



Government of South Australia
Primary Industries and Resources SA

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**INQUIRY INTO THE FUTURE DEVELOPMENT OF THE AUSTRALIAN
HONEY BEE INDUSTRY**

**SUBMISSION TO THE HOUSE OF REPRESENTATIVES STANDING COMMITTEE
ON AGRICULTURE, FISHERIES AND FORESTRY**

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Introduction

A broad overview of the national honeybee industry is provided in Attachment 1. The remaining document has been constructed to sequentially work through the terms of reference, providing a brief description of the issue followed by several recommendations that have national application.

1. Current and Future Industry Prospects

1.1 Insufficient Industry Data for Decision Making

Historically, industry data (particularly economic) has tended to only be consolidated in response to an issue. Consequently these reports (unlike technical research reports) have a limited life span due to the evolution of industry and/or economic conditions. A cost effective method for data capture could;

- assist operators assess their profitability (relative to industry standards);
- allow prospective investors/entrants to assess the industry's productivity and opportunities; and
- provide objective data when developing policies.

A benchmarking program involving operations from all states and territories could contribute greatly to this. Computer based models that could be modified for this purpose already exist in many primary industries.

1.1 Recommendations

- Implement and maintain a national honeybee industry benchmarking program involving all states and territories.
- The Australian Honeybee Industry Council (AHBIC) to co-ordinate the periodic distribution of benchmarked indicators to industry for information.

1.2 Strong Genetic Bee Stocks are Necessary

The bulk of replacement queens for the honeybee industry (excluding Western Australia) are sourced from the eastern states (principally Queensland and New South Wales). In many instances, queen bee breeders do not actively measure or provide purchasers with data about the honey producing ability, temperament and hygienic behaviour (ie ability to detect and remove infected larva/pupa) of the queens supplied. Similarly, beekeepers do not provide reciprocal information to their queen bee breeders. Thus in the absence of standardised objective trait measurements, decisions on genetic selection are subjective and may not necessarily match customer requirements. Further, consideration should also be given to evaluating known overseas lines of varroa resistant *Apis mellifera* – both as a preventative measure for the Australian honeybee industry but also as a means of creating a market advantage for Australian package bees.

It is argued that Kangaroo Island is the last known population of pure *Apis mellifera ligustica* Spinola (Ligurian bees). In recognition of this status, the South Australian Government has legislated to protect this unique honeybee gene pool. Research is underway to determine the potential for the commercialisation of these genetics. For the past two and a half years concerted selective breeding of several stock lines has been in place. Trials have been conducted on production, hygiene and temperament. Kangaroo Island is potentially a vital provider of queen bees and package bees in support of Australia's drive to establish a sound honeybee genetic pool.

1.2 Recommendations

- Support and expand the AHBIC genetic improvement program so that more bee lines (including known overseas varroa resistant lines) can be tested for their production traits. Through this program's association with the University of Western Sydney, opportunities may arise where collaborative work with overseas institutions may allow Australian bee lines to be tested (including any inherent varroa resistance).
- Investigate the potential for overseas investment/resources in an Australian genetic improvement program – Australia's freedom from exotic mites and pathogens may be of advantage for certain R&D projects.
- Commercialise the breeding lines established in AHBIC's genetic improvement program including information about their heritable traits (eg production, temperament and hygienic behaviour).
- Establish a bee version of the livestock industries genetic databases (eg Sheep Genetics Australia and Breedplan) to run breeding data and provide independent breeding value information for the industry.
- Ensure that at least one bee quarantine facility is maintained within the eastern states for the importation of overseas genetic stock and the retention of valuable breeding stock in the event of an exotic disease response.

2. Industry's Role in Agriculture and Forestry

2.1 Pollination Reliant Industries need to Recognise the Importance of Professional Pollination Services

An analysis of 1999/2000 data revealed that the value of pollination services (both direct and incidental) was \$1.7 billion for the 35 most honeybee pollination dependent horticultural crops. The almond industry alone estimates a need for around 300,000 beehives for pollination by 2015. Unfortunately the absence of clear market signals, due to poor awareness about the benefits of managed hives for pollination and the presence of naturalised colonies, has resulted in remuneration (in general) not covering the cost of preparing hives for pollination nor the potential loss from competing honeyflows. Consequently up to 50% of commercially managed national beehives (it's arguable that between 70%-80% of the 672,557 national beehives are commercially managed) may not be available for professional pollination when required. This further increases the total number of hives required in order to have sufficient for pollination services.

2.1 Recommendations

- Support and assist in the development of the Pollination Industry Network (PIN) whose role would be to identify and oversee the undertaking of beneficial research and development (particularly on threats to the availability of honeybees for pollination) and the education of stakeholder groups.

3. Biosecurity

3.1 A Sound Biosecurity Platform Supported by Jurisdictions and Pollination-Reliant Industries is Required

Endemic honeybee diseases (such as American and European Foulbrood) are host specific. With few exceptions (such as the overseas trade in queen bees, package bees and honey to New Zealand), these conditions do not limit export market opportunities for the honeybee industry. It is primarily in response to this absence of disease as a trade barrier, combined with the lack of zoonotic and public food safety risks, that many jurisdictions are keen to devolve endemic disease control to industry. However, in the absence of any suitable industry infrastructure to monitor endemic disease, it has been considered premature for the South Australian governments to deregulate American Foulbrood control because of the impact this disease can have in high hive density situations such as pollination contracts. Standardisation of endemic disease control through a national program would greatly benefit industry and state jurisdictions.

In conjunction with a national on-farm biosecurity disease management program, consideration should also be given to implementing a surveillance program that monitors imported honeybee products for compliance with AQIS import requirements and FSANZ Food Standards Code. The data collected would contribute to the fine-tuning of the national on-farm biosecurity program, and act as an additional detection method for exotic honey borne bee conditions (such as *Nosema ceranae*).

Biosecurity risks tend to be perceived as on-farm or industry issues. However the maintenance of disease-free (or low risk) regions are important for the trialling and breeding of queen bees (refer to section 1.2). Kangaroo Island for example, has to date remained free of all major international bee diseases. Through a Government and Island community partnership, a whole of Island biosecurity plan has been finalised and will commence implementation in 2007/2008. This is not an inexpensive exercise – the benefits that accrue are wider than the local region or state. National assistance for the maintenance of such regions is desirable.

3.1 Recommendations

- Develop a national biosecurity disease management program that is underpinned by HACCP principles, complements existing food safety programs (such as B-Qual), and has the potential for external monitoring.
- Implement a national testing program for domestic and imported honeybee products to confirm the disease level of key production limiting diseases and the early detection of new risks.
- Request Animal Health Australia to consolidate, in liaison with Biosecurity Australia and state jurisdictions, a tourist information brochure that highlights where honeybee products can and can't be moved on mainland Australia and surrounding islands.
- Consider how national measures could assist in strengthening the biosecurity of areas of industry importance, such as Kangaroo Island.

3.2 Strengthen the Honeybee Industry Exotic Surveillance Program to Minimise Biosecurity Incursion Threats

Unlike New Zealand (where predominantly paid pollination services were used pre-varroa), any outbreak of varroa or other exotic mite will devastate Australia's pollination-reliant industries. Much of the \$1.7 billion dollar pollination service relied on by horticulturalists (with the exception of the almond industry) and agriculturalists (with the exception of small seed production) is provided by unmanaged or naturalised colonies that will be devastated by varroa or other exotic bee mites. Thus an exotic bee mite/disease incursion will not only impact on the honeybee industry but also on around 65% of the horticultural crops produced.

In an environment of limited funds, exotic surveillance provides the biggest return on investment to the economy. It is arguable that Australia's early mite detection system (\$250,000 per annum) is inadequate when compared to New Zealand's South Island surveillance program. A review of this system by Biosecurity Australia, state jurisdictions and AHBIC is urgently required.

3.2 Recommendations

- Implement an education campaign to heighten awareness in the honeybee and pollination-reliant industries and the wider community about the risks and potential consequences of an exotic bee mite/disease incursion.
- Support AHBIC and Animal Health Australia in their ongoing review and updating of the "Bee Diseases and Pests" AUSVET Plan manual.
- Maintain and expand the National sentinel hive surveillance program and other surveillance initiatives (eg bait hives, sniffer dogs, on-farm testing etc).
- Request that Biosecurity Australia undertake a risk assessment for Australia's honeybee industry as per Biosecurity New Zealand's "Import Risk Analysis: Honey Bee Products" undertaken in 2004.

4. Trade

4.1 Honeybee Industry Products must be Underpinned by Food Integrity Systems to Ensure Continued Overseas Market Access

To maintain a strong viable Australian honeybee industry it needs to be underpinned by robust food integrity systems (based on HACCP) to ensure its products are competitive on the international market and meet consumer requirements. In recognition of this, industry has developed paddock to plate biosecurity and food safety systems. Expansion of these systems is now dependent on honey packer uptake and implementation. These systems however need to be complemented with supportive national food standards that can be used to verify compliance by both domestic and imported honey.

4.1 Recommendations

- Review FSANZ Food Standards Code (in relation to honey) to identify whether any gaps exist that may affect public safety or product integrity such as adulteration).

5. The Impact of Land Management and Bushfires

5.1 Continued Access to Ecosystems (including Native Flora on Crown Land) is Necessary

To ensure that future negotiations for land access are based on scientific data, research funds are needed to measure the impact of managed beehives on different ecosystems. It is arguable that the South Australian honeybee industry's relatively stable access to crown land is the result of such research undertaken in the Ngarkat Conservation Park. Access to privately managed areas of native flora is declining. This access problem could be rectified by making future access to Federal funds for revegetation and conservation activities on private land provisional on the inclusion of local pre-European "bee friendly" vegetation and that such vegetation is available to the honeybee industry. Similar consideration could also be given to plantations intended for use in the event of carbon trading.

5.1 Recommendations

- Review the potential to make Federal Government funds for revegetation land conservation activities provisional on the inclusion of local pre-European "bee friendly" vegetation that is available to industry.
- Consider how national support could assist in the undertaking of research across different ecosystems in order to scientifically determine the impact of managed hives on these ecosystems.

6. The Research and Development Needs of the Industry

6.1 The Development of a Multi-Industry Research Entity is Necessary

It is arguable that current commercially managed hive numbers (470,790 – 538,046) could sustain immediate and imminent pollination requirements (assuming they remain mite/disease free). However, as outlined previously in section 2.1, up to 50% of hives may not be available. To ameliorate this problem, national support is required to facilitate the development of a multi-industry network whose role will be to oversee and fund R&D of mutual benefit to participating parties. This recommendation was the outcome from a Rural Industry Research and Development Corporation (RIRDC) sponsored “Honeybee Linkages Workshop” which involved participants from the honeybee industry, key agricultural and horticultural industries and Government jurisdictions conducted in Canberra on the 23 – 24 April 2007. An application from RIRDC on this matter is imminent. The development of the “Pollination Industry Network” (PIN) needs to be complemented by available competent researchers and the development of a supportive communication infrastructure with direct liaison with pollination-reliant industries in order to improve information penetration.

6.1 Recommendations

- Industry through RIRDC seeks support and financial assistance from the Federal Government in developing the PIN.
- Review the capacity for honeybee research nationally, and financially assist where market signals do not support the recruitment of new researchers.

7. Existing industry and Government work that has been undertaken for the honeybee industry

The South Australian Honeybee Industry has a strong working relationship with both Primary Industries and Resources SA (PIRSA) and the South Australian Department of Environment and Heritage (DEH-SA). In the former case, this partnership has focused on industry biosecurity (both endemic and exotic) through education and enforcement of the Livestock Act 1997 when necessary. Industry has had direct input into the development of disease control programs through industry specific advisory groups and their respective associations. As this partnership has matured, industry has felt confident in involving PIRSA in the development and implementation of their five year industry strategic plan.

In the case of DEH-SA, industry, again through a consultative committee, has had direct input on negotiating access to crown land access for managed hives. In recognition of this relationship, industry was able to renegotiate temporary sites to replace those lost for example in the recent Ngarkat Conservation Park fires. Beekeepers have also negotiated directly with Adelaide University to participate in ecological surveys where managed hives are kept also.

7.1 Recommendations

- That the Standing Committee notes the collaboration between the South Australian Government and the State's honey bee industry.

References

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Gibbs, DMH and Muirhead, IF (1998) The Economic Value and Environmental Impact of the Australian Beekeeping Industry;
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Benecke, FS (2007) Commercial Beekeeping in Australia; RIRDS Publication No. 07/059

Primary Industries and Resources SA registration data

Appendix 1

Australian Honey Bee Industry Overview

In order to identify future opportunities, an appreciation of the current industry is necessary. Based on information from Rodriguez et al (2002), Gibbs and Muirhead (1998) and Benecke (2007), the industry can be characterised as follows:

- most honeybee operations are small family owned businesses operating less than 500 hives. In general terms, only larger operations with 500 or more hives (of which there are about 250 nationally) can solely rely on their honeybee business for their income. Average business costs account for 67% of income, though Gibbs and Muirhead (1998) suggest that this cost could be as high as 80%. Major costs are labour and motor vehicle expenses including fuel. When non-cash costs are included, such as depreciation and the value of the operator, business losses are common. In 2000/2001, the average rate of return for honeybee businesses was -5%. Only 10% of honeybee businesses (mainly larger operations) generated positive rates of return of more than 10%;
- the average age of honeybee operators is 54 years (in 2000/2001), and their experience in the industry is around 25 years;
- formal schooling is limited amongst the older generation of beekeepers, with just over 50% of operators having attained less than year 11 as their highest level of education;
- managed beehive numbers are declining. Between 1996/1997 to 2005/2006, registered hive numbers have decreased by 68,300 hives (11.3%) to 672,557 hives nationally. The biggest losses have occurred in Western Australia (34.2%), Victoria (23.9%) and South Australia (16.8%). This trend is not a recent phenomenon. Department of Primary Industries and Resources SA (PIRSA) data indicates that over the last 20 years, 677 beekeepers owning 39,200 beehives have left the industry and not been replaced. This loss has predominantly occurred amongst hobbyist and semi commercial operations owning less than 200 hives per operation. Within the commercial sector (responsible for 79% of the State's beehives), hive numbers have remained static. It's probable that the reductions observed in other states reflect what has occurred in South Australia; and
- managed hives, particularly those used for pollination contracts, need access to native flora in order to rejuvenate the hive. Unlike production livestock, a paucity of information exists about the dietary requirements of bees. Hence no effective substitute exists to maintain a productive hive over an extended period of time.