



RIRDC Honeybee R&D News is the official newsletter of the Rural Industries Research and Development Corporation Honeybee Program

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Chairman's Foreword

Des Cannon, Chairman

The new RIRDC Honeybee R&D Committee has been appointed – Dr Denis Anderson (CSIRO Entomologist), Prof. Ben Oldroyd (University of Sydney Geneticist) and Bruce White (former Technical Specialist, Apiculture, NSW DPI). This Committee will take the Honeybee Program through to 30 June, 2012.

Outgoing Committee member Trevor Monson is to be thanked for his hard work over the past three years. As one of the biggest pollination brokers in the world, particularly in organising bees for almond pollination, Trevor is always a very busy person; it is a mark of his dedication to the Australian Honeybee

Industry that he has always been prepared to play such an active role in Honeybee research in Australia.

This Issue of Honeybee R&D News highlights two new RIRDC Honeybee-related publications, and also contains the results of the survey conducted at the RIRDC Honeybee Research Field Day. Since publication of the last R&D News, RIRDC has endorsed a 5-Year Pollination R&D Program. While this is totally separate to the Honeybee R&D Program, it will operate as a sub-program within the Honeybee Program. It is driven by Pollination Australia, the alliance between the Honeybee industry and pollination-dependent Horticultural industries, but

because there is no 'Pollination Australia' industry as such within the RIRDC framework, the Pollination R&D Program finds its home under the banner of the Honeybee Program.

For further information about the RIRDC Honeybee Research and Development Program, feel free to browse the RIRDC website (www.rirdc.gov.au) or contact the Program Coordinator, Lea Edwards, on 02 6271 4132, or email lea.edwards@rirdc.gov.au

Current R&D Committee

Des Cannon (Chair)	02 6236 3294
Dr Denis Anderson	02 6246 4148 (w)
Prof Ben Oldroyd	02 9351 7501 (w)
Bruce White	02 9634 6792
Research Manager	
David Dall	02 6271 4128
Program Coordinator	
Lea Edwards	02 6271 4132

The RIRDC Honeybee Research Field Day

Held at University of Western Sydney, Hawkesbury campus, on Wednesday 8 July 2009, the Research Field Day attracted approximately 160 participants, many from interstate. Interest was shown in all the topics presented, including:

- Colony Collapse Events
- *Nosema ceranae* and its incidence in Australia
- Honey's value as a Pre-biotic
- Anti-Varroa boards and their influence on honey production and the incidence of small hive beetle
- Effect of Varroa in Papua New Guinea
- Small hive beetle Research currently being undertaken

Undoubtedly the highlight of the day, however, was the world premiere of the SBS Documentary of *Honeybee Blues*, which featured stunning photography of honeybees, and starred CSIRO

Entomologist Dr Denis Anderson. Denis is well-known throughout the beekeeping world for his discovery that *Varroa destructor* was the Varroa species affecting European Honey bees, not *Varroa jacobsonii* (as had been previously thought.)

Honeybee Blues tells the story of the world's disappearing European honeybees and the efforts of CSIRO scientist Dr Denis Anderson to save them from annihilation. From the native bush and orchards of Australia to the industrial farmlands of the United States and the highlands of Papua New Guinea, this new documentary portrays the battle by the last country on earth to remain free of the devastating *Varroa destructor* mite. The documentary is directed by Stefan Moore.

The documentary will be aired on SBS television at 7.30pm on 17th November this year, so take the opportunity to see it! DVDs will be available to purchase from Screen Australia. For further inquiries, please contact the producers Anna Cater on mobile 0403 186206 or email: anna@mitrafilms.com.au or Susan MacKinnon on mobile 0407 484 451 or email: s.mackinnon@ozemail.com.au.



The audience at the RIRDC Honeybee Research Field Day, UWS 8 July 2009

Marcus Oldham Rural Leadership Course 2009

The Marcus Oldham Rural Leadership Program Course at Marcus Oldham College (near Geelong, Victoria) ran this year from 28 June 2009 to 3 July 2009. Each year the RIRDC Honeybee Committee sponsors one person to do this course. This year RIRDC sponsored Stephen Davies, from Western Australia. A Report from Stephen on the Course will be included in the next Issue of Honeybee R&D News.



New RIRDC Honeybee Publications

All RIRDC publications can be purchased in hard copy online from www.rirdc.gov.au, or may be downloaded for free from the same site. Books can also be purchased by phoning 1300 634 313



Feasibility Study into In-Hive Fungal Bio-Control of Small Hive Beetle

Diana Leemon and Jacinta McMahon. Pub. No. 09-090

Executive Summary:

The Small Hive Beetle (SHB) is a foreign pest of bee hives that was first reported in Australia in 2002. Larvae of these beetles cause extensive damage to honey frames and combs, stored honey and pollen when they feed and leave wastes behind. The resulting fermented honey is rejected by honeybees and cannot be marketed by the beekeeper. Heavy infestations may also result in queens ceasing to lay eggs or bees abandoning their hives.



Since SHB was first reported it has spread at a rapid rate and is now regarded as a serious pest of hives in the eastern states of Australia. Chemical control of these pests in hives is limited by the possible toxicity of chemicals to the bees, unacceptable chemical residues in honey and the possible development of resistance to active ingredients. Therefore it is necessary to look for alternate and novel control strategies.

One strategy is to consider fungal bio-pesticides for the control of SHB. A fungal bio-pesticide for SHB control will have a dramatic impact on the honeybee industry by controlling a serious exotic pest without the use of chemicals. The magnitude of the benefits will go further through developing principles of fungal bio-control of hive pests that can potentially be applied to the control of another extremely serious exotic pest of bee hives, the Varroa mite (*Varroa destructor*). Although this pest has not yet been recorded in Australia, it recently established in New Zealand; a strategy of preparedness for when Varroa does reach Australia should be regarded as critical.

This project addresses both a current pest problem of the Australian honeybee industry, and develops the principles of fungal bio-control in bee hives for future pest problems.

This research identified a number of local isolates of the entomopathogenic fungi *Metarhizium anisopliae* and *Beauveria bassiana* that show good efficacy against adult and larval small hive beetles. The *B. bassiana* isolates were more effective against the adult beetles, while the *M. anisopliae* isolates were more effective against the larval beetles. The susceptibility of beetles to fungal infection did not appear to increase with age. Although isolates of *M. anisopliae* did not kill high numbers of adult beetles there was a trend of lowered fecundity in the beetles surviving the treatment that is worthy of further investigation. Spores applied as a dry loose powder to hives were rapidly cleaned up by bees in strong hives. The spores appeared to have an effect on the bees in the treated hives, although it was short term. It was also noted that fungal spores contaminating honey lose their viability rapidly.



Pollination Five-Year Plan 2009-2014

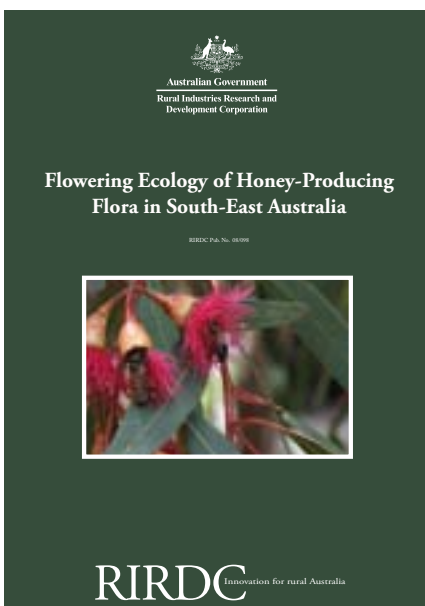
RIRDC Pub. No: 09-125

This Five Year Plan establishes the profile of investments that will comprise the RIRDC Pollination R&D Program, which will be administered as a sub-program of RIRDC's existing Honeybee Program.

Honeybee pollination provides a critical underpinning to Australian horticulture and agriculture, with an estimated 65% of agricultural production involving pollination from honeybees. Honeybee populations around the world,

including in Australia, are increasingly compromised by pests, diseases, insecticides and exclusion from vital floral resource areas. The R&D activities in this RIRDC Program are a response to these issues.

RIRDC's Honeybee Program works closely with Pollination Australia, which is an alliance of members of the Australian honeybee industry and the nation's pollination-dependent industries.

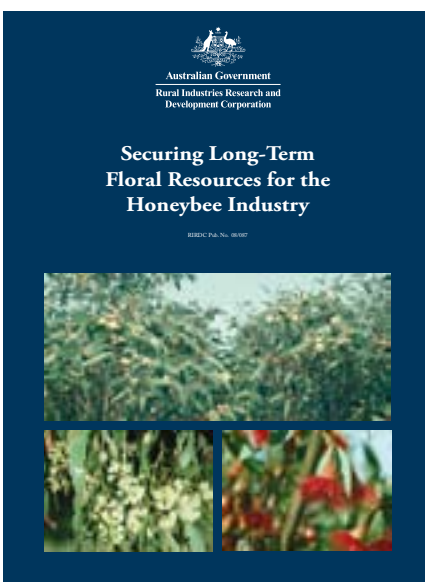


Flowering Ecology of Honey-Producing Flora in SE Australia

M Birtchnell and M Gibson. RIRDC Pub. No: 08-098

This report examines the flowering ecology of important Australian melliferous flora. Aspects of flowering ecology that can have a negative impact on invertebrates, including honeybees, were also investigated. The research was based on information sourced by highly experienced, commercial beekeepers and, so, provides a valuable written record of long-term observations relating to flowering ecology which otherwise may be lost following the death of beekeepers. Results of this study are of far-reaching importance, not only to the beekeeping industry, but to land managers, the general public and the future of Australian flora and fauna.

An understanding of flowering ecology is vital for many reasons, including implementing appropriate management practices which ensure the sustainability and growth of natural resources and industries like the beekeeping industry. Despite the importance of such studies, very little research has considered flowering ecology in Australian flora. Furthermore, research often was based on short-term data; long-term data are widely acknowledged as being necessary in such research in order to determine 'real' flowering patterns. Thus, studies of flowering ecology which use long-term data are vital.



Securing Long-Term Floral Resources for the Honeybee Industry

D Paton. RIRDC Pub. No: 08-087

This report documents the floral resources used by the honeybee industry in rural landscapes of South Australia, particularly the Mt Lofty Ranges. Various species of eucalypt are important sources of nectar for honeybees in this region. A simple method is developed to document the flowering of these plants, allowing spatial and temporal variation in flowering to be documented.

The report aims primarily to provide

information on the use of different floral resources by the honeybee industry, and how the flowering levels of key plant species change over time and following perturbations like fire and drought. Since fire and drought are more likely in southern Australia due to climate change, monitoring the performances of the plants during and following the current drought, and following recent fires, provides a strong basis for predicting future changes to floral resources.

Survey results from

RIRDC Researcher's Honeybee Field Day

During the course of the Research Field Day, participants were invited to fill in a survey form. This was primarily aimed at helping us to gauge the effectiveness of the Field Day. From the approximately 160 participants present on the day, we received 74 completed survey forms and results indicate that:

- Those present obtained an increase in their knowledge of *Nosema ceranae*, Colony Collapse Disorder and Varroa destructor
- This increase in knowledge prompted 67% to indicate that they would change their honeybee management practices
- 78% indicated they would like to receive more information on Honeybee Pests and Diseases
- Approximately 80% receive information about Pests and Diseases from Field Days and Newsletters. 75% indicated they receive information from Research Publications and other beekeepers. Only 47% indicated that they obtain information from the internet. There is overlap between the sources of information – many use more than one source.
- 96% rated the Field Day as of high to excellent value
- Only 24% indicated that they would have liked other topics covered

Study of the full list of written comments has not yet been completed, but as a Communications exercise the RIRDC Honeybee R&D Committee were pleased with the overall attendance and response, and felt that it was extremely worthwhile in 'getting the message out there'.

Hopefully we will be able to repeat the effort at other venues in the future.

Varroa on its host, the honeybee. Photo source: Wikipedia

**HONEYBEE
PESTS &
DISEASES**

