

### Overwinter Survival of Scottish Honeybees: 2014-15

The Dundee University – SBA collaboration has continued into its 4<sup>th</sup> year with a survey of colony losses including forage availability, land use and estimated Varroa levels. Data collected from beekeepers for 2014-15 are reported here and further work is being done to assess information for geomapping to correlate losses with landscape use and rainfall and collation of all data over the four years. We will also conduct a survey of the honey harvest obtained by Scottish beekeepers for the 2015 summer season. Has this been a good year for you?

128 beekeepers responded to the questionnaire reporting on 569 colonies followed through the winter from November 2014. The colony loss rate for all areas was 9.3% and the combined loss and weak colonies in spring 2015 was 17.4%. (Weak colonies were defined as those surviving the winter but unlikely to become productive colonies and either dwindling or requiring to be united).

The results by postcode area are shown in the table below. This still gives an approximation of areas covering broad habitats so must be viewed with caution. There is a wide variation in results so it is difficult to see any trends emerging without further work on weather and land use by geomapping.

Table 1 Colony loss rates by area

Region	Postal Code		% loss	% weak / lost
Central East	Edinburgh & Lothians (EH)	n=103	16.5	25.2
	Dundee & North Tayside (DD)	n=21	19.0	19.0
	Fife (KY)	n=25	7.4	14.8
Central	Perthshire & Central Highlands (PH)	n=74	10.8	23.0
Central West	Forth Valley (FK)	n=17	17.6	23.5
	Greater Glasgow (G)	n=13	15.4	15.4
	Lanarkshire (ML)	n=14	21.4	35.7
	Argyllshire (PA)	n=97	5.2	15.5
	Ayrshire (KA)	n=7	0	0
North East	Aberdeenshire (AB)	n=64	4.7	8.2
	Inverness-shire (IV)	n=68	2.9	13.2
	Caithness & Orkney (KW)	n=15	0	13.0
South East	Borders & Tweed (TD)	n=33	6.1	9.1
South West	Dumfries & Galloway (DG)	n=16	12.5	18.8

Examining colony loss rates with the reported Varroa levels shows a correlation with level of infestation. However the number of reported weak colonies with no Varroa suggests that other factors are involved. The association of high Varroa levels with colony mortality was not present in surveys the previous 2 years. The reasons may be differing efficacy of treatments, viral load, virulence or just normal variation.

Table 2 Colony loss rates and Varroa infestation

Varroa level	Heavy (n=6)	Medium (n=418)	Light (n=86)	None (n=57)
Colonies lost (%)	33.3	11.2	3.4	1.8
Colonies weak (%)	0	7.9	5.7	14

We also asked questions about bees having access to various crops. The colony loss rate was slightly higher at 10.5% with no crop exposure and 8.1% where crops (OSR, beans, soft fruits etc.) were present in significant amounts.

Regarding oilseed rape (OSR) specifically the results were as follows.

Table 3 Colony loss rates and OSR

	OSR (mainly)	No OSR (other crops)
Overall loss rate %	7.9	9.8
Overall loss/weak %	11.9	19

The differences are small and probably not significant. For this period no neonicotinoids have been used due to the EU moratorium suspending their use on bee-friendly crops. Previously neonicotinoids (imidacloprid, thiamethoxam or clothianidin) could have been used. Their impact (if any) on bees is complicated by the fact that we do not know which ones have been used at a local level and emerging evidence that they may not all be toxic to bees.

Dr C Connolly

John E Durkacz

CC/JD 12/09/15