

APPENDIX 3

Papers presented to the CCEPP at April Meetings

- 'Asian bee survey and surveillance project', Australian Honey Bee Industry Council (AHBIC), 8 April 2011; and
- 'Remote poisoning trials on *Apis cerana*: Cairns', Mr Wim De Jong, February 2011.



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Asian Bee Survey & Surveillance Project

Introduction:

In the Interim Report of the Senate Rural Affairs and Transport References (SRA&TR) Committee inquiry into “Science underpinning the inability to eradicate the Asian honeybee” (April 2011), it was recommended that the Consultative Committee on Emergency Plant Pests (CCEPP) reconsider the question of whether the Asian honey bee is eradicable from Australia; and, following that re-consideration, make a fresh recommendation to the National Management Group (NMG) on the Asian honey bee incursion management response.

CCEPP met on 7 April 2011 to again reconsider the SRA&TR Committee’s question. At this meeting the positions of CCEPP members had not changed from the 25 January 2011 CCEPP meeting, and indeed for the most part, from the positions taken at the 29 October 2010 meeting. These were also the same positions taken by members of the NMG at the 31 January 2010 meeting where a vote on whether eradication was feasible or not was 6:4 in favor of the bee not being eradicable.

Even though the decision that the bee was not eradicable was a majority decision of the CCEPP Committee, it was not a unanimous decision. The reason for this is that there is the high level of uncertainty associated with the technical data that members are using to try and determine whether or not eradication is possible (and this is highlighted in the SRA&TR Report). Therefore it is very likely that even when the CCEPP Committee meets again in a weeks’ time it will still be at an impasse.

To overcome this, the Australian Honeybee Industry Council (AHBIC) is proposing a way forward. This involves undertaking a project from April to December 2011 that will enable data to be obtained which can be used to decide whether or not eradication is possible. This project is not an attempt to eradicate the Asian bee in itself, but to determine whether eradication of the bee is possible. The proposed project overcomes the notion that the current response could drag on and on. It will also be relatively inexpensive to fund. The project could be overseen and managed by a new consultative committee equivalent to the old Consultative Committee on Asian Honey Bees (CCAHB) which managed the response after the varroa mite was not found on the bees at Cairns. The membership of the new CCAHB would be the same as CCEPP and it would report directly back to the CCEPP at the conclusion of the project.

Details of the proposed project follow:

Project Name: Asian Bee Survey & Surveillance Project.

Purpose of Project: To obtain information that can be used to determine whether or not the Asian honey bee is eradicable from Australia.

Time Line: 1 May - 31 December 2011.

Methodology: A surveillance and destruction program for Asian honey bees will be carried out at the same level of effort given during the eradication activity carried out between Aug-Nov 2010 in Cairns (that is, a team of 40 people of the ground to detect and destroy Asian honeybee colonies, as well as personnel to collect and file the data).

New methodologies, such as the use of remote poisoning and sniffer dog, would also be incorporated into this effort.

In the early part of the project beekeepers would also give their time for free in community engagement activities through education stalls on Asian honeybees in shopping malls and the like. If it can be arranged beekeepers could also assist with locating colonies. During the search and destruction activity, data would be collected on a number of given parameters against which success or otherwise will be measured at the

end of the project.

These parameters are (but not restricted to):

- Number of colonies detected
- Size of colonies detected
- Age of colonies detected
- Number of swarms detected
- Size of swarms detected
- Number of bee captures in targeted net sweepings
- Number of bee captures in non-targeted net sweepings
- Number of bees found visiting feeding stations
- Public call rate

A Scientific Advisory Panel (SAP) would finalize these parameters before the project commenced and give each a particular 'weight', according to the significance of each. The SAP would report back to the CCAHB on the finalized parameter. The CCAHB would seek member agreement on the suitability of these parameters to produce meaningful results.

At the end of the project (Dec 2011) monthly data on the parameters would be analyzed by the SAP and recommendations made to CCAHB. The CCAHB in turn would examine the recommendations and pass them to CCEPP for final agreement before passing them to the NMG, where a final determination will be made.

Funding: Funding will be required for 8 months only and the cost would be shared between member States and Territories, the Commonwealth and Industry members of CCEPP. Beekeepers will assist with community engagement free of charge. Given that the cost of the eradication under CCEPP from April to December 2010 cost somewhere in the vicinity of \$1 million, then this project would cost a similar amount.

Yours sincerely



LINDSAY BOURKE
Chairman
Australian Honeybee Industry Council
8 April 2011

Biosecurity Queensland, a service of the Department of Employment, Economic Development and Innovation.

Remote Poisoning Trials on *Apis Cerana* Cairns, February 2011

By Wim De Jong

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Interim Report

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Remote Poisoning Trials on *Apis Cerana* Cairns, February 2011

INTRODUCTION

Apis cerana, commonly known as the Asian Honeybee (AHB) was first detected in the port area of Cairns in May 2007 and have since been detected on the Atherton Tablelands, as far south as Innisfail and also the Northern beaches of Cairns. This area of Far North Queensland is recognised for its environmental significance and its surrounding region of almost one million hectares; declared as the Wet Tropics World Heritage Area (WTWHA) of North Queensland (Figure 1). An eradication program commenced immediately after *Apis cerana* were detected and continues to date; while the program is assessed and its future considered.

The primary objective of the AHB eradication program is to remove AHB from the environment therefore reducing the impact of a mainland incursion by the Varroa mites (*Varroa jacobsoni* and *Varroa destructor*). Both these mites are external parasites of honeybees and are carried by *Apis cerana* who have adapted to withstand the mite's negative effects and thus, are regarded as a natural host to them. In recent years the Varroa mite, has become an increased threat to Australia due to their establishment in New Zealand and Papua New Guinea. Varroa mite infestations are known to weaken bees, reduce their life span and lead to death from viral infections that would not normally harm honeybees. It is believed Varroa mites can remain undetected for up to two years, by which time it is too late to prevent spread to other hives.

Remote poisoning is an important tool when considering eradication of AHB is Remote Poisoning. These trails were conducted in the Cairns area following 3 years of studying AHB and best practise methods of surveillance and eradication. This paper outlines two early trials that assist in providing additional tools to eradicating Asian honey Bee from mainland Australia.

Remote Poisoning Trial with Fipronil (Regent™) to kill the Asian Honey Bee, *Apis Cerana*

Guideline Methods

Equipment Required

- Multi-flow plastic feeding tray x 2
- All weather hood for feeding tray
- Spray bottle
- Collapsible card table
- Personal Protective Equipment (PPE) as per MSDS for handling Regent™
- Sugar solution – 2 litres of warm water to one kilo of white sugar, when dissolved, add 10 drops of lavender oil as an attractant.

Prior to Commencing trial

- Clear all dead bees from hive with a hand-held vacuum when possible if not wearing PPE and gloves

Methods

- Fine weather is needed to create the ideal conditions for the foraging bees.
- Locate and identify the plants used by the foraging *Apis Cerana* hive located at the experiment location.
- Set up feeding tray with the sugar solution on the card table near the host plants.
- Spray some of the sugar solution onto the foraging bees found there.
- The feeding tray is to be constantly observed and the bees counted. When there are approximately 20 bees visiting the feeding tray it is considered that they are Addicted to the sugar solution. (This may happen quickly or take up to three days).
- Locate a suitable position approximately 20 meters (normal foraging range) from the hive that will become the final position for the feeding tray.
- Once the bees are Addicted to the sugar solution, begin to move the table (without touching the feeding tray) in three meter increments every 15 minutes until the 20 meter location is reached.
- Take photos of every step of the process.
- A record of bee numbers using the feeding tray throughout the trial needs to be kept.

Trial 1

The first trial was conducted in West Court, Cairns where *A. Cerana* were first reported by a beekeeper as bees robbing extracted honey frames (stickies).

The trial began on 16 February 2011 at 11am by observing approximately 4 *A. Cerana* bees robbing stickies. An introduced sugar feeding station attracted the *A. Cerana* bees within approximately 10 minutes.

On day 2, approximately 20 bees foraging and returning on a regular basis were converted to the sugar feeding station and gave distance and direction to where the bees were travelling. Approximately 3.5 hours later, this beelining allowed field staff to find the *A. cerana* nest ~2m above ground level in a mangrove tree on the banks of Chinaman Creek. The nest was covered with bees with the comb being approximately 30cm x 15cm with all signs of it being in a healthy condition.

The sugar feeding station was moved to a position 20m within the nest with 20 bees moving between the nest and the sugar station. The bait tray was introduced as per the methodology outlined in the paper describing the proposed fipronil remote poisoning methodology as listed below app. After 15 minutes, visiting bee numbers dropped with all traffic stopping after 20 minutes. This may have been due to a change in weather with rain closing in, which resulted in cessation of all trial work for 5 days.

On day 10, inspection of the nest revealed a lack of bees covering approximately 75% of the comb with no bees maintaining the brood comb and a lack of pollen and nectar in the comb. The remaining bees (~1000-1200) were balled up near the top of the nest (the bee number was judged from previous counts on 300 *Cerana* nest and swarm dissections and counting drones / workers) and traffic at the nest entry was poor (which may have been partly the result of inclement weather).

Since the weather was forecasted to be poor for a week, the decision was made to destroy the nest. It is suggested that despite the trial being concluded early, it is unlikely the nest would have been able to recover from the limited exposure to fipronil.

Trial 2

The second trial was conducted on a nest identified during targeted floral sweeping in the North Cairns area. Bees foraging on target plants mimosa and cuphea were converted to a sugar feeding station and Beelining identified a nest in a melaleuca tree approximately 100m into a council park and approximately 23m above ground level.

On day one at 8:20am, some dead *A. Cerana* were detected in the sugar feeding station which had become dry since the day before. Upon refuelling the station, *A. Cerana* immediately started foraging again and within a few minutes, approximately 40-60 bees were feeding.

The bait station was introduced at 8:36am with approximately 50-60 bees feeding and at 8:41am, bee numbers increased to approximately 80-100. At 8:50am, the station started to dry and at 8:52am, the bait station was swapped out for a clean sugar feeding station which the *A. cerana* continued to feed on. At 2:45pm, the nest was active with bees coming and going.

On day 2, there were no bees observed on the sugar station at 9:00am and no activity at the nest entrance from 9:05am to 10:00am. No bee activity was observed at the nest on day 3 or 4.

On day 5, an arborist extracted the nest with all bees being dead.

Poisoning Trials Diary

DAY 1

- Record weather conditions.
- Prepare a second feeding tray with sugar solution, then add the label-prescribed dose of Fipronil (Regent™).while wearing PPE as directed in the MSDS.
- Once there is a steady flow of bees (20) to the feeding tray in the 20 meter position, the feeding tray is removed and immediately replaced with the identical, labelled tray containing the prescribed dose of Fipronil (Regent™)(0.05%).
- The feeding tray with Fipronil (Regent™) will be substituted at **11am for one hour**, this time has been chosen as bees predictably forage for nectar in the middle of the day (pollen in the morning and water in the afternoon). The sugar solution replaces the nectar.
- Bees visiting the Fipronil (Regent™) sugar solution must be counted to get the ratio of bees to dead bees.
- After the one hour exposure to the Fipronil (Regent™).solution the feeding tray is removed (and stored in a locked box until the next day and dispose of used Fipronil (Regent™).as per the MSDS).
- The original feeding tray, without poison, is then replaced on the table 20 meters from the hive.
- The number of bees visiting the feeding tray should continue to be counted and recorded to ascertain the total number of bees taking the bait to the hive.
- At **2pm** the hive will be opened (using smoke and protective clothing) and inspected for any visual effects and the dead bees will be collected using a hand held vacuum where possible
- The dead bees will be examined and counted in the lab.
- Take photos of all stages throughout the day.

Day 2 - 5

- Repeat all the steps as per Day 1 if required.
- Make up new dose of Fipronil (Regent™)(0.05%) , wearing PPE and disposing of

- Recording numbers of bees visiting the feeding tray, visiting the poison tray and the number of dead bees in the hive.
- Continue to photograph the steps each day
- When it is estimated that 95% of the bees in the hive are dead discontinue offering the bees the feeding tray containing Fipronil (Regent™).
- Observations of the hive will continue to monitor if more dead bees are still found in the hive or if over time the hive recovers and the population of bees again increase.

Difficult / impossible. Further trials will be conducted to test the strength of this method.

Conclusion

The first trial demonstrated that a very light exposure to fipronil may be sufficient to kill a nest of *A. Cerana*. The characteristic of *A. Cerana* not storing large quantities of honey and pollen (compared with *A. mellifera*) may contribute to it not being as strong/resistant to poisoning.

The second trial demonstrated that the employed methodology worked with no complications. Its usefulness in killing nests that are not easily accessible was well demonstrated.

Remote poisoning shows promise as a weapon in the *A. Cerana* eradication arsenal. The interim results suggest remote poisoning may be a tool that can be used to effectively to kill a nest where access may be difficult. Remote poisoning in conjunction with other proven tools including public calls / target floral sweeping / bee traps / beelining and spot sweeping will continue to make up the backbone tools of future bee eradication programs.