ApiNZ Science and Research Focus Group Meeting Notes Summary
Tuesday 26 May and 9 June

The ApiNZ Science and Research Focus Group met via Zoom on 26 May and 9 June 2020 to receive updates and prepare actions going forward.

Terms of reference for Science and Research Focus Group and Research Priorities

- The group discussed the terms of reference for the Science and Research Focus group and decided more discussion was needed on the future role of the Group.
- They also discussed the need to identify research priorities.
- The Group discussed the possibility of basing these priorities on a survey carried out by Pike Brown in 2018, or applying for funding to investigate research priorities further.
- Pike surveyed beekeepers in 2018 on their research priorities which revealed the three key areas as varroa, biosecurity and AFB.
- It was suggested that both honey prices and value-add products are topical issues since that time and may need to be considered from a research perspective.

Blockchain technology

Erik Bast from Bee Intelligence shared a presentation on distributed ledger technology (DLT) and its relevance to New Zealand apiculture.

- He emphasised that as with any technology, it is important to determine if the technology is the best solution to the problem posed.
- He suggested DLT is best suited to building trust in a low trust economy or when using high value products.
- Overseas interest in blockchain, particularly in China, could mean this technology may become in demand here.

NZ Colony Loss Survey

Pike Brown, author of the NZ Colony Loss Survey shared an overview of the 2019 results.

- Compared to the other 35 countries participating in the Survey our rates of loss are low and more consistent. New Zealand also has a very high rate of participation compared to other nations.
- Our survey is also more accessible and been adapted to suit the New Zealand apiculture sector. Other countries are adopting NZ-developed questions and our findings will be reported in the Apiculture Research Journal.
- There is some complacency amongst beekeepers as the loss rate remains low compared to international figures, despite a 25% increase over the last five years. The survey included how many hives were lost to tell a more compelling story.
- Loss rates and causes of losses vary across regions.
- Commercial loss rates fall within this group's perceived range of 'acceptable losses', while hobbyist and semi-commercials loss rates are higher than their 'acceptable loss' rates.
- Findings show that non-commercials need more training at identifying varroa-related diseases such as deformed wing virus or parasitic mite syndrome.

- Monitoring of varroa was variable – with 29% of commercials in the 501 – 3000 hive category doing either no monitoring or only doing visible checks of adult bees.
- Researchers would like to see the survey data being more actively used by bee science researchers.
- Pike is working with data companies to look at ways to automate the data collection process in the future.
- Group asked if future surveys could ask how participants determined if hives were lost to varroa or starvation, and how colony loss data was recorded by larger companies. The Group also asked if there was any correlation between areas where varroa monitoring was low and high rates of loss due to varroa.

Pheromite

Pablo German of Pheromite gave an update on the development of a treatment for varroa.

- He reported that more work was needed to optimise the treatment and the team was still in the screening and medical stage. The company was finding it difficult to get funding into a treatment only focused on varroa, so they have begun to investigate its efficacy with other agricultural pests.
- Discussion moved to whether breeding mite-resistant bees offer the best long-term approach to varroa treatment and whether this should be a research priority.

Industry Leaders' Group

Martin has proposed establishing an industry leaders' group as a way of connecting research with potential funders. He hopes that if a cross section industry leaders could regularly meet and be presented with project proposals this could lead to better engagement in research.

Presentation from Plant & Food Research

The Plant & Food team presented on their evolving approach to customer-focused research which is centred on what customers and industries need.

- PFR is trying to understand what drives industry and fit this with research that is desirable and achievable.
- It is important to note that the end users of the research can go beyond the original customer. Beekeepers often benefit as the end users of others' research.
- PFR ability to research is reliant on funding – the ideal is to get funded research that is beneficial to industry.
- PFR has developed a broad vision that it would like to make New Zealand beekeeping residue-free by 2030. This is an aspirational goal that they think would be a credible funding option.
- The main themes under this goal would be championing integrated pest management techniques, supporting new management approaches and eradicating varroa (potentially through gene editing technology like CRISPR). They see this vision has having both a bee health benefit and a commercial benefit.
- This project could also be a way of strategic linking current ongoing projects on varroa including FutureBees mite monitoring programme, genetic screening for resistance carried out by companies like dnature, and the Colony Loss Survey.
- There was discussion on how this vision fits into the Focus Group's development of research priorities, and how wider industry engagement on research priorities could be ascertained.

Presentation from FutureBees

Gertje Petersen from FutureBees updated the group on the project's progress.

- The aim of FutureBees' work is to bring modern animal breeding methods into commercial beekeeping.
- The work involves four parts – developing phenotyping (performance) and genotyping (related to performance and how bees relate to each other) tools, pedigree construction for free-mated queens, the economic framework of breeding objectives and the environmental impact on bee performance.
- FutureBees has been working with Bee Intelligence and Apiary Solutions to develop new approaches to data collection and use that will streamline this process for beekeepers and researchers.
- They are also beginning to see the findings of their genetic diversity survey which will ultimately answer the question does New Zealand need to import more genetics.
- The team is progressing with its breeding goal preference survey to find out the priorities amongst beekeepers regarding bee traits.
- A PhD student will begin with FutureBees next month and will begin to investigate the impact of environmental factors on genetic improvements in bees.
- FutureBees has two years more to run, the team hopes at the end of this time they will have a body that can be handed over to industry.
- The team is also gathering data for a varroa monitoring system that is also looking at the economic impact of varroa mites.

Miscellaneous

- John McKay mentioned that research may be warranted to see if a New Zealand-specific mutation of miticide resistance exists amongst varroa.