

# Winter losses of honey bee colonies and renewal of livestock in Austria and the Czech Republic

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## Introduction:

Austria (A) and the Czech Republic (CZ) closely cooperate in colony loss monitoring using a standardized questionnaire. In 2014 we also conducted a follow-up study on renewal of honey bee livestock in both countries, as the interplay of colony losses during winter and livestock production during summer is poorly investigated.

## Material and Methods:

The COLOSS questionnaire was distributed and promoted through beekeeping journals, internet and at meetings between February and May.

For the follow up study in October 2014 on renewal of honey bee livestock, we invited only those beekeepers that left an email-address in the winter loss survey. We asked them on the number of home-grown and purchased honey bee units (i.e. queens, splits or colonies) and about the rationale behind that.

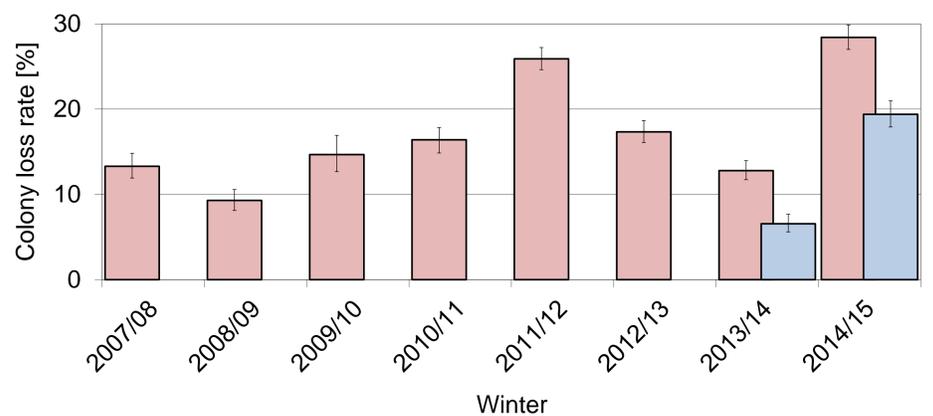
## Results:

The results of winter colony losses in A and CZ collected so far are shown in Fig. 1. The follow up study was answered by 381 and 341 beekeepers in A and CZ, respectively, hence response rate was more than 75% in both countries. In both countries, most beekeepers breed their own material ("breeders"), whereas only few breed also for sale ("Sellers") and very few do not breed at all (Fig. 2). In both countries, beekeepers did buy queens or bees (Fig. 3). The reasons to choose sales operation did not differ between A and CZ beekeepers (Fig. 4, Chi<sup>2</sup>, p>0.05). Bees were bred or bought mainly to replace queens or extend operation (Fig. 5).

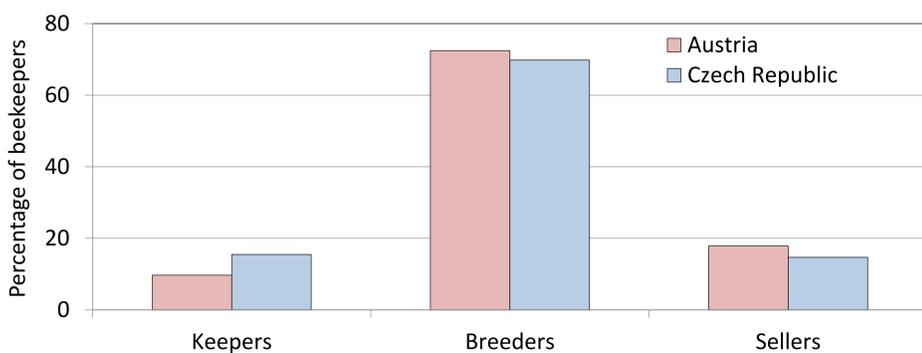
## Discussion:

Most beekeepers in A and CZ breed bees themselves. Restoration of winter losses played no major role in 2014, following a winter with moderate winter losses in both countries. Beekeepers rather produce or buy bees to replace queens or extend operation. Thereby, own breeding or renewal highly outperforms the number of bought bee units. If bees are purchased, quality, genetics and confidence are more important than the price.

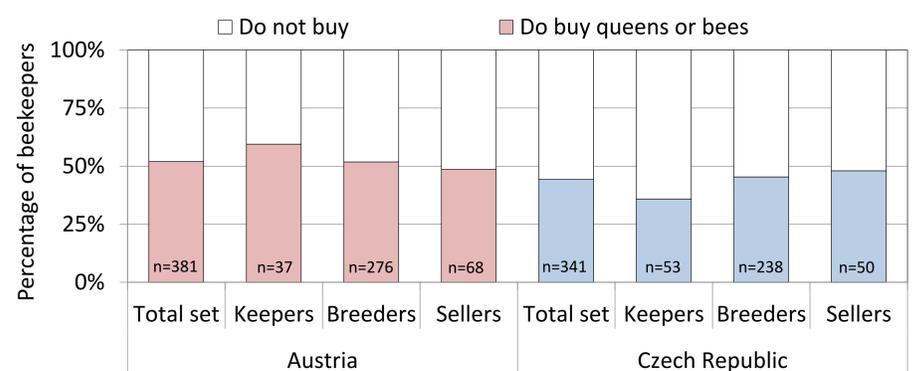
During winter 2014/15, both countries experienced high losses of honey bee colonies. The role that renewal of livestock plays after a winter with high losses is of great interest and currently under investigation.



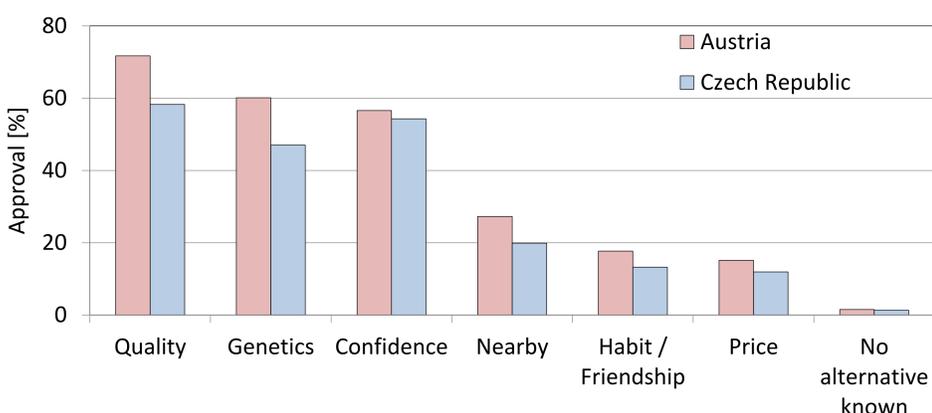
**Figure 1:** Winter loss rate (and 95% confidence interval) of honey bee colonies in Austria (red) for the last eight and two years and the Czech Republic (blue), respectively.



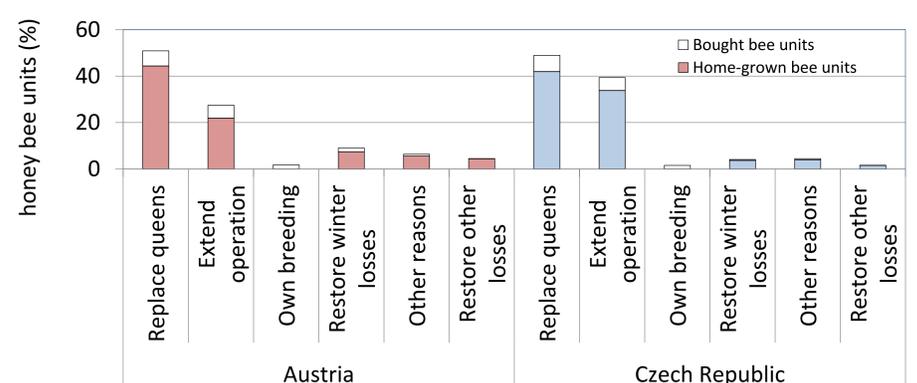
**Figure 2:** Percentage of beekeepers in A and CZ that do not produce bees („keepers”) or that produce for own demand („breeders”) or sale („Sellers”). n=381 for A, n=341 for CZ.



**Figure 3:** Percentage of beekeepers in A and CZ that do buy queens or bees separated for the three groups of beekeepers and the total set.



**Figure 4:** Rationale to buy queens or bees at a particular retailer, multiple answers possible. n=498 for A, n=311 for CZ.



**Figure 5:** Comparison of usage of bought (n= 936 for A, n= 745 for CZ) and home-grown (n=4781 for A, n=4199 for CZ) honey bee units (queens, splits, colonies).