers personally and are confident that they are sympathetic to the view we present in this article. Also over the last seven years we have supplied 56 starter colonies to local beekeepers and, to the best of our knowledge, 51 of these are still continuing; and only one is treated. From outside our area, in Oxfordshire, Gareth John has recently written an article about his experience of beekeeping treatment-free.[6] There is also Ron Hoskins from the Swindon Honey Bee Conservation Group who has not treated his bees for twenty years.[7] Bees from Ron Hoskins' colonies have been the subject of recent research, results of which are proving very interesting. The research has found that, as well as carrying potentially harmful virus, Ron's bees have additional relatively beneficial virus(es) that block the harmful effect of deformed wing virus (DWV).[8] This is complicated science, but if the suggestions are correct it could help to resolve the paradox as to why non-treated bees are surviving. Following this research a national project is underway with funding from BDI (Bee Diseases Insurance) and from over 60 participating beekeeping associations. This potentially important research has the title REViVe, a rather complicated acronym standing for: Rolling out the Evolution of resistance to Varroa and DWV.[9]

We enjoy sharing our beekeeping and have always been happy to have interested parties view our hives, from single enthusiastic beginners to whole association meetings. We have always got on well with our Seasonal Bee Inspectors (we think!) and on 11 July 2013 we had a visit from a trio; our local bee inspector with a colleague in training, and the Regional Bee Inspector for Wales. Twenty-three colonies were examined at our sites and the expressed comment on our colonies was that they were as good as any treated colonies that they had inspected and in good health.

If you find our experience interesting and have a few hives, our suggestion is to consider starting your own experiment by not

treating some colonies. It would also be interesting for the NBU to monitor an apiary of non-treated bees; using locally adapted bees of course.[10]

We cannot know the future, but we hope our experience is one of hope in documenting that locally bred and locally adapted bees can evolve to live with varroa without the need of chemical treatment.

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A healthy bee is a happy bee! Photo by Chris Knott.