



Honeybee Husbandry Survey Winter 10/11

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 DARD and other Government departments, public bodies and commercial companies.

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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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Contents	Page
Summary	1
Method	1
Response	1
Q1. How many production colonies and nuclei did you have on 1st October 2010?.....	2
Q2. How many production colonies and nuclei did you have on April 1 2011?	2
Q3. How many production colonies did you lose between October 1st 2010 and April 2011?.....	2
Q4. How many of your production colonies were lost between October 1st 2010 and April 1st 2011 that did not have bees in the hive or in the apiary?.....	3
Q5. If applicable, how many of your production colonies were lost between October 1st 2010 and April 1st 2011 due to: disease, starvation, weather, queen problems, other	3
Q6 Between Oct 1st 2010 and April 1st 2011: How many colonies did you buy or splits did you make to be used as production colonies? How many colonies did you sell or give away? What was the reduction in total production colony numbers due to uniting/merging?	3
Q7. How many years have you kept bees?	3
Q8. Do you move your honeybee colonies?	3
Q9. In which county do you keep your bees for the majority of the season?	4
Q10. Do any of your colonies contain queens imported into Northern Ireland?.....	4
Q11. Do you treat for <i>Nosema</i> ?	5
Q12. In your opinion, did any of your colonies or nucs suffer with <i>Nosema</i> or acarine (tracheal mite) between May 2010 and April 2011?.....	5
Q13. Were any of your honeybee colonies diagnosed with either <i>Nosema</i> or acarine (tracheal mite) between May 2010 and April 2011 (i.e. microscopy/molecular diagnosis)?	6
Q14. Do you monitor the levels of <i>Varroa</i> in your colonies?.....	6
Q15. Have you ever submitted bees to a laboratory for <i>Varroa</i> pyrethroid resistance testing or conducted such a test yourself?	7
Q16. Do you treat for <i>Varroa</i> ?.....	7
Seasonality of <i>Varroa</i> treatments.....	8
Q17. Do you practice full or partial comb replacement with new foundation during the spring?.....	9
Q18. Did you feed your colonies between May 2010 and April 2011?.....	9
Q19. Can you recognise when bees have the following pests and diseases?.....	10
Any other comments or notes?.....	11

Summary

This is the third survey of beekeeping husbandry issues in Northern Ireland. A questionnaire survey was sent out hardcopy to beekeeping associations and an online copy made available on the AFBI website. 130 beekeepers responded.

Typically, beekeepers maintained 1-2 colonies. Colony loss for the 2011 survey was 16% compared to 13% in 2010 and 23% in 2009. 70% of beekeepers reported no loss of colonies, which compares with 44% in 2010. As in previous surveys the main problem was related to the queen, then starvation, weather and disease. A total of 17 colonies from nine beekeepers were reported lost without bees in the hive, although there is no evidence that this is colony collapse disorder as seen in the US.

10% of beekeepers imported queens but this was mainly from RoI or GB. Only one beekeeper imported queens from outside of the British Isles.

34% of beekeepers treated for *Nosema*, mostly using Fumidil-B in September / October. 96% of beekeepers treat for *Varroa*. Most used open mesh floors and the pyrethroid treatments Apistan and Bayvarol in September / October. 29% of respondents used thymol-based treatments against *Varroa*. Ten beekeepers (8% of respondents) tested for *Varroa* pyrethroid resistance, with four reporting evidence of resistance.

Method

The honeybee husbandry survey was sent out by paper copy including stamp-addressed envelopes and was also available electronically and online on the AFBI website (www.afbini.gov.uk). Approximately 400 paper copies were sent to the two Northern Ireland beekeeping organisations, namely the Ulster Beekeepers' Association and the Institute of Northern Ireland Beekeepers. Paper copies were sent out in March, with a closing date of June.

Response

There were 130 responses from beekeepers. This compares with 134 in 2010 and 94 in 2009.

Questions and answers

Q1. How many production colonies and nuclei did you have on 1st October 2010?

Q2. How many production colonies and nuclei did you have on April 1 2011?

Q3. How many production colonies did you lose between October 1st 2010 and April 2011?

The total number of production colonies in October 2010 was 576, and in April 2011, 482, representing an overwintering loss of 16%. 2010 losses were 13%, 2009 = 23%. Table 1 shows the breakdown per county.

Table 1. Colony losses during the winter of 2010/2011 per region			
Region	Live October 10	Live April 11	% loss
Antrim	127	121	5
Armagh	74	52	30
Down	250	202	19
Fermanagh	40	36	10
Londonderry	45	40	11
Other*	9	9	0
Tyrone	31	22	29
Total	576	482	16

*Other is Cavan and Leitrim

The number of nuclei in October was 120, and in April, 79, representing a loss of nuclei of 34%.

Seventy percent of beekeepers reported no losses of production colonies. In 2010, it was 44%.

Most of the respondent beekeepers kept 1-2 hives (Table 2).

Table 2. The numbers of colonies, divided into categories, maintained by individual beekeepers						
No. of beekeepers	No. of colonies maintained					
	0	1 - 2	3 - 5	6 - 10	11 - 20	20+
October	2	66	30	18	13	1
April	15	77	29	18	10	1

Q4. How many of your production colonies were lost between October 1st 2010 and April 1st 2011 that did not have bees in the hive or in the apiary?

A total of 17 colonies from nine beekeepers were reported lost without bees in the hive.

Q5. If applicable, how many of your production colonies were lost between October 1st 2010 and April 1st 2011 due to:

Disease	9 beekeepers, 13 hives
Starvation	12 beekeepers, 18 hives
Weather	10 beekeepers, 13 hives
Queen problems	24 beekeepers, 36 hives
Other	6 beekeepers, 11 hives

Q6. Between Oct 1st 2010 and April 1st 2011:

How many colonies did you buy or splits did you make to be used as production colonies?

12 beekeepers responded, specifying a total of 19 colonies.

How many colonies did you sell or give away?

14 beekeepers responded, specifying a total of 32 colonies.

What was the reduction in total production colony numbers due to uniting/merging?

4 beekeepers responded, with a total reduction of 6 colonies.

Q7. How many years have you kept bees?

Average of 11 years, mode = 1 to 2 years (37% of respondents), range 0-57.

Q8. Do you move your honeybee colonies?

Yes = 20 (15%), No = 110 (85%)

15% of beekeepers moved their colonies; with most to heather followed by apple and oilseed rape (Table 3).

Table 3. The number and percentage of beekeepers moving colonies to different crops.

Heather*	Apple*	Oilseed rape*	Other
12 (9%)	9 (7%)	5 (4%)	13 (10%)

*In some cases, the colonies were not moved but remained on the crop

Q9. In which county do you keep your bees for the majority of the season?

Most responses were from beekeepers who kept their bees in counties Down and Antrim (Table 4).

Table 4. The responses received from beekeepers in different regions

County	Responses
Antrim	28
Armagh	18
Down	44
Fermanagh	14
Londonderry	11
Other*	3
Tyrone	12

*Other is Cavan and Leitrim

Q10. Do any of your colonies contain queens imported into Northern Ireland?

Yes = 13 (10%), No = 117 (90%)

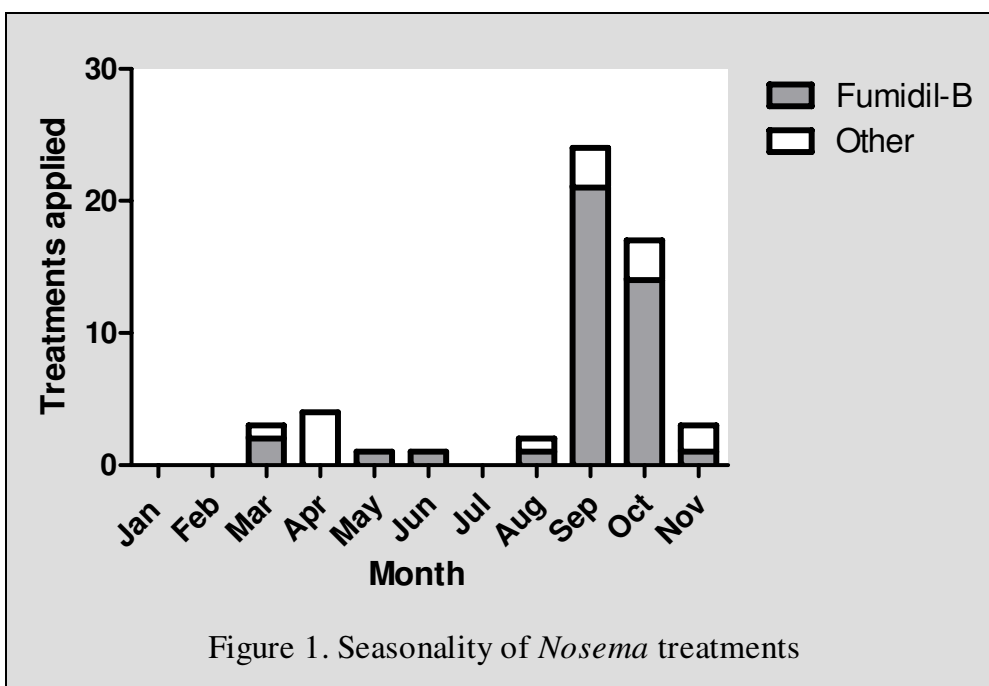
Table 5. Source and numbers of bees imported into Northern Ireland

Source of bees	Count of beekeepers	Total colonies	EU countries
Rol	7	15	
EU	1	2	Slovenia
Non EU	0	0	

Q11. Do you treat for *Nosema*?

Yes = 44 (34%), No = 86 (66%)

Thirty four (out of 44) beekeepers used Fumidil-B against *Nosema*. Other treatments were: Vita Feed Green, Vita Feed Gold, tea tree oil, wintergreen oil, thymol syrup. Treatments were applied mostly during September and October (Figure 1).



Q12. In your opinion did any of your colonies or nucs suffer with *Nosema* or acarine (tracheal mite) between May 2010 and April 2011?

<i>Nosema</i>	Yes = 12 (9%), No = 118 (91%)
Acarine	Yes = 6 (5%), No = 124 (95%)

Q13. Were any of your honeybee colonies diagnosed with either *Nosema* or acarine (tracheal mite) between May 2010 and April 2011 (i.e. microscopy/molecular diagnosis)?

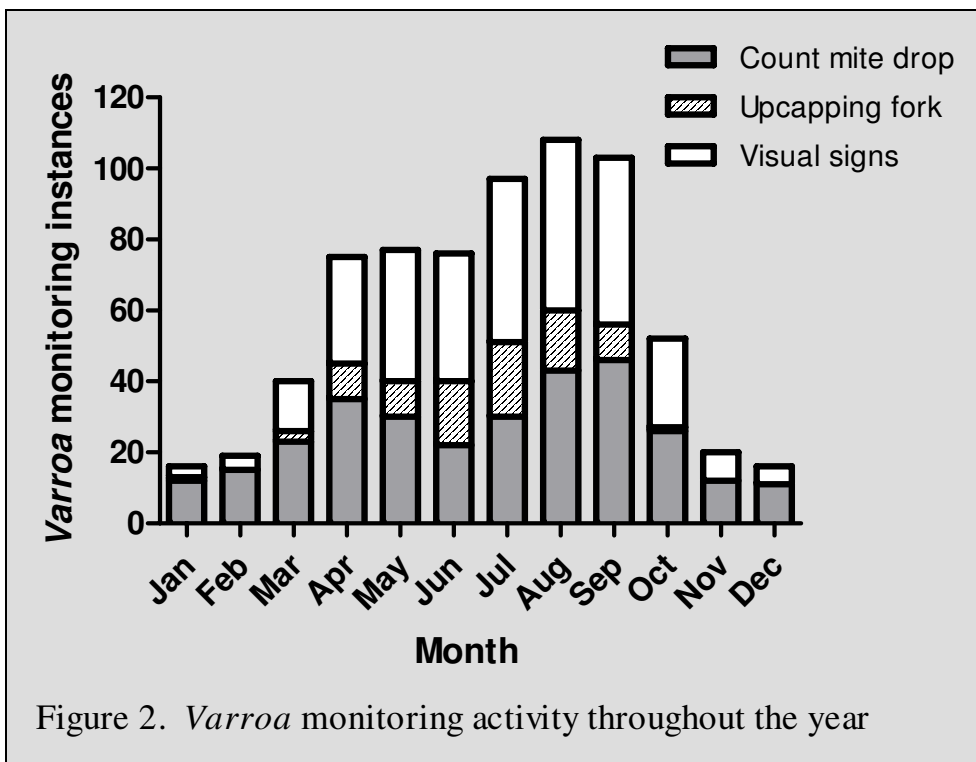
Nosema affected 5% and acarine 2% of beekeepers (Table 6). However, most beekeepers did not have samples tested for these diseases. Of those tested, 28% were positive for *Nosema* and 13% for acarine.

Table 6. Prevalence of <i>Nosema</i> and acarine disease amongst Northern Irish beekeepers			
Disease	Positive	Negative	Not tested
<i>Nosema</i>	7 (5%)	18 (14%)	105 (81%)
Acarine	3 (2%)	20 (15%)	107 (82%)

Q14. Do you monitor the levels of *Varroa* in your colonies?

Yes = 102 (78%), No = 28 (22%)

Overall, the most common method of assessing *Varroa* was by counting mite drop on a floor insert, followed by visual inspection and uncapping. There was a seasonal pattern to *Varroa* monitoring, with activity peaking in the late summer months (Figure 2).



Q15. Have you ever submitted bees to a laboratory for *Varroa* pyrethroid resistance testing or conducted such a test yourself?

Yes = 10 (8%), No = 120 (92%)



Not resistant = 6

Resistant = 4

Of the ten beekeepers who tested for resistance, four reported *Varroa* mites as resistant to pyrethroids. Testing by AFBI has also identified pyrethroid resistance in some samples.

Q16. Do you treat for *Varroa*?

Yes = 125 (96%), No = 5 (4%)

96% of beekeepers treated for *Varroa*. 118 respondents provided details of treatment. The commonest treatment for *Varroa* was open mesh floors followed by Apistan and Bayvarol (Table 7).

Table 7. Treatments used against *Varroa*, expressed as the number of beekeepers using each treatment, as well as the percentage of total usage throughout the year

Treatments against <i>Varroa</i>	Count of beekeepers (n = 118)	% of beekeepers	Total usage (%)
Api Life Var	8	7	1
Apiguard	24	20	5
Apistan	37	31	8
Apivar	3	3	1
Bayvarol	37	31	6
Bee vital hive clean	1	<1	<1
Drone comb removal	13	11	5
Dusting icing sugar /ground rice	18	15	8
Formic acid	1	<1	<1
Lactic acid	0	0	0
Open mesh floors	42	36	60
Other*	10	8	3
Oxalic acid	9	8	1
Thymol crystals	8	7	2
Thymomite	0	0	0

*Other treatments were 'essential oils', wintergreen oil, varachet forte, Varroa Gard, Vita Feed Gold

Seasonality of *Varroa* treatments

Open mesh floors were a permanent feature of the hive and therefore used in every month. The synthetic acaricide and thymol treatments were mainly used at the end of summer/autumn with peak usage in September (Figure 3).

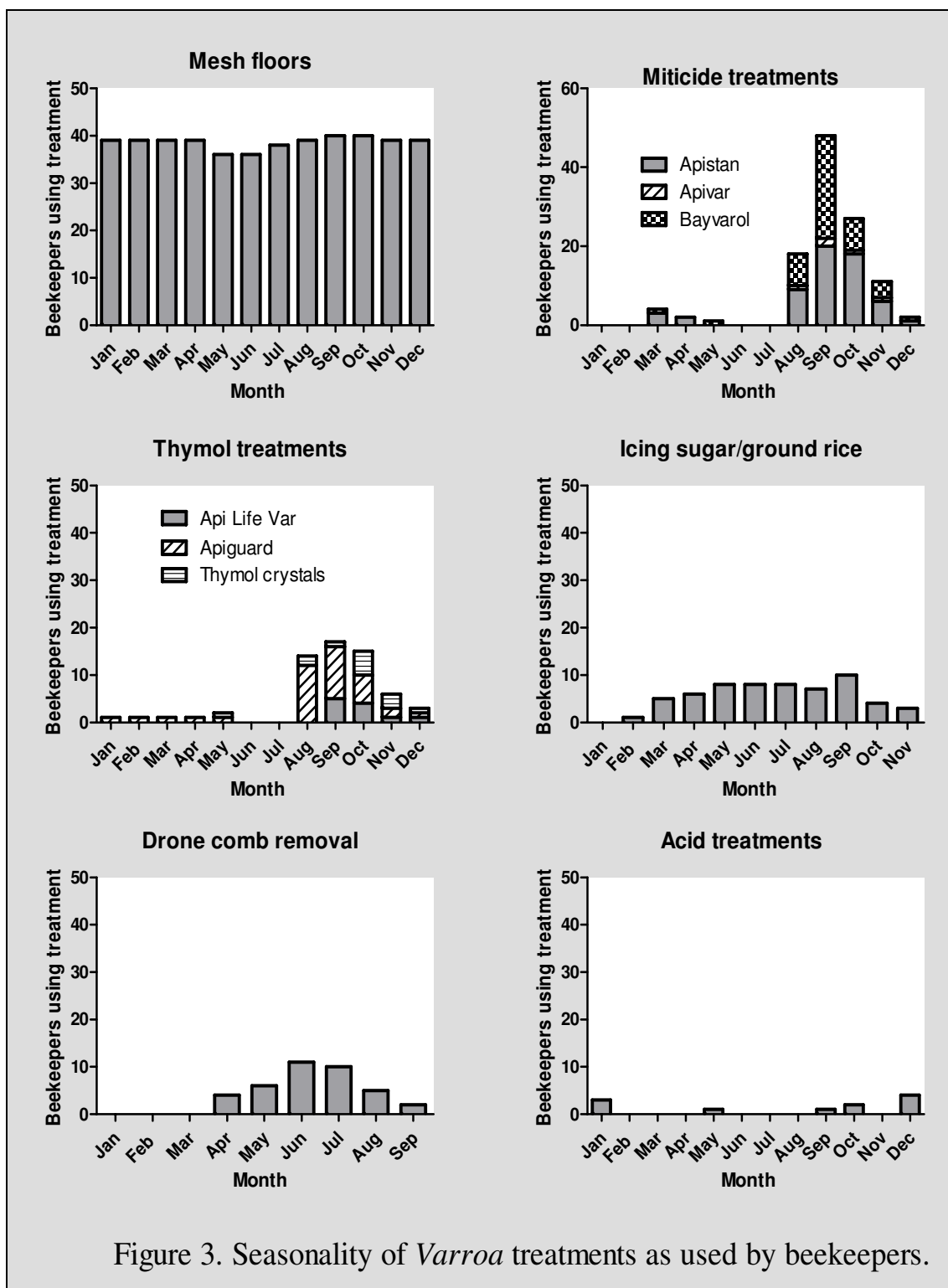


Figure 3. Seasonality of *Varroa* treatments as used by beekeepers.

Q17. Do you practice full or partial comb replacement with new foundation during the spring?

Yes = 92 (71%), No = 38 (29%)

Full replacement = 2, Partial replacement = 90

If you replace some of the frames, how many?

Frames	Beekeepers (<i>n</i> = 90)
1 to 2	20 (22%)
3 to 4	59 (66%)
5 or more	11 (12%)

Q18. Did you feed your colonies between May 2010 and April 2011?

Yes = 120 (92%), No = 10 (8%)

Most beekeepers fed their bees using sugar syrup and candy/fondant (Table 8). Typically bees were fed with sugar syrup in the autumn, switching to candy/fondant during the winter (Figure 4).

Table 8. Feeding methods used by beekeepers in Northern Ireland

Feed for bees	Count of beekeepers (<i>n</i> = 116)	% of beekeepers	Total usage (%)
Ambrosia	18	16	8
Pollen/Patty feed product	9	8	4
Candy/Fondant	71	61	32
Feed supplement	1*	<1	<1
Honey	5	4	4
Sugar Syrup	102	88	51
Other	1**	<1	<1

* Vitafeed Green

** Granulated sugar

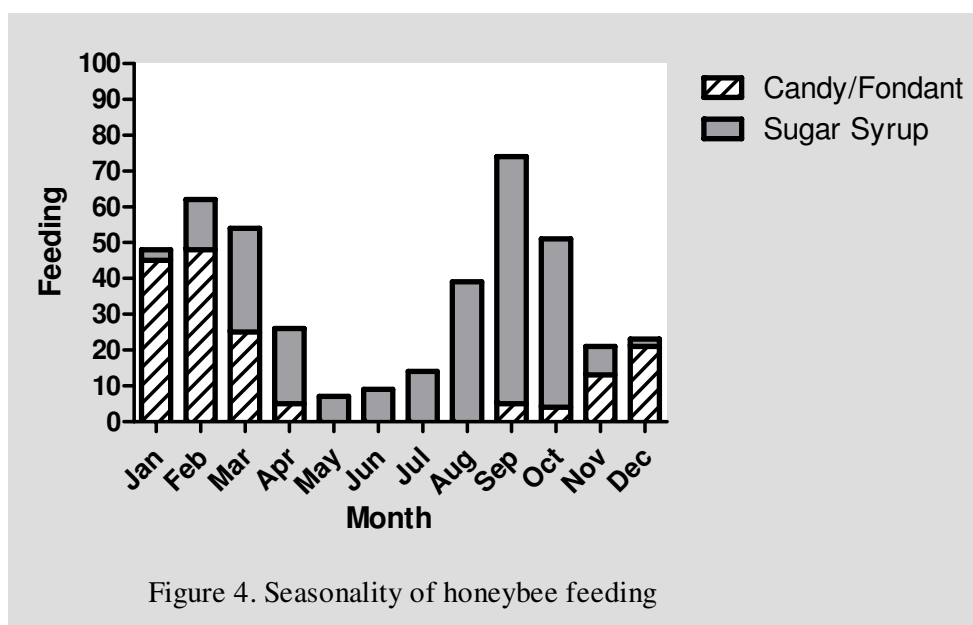


Figure 4. Seasonality of honeybee feeding

Q19. Can you recognise when bees have the following pests and diseases?

Beekeepers can recognise the main pests and diseases of honeybees (Table 9). *Varroa* was the most readily identifiable pest. Viruses (including sac brood) and acarine disease were the least recognised diseases.

Table 9. The ability of beekeepers to recognise or access help on the main bee diseases

Disease	Can you diagnose when bees have the following pests and diseases?					
	Yes			No		
	Count	%		Count	%	
Acarine	64	49		66	51	
<i>Nosema</i>	83	64		47	36	
<i>Varroa</i>	115	88		15	12	
Chalk brood	98	75		32	25	
Sac brood	58	45		72	55	
European foul brood	84	65		46	35	
American foul brood	94	72		36	28	
Other viruses (DWV, APV)	19	15		111	85	

Any other comments or notes?

A Beekeeping course gave me information regarding pests and diseases and I can phone experienced beekeepers if I have any concerns. Hopefully I will never see any of them! I have a reasonable insight if there are unhealthy bees in the hive.
As I am only new to bee keeping my knowledge is limited, but growing daily. If I have concerns about my bees I contact my mentor to ensure I deal with the situation correctly.
Ban on import of bees and we stand a chance of keeping out other diseases.
Have had one of my most successful years to date and signs of having an exceptional year 2011.
I am first year bee keeper and have responded to Q 17 this is based on intention to replace 1/3 of my frames with new foundation each Spring from next year.
I have lost 2 colonies in May 2011 because of the bad weather and none of my queens are laying. I had to feed candy to all of my hives. The good weather in April meant the queens laid hard but the colonies didn't get enough food in May & suffered.
I have not had the opportunity this year to re-establish the bees I lost previously. I hope to return to bee-keeping next year.
I must say I was surprised that all my stocks came through last winter in such good shape!
I now have three very strong stocks and one which was weak in the Spring but is building up well now. All have been very well fed when required, which this year means very often as there are a lot of bees in the hives but little food coming in.
I received my first nucleus of bees (locally sourced) in May 2010. I did not set the hive up with a super as I received my nucleus colony late and wanted to cause as little stress to the hive in its first year.
I have not ticked Acarine and <i>Nosema</i> as it cannot be seen but colonies will not build up. I did send bees in to be checked, they were negative.
Just starting this year as a beekeeper having started with a nucleus colony. We have had lots of swarms and there is no clear reason. July 2009 - 1 nuc July 2010 - 3 colonies (all small but healthy) + 2 swarms escaped July 2011 - 6 colonies
Many hedges have been removed spring 2011 in this area in response to eec grant thus reducing forage.
My 3 hives (as I sold one) grew that dramatically in March that I had to put double brood boxes on them. They filled the double brood boxes very quickly that I made up 4 nucs to decrease the numbers in each hive. I didn't class this as splitting my hive.
My bee losses were due to poor management due to my type of work prior the winter season I was unable to monitor and close them down for the winter.
Practise good hygiene with all hives and spend money on replacing suspect frames as and when necessary.
Q 4 I assumed this refers to a CCD type situation where the colony had disappeared and there were no bees or brood left in the hive.
Since 1st April 2011 a further 2 colonies were very weak and died out plus a further 2 that are not building up.
Questionnaire unstable
Recently became a bee keeper so still learning as I go. Was given a swarm earlier this year and so far all seems fine.
The reason our bees died was that we split our colony to make 2 but this was done too late in the year (September) which left 2 weak colonies going into the winter which was VERY cold.
This is my first year so very much a beginner as far as diseases are concerned
Two of the colonies are in the Warrenpoint & Rostrevor apiary at Anets Garden Centre, Warrenpoint. Our association is made up of beginner beekeepers. I formed the association in Feb 2010. The members have been informed re this survey !!!!
Would AFBINI consider running disease recognition workshops at locations around Northern Ireland to better help beekeepers enhance their disease recognition skills and to give them impartial advice on managing varroa, preparation for wintering etc.?