BIBBA Conference Sept 6th-9th 2018 Royal Agricultural University, Cirencester
"Varroa Has Lost its Sting - My Experience of Treatment Free Beekeeping"

Thank you very much for coming to this presentation.

My name is Clive Hudson, I live in a rural area in Snowdonia, North Wales and together with my wife Shân we are currently completing our 33rd season of beekeeping. We overwinter about 20 hives at three apiaries.

I have just given you a number of facts about myself and our beekeeping; I give you one more -

- we have not treated our bees against Varroa with any treatments whatsoever for 10 years – we keep bees Treatment Free. That one fact provides the confidence for me to stand here and share our experience with you. By the way, I've put pictures of our bees behind some of the written information.

It is not easy stating exactly what is going on with honey bees and Varroa - I am a hobby beekeeper, an enthusiast maybe, but not a scientist.
There is, however, a lot going on and I will try to show you information that supports what we are doing.

Over the years different ideas have been proposed as to why some bees are able to cope with Varroa; these include:

- Hygienic Behaviour
- VSH (Varroa Sensitive Hygiene)

- Superinfection Exclusion (Having higher levels of the 'B' variant of DWV – (Deformed Wing Virus) which combat the more harmful effect of DWV 'A' variant (this is the REViVe Project research - more about this later)
- 'Uncapping/ Recapping' – a recent discovery where bees may be disrupting the breeding Varroa
- Evolution

It maybe they are all changes in the behaviour of bees that have had the time and the chemical free space to evolve to coexist with Varroa.

In the last year or so, however, I believe some clarity has started. For me this is crystallised by a definitive statement from Tom Seeley – after a lifetime of studying Treatment Free wild bees in the Arnot Forest this eminent professor has stated:
"Colonies of European honey bees can survive without chemical treatments for Varroa".

It is now becoming clear that left to themselves – ie with no chemical treatment – locally adapted honey bees are evolving to coexist and to thrive with Varroa. Science is gradually catching up with the bees! Colonies that are being treated to kill Varroa are not being given this opportunity. No treatment, to my knowledge, eradicates all Varroa; therefore it follows that Varroa in treated colonies are continuously breeding from mites that survived treatment. It only took a few years treating with Bayvarol or Apistan for the mites to evolve resistance to the active chemical flumethrin. Environments do affect organisms and also the off-spring of those organisms: this applies to Varroa mites and to honey bees. And, of course, to us – I am now referring to epigenetic changes, and as the detail of this science is beyond my pay-scale I had better not continue to far along this very interesting but complex thread!

What is the history of our own Treatment Free beekeeping? I summarise this as follows:

1985 – 1998 - Traditional beekeeping with no Varroa
1998 (August) – first Varroa found in out hives; treated with Bayvoral/Apistan
2006 (Autumn) – last treatment with Bayvoral/Apistan as resistance developed
2007 (Spring) – thymol in cooking oil, applied on tissue
2008 (January) – oxalic acid, 5ml per seam of bees. (April) – thymol crystals, 2tspns on sacking strip

2009 (March) – on some hives only, our last treatment with thymol or any other treatment, on some hives only
2009 – 2018 - Traditional beekeeping with our bees coexisting with Varroa!

Why did we stop treating? For three reasons:

1. Concern over the chemicals we had been using:
   Apistan/ Bayvoral were no longer recommended as Varroa mites developed resistance to the active chemical. We did not like the winter application of oxalic acid and anecdotal evidence of its damage to bees. Nor did we like the way bees reacted to thymol, and our detection of thymol taint in honey.
2. The observation that the presence of Varroa mites and Varroa damaged bees was decreasing in our hives, season on season. This was particularly on our minds during the 2009 season when we treated some hives with thymol crystals and not others, and could observe no obvious difference in the colonies as the season unfolded.
3. Realising local wild/feral colonies had not died out. This applied to visual examination of colonies taken from fallen trees, and out of buildings in the course of building work. These revealed healthy bees and brood with no obvious damage from Varroa.

Finding strong wild colonies that were obviously receiving no treatment for Varroa was persuasive information.
Two more examples: The first is a large colony we took from a roof in early 2011. At this time, early in our Treatment Free experiment, some knowledgeable experts were telling us the viral load would build up in our bees and they would not last beyond three years.

This photo shows the brood comb when first exposed in the dormer roof.

The next shows the honey comb further into the roof space. It was a large colony – filling two 5gal. containers - and a sad it had to be removed.

The second example, in a friend's woodland was found after a violent summer storm that felled a
huge 80 foot oak tree, and revealed a metre long cavity containing a wonderful honey bee colony.
Unfortunately, the strong winds that split the trunk were followed by torrential rain that killed the bees and the brood that had been scattered around the site.

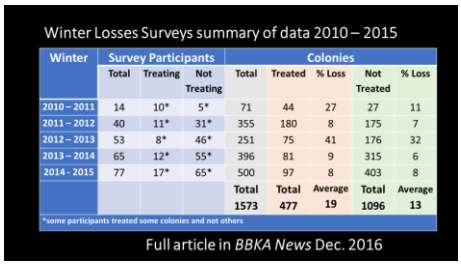
This colony showed evidence of being established for a long time. In particular the debris beneath the colony was a foot in depth and layered, indicating its accumulation over many years. So, colonies in buildings and trees are clearly surviving without treatment.

I would like to stress three points:

Firstly, we do have Varroa mites in our hives. Their numbers are low, as shown this year by extensive measurements on our hives by Dylan Ellen, from Bangor University, as part of his doctorate research programme.

Secondly, there is nothing special about our bees or our beekeeping. Our bees are our Locally Adapted Bees, we are very happy with them and I'm pleased that the Welsh Beekeeping Association advocates the breeding and keeping of Locally Adapted Bees. You may guess, correctly, that I am not in favour of the importation of alien honey bee subspecies.

Thirdly, we are not alone! Members of our BKA are mainly Treatment Free.
Back in 2010 there were warnings of a possible catastrophe with beekeeping complete with a catchy acronym CCD, Colony Collapse Disorder – remember that? Along with many of you, I would guess, Shân & I were concerned.



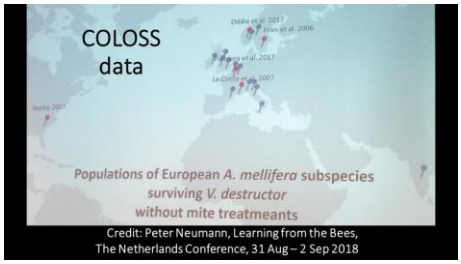
Winter	Survey Participants			Colonies				
	Total	Treating	Not Treating	Total	Treated	% Loss	Not Treated	% Loss
2010 – 2011	14	10*	5*	71	44	27	27	11
2011 – 2012	40	11*	31*	355	180	8	175	7
2012 – 2013	53	8*	46*	251	75	41	176	32
2013 – 2014	65	12*	55*	396	81	9	315	6
2014 - 2015	77	17*	65*	500	97	8	403	8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

*some participants treated some colonies and not others

For 5 years we carried out a Winter Losses Survey of local beekeepers – our attempt to try and find out 'what was going on'. To our great surprise we found that many other beekeepers were already experimenting with non-treatment. In our last survey year, 2014 – 2015, out of 77 beekeepers participating 65 were not treating, and over the five survey years we collected data on 1573 colonies where the winter losses averaged 19% for treated colonies and 13% for untreated colonies. (The survey results were published each year in the Welsh Beekeeper Magazine and are summarised in an article in BBKA News December 2016, and the stats. analysed by Dr Dorian Prichard and also published in BBKA News)

To see Treatment Free beekeeping at a National level, take a look this map from the website of the Natural Beekeeping movement who advocate keeping bees treatment free. I am not member but it does illustrate the widespread distribution of Treatment Free beekeeping across the UK.

There are also many examples of Treatment Free Traditional beekeepers; for example, check out Ron Hoskins, over 20 years Treatment Free and with an informative website of his Swindon Honeybee Conservation Group. Or, maybe have a word with Dr Dorian Pritchard from Northumberland who has just completed his talk in Room 1.



Also, 'hot of the press' is a map of *Apis mellifera* survivor populations without mite treatments across Europe, plus Tom Seeley's Arnot Forest in the United States. I wasn't at this large Conference last weekend, but a friend sent this screen shot to me. COLOSS (Colony Losses Surveys) is starting a new survey of Treatment Free bee colonies.

Survey on Varroa destructor survivors: https://goo.gl/forms/xETmwgeQDjhRqg312

We have always been happy to share our experience with other beekeepers and that includes our Seasonal Bee Inspectors. On 11th July 2013 we had a visit from a trio; our local Inspector, the Regional Bee Inspector for Wales, and a colleague in training. They inspected 23 colonies and were able to report that our bees were healthy.

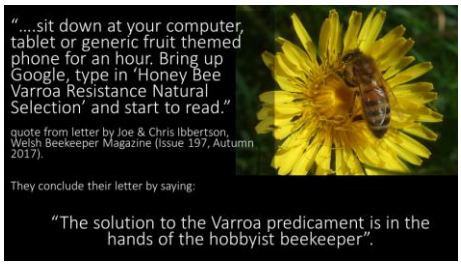
Over the years we have offered to help with a number of research projects and this photograph shows a visit from Prof Stephen Martin from Salford University who is heading the previously mentioned REViVe Project on bee viruses, and Doctorate student Jessica Kevill who has done most of the laboratory work and spoke yesterday at this Conference.

So, what is our experience of Treatment Free beekeeping? The answer is - absolutely fine! For the last ten years we have been keeping bees exactly as we did before Varroa arrived. And, as it

happens, this year of 2018 has been amazing! The bees have loved the hot weather and our honey crop has been outstanding.

I am aware that I have referred to a number of research projects and articles; if you would like more information on these please refer to our website at beemonitor.org This presentation will also shortly be uploaded to this site.

Dare I venture to give advice? I'm not sure, because my main reason for coming here today is to simply share our experience with you. But… but, if pressed, I would suggest the following: if you are in your first year or two of beekeeping, and being mentored by a beekeeper who advocates treating, don't change anything quickly. If you are an experienced beekeeper and interested in keeping bees Treatment Free, why not start your own experiment and cease treatment in some hives?



If you are interested but not sure try this advice:

"…sit down at your computer or tablet or generic fruit themed phone for an hour. Bring up Google, type in 'Honey Bee Varroa Resistance Natural Selection' and start to read."

This quote is from a very informative and inspiring letter by Joe & Chris Ibbertson (Welsh Beekeeper Magazine, Issue 197, and available online). They conclude their letter by saying the following:

"The solution to the Varroa predicament is in the hands of the hobbyist beekeeper."

Now- I'm pleased to tell you I have a surprise, because Joe & Chris have agreed to join me to discuss any questions that may arise.

As well as thanking Joe & Chris, I want to say they have some differences from me, and I think they are very special for a number of reasons;
They are young!
They keep bees in an area surrounded by arable farmland
They have treated bees near to them
They are from a BKA that recommends treating
They are from the heart of the UK in Northamptonshire

And, they are also, very enthusiastic and successful Treatment Free beekeepers

Please give a welcome Joe & Chris…