Trainee opportunity in honeybee research at FiBL 2020

**Topic**

*Chemical-free treatment against Varroa destructor in honeybees: Field trial of a high-tech, self-learning and comb-integrated thermal treatment – effects on Varroa reproduction and honeybee colony growth dynamics, brood mortality and gene expression profiles*

**Problem**

Treatments against *Varroa destructor*, the main parasite of the honeybee, *Apis mellifera*, generally include chemicals that may cause substantial side-effects and/or residue accumulation. Higher susceptibility of *Varroa* mites towards increased temperatures is known but practically feasible solutions for thermal treatments are yet missing. Within a joint innovation project we test a straightforward thermal treatment integrated into wax foundations (within combs) selectively activated during the sensitive phase of *Varroa* reproduction shortly after brood cell capping (sensor-based). Potential positive as well as negative effects will be thoroughly assessed during an extended field trial (actual post) and subsequent molecular analyses.

**Methods**

Comparison of heat-treated colonies versus colonies treated according to common good beekeeping practice (particularly formic acid and oxalic acid treatments against *Varroa*), at each four different apiaries (48 colonies in total) over a one year period (2020-2021):

- Varroa levels (natural mortality and standard powdered sugar honeybee sampling).
- Colony growth dynamics over time and productivity (according to Liebefelder method).
- Digital brood (mortality) assessments of several brood cycles throughout the season (successive comb photographing and subsequent software analyses).
- Repeated bee sampling for honeybee gene expression profiles and transcriptomics of viral/pathogenic landscapes (collaborating partner University of Hohenheim).

**Qualification**

High motivation and interest in honeybee research; ideally extended practical beekeeping experience and basic data management skills; failure for technical solutions for biological problems, and basic skills in photography; no allergies against bee stings or propolis; language: German or English; ability to work in a team, self-dependence and driver's licence (field car available).

**Location**

Winterthur (practical works) and Frick (data works), Switzerland.

**Period**

As of March 2020 and no later than May 2020 (for up to 9 months)

**Optional**

Data generation may well be used for parallel or subsequent Master Thesis preparation (co-supervision by FiBL and any international University).

**Compensation**

Yes, according to FiBL trainee rates, depending on graduation (but no academic degree would necessarily be required).

**Accommodation**

Can be provided at comparatively low costs at the FiBL campus in Frick.

**Contact**

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