Assessing the Effectiveness of 'Shook Swarm' as a Husbandry Method for the Control of European Foul Brood in the UK: 1st Year Summary

Aim

The main aim of this study was to assess the effectiveness of oxytetracycline (OTC) and the shook swarm (SS) methods for the control of European foul brood (EFB) disease of honey bees. Additional aims were to assess the risk posed by asymptomatic, or contact colonies, and to investigate the distribution of the causative organism across England and Wales. We were also interested in determining whether OTC or SS treatments led to an increase in colony mortality.

Background

EFB is a common disease of honey bee brood caused by the statutory bacterium *Melissococcus plutonius* (*Mp*). Colonies with a low level of disease can either be treated using the antibiotic OTC or the husbandry method SS (Figure 1) (see NBU leaflet on SS for full details).

Methods

Bulk adult bee and larvae samples were collected from three treatments:

1) Symptomatic colonies treated with OTC
2) Symptomatic colonies treated with SS
3) Asymptomatic (apparently healthy) colonies from within an infected apiary (*AI*).

Samples were collected before treatment in 2006 and again at the beginning of the 2007 season. The genetic material was extracted from all the samples and then tested for the presence of *Mp* using a sensitive method called real-time PCR. The method was used to detect and quantify the number of *Mp* bacteria in each sample.

Results and Conclusions

- More colonies tested positive for Mp after treatment with OTC than SS (Figure 2)
- Although both OTC and SS reduced the amount of bacteria present, EFB reoccurred in 22% of colonies treated with OTC but only 4% of colonies treated using SS, suggesting SS was more efficient at preventing EFB
- The amount of bacteria present in adult bee samples was surprisingly high for what is reported to be a brood disease of honey bees (Figure 3)
- *Mp* was detected in 54% of larvae and 43% of adult bee samples from asymptomatic contact colonies in 2006. However, the number of bacteria in these contact colonies was low compared to symptomatic colonies (Figure 3)
- *Mp* was found not to be ubiquitous across all regions of England and Wales
- Neither OTC nor SS treatments have any adverse effect on colony mortality

Figure 1 Shook Swarm treatment being applied

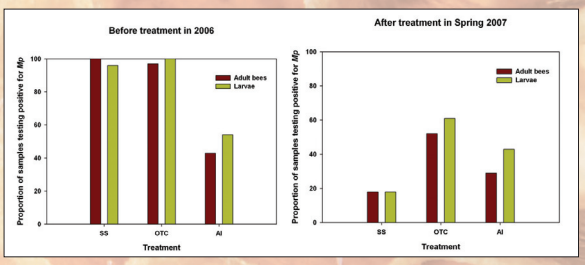

Figure 2 Proportion of samples testing positive for *M. plutonius* bacteria

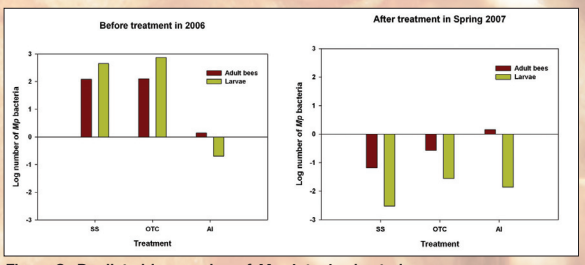

Figure 3 Predicted log number of *M. plutonius* bacteria

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