COLOSS Working Group 1

2012 Questionnaire and Bee Book Workshop

6 – 7th February 2012

The Food and Environment Research Agency
Sand Hutton
York
England
YO41 1LZ

The Food and Environment Research Agency

Index

1. Agenda

COLOSS Working Group1 Work Shop
Coloss Questionnaire 2012 / Beebook
When: 6-7th February 2012
Where: Food and Environment Research Agency, Sand Hutton, York, YO41 1LZ UK,

TIME	
05/02/2012 (Sunday) – Venue TBC	
16.00-19.00	**BeeBook Workshop meeting- Romée, Kim, Alison and Celine**
20.00-??	WG Dinner Venue TBC **(Unfortunately will probably have to be self funded)**
06/02/2012 (Monday) – Fera, Sand Hutton, York	
08:30- 09:00	Registration and Coffee
09:20 – 09:35	Welcome and organizational matters
09:35 -11.00	BEE BOOK Separate Work package discussions
11:00 – 11:30	Coffee break
11:30 – 12:30	BEE BOOK Separate Work package discussions
12:30 – 13:30	Lunch
13:30 – 15:00	BEEBOOK General Discussion
15:00 – 15:30	Coffee Break
15:30 – 17:00	Feedback on 2011 Questionnaire – Presentation Analysis of 2011 Questionnaire Romée/Alison/Leonard?
20:00 – open	Social dinner in York
07/02/2012 (Tuesday) - Fera, Sand Hutton, York	
09:00 – 11:00	Feedback on 2011 Questionnaire– Open Discussion
11:00 – 11:30	Coffee break
11:30 – 12:30	Coloss Questionnaire 2012
13:30– 14:30	Lunch
13:30 – 15:00	Coloss Questionnaire 2012
15:00 – 15:30	Coffee
16.00	Close and - Depart

Registration on site is also required (fees: €50. Social Dinner Included)

LOCATION AND INFORMATION	
Food and Environment Research Agency	**Selwyn Wilkins**
Food and Environment Research Agency, National Bee Unit, Sand Hutton, York, UK	e-mail: selwyn.wilkins@fera.gsi.gov.uk Phone: Office: +44 (0)1904 462503 Mobile: +44(0)7971 887232

Evaluation of Colony Losses in Israel 2008-2011

Victoria Soroker1, Nor Chejanovsky1, Joseph Kamer1, Ilya Zeidman1, Saadia Rene1, Hadassah Rivkin[1], Anna Litovsky1, Dorit Avni1, Amotz Hezron[2], Boris Yakobson[3] , Hillary Voet[4] ,Yossi Slabezki and Haim Efrat[5]

[1]Institute of Plant Protection,
[2]Institute of Agricultural Engineering, Agricultural Research Organization; The Volcani Center;, Bet Dagan
[3]Veterinary Institute
[4]Faculty of Agricultural, Food and Environmental Quality Sciences, Rehovot;
[5]Department of beekeeping, the Extension service, The Israeli Ministry of Agriculture.

Since 2008 we implement two approaches to evaluate the local levels of the colony losses in order to characterize the potential causal factors that include:

1- a survey, among beekeepers and,

2- regular monitoring of specific hives during the year.

Detailed questionnaires were distributed among the beekeepers in 2008, 2009 and in 2010 and in 2011. In 2010 and 2011 two questionnaires were handed, one dedicated to evaluate winter losses using a level 1 questionnaire developed by COLOSS working group 1, and a detailed questionnaire to evaluate annual losses.

In the last two years the survey used a combination of data collection modes (a mixed-mode survey). It starts as a self administered survey; beekeepers receive a questionnaire by mail, answer the questions and send the questionnaire back. However, usually these questionnaires were incomplete. To increase the response rate and accuracy, telephone interviews were conducted.

Over the years, our survey data, represented 28-50% of total colonies but only from 8-15% of the beekeepers. Up to 2011, overall the level of colony losses was below 20%. It appears that the high levels of losses (above 40%) occur among small beekeepers (with operation size below 100 hives) and are not associated with hive migration or pollination services. The winter losses increased last year reaching 16% relative to 11% in winter of 2010. Analysis of the major causes of colony losses by multiple regressions was problematic as the number of beekeepers participating in the survey was rather low, while the variability in their replies was high and the number of relevant factors was large.

The detailed survey of 2011 is now in progress and we hope to be able to increase the response rate this time.

The hive monitoring is conducted since 2009 and includes at least 100 hives each year from January to October. Up to 15% losses were recorded in these hives during this monitoring period. Varroa infestation and viral infection seemed to be the major causes of it. The role of Nosema on colony health is currently being evaluated.

Sampling Methods during the Colony Bee Losses Survey in 2012 – the issue for discussion

Grażyna Topolska, Anna Gajda, Urszula Grzęda*

Warsaw University of Life Sciences, Faculty of Veterinary Medicine
Warsaw University of Life Sciences
Faculty of Veterinary Medicine
Ciszewskiego 8
02-786 Warsaw
Poland,
Tel: +48225936140
Email: grazyna_topolska@sggw.pl

In the two last COLOSS surveys on bee colony losses (in which beekeepers sent back their information mostly on a voluntary basis) in most countries a mixed mode of data collection was used. This was because there were difficulties with addressing the whole beekeepers population using only one mode. Randomized sampling was not possible because of lack of good lists of beekeepers. However collecting data for the Chapter 12 of the "BeeBook" has revealed that in many countries a list of beekeepers is available. Therefore in some countries probably randomized sampling based on these lists could be applied. However, since "the variability in operation size, bee race, Varroa treatment, environmental conditions, focus on pollination or honey production between operations is considerable and should be represented in a randomized approach to avoid coverage errors"1 a stratified multistage sampling should be designed. Most lists of beekeeper probably contain only basic data (beekeepers' addresses and size of apiaries), so auxiliary information for forming the strata and setting the selection probabilities is not available.

The pros and cons of using randomized sampling in the winter of 2011/2012 monitoring should be discussed, especially as the EURL for bee health pilot surveillance project on colony losses is about to begin and the basis for this project (published in June 2011) contains some statements concerning the COLOSS questionnaire.

1From the draft of "Managed honey bee colony losses in Canada, China, Europe, Israel and Turkey, for the winters of 2008-2009 and 2009–2010"- R. van der Zee et al.

Beekeeping Registry and new GIS Applications

*Mutinelli F., Barzon L., *Ferre' N.*

Istituto Zooprofilattico Sperimentale delle Venezie, NRL for Beekeeping
*GIS Unit, Viale dell'Universita' 10, 35020 Legnaro (PD), Italy
E-mail: fmutinelli@izsvenezie.it,
Tel.: +39 049 8084287

The national beekeeping registry (NBR) has been approved (Decree 4.12.2009 of Ministry of Employment Welfare and Social Affairs "Rules for Italian national registry of beekeeping", OJIR n. 93 of 22.04.2010). The NBR is defined as the beekeepers and beehives identification and registration system. The beekeeping database (BDA) is established and managed by the National Service Centre of the zootechnical registry. The NBR is composed of: notification and registration of beekeepers and apiaries; NBR database; identification label; herd. NBR aims at: economic and sanitary protection as well as valorisation of beehive patrimony, support the information flow on honey and other beehive products to guarantee consumer's health, improvement of the knowledge on beekeeping. The NBR is based on: a) notification and annual communications of the beekeepers, b) assignment of an univocal code of identification to the beehives owner, c) data registration in the BDA. The operative manual of the NBR establishes the registration procedure, the communication of herd data changes, the communication of the end of the activity, the data management, the privacy rules, the composition and assignment of the univocal code. Beekeepers notify their activity and ask for identification code, and communicate any variation concerning their herd. The Local Veterinary Service provides code assignment, herd registration, field controls and health control and prevention activity. Moreover, in order to collect geographical information on beekeepers and beehives and to support exploratory geovisualization and spatial analysis, a framework based on Participatory GIS (Geographic Information System) is proposed. Participatory GIS (PGIS) is a practice in which communities share their knowledge and opinions to help generate maps to inform management and decision-making. PGIS are usually assumed to be cost-effective terms of relevance, usefulness, sustainability, empowerment, and meeting good governance objectives, due to their eponymous stress on participation and on utilizing on-field knowledge. The proposed PGIS application is based on the overlay principle: beekeepers and other authorized stakeholders geotagging items on a map, allowing the user of the map to toggle the overlay's visibility and thus all items contained in the overlay. The application uses map tiles from a third-party (in this test phase we are using the Google Earth API) and adds the collaboratively-edited overlays to them, in a Wiki fashion. The edited tag are joined by means of a GIS software (in this test phase we are using QGIS) in order to perform some SOM analysis that are accessible by the users as a web service.

Low *Varroa* Infestation Levels in Norwegian Honey bee Colonies

Bjørn Dahle, Norwegian Beekeepers Association & Norwegian School of Veterinary Science

Email: bjorn.dahle@norbi.no

Winter losses of honey bee colonies in Norway have varied around 10% in Norway, which is relatively low compared to winter losses reported in neighbouring countries. Because Varroa destructor is identified as an important cause of winter losses in general I sampled 200 honeybee colonies from 14 beekeepers to calculate Varroa infestation levels. Except from an oxalic acid treatment in autumn 2010 no Varroa treatment (including drone brood removal) was carried out prior to sampling in early September 2011. Varroa infestation levels were low (X = 0.76 ± 1.21 SD mites/100 bees), but varied substantially among and within beekeeper operations. According to the literature the Varroa infestation levels found in this study should not contribute to elevated winter losses.

Colony Losses in Ireland

Mary F Coffey[1,*], *John Breen*[2]

[1]University of Limerick, Dept of Life Sciences, Ireland.
[2]University of Limerick, Dept of Life Sciences, Ireland.
* Author for correspondence: Mary.Frances.Coffey@ul.ie

Colony losses are not only a modern problem but also an historic one. In Ireland, the first bee epidemic was reported in 950 A.D and over the past number of centuries there has been numerous reported incidences of increased losses including two individual bee epidemics in 992 A.D and 1443 A.D respectively, the Isle of Wight disease in 1912 and the arrival of Varroa destructor in 1998, which resulted in the disappearance of all feral colonies. In 2010 pyrethroid resistance was reported for the first time, and although symptoms typical of Colony Collapse Syndrome have been reported by Irish beekeepers, this condition has not been confirmed to date. However, it is clear from this brief history that colony losses are always a serious threat to beekeeping yet in Ireland the losses being experienced by beekeepers have not been well documented. Although beekeepers estimated losses of 10-15% pre-Varroa and 15-20% losses post-Varroa there was no reliable dataset prior to the pilot survey carried out in 2008/2009 using the COLOSS questionnaire. In this study, 35 beekeepers (1.7% of the total beekeepers in Ireland) participated and the estimated losses were approximately 22%. In 2009/2010 and 2010/2011, more comprehensible surveys were carried out again using the COLOSS questionnaire. The total number of participating beekeepers were 458 (20%) and 352 (16%) and the estimated colony losses were 22.7% and 17.0% respectively.

Poor queens were perceived as the primary cause of losses in both studies. Other contributing factors included Nosemosis and weak colonies in 2009/2010, while starvation emerged as an important contributor in 2010/2011. The insufficient control of Varroa was not perceived as an influential factor on winter survival in either studies despite the fact that a resistant mite population to Bayvarol is developing and a high percentage of beekeepers delay treatment until September/October as indicated in the 2010/2011 survey (~60% beekeepers treat in September and 25% in October). Apiguard is the alternative Autumn treatment registered for use in Ireland, but in late Autumn the mean ambient temperature regularly drops below 15°C, thus limiting the efficacy of Apiguard. Considering this situation, it is likely that in many colonies, winter bees are developing under the pressure of relatively high mite populations, hence the possibility of viral infection, which consequently has the potential to reduce survival rate. However, the actual development time of winter bees and the impact of late Autumn treatment of colony survival rate under Irish conditions requires further investigation.

Four Years of COLOSS Monitoring in Austria

Robert Brodschneider, Rudolf Moosbeckhofer and Karl Crailsheim

Karl-Franzens-University Graz
Department of Zoology
Universitätsplatz 2
A-8010 Graz
Austria
Phone: 0043316380-5602
Fax: 0043316/380-9875
Email: robert.brodschneider@uni-graz.at

In Austria we have now established monitoring over winter colony losses and are going in the fifth year. We used a mixed media survey (meetings, journal, Internet) and received 565 questionnaires relating to 13,179 colonies in 2011. Since 2007/2008, nation wide winter colony losses were between 9.3% and 16.4% and can therefore be regarded as moderate, compared to other countries. Nonetheless, there are single operations or whole regions with higher losses. For example, the region of Tyrol experienced high losses (25.4%, n=88 and 24.7%, n=76) during two winters in row. The drivers of these elevated losses have not been identified yet, but will be subject of further investigations. The COLOSS questionnaire allows identifying the risk factors of over winter losses. These results will be presented and discussed at the workshop.

The Danish Five-Year Questionnaire

Flemming Vejsnæs

Danish Beekeepers Association
Fulbyvej 15, DK-4180 Sorø
fv@biavl.dk

The Danish Beekeepers Association has been doing a big questionnaire survey every 5th year since 1986. This year it is repeated for the 6th time. This abstract is a summary of the used questions for the 2011 version. Marketing questions are excluded. The questionnaire is running until the 1st April. The aim is to give inspiration/ideas for the coloss 2012 questionnaire, which we are planning to use also.

[1] Enter your email address.

[2] Zip code for your residence.

[3] Number wintered colonies fall 2010.

[4] Number of living colonies in spring 2011.

[5] Number wintered colonies fall 2011.

[6] Total honey production in 2011 in kg.

[7] I (beekeeper) was born (year).

[8] Sex. I am male/female.

[9] Spouse / partner / friend / family member involved in beekeeping.

[10] I started as a beekeeper (year)

[11] I am hobby / part time / commercial beekeeper.

[12] My beekeeping is VAT registered.

[13] I sell my honey direct sale, for shops, honey filling companies.

[14] Do you produce different types of honey? (E.g. clover, heather, bell heather honey, etc).

[15] How do you extract the honey?

[16] Do you make comb honey (= honeycombs cut out and sold).

[21] I use the following types of hives (Traditional troughhives/boxhive).

[22] I use the following frame size (7 different framesizes).

[23] Of what material are your bee boxes made of ? Styropor or wood?

[24] How would you describe your type of beekeeping?

- Conventional beekeeping
- Alternative - tree trunk, top bar hive, etc.
- If other - please describe any.

[25] I have for autumn 2011 winter fed my bees with:

- Sugar (granulated sugar)
- Candy solid feed (e.g. Apifonda or ambrosia)
- Syrup (eg. Apiinvert or ambrosia feeding syrup)
- No feeding

[26] My colonies do make their queens by themselves.

[27] I do produce my queens by myself?

[28] I do buy Danish-produced queens

[29] I do buy queens from overseas.

[30] Species of bee (Please indicate) (6 different species/types).

[31] Have you in 2011 had / seen a poisoning of bee colonies?

[32] If yes - have you reported the injury?

[33] If yes - Have you received compensation for the damage?

[34] Do you know how to handle a poisoning situation? Do you know to whom you should report the damage to?

[35] Have you migrated with your colonies in 2011?

[36] Are you educated as a skilled beekeeper (government bee disease training)?

[37] Do you fill out bee health certificate when moving your colonies?

[38] Do you fill out health certificate when moving in-between your own apiaries?

[39] Have you heard of the Central Apiary register on the Internet?

[40] Do you think that such a register will provide beekeeping better and healthier colonies?

[41] Do you have income from pollination work?

[42] If yes - How many colonies have been placed for pollination? (Write number)

[43] I have in 2011 found American foulbrood in my colonies.

[44] I have seen chalk brood in my colonies.

[45] I have seen sac brood in my colonies.

[46] I have seen deformed wing virus in my colonies.

[47] I have seen symptoms of diseases which I do not know the name of (colonies do not look healthy).

[48] Do you experience periods of the season that your bees lack pollen.

[49] Varroa control method.

- ☐ drone brood removal
- ☐ Free formic acid (4 x formic acid)
- ☐ Nassenheider evaporator

- ☐ Kramer board / Mite Away Plate
- ☐ Other formic acid methods
- ☐ Oxalic trickling - Spring
- ☐ Oxalic trickling - Autumn / Winter
- ☐ Lactic Acid
- ☐ Bayvarol / bayticol / sticks
- ☐ Other control method
- ☐ I have not been fighting varroa in 2011

[51] Would you consider switching to organic beekeeping - if it would be practicable legislatively?

[52] What do you consider to the biggest obstacles to operating organic beekeeping in Denmark?

- ☐ Distance requirement for apiary
- ☐ Requirement for feeding with organic sugar
- ☐ Prohibition against wing clipping
- ☐ Queens must be purchased from other organic beekeepers
- ☐ Hives must be made of wood
- ☐ Wax must be organic certified
- ☐ Paperwork and control measures

[60] Within which areas do you feel lack of education

- ☐ Bee biology
- ☐ Queen breeding
- ☐ Queen Production
- ☐ Management
- ☐ Varroa treatment
- ☐ Bee diseases
- ☐ Honey Processing
- ☐ Marketing
- ☐ Accounting

- Better utilization of honey (recipes, etc.)
- Beekeeping Legislation

Survey on Losses in Sweden

Preben Kristiansen

Swedish Beekeepers Association, Trumpetarev 5, SE-59019 Mantorp, Sweden.
E-mail: preben.kristiansen@biodlarna.se.
Phone: +46 735 233122

Since 2009 we have carried out web-based surveys on winter losses. The last two years with questionnaires based on the ones made by WG1. The total losses for each of the three last winters were: 17,5 % (of the 7354 colonies that were wintered 2008), 24,7 % (of the 13598 colonies that were wintered 2009) and 14,5 % (of the 11700 colonies that were wintered 2010). The estimated number of bee colonies in Sweden 125000 and the number of beekeepers is 12000. All data has been submitted to the chair of WG1 for a joint publication about losses.

In 2012 we will make a survey both via internet and via letter to a number of randomly chosen beekeepers. If possible we will also make a more thorough interviews with a number of beekeepers from different areas of the country.

Monitorization of Honeybee Pathogens for Detecting Alerts and Sanitary Risks

A. Cepero, A. Meana, M. Higes R. Martín-Hernández*

Centro Apícola Regional (CAR), Camino de San Martín s/n, 19180 Marchamalo, Spain

* Facultad de Veterinaria, Universidad Complutense, Avda. Puerta de Hierro s/n, 28040 Madrid, Spain

COLOSS Questionnaires were disseminated in Spain in 2011 by sending them directly to beekeepers associations and during meetings. In same cases a surveyor filled out the questionnaire (asking directly to the beekeepers) but more frequently the beekeeper filled it our by themselves. Although we tried different journals to contribute for dissemination, we had not success. Level 1 of questionnaire was also included in a survey for monitoring infectious and parasitic honeybee diseases and contaminants in pollen.

A total of 281 beekeepers from 13 different regions answered the questionnaire. The participation was very low according to the number of beekeepers and the census of colonies in Spain.

Absolute values obtained are shown in the table (N represents the number of beekeepers that answered each question). Although in any cases the absence of an answer could be assumed as 0 value (e.g. questions 3, 4, 5, 6, 7), this might be not acceptable for other questions. Questions regarding the summer losses were less answered that the ones related to winter losses.

	1-10-2010 / 1-4- 2011	N	1-4-2010 to 1-10-2010	N
1. Number of production colonies (PC)	8616*	279	3894**	160
2. Number of PC lost	1729	277	3937	121
3. Number of PC lost with CCD	879	249		
4. Number of PC lost with queen problems	479	242		
5. Number of purchases or splits	1794	161	1335	139
6. Number of sold colonies	1602	122	48	110
7. Number of uniting/merging colonies	33	124	211	105
8. Number of PC on April 1 2011	7878*	188		

*On 1-10-10 **On 1-4-2010

The number of beekeepers that answered the questions on Level 2 was much lower (68 beekeepers). This low participation was because this block was no included in the monitoring survey and also

because same beekeepers didn't want to spend much time filling out the questionnaire. The most of beekeepers declared that colonies reared the queen by their own and they rarely buy bees to other countries. The 53.8% of the beekeepers declared to perform the varroa treatment twice per year and a 4.6% declared they don't apply any treatment. The more frequent months for applying those treatments were March and October. Pollination services were not frequently used and the main flowers declared to be foraged were bee-pastures (55.8 %), dew (42.3 %) and dandelion (36.5 %). Finally, the main disturber agents identified by Spanish beekeepers were bee-eaters (68.5%) and mice (29.6%).

Winter Colony Loss Survey Since 2008

Celine Holzmann

"ITSAP – Institut de l'abeille"
The Technical and Scientific Institute for Beekeeping and Pollination
France
Email: celine.holzmann@itsap.asso.fr

The technical and scientific institute for beekeeping and pollination: "ITSAP – Institut de l'abeille" runs a survey on winter colony losses since 2008. This survey leads to the estimation of the loss rate during winter. Results exhibit differences in colony losses with years: 19.6% [17%-22%]CI 5% for 2011, 26.8% [23%-30%]CI 5% for 2010 ; 23.4% [21%-25%]CI 5% for 2009 ; 29.3% [26%-32%]CI 5% for 2008.

Beyond these estimations, principal risk factors are identified from about twenty variables. Five variables appear as important risk factors: the Varroa fight strategy, the strength of colonies population, the availability of resources around the wintering place, the level of food reserves before feeding and the function of the apiary. The Varroa mite is still a major problem.

To get a better view on Varroa fight strategy, a detailed study of the Varroa treatment had been made. This study reveals an important diversity across the French country.

Some lessons to be learned from the COLOSS survey of 2011 in designing the questionnaire for 2012

Magnus Peterson

Dept of Maths and Statistics
University of Strathclyde
Glasgow
Scotland
Email: magnus.peterson@strath.ac.uk

The author has been involved in conducting surveys of beekeepers in Scotland since 2006 and in combining that with making a return to the COLOSS questionnaires during both 2010 and 2011. He has also been involved in quite extensive practical survey work in other fields in earlier years on a variety of topics (market research for Garden Centres, and satisfaction levels experienced in the provision of frozen meals to elderly dependent people amongst others). He has already made suggestions about improving the quality of the questionnaires being used by COLOSS, and many of these suggestions (some of which were also suggested by others) have already been adopted. He hopes to be able to use this past experience along with experience in using the 2011 COLOSS questionnaire to make a presentation as a useful contribution to the discussion of the design of the proposed COLOSS questionnaire for 2012.

Honey bee Monitoring and Surveys in England and Wales

Selwyn Wilkins*, Giles Budge, Stéphane Pietravalle, Gay Marris, Ben Jones and Mike Brown

Food and Environment Research Agency
National Bee Unit
Sand Hutton
York
YO41 1LZ
UK
Email: selwyn.wilkins@fera.gsi.gov.uk

The National Bee Unit (NBU) is in the fourth year of conducting an extensive Honey Bee Husbandry Survey on current beekeeping practices in the England and Wales. For the first two years information from this survey was gathered by means of a questionnaire, available both on-line via the NBU beekeeper database BeeBase (www.nationalbeeunit.com) or hard copies circulated to beekeepers through the bee health inspection service at association meetings and training events. It is intended to continue conducting these surveys annually and to use the data collected to monitor trends in beekeeping and to assist with beekeeper training and to also feed the information on colony losses from England and Wales into the COLOSS network. To accomplish this effectively and to allow the data to be used comparatively the Basic COLOSS questionnaire has been incorporated into this survey. Due to the limited data collection methods used in the first two years of the survey it was recognized that a more robust sampling method was required to get the best from the information available. Thus for the 2010-11 NBU survey used a randomised, stratified survey using a number of data collection methods (on-line, paper copies and telephone interview).

To provide a representative sample of the beekeeping population and an indication of losses, a survey of a minimum of 5% of the beekeeping population is desirable. However predicting the response rate for such a survey is very difficult. For 2010-11 pilot study data were derived from a smaller survey conducted by the British Beekeepers Association (BBKA) in 2011. Dr. David Aston indicated that of 2500 postal surveys distributed, 982 were returns, giving a compliance rate of 39%. As the NBU husbandry questionnaire was longer, it was assumed that the response rate would be lower - for the purposes of this we estimated a compliance rate of approx 30%. However this was exceeded and was actually approximately 40%.

In 2010-11for the purposes of the NBU survey the beekeeping population (England and Wales only) was taken as those held on BeeBase (this is currently increasing by approximately 5,000 new beekeepers per annum. The following were selected as proportions from the overall beekeeping population on BeeBase.

	Amateur (<40 colonies)	Professional (40 + colonies)
Has email	A_1%	A_2%
Does not have email	A_3%	A_4%

In this way a total of 3950 beekeepers were selected from the overall beekeeper population on BeeBase. An additional 52 of the remaining beekeepers were selected for telephone interview in the same proportions of amateur versus professional. The email population (A_1% and A_2%) were randomly split into two even groups and contacted by email or by post. Those without email were written to and asked to complete the survey. Those contacted by email were given a link to follow to complete the survey online and those contacted by post were asked to complete a hard copy and return it to the NBU.

In total, in July 2011 23,134 beekeepers were registered on BeeBase, with the following breakdown between those with and without email addresses:

	Amateur (<40 colonies)	Professional (40 + colonies)
Has email	9500	158
Does not have email	13273	203

Therefore the following were selected to maintain the above proportions (postal); [email]; {interview}:

	Amateur (<40 colonies)	Professional (40 + colonies)
Has email	(811) + [811] + {21}	(14) + [13] + {1}
Does not have email	(2266) + [0] + {29}	(35) + [0] + {1}

The NBU will be conducting a husbandry survey again for the 2011-12 beekeeping season once again the COLOSS Questionnaire will be incorporated into the survey and the targeted approach to questionnaire distribution will be repeated.

2. List of Participants

	Name	Institute	Country
1	Victoria Soroker	Agricultural Research Organization	Israel
2	Grazyna Topolska	Warsaw University of Life Sciences	Poland
3	Franco Mutinelli	Istituto zooprofilattico sperimentale delle venezie	Italy
4	Bjørn Dhale	Norwegian Beekeepers Association	Norway
5	Mary Frances Coffey	University of Limerick	ROI
6	Robert Brodschneider	Department of Zoology, Karl-Franzens-University Graz	Austria
7	Flemming Vejsnæs	Danish Beekeepers Association	Denmark
8	Preben Kristiansen	Swedish Beekeepers Asscociation	Sweden
9	Raquel Martin Hernandez	Centro Apícola Regional	Spain
10	Aykut Kence	Dept of Biology, Middle East Technical University	Turkey
11	Céline Holzmann	ITSAP – Institut de l'abeille	France
12	Magnus Peterson	University of Strathclyde, Dept of Maths & Statistics	UK
13	Romee Van der Zee	Bee Monitoring	Netherlands
14	Kim Nguyen	University of Liege, Dept of Functional & Evolutionary Entomology	Belgium
15	SelwynWilkins	Food and Environment Research Agency	UK