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The future development of the Australian honeybee industry

*Submission to the House of
Representatives Agriculture, Fisheries,
and Forestry Committee Inquiry*

Prepared for

Australian Honeybee Industry Council (AHBIC)

*Centre for International Economics
Canberra & Sydney*

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Forward

The following submission to the Federal Parliamentary Inquiry into the Future Development of the Australian honeybee industry has been prepared by the Centre for International Economics on behalf of the Australian Honeybee Industry Council (AHBIC).

The Australian Honeybee Industry Council (AHBIC) is the peak body representing the apiary industry in Australia. Its membership includes:

- Federal Council of Australian Apiarists' Associations;
- Honey Packers' and Marketers' Association of Australia;
- Australian Queen Bee Breeders' Association; and
- National Council of Pollination Associations.

The submission was prepared following consultation with the AHBIC Executive and all major committees of AHBIC. All recommendations are supported by the industry.

Executive Summary

THIS REPORT IS A SUBMISSION to the House of Representatives Agriculture, Fisheries, and Forestry Committee Inquiry into the future development of the Australian honeybee industry. It has been prepared by the Centre for International Economics on behalf of the Australian Honeybee Industry Council (AHBIC).

In accordance with the Committee's request, this submission addresses the following topics:

- current and future prospects;
- role in agriculture and forestry;
- biosecurity issues;
- trade issues;
- the impact of land management and bushfires;
- research and development needs of the industry; and
- existing industry and government work that has been undertaken for the honeybee industry.

A summary of the submission is provided below.

Current and future prospects

- The most effective avenue for the honey industry to compete with other spreads is through promoting the health qualities of honey.
- In order to generate greater marketing opportunities for Australian honey, the industry has recently invested in a marketing plan developed specifically for the industry.
- There are some increased opportunities to sell value added consumer packaged Australian honey in the US, EU, and China.
- As a medicinal product, honey is currently being used orally and as a treatment for wounds, burns, and ulcers. With the ageing population and the increased amount spent on health care, medicinal honey provides a large opportunity for the industry to promote the use of honey as a therapeutic product.
- There is a large opportunity to diversify the industry's income. Australia is the largest commercial producer of almonds in the Southern Hemisphere, which are 100 per cent dependent on honeybee pollination. There is expected to be high

growth in this industry, thereby providing the opportunity for beekeepers to provide pollination services.

- Diversification into commercial queen bee and package bee production for the domestic and international market represents a viable alternative to honey production and could provide the industry with huge opportunities in the long term. This is especially the case in the US, where the Varroa mite and Colony Collapse Disorder (CCD) continues to destroy honeybee colonies.
- Although the honeybee industry has many current and future prospects, they are currently under threat by two primary risks associated with the industry – establishment of Varroa and other mites and reduced access to public lands. The industry is currently trying to address these risks with a recently held national linkages workshop on research and development needs for the pollination industry, and the development of a national code of conduct for beekeepers working on public land.

Role in agriculture and forestry

- The honeybee industry's gross value of production around \$80 million per annum. Of this, \$60 million comes from honey production, with the remainder coming from other products such as paid pollination services, beeswax production, queen bee and packaged bee sales, pollen, bee venom, royal jelly, and propolis.
- Honeybee pollination is essential for some crops, while for others it raises yield and quality. Honeybee pollination provides significant value to Australian horticulture and agriculture with services being valued at \$3.8 billion per annum for the 35 most important honeybee dependent crops. When other crops, including pastures such as lucerne and clover, are added this estimate becomes even larger.

Biosecurity issues

- Australia is the only major honeybee producing country in the world where Varroa and other mites are not present. Should the pest become established in Australia it would continue to spread rapidly unless very expensive control measures were enforced. Control costs for the pest would substantially add to costs of production and could have a devastating effect on the industry. Most small beekeepers would probably find it uneconomic to continue beekeeping.
- Currently there is surveillance for exotic honeybee pests, most notably Varroa, in the immediate vicinity of Australian ports. Sentinel hives with sticky strips can trap exotic mites, thus enhancing the chances of detecting an incursion. In addition, the industry uses bait hives at various ports.

- To reduce the risk and impact of a Varroa and other mites incursion and establishment, the industry, in conjunction with the Rural Industries Research and Development Corporation (RIRDC), held a workshop in April 2007. The objectives of the workshop were to develop possible solutions to address:
 - future honeybee and pollination research and development capability and funding;
 - education and training requirements to support honeybee and pollination production, research and extension;
 - the dissemination of information to organisations, industries, and individuals reliant on commercial beekeeping and pollination;
 - additional quarantine requirements to support the beekeeping industry and pollination services;
 - profitability of pollination;
 - education of growers and the need for remuneration to be sufficient to cover the costs of pollination; and
 - restricted access to resource base.

Workshop participants collectively developed a set of key outcomes and recommendations.

- Although wax moth does not pose as much a threat to the industry as some pests, its control is still a significant cost for the industry. Similarly, the control of small hive beetle imposes a significant cost on the industry but in this case the problem is still growing so the costs could become quite large. However in order to use control products, beekeepers have to undertake training courses through TAFE in NSW to gain a certificate of competency in fumigation. This is not the same in other states and it is the industry's belief that the training requirements for the use of these products in NSW is too rigid and that they impose an unnecessary cost on the industry.
- The disease which is of most concern is American Foulbrood (AFB), and most activities of state agencies are directed at controlling this disease. It is highly infectious so that actions by one beekeeper whose hives are infected can cause the disease to spread, and seriously impact on many other beekeepers. Despite all the measures to control the disease the evidence is that it continues to spread.
- Animal Health Australia (AHA) has prepared a proposal for a nationally coordinated program for the improved management and control of AFB (AHA, 2004). It is proposed that AHA would manage the implementation of this national program. Unfortunately, the industry has dropped this proposal because of governments' unwillingness to commit resources to the plan. However the industry believes a program of this type is essential for an efficient and effective approach to controlling AFB.

- Colony Collapse Disorder (CCD) is a relatively new phenomenon affecting the health of bee hives. Although no one knows exactly what causes it, the major symptom is the complete disappearance of adult bees in colonies. Although Australian beekeepers have not experienced colony collapse disorder, the impact this disorder has had on the US suggests any incursion into Australia is likely to significantly cost Australian honeybee and agriculture industries.
- Bumblebees were introduced into Tasmania in 1992 by accident and have since been contained in Tasmania. Bumblebees have a negative impact on the Australian beekeeping industry. However some industries such as the tomato industry and those that are grown under similar hydroponics are calling for the introduction of the bumblebee to pollinate their crops. The industry believes that bumblebees should not be introduced on to mainland Australia due to concerns regarding pests and disease, competition for nectar and pollen with managed honeybees, and the possible negative impact on the native environment.
- There is currently a five year review of the Emergency Animal Disease Response Agreement. The industry therefore supports the Committee of Review recommendations on and proposed changes to the agreement on the basis of ensuring a Response Agreement that ensures protection of Australia's agricultural and pastoral industries from introduced bee diseases and pests.
- The National Sentinel Hive Program has recently been taken over by the Office of the Chief Veterinary Officer and will move to Animal Health Australia as of 2008. A draft business plan has been produced that addresses funding and coordination of the program. Recommendations from a Biosecurity Australia review are to be implemented by Animal Health Australia.

Trade issues

- Honey exports face ad valorem tariffs and non tariff barriers. Ad valorem tariffs range from approximately one per cent to 248 per cent. However there is also evidence of non-tariff barriers faced by Australian honey exporters.
- Australia has an enviable reputation in world markets for producing high quality, clean and green honey and honeybee products. However, this reputation is under threat from contaminated honey or honeybee products being imported into Australia and re-exported to international markets with a 'Made in Australia' label.
- The National Residue Survey (NRS) monitors residues of chemicals and environmental contaminants in Australian honey. However under current legislation the industry believes that the NRS is unable to assist industry to the fullest in reducing contamination.
- The industry is concerned with the integrity of organic honeybee products that are being marketed in Australia and the 'Certification' claims that are being made. The Australian Competition and Consumer Commission (ACCC) has also

expressed concern regarding food and beverage companies in general making claims of their products being labelled 'organic', which might be misleading (ACCC, 2006).

The impact of land management and bushfires

- Without access to native flora the commercial beekeeping industry would not exist. Continued access to native flora on private but more especially public land is the essence of the Australian beekeeping industry.
- In response to concerns about vehicular access to hives and the equivocal empirical data about the impact of introduced honeybees on ecological processes, state governments have placed restrictions on access to public land.
- Evidence suggests that managed honeybees have either a minor or no effect on native insect pollinators or fauna competing for nesting hollows in public forests. Managed honeybees are moved often and harvest only excess honey flows.
- At least 60 per cent of beekeeping activities are undertaken on public land that is controlled by state governments. Future access to these lands is at best uncertain.
- In addition to erosion of access to resources on public lands, the following are also threats to floral resources accessed by beekeepers:
 - land clearing for agriculture;
 - forestry activities that remove honey producing trees;
 - replacement of felled trees with pine and low honey and pollen yielding eucalypt plantations;
 - fire, including natural bushfires;
 - reduction in vehicle access to potentially high yielding apiary sites;
 - competition with loggers as forest resources contract;
 - salinity affecting the health of the available flora;
 - droughts which reduce flowering and interrupt growth cycles;
 - control of weed species that provide pollen and nectar for honeybees;
 - urban sprawl;
 - access to native flora on private lands because of a perception by some landholders that managed honeybees are harmful to the ecosystem; and
 - aging and dying of mature eucalypt trees across the general landscape in temperate Australia.
- Long term climate change that may have the impact of increasing drought durations and frequency will equate to reduced reliability of the floral resources within Australia to regularly and reliably flower. These long-term dry periods may also equate to an escalation in fire events, which potentially remove a floral

resource for many years until regrowth is mature enough to return to a regular flowering pattern.

- The honeybee industry has a relatively low carbon cost of production compared to the production of substitute products such as sugar and other products.

Research, development, and education needs

- Industry research and development is principally funded by the research levy on honey currently managed by RIRDC. Apiarists pay a levy for research, which is matched on a dollar for dollar basis by the Australian Government. The levy raises between \$350 000 and \$450 000 per annum and funds approximately 12 projects per year. A further \$10 000 per annum is also provided via queen bee producers.
- The new five-year research and development plan 2007-2012 is the fifth research and development plan for the honeybee program. The new plan reflects the state of the industry in 2006 – a supply-limited producer of a suite of quality products with issues in profitability, training, resource access and pest and disease management.
- The plan identified six key priority areas for research and development investments to be made on behalf of the industry and Australian Government. The research and development plan's objectives are:
 - pest and disease protection;
 - productivity and profitability enhancement to lift beekeeper income;
 - resource access security and knowledge;
 - pollination research;
 - income diversification, new product development; and
 - extension, communication and capacity building.
- The industry's gross value of production falls dramatically after a sequence of drought years and with it, industry's capacity to attract matching funds from the Australian Government. The industry is currently suffering a 'double whammy' effect (less of its own levy resources and less matching funding) at a time in its history when it can be least afforded.
- There is no provision in the current levy arrangements for voluntary industry contributions to be recognised by the Australian Government. Consequently the industry cannot attract matched funding for an approved project.
- The national workshop to address recommendations from the Australian Parliament Inquiry into Rural Skills, Training and Research held on 23 and 24 April 2007 included representatives from industries that benefit from pollination services. The workshop reviewed the new industry research and development plan and agreed on the need to supplement both its budget and its

coverage. Workshop participants suggested the following areas should be investigated:

- beehive health, production, ecology (environment), climate change, and pollination;
 - higher education, including undergraduate and postgraduate;
 - training, including vocational, registered training organisations and other types of training;
 - staff development, employment opportunities;
 - biosecurity, including quarantine, state issues, and policy development;
 - industry development and value adding; and
 - resource security.
- The industry has recently had a range of competencies endorsed by Department of Education, Science and Tourism (DEST) for the delivery of training to its members. As the industry is dispersed right across Australia, the industry believes that there will be problems getting a critical mass of trainees together for specialised bee industry training.
 - The geographical dispersion of the industry is a real impediment to the up-skilling of the industry for future changes that are likely to impact upon it. The industry therefore suggests that institutional arrangements be put in place for a Commonwealth traineeship to be run that would enable trainees to attend their training anywhere in the country.

Existing industry and government work

Recent investment by industry and Government in the Australian honeybee industry includes:

- Industry Partnerships Program:
 - Stage 1 'Taking stock and setting directions'; and
 - Stage 2 'Developing a National Code of Conduct'.
- CRC Grant for Queen bee breeding - \$200 000 to \$300 000 grant;
- Emergency Animal Disease/Pest Response:
 - Work with Plant and Animal Health Australia;
 - National Sentinel Hive Program; and
 - Industry Training and Response.
- Honeybee research and development plan - 2007-2012
- Completion of the development of competency standards:
 - Training materials for EMS units and emergency response; and

- Training for emergency animal disease/pest response.
- Industry sought funding for development of course materials for the remainder of apiary competency units.
- Funding of a workshop to address industry issues and build on recommendations from the Australian Parliament inquiry into Rural Skills, Training and Research.

Summary of recommendations

In consultation with AHBIC executives and all major committees of AHBIC, the industry makes the following recommendation.

Recommendation 1 The resolutions agreed at the national pollination industry workshop of 23 and 24 April 2007 be implemented as agreed. This means the industry and Australian government should work together to deliver on the key outcomes derived from the honeybee linkages workshop. This includes developing a new national alliance for the management of the issues faced by the pollination industry, and obtaining interim government and new industry funding to develop a considered proposal and full strategic plan. It is hoped that this will lead to a secure funding base for implementation of the strategic plan.

Recommendation 2 All crop industries that derive an economic benefit from pollination services should contribute to exotic pest and disease cost sharing arrangements.

Recommendation 3 Education programs should be developed to assist apiarists to correctly price paid pollination services along with the development and implementation of standards to objectively measure the quality of pollination services provided. These tasks are currently beyond the resources of the current research and development program.

Recommendation 4 Training requirements should be revised for beekeepers who want to use fumitoxin coated insecticide tablets and sanphos fumigation tablets in order to remove an unnecessary cost on the industry.

Recommendation 5 A national program for the improvement and control of American Foulbrood should be implemented. This should be based on the nationally coordinated program that has already been created by AHA but has not yet been implemented due to a lack of funds from the Commonwealth government.

Recommendation 6 The government should continue to prohibit the introduction of the bumblebee into mainland Australia. This is because it is unknown whether the bumblebee harbours pests that are dangerous to the honeybee industry, and if the bumblebee becomes feral then it could impact the honeybee industry and adversely affect the environment through over pollination of introduced weeds. Native bees may also be adversely affected.

Recommendation 7 The government should make a request to BASF to make Friponil available to the industry in order to control small hive beetle and emergency disease pest incursions.

Recommendation 8 If the Eastern Creek quarantine station is relocated in 2010, then the new facility for the inspection of imported honeybees should be run to the same high standards that are currently being undertaken, and that current funding arrangements for the maintenance of the program should continue.

Recommendation 9 All recommendations from the 2005 National Sentinel Hive Program review should be implemented and managed by AHA in order to enhance the surveillance for exotic honeybee pests in the immediate vicinity of Australian ports.

Recommendation 10 All hive products from countries that are not free from *nosema ceranae* should be banned.

Recommendation 11 There should be continual lobbying by the Australian government to the New Zealand government over the prohibition of Australian honeybee exports into New Zealand.

Recommendation 12 The Australian government should ensure that any negotiations with the South Korean government addresses the current non-tariff barriers faced by the Australian honeybee industry. This means the Government should seek to remove all quotas on Australian honeybee products imported into South Korea.

Recommendation 13 The Australian government should continue to lobby the Canadian government over highly restrictive quarantine requirements placed on Australian queen bee exports. The industry believes that it has sufficient protocols in place to minimise the risk of Small Hive Beetle being unintentionally brought into Canada through queen bee exports from Australia.

Recommendation 14 The industry supports the continual lobbying of the Japanese government by the Australian government over reducing unfair trade restrictions on queen bees from Australia. The industry believes that because Japan already has Chalkbrood, European Foulbrood, and there have been intermittent cases of Nosemosis, these should be removed from the notifiable disease list.

Recommendation 15 The levy for the National Residue Survey should be reduced from 0.03 cents per kilogram to 0.01 cents per kilogram, with the difference being redirected to AHA. This is due to the industry's inability to access substantial funds within the National Residue Survey

Recommendation 16 The government should enforce the rules and regulations associated with product labelling in order to reduce the risk of contaminated honeybee products being imported into Australia and then being re-exported with a 'Made in Australia' badge. In addition, this should be supported by the enforcement of labelling on product descriptions so re-exporters are not allowed to attach a label that relates to a specific ingredient when in fact the majority of the product is made up of filling material.

Recommendation 17 The government should develop a domestic standard for organic products to ensure consumers are fully informed regarding honeybee products.

Recommendation 18 Resources should be provided to manage a Varroa and other mites outbreak and the resultant impacts on pollination dependent industries.

Recommendation 19 The Australian government matched funding for research and development should not be cut in response to drought related drops in industry gross value product.

Recommendation 20 The Australian government matched funding for research and development should be extended to recognise industry voluntary contributions.

Recommendation 21 Institutional arrangements should be put in place for a Commonwealth traineeship that would allow trainees within the honeybee industry to attend training anywhere in the country.

Recommendation 22 Assistance should be given to the industry to allow it to promote the benefits of the industry to society.

1. *Current and future prospects*

THE HONEYBEE INDUSTRY HAS MANY strengths on which it can capitalise to increase profitability, sustainability, competitiveness, resilience, and self-reliance. These include:

- skills, enthusiasm and mobility of commercial beekeepers;
- the industry is currently free from Varroa mite (*Varroa destructor*), which is destroying honeybee hives in every other major producing honeybee country in the world;
- Australia has diverse national flora that can be used to produce a wide range of honey types (flavour and colour);
- a reasonable organisational structure that is close knit and committed to continually improving the industry;
- reputation for high quality product. Some good brands have been established, and awards have been won for the worlds best honey at international competitions;
- some honey and honey products have medicinal uses that can be better exploited;
- the industry provides major benefits to the rest of agriculture through pollination services. There is strong demand for these services and the fast growth of the horticulture industry and industries that are 100 per cent reliant on honeybee pollination (for example, almonds) will ensure strong demand for pollination services in the future;
- industry has a good quality assurance program; and
- industry has good research capacity with several highly skilled researchers, but the industry needs to look to encouraging young researchers and obtain more funding.

Current and future prospects include domestic and international marketing opportunities, diversification of honey use into other areas (such as medicinal purposes), and diversification of revenue into other areas of the honeybee value chain, such as paid pollination services and queen bee and packaged bee exports. These are further discussed below.

Marketing opportunities

Prospects for the Australian honeybee industry lie in gaining a greater share of the spreads market, differentiating Australian premium honey from cheap imports, and expanding exports. Honey could also be promoted as a product with one of the lowest energy life cycles, inferring low environmental cost.

Domestic market

Honey is primarily bought as a spread. Gaining a greater share of the spread market may be achieved through competing with alternative spreads (for example, peanut butter and jams) on price and quality.

However, the pricing structure used by retailers takes away some of the ability for honey packers and marketers to set prices, which means it is difficult to compete with spreads on price. Although discounting is allowed, it is tightly controlled by the retailers. If supplier wants to change the sell price temporarily, they have the option to do so through a promotional program, although any difference in the normal retailer price and the discount price is usually made up by the supplier. If a supplier wants to change the price permanently, they have to reduce their sell price to the retailer.

In addition, honey packers and marketers have little scope to recoup any temporary surplus made from honey sales through the major supermarkets. This is because the market power of Australia's two major supermarkets allows them to pay relatively low prices for honey compared to the price sold to consumers.

The most effective avenue for the honey industry to compete with other spreads is through promoting the health qualities of honey by focusing on the natural aspects of honey and educating the consumer that honey is the healthy alternative. This could be done through nutritional comparisons, which is the approach currently being used by some industry players.

In order to generate greater marketing opportunities for Australian honey, the industry has recently invested in a marketing plan developed specifically for the industry. The marketing plan provides a number of recommendations to increase the attractiveness of Australian honey (and the industry) to the domestic consumer. These include:

- redevelopment of the AHBIC website to meet the needs of industry, consumers, domestic and international market, food service and industrial food and non-food users of honey, research and development organisations and media;
- the development of a marketing toolkit to secure a positive and correct profile of the industry that can be downloaded by industry in order to provide a consistent message and image. The toolkit would include:
 - brochures on industry profile, floral guide etc;

- in-store promotions;
- image library;
- recipes;
- small business marketing plan assistance;
- practical promotional tools;
- instructions to campaign initiatives and instructions;
- the development of a public relations campaign to educate consumers that honey is pure, natural, and has many healthy attributes including low GI, antioxidants, Vitamin C, iron, zinc, and naturally occurring antibiotics that can boost the immune system. The PR campaign would also promote the role honeybees play in pollination.

International market

The largest consumer of honey in the world is the United States, who are also the third largest importer. In the last ten years the US has faced a decreasing supply of domestically produced honey, due to the adverse impacts felt by the incursion of the Varroa mite and other mites, together with Colony Collapse Disorder, destroying nearly two thirds of their colonies. Therefore the US market may represent the most profitable over the short to medium term as Australian honey exporters currently do not have a large foothold in this market. Australia currently exports approximately seven per cent of total exports to the US.

Experience suggests it is very difficult for a new honey exporter to gain market share within an international market as distribution channels are very hard and costly to acquire. Furthermore, a honey exporter entering a new market needs to demonstrate that it can guarantee a consistent product (in terms of volume, taste, and colour) for the full 12 months, year on year. This may be difficult for a small to medium size exporter as the current restrictions in place on access to natural resources limits the ability of the industry to meet these demands.

Alternatively, China also represent a potentially large growth market in the medium to long term due to its rapid increase in income and the large number of middle to high income earners within the country. Consumption of honey in China has been steadily rising since 1997, increasing from approximately 34 000 tonnes to around 53 000 in 2003, or an average annual increase of around 10 per cent (Access Asia 2005).

Diversifying honey use

The Australian honey industry is starting to focus on honey markets that pay a premium for taste and quality, rather than selling into bulk markets where

competition is primarily based on price. This is to ensure any investment into marketing and promotion can be used in its most efficient and effective manner. As such, there has been a gradual trend away from bulk honey exports towards final product export sales.

In addition, honey packers and marketers are trying to diversify honey use. This includes the promotion of honey in alternative forms of cooking (other than as just a breakfast spread) and using tested anti-microbial honey for medicinal purposes.

Using honey in other products

Educating the public on what types of foods honey is best suited to, and how to maximise the different flavours of honey, will promote the use of honey in other products. Some industry members are already promoting other uses for honey. This includes its use as a substitute for sugar in cooking, and as a separate flavour base for stirfry, sauces and marinades. This has been achieved through joint promotional campaigns with major Australian supermarkets.

Using honey for medicinal purposes

Tested microbial honey is currently being used as a treatment for wounds, burns and ulcers, with a number of alternatives available to the consumer. These range from Medihoney to smaller independent suppliers. The Australian honeybee industry currently enjoys a competitive advantage in this market compared to the rest of the world as there is no competition from major importers (except from New Zealand) because other countries have yet to find suitable flora that can be used to produce honey with the same type of properties.

Due to the production of hydrogen peroxide, most raw honeys have anti-microbial properties. However Australian Jellybush honey is primarily used for its medicinal purposes as it has some as yet undiscovered property that provides extra anti-microbial activity. In 1997, Jellybush honey became the first and only honey registered as a therapeutic agent, which was made possible through research undertaken by RIRDC and Capilano. It comes from *Leptospermum* species, a native plant with small waxy flowers. Although this is one of the species that has anti-microbial activity, there exists other species within Australia that have medicinal use potential, including Jarrah honey from Western Australia. Other high anti-microbial active honeys are currently being researched.

The advantages of high activity Jellybush honey are that it not only stops the microbial process in wounds, but it can also stimulate the healing process. This is one of its greatest advantages over conventional topical anti-microbial agents as these types of products do not have this property. Furthermore, there is no evidence to suggest organisms will develop a resistance to honey, which is another advantage over some antibiotics.

There is a good possibility for honey producers to expand into the production of medicinal honey. Jellybush grows quickly, maturing at between two and three years old, and can be grown in a number of places within Australia. Promotional efforts are currently being undertaken on the domestic and international health care markets to increase demand for medicinal honey. However, not all Jellybush trees can be used to produce medicinal honey, and the process of extraction can impact the level of anti-microbial activity. Further research into the properties that create active honey and the maintenance of its medicinal properties needs to be undertaken in order to continually develop this market.

Medicinal honey represents a large opportunity for the honeybee industry due to the ageing population and the increased amount spent on health care, with over a billion dollars spent on wounds alone in Australia. Due to its unique properties and Australia's competitive advantage in the production of medicinal honey, there is an opportunity for producers to command a high price premium and to diversify its farm income by tapping into a potentially huge world health care market.

Diversification of the industry

Although the majority of revenue in the honeybee industry comes from the production of honey, there are some significant prospects in the future for the industry to diversify their revenue source and increase profitability. This includes the development of a professional honeybee pollination industry, and exports of queen bees and packaged bees to the US. The US represents a particularly large opportunity as its honeybee industry is currently under pressure by the Varroa mite and Colony Collapse Disorder, both of which are not present in Australia.

Paid pollination services

Paid pollination services represents a large opportunity due to the enormous value it can provide to the production of crops and the increase in demand for horticultural goods in Australia. For example, Australia is the largest commercial producer of almonds in the Southern Hemisphere with a farm gate value of around \$85 million per year (PIRSA 2005) and annual growth expected to continue at around 13 per cent (ANIC 2005). The production of almonds is 100 per cent dependent on honeybees. The demand for honeybee hives is expected to increase by at least as much as the annual growth in the industry.

The primary area that produces almonds in Australia is the Riverina and Northern Victoria (80 per cent) and South Australia (20 per cent). Although it is expected that there will be sufficient numbers of hives to service these markets, some of these hives will have to be sourced from New South Wales and Queensland, requiring beekeepers to travel long distances. Even though beekeepers may have the capability

to provide an adequate pollination service, due to the high cost of transport they may not be interested in supplying the almond market.

According to Somerville (2005), there are three major impediments facing the industry in capitalising on the expected demand for pollination services from the almond industry. These include:

- management modifications by the beekeeper during autumn and winter;
- profitability of providing the service; and
- conditions imposed on cross border movements and inspection of hives.

In order to command a premium on pollination services and to maximise the opportunities paid pollination presents, the industry needs to address these impediments. In particular, a recognised and standardised education program on pollination with certification needs to be developed that can be used by the pollinator to indicate they have undertaken the necessary skills training. This will reduce the risk to growers of receiving a sub-standard service. It will also standardise the quality of services, thereby generating greater confidence within the paid pollination market and enabling the pollinator to capture some of the enormous value that pollination services currently provide to growers.

Furthermore, the industry needs to minimise or remove any barriers that will impede the development of the paid pollination market. For example, it needs to ensure that costs from border crossings are minimised by working with state governments to remove unnecessary conditions on cross border movements and hive inspection. This process can be assisted by demonstrating the minimal risks for accredited pollinators and highlighting the economic value of allowing free movement of honeybee hives across state borders.

Reducing the risk associated with pollination services

Although paid pollination services represents a large opportunity for the honeybee industry, there are many risks that could inhibit the development of this market. Chemical spraying is one such risk. Those who apply chemicals to crops need to be educated on the risk spraying can impose on bee colonies. Better labelling on chemical products would reduce the potential collateral damage from spraying.

In addition, an incursion by Varroa and other mites¹ could have a devastating effect on pollination services throughout Australia. To reduce this risk, the industry, in conjunction with RIRDC, held a workshop in April 2007. The workshop was attended by a broad range of stakeholders, including those who work in the industry, representatives from industries that are reliant on honeybee pollination (horticulture, pasture seeds and grains), research and development service providers,

¹ See Chapter 5 - Biosecurity Issues - for an explanation of the risks associated with a Varroa mite incursion

state and federal government representatives (such as AQIS and DAFF), and university research centres.

The objectives of the workshop were to develop possible solutions to address:

- future honeybee and pollination research and development capability and funding;
- education and training requirements to support honeybee and pollination production, research and extension;
- the dissemination of information to organisations, industries, and individuals reliant on commercial beekeeping and pollination; and
- additional quarantine requirements to support the beekeeping industry and pollination services.

Workshop participants then collectively developed a set of key outcomes and recommendations. These are presented in box 1.1. The outcomes and recommendations were also presented to Dr Peter O'Brien, Managing Director, RIRDC, and David Mortimer, Executive Manager, Foods and Agriculture, DAFF, on behalf of the Minister for Agriculture, Fisheries and Forestry.

As evidence of the importance of these issues and the unity established in the workshop, it was also announced on the second day of the workshop that the almond industry (through Timbercorp and Macquarie Horticultural Services) will provide immediate capital to fund part of the strategies that have been developed within the workshop.

In closing off the workshop, participants agreed that the next step was to get RIRDC to develop a funding application in order to create the full proposal. In the first instance it is proposed that funding be sought through DAFF's Industry Partnerships Programme.

1.1 Key outcomes from the honeybee linkages workshop

- Establish a new national alliance for management of these issues:
 - A national alliance to support the strengthening of pollination industry research and development, training and communication had strong buy-in from all present; and
 - Horticulture is the fastest growing Australian agricultural sector. A secure and strong pollination industry has the ability to enhance this industry's productivity and profitability.
- The need for action to protect pollination services is urgent - beekeeping and pollination dependent industries are under prepared:
 - Varroa mite is a food security issue that is on our doorstep. When present in Australia it will seriously affect the honeybee industry, as well as many horticulture, crop and pasture industries dependent on honeybee pollination valued at more than \$3.8 billion;
 - Australia must increase its beekeeping and grower skills and viability. The honeybee industry is poorly resourced to manage Varroa mite, it has low profitability levels and low capacity to respond to external shocks; and
 - Quarantine is vital for the pollination industry and a replacement quarantine facility is required for Eastern Creek in Sydney.
- The public and private economic benefits of pollination services and their protection are compelling and the threats to these goods are real and immediate;
- A national alliance to advance key agreed workshop outcomes was proposed;
- The workshop's leaders (RIRDC) will obtain interim government and new industry funding to develop a considered proposal:
 - The workshop's leaders will seek engagement of pollination-dependent industries and other public interests as represented at the workshop.
- A full strategic plan will be developed it will include:
 - a comprehensive risk management strategy;
 - business delivery model development;
 - research and development strategies;
 - education and training strategy; and
 - common messages and communication.
- Workshop leaders will then secure longer term funding for the proposal; and
- Agreement that public benefit warrants public investment to leverage further private resources.

Queen bees and packaged bees

Diversification into commercial queen bee and package bee production for the domestic and international market represents a viable alternative to honey production and could provide the industry with huge opportunities in the long term. This is especially the case in the US, where the Varroa mite and a new threat in Colony Collapse Disorder continues to affect honeybee colonies.

The US is the largest honey consuming country in the world, and current honey demand is outstripped by supply, requiring it to import large amounts of honey each year. In addition, due to Australia's Southern Hemisphere location, Australia is able to supply the Northern Hemisphere markets with a large number of strong queens and strong hives of packaged bees at the start of their spring. This is especially important for California, which annually produces the largest amount of almonds in the world, all of which are 100 per cent dependent on honeybee pollination.

Queen bees

Recently Australian queenbees have been granted access to the US market, providing a large opportunity to sell queenbees in one of the largest markets in the world. In order to capitalise on this opportunity by generating demand for Australian queens and reducing supply side constraints, the industry needs to:

- invest in improving efficiency in production of queen bees;
- increase access to queen bee breeding educational programs and formalise the recognition of skills within the industry;
- assist queen bee breeders in undertaking market research and establishing distribution channels or direct contacts within the United States;
- promote and market the use of Australian queens in the US market and educate the industry on the assistance Austrade provides in establishing new export markets and the direct funding available to small to medium size enterprises under the Export Market Development Grant;
- continue to develop better breeds of queens through continual support of the Western Australian queen bee breeding program and the establishment of the Australian Queen Bee Breeding Group (AQBBG) and where appropriate import superior genetic material;
- ensure research findings are disseminated throughout the entire industry; and
- minimise the risk of the introduction of exotic disease into Australia.

Although there seems to be a large demand for Australian queens from the US since access was granted, securing the future means improving and increasing the breeding stock as the success of the queen bee-breeding sector will depend on the quality of Australian queens relative to the rest of the world. This means there should be continual investment in minimising any disease risks. A lapse in quarantine could severely hurt the queenbee breeding industry and the honeybee industry as a whole very quickly.

Packaged bees

The package bee industry was first developed to satisfy the Korean market in the late 1980's but has since expanded to include Canada, the Middle East, Western Europe and most recently the US. This has been primarily driven by the Varroa free status

Australian bees enjoy and the capacity for Australian producers to deliver strong colonies at the start of the Northern Hemisphere spring.

The industry is trying to capitalise on these qualities by establishing export markets and develop distribution channels and direct contacts in the United States.

Issues that are reducing industry prospects

Although the industry has many current and future prospects, these are currently under threat by two primary risks associated with the industry – establishment of Varroa and other mites and reduced access to public lands.

Should the Varroa mite become established in Australia it would continue to spread rapidly unless very expensive control measures were enforced. Most colonies not treated with acaricide would be killed. Control costs for the pest would very substantially add to costs of production and would have a devastating effect on the industry. Most small beekeepers would probably find it uneconomic to continue beekeeping. This pest is to the beekeeping industry what foot and mouth disease is to the livestock industry.

Without access to native flora the commercial beekeeping industry would not exist. Continued access to native flora is the essence of the Australian beekeeping industry. Even though, at present, the number of sites in national parks is not great, these lands contain important species and the threat is that over time, more forest land which is now accessible to beekeepers will be made inaccessible with the spread of national parks and other conservation reserves.

The industry recognises these threats and is currently doing something about them. With the help of RIRDC and DAFF in April 2007, the industry organised a two day workshop to deal with this issue. Several outcomes arose from this workshop that are expected to reduce the risk associated with a Varroa and other mites incursion (see box 1.1)

In order to reduce the risk from declining access to public lands, the industry has already developed an action plan to drive it towards a national code of conduct and then on to an Environmental Management System (EMS). This includes the establishment of a management industry steering committee, an industry reference group (made up of various industry participants across the entire supply chain), and an industry scientific environmental advisory group. Furthermore the industry held a workshop with industry representatives to discuss the development and implementation of a national code of conduct and the subsequent introduction of an EMS once the code has been implemented. In June 2006, the industry received funding from stage two of the Industry Partnership Program (IPP) to develop a national code of conduct for those working on public land, and has been developing such a code for the last nine months.

Recommendations

In consultation with AHBIC executives and all major committees of AHBIC, the industry makes the following recommendations.

Recommendation 1 The resolutions agreed at the national pollination industry workshop of 23 and 24 April 2007 be implemented as agreed. This means the industry and Australian government should work together to deliver on the key outcomes derived from the honeybee linkages workshop. This includes developing a new national alliance for the management of the issues faced by the pollination industry, and obtaining interim government and new industry funding to develop a considered proposal and full strategic plan. It is hoped that this will lead to a secure funding base for implementation of the strategic plan.

2. Honeybee industry role in agriculture and forestry

This section addresses:

- The value of the honeybee industry to Australia.
- The value of pollination in Australian agriculture and forestry, including:
 - increase in yield and quality of plant industries.
- The economic impact of a Varroa mite establishment in Australia, including:
 - direct effects to producers, labour, and consumers; and
 - flow-on effects to the community and the greater economy.

The value of the honeybee industry to Australia

The honeybee industry's gross value of production is around \$80 million per annum. Of this, \$60 million comes from honey production, with the remainder coming from other products such as paid pollination services, beeswax production, queen bee and packaged bee sales, pollen, bee venom, royal jelly, and propolis. Therapeutic honey is an exciting prospect for the industry.

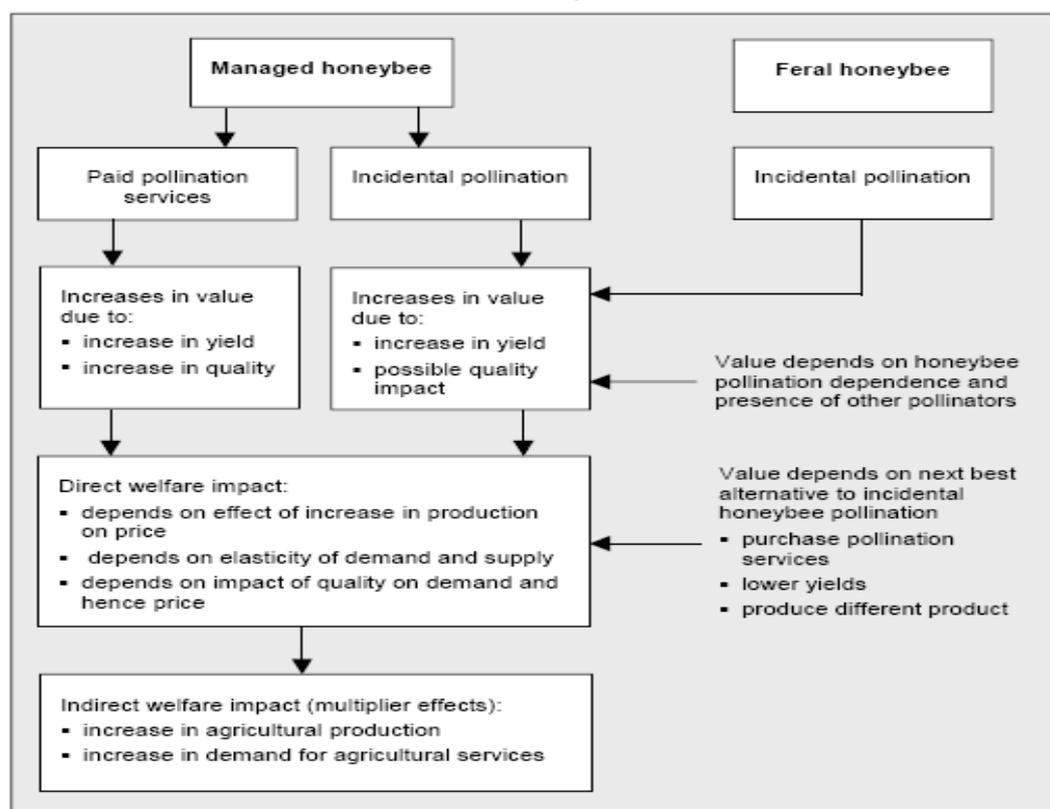
NSW accounts for 41 per cent of honey production in some years. Annual honey production is approximately 30 000 tonnes, one third of which is exported. However this amount can vary significantly due to adverse weather patterns (for example, droughts).

The value of pollination in Australian agriculture and forestry

Honeybee pollination is essential for some crops, while for others it raises yield and quality. Honeybee pollination provides significant value to Australian horticulture and agriculture with services being valued at \$3.8 billion per annum for the 35 most important honeybee dependent crops. When other crops, including pastures such as lucerne and clover, are added this estimate becomes even larger. If honeybee pollination were to stop completely, large losses would be felt in a horticulture sector. This is because approximately 65 per cent of horticultural and agricultural crops produced in Australia require pollination services from honeybees.

Chart 2.1 shows a flow diagram of the role honeybees play in the horticulture and broad acre industries. Pollination can occur through paid pollination services and/or incidental pollination. Paid pollination involves employing an apiarist to place bees on the grower's land in order for the bees to pollinate crops. Honey production is a secondary objective for the apiarist. With incidental pollination, the apiarist's specific purpose is to produce honey, and pollination of crops is a positive externality received by growers.

2.1 Economic Benefits Attributable to Honeybee Pollination Services



Data source: Gordon and Davis 2003

Both paid honeybee pollination services and incidental honeybee pollination increase the value of crops to growers through an increase in yield and an increase in quality. This means that pollination has a direct impact on welfare for those growers who benefit from pollination services. In addition, there are positive benefits to the entire agriculture industry due to flow-on effects from an increase in the value of crops, and positive benefits from pollination to consumers as it increases production (thereby putting downward pressure on prices) while providing better quality.

Consequently any loss in honeybee pollination services will mean a loss in welfare to growers and consumers. Losses from the absence of pollination services would be split between producers who would forfeit horticulture and broad acre crop income and consumers who would suffer a sudden and sometimes complete decline in the availability of many fresh fruits, nuts, vegetables and honey. Although some of these

crops could be replaced through imports, Australia's capacity to import many of the affected products would be limited by quarantine restrictions. This means prices for the reduced supply of fresh fruits, vegetables, nuts, and honey would be driven up by the reduction in supply, thereby reducing access to these goods and also reducing consumer welfare.

It has been estimated that if honeybee pollination had stopped completely in 1999/2000, the agriculture industry would have experienced a loss of around \$1.7 billion in production and consumption, resulting in the loss of around 9 500 jobs. It was also estimated that there would have been short-term flow-on effects which would add an additional \$2 billion loss to agricultural industry output and another 11 000 jobs. Partial loss in pollination services would have still resulted in major economic costs (Gordon and Davis 2003).

The speed with which Australian horticulture and agriculture would recover from a loss in honeybee pollination services of the type that might occur from the introduction of Varroa mite will depend on several factors. One is the extent that other pollinators can replace the honeybee. In the case of almonds no other insect pollinator is possible so a loss in honeybee pollination services would represent a direct loss to the almond industry. A second factor is the profitability of current crops and their ability to absorb additional production expenses. A third is the impact on markets from a large-scale switch in enterprises, including the diversion of exports back to Australia and the potential for imports to pass quarantine and 'plug' local production gaps.

The economic impact of Varroa mite establishment in Australia

There are substantial costs to the Australian economy from a Varroa mite incursion. Rather than wiping out honeybees in one fell swoop, it is expected that the Varroa mite will decimate feral honeybee colonies but will spread more slowly through managed honeybee populations as apiarists, agriculturalists and horticulturalist change their behaviour in an attempt to minimise the loss. It is expected that despite these efforts, the cost to the agriculture and horticulture industries will be between \$21.9 million and \$51.4 million per annum (Cook et al, 2005).

There is a strong case for agriculture and horticulture industries to contribute to the prevention of a Varroa mite incursion and other bee diseases and pests. This is because it is these industries that are expected to experience significant losses if an incursion does occur. For example, of the 25 crops listed in Table 2.2, thirteen will avoid costs of over \$1 million per annum from the prevention of a Varroa mite incursion. It has been estimated that up to \$21.9 million per annum in total could be spent on a Varroa mite control program that will prevent the establishment of Varroa mite before Australia becomes worse off (Cook et al, 2005).

2.2 Impact of a Varroa mite incursion on selected crops

Crop	Total area	Annual gross	Proportion of	Additional hives	Yield loss in the
		value of	total pollination	required in the	absence of Feral
		production (5	services	absence of Feral	Apis mellifera
		year average)	delivered by	Apis mellifera	Apis mellifera
	Ha	\$	insects		
			per cent	Hives per	per cent
				hectare	
Almond	4 430	41 759 605	100	2-5	10-30
Apricot	1 085	31 490 850	70	1-2	0-10
Avocado	4 000	78 740 005	100	2	10-30
Blueberry	510	26 823 780	100	1-2	10-30
Canola	1 909 730	1 502 672 850	15	0	0-5
Cherry	1 270	42 829 140	90	1-2	0-20
Cucumber	1, 05	16 530 650	100	1-2	0-20
Field Pea	422 675	98 764 290	50	0	0-10
Lemon & Lime	1 785	24 523 360	20	0.5	0-5
Lupin	1 347 180	272 872 360	10	0	0-5
Macadamia Nut	14 000	50 675 680	90	2-5	0-20
Mandarin	4 895	86 286 200	30	0.5	0-5
Mango	2 650	100 964 215	50	2	0-10
Nectarine	985	114 537 870	60	1-2	0-10
Orange	30 560	297 818 985	30	0.5	0-5
Peach	1 885	84 923 755	60	1-2	0-10
Pear (Not Nashi)	3 025	106 191 015	50	2	0-10
Plum	835	44 197 390	70	1-2	0-10
Pumpkin	8 995	59 762 785	90	1-2	0-20
Rockmelon	3 940	104 172 020	100	1-2	0-20
Strawberry	905	150 867 890	40	0	0-10
Sunflower	161 545	50 798 325	100	2-5	10-30
Watermelon	4 950	68 058 840	100	1-2	0-20
Zucchini	1 955	32 249 965	100	1-2	0-20
Mango	2 650	100 964 215	50	2	0-10
Nectarine	985	114 537 870	60	1-2	0-10
Orange	30 560	297 818 985	30	0.5	0-5
Peach	1 885	84 923 755	60	1-2	0-10

(Continued on next page)

2.2 Impact of a Varroa mite incursion on selected crops (continued)

Crop	Total area	Annual gross value of production (5 year average)	Proportion of total pollination services delivered by insects	Additional hives required in the absence of Feral <i>Apis mellifera</i>	Yield loss in the absence of Feral <i>Apis mellifera</i>
		Ha	\$	per cent	Hives per hectare
Pear (Not Nashi)	3 025	106 191 015	50	2	0-10
Plum	835	44 197 390	70	1-2	0-10
Pumpkin	8 995	59 762 785	90	1-2	0-20
Rockmelon	3 940	104 172 020	100	1-2	0-20
Strawberry	905	150 867 890	40	0	0-10
Sunflower	161 545	50 798 325	100	2-5	10-30
Watermelon	4 950	68 058 840	100	1-2	0-20
Zucchini	1 955	32 249 965	100	1-2	0-20

Source: Cook et al (in print)

Recommendations

In consultation with AHBIC executives and all major committees of AHBIC, the industry makes the following recommendations.

Recommendation 2 All crop industries that derive an economic benefit from pollination services should contribute to exotic pest and disease cost sharing arrangements.

Recommendation 3 Education programs should be developed to assist apiarists to correctly price paid pollination services along with the development and implementation of standards to objectively measure the quality of pollination services provided. These tasks are currently beyond the resources of the current research and development program.

3. *Biosecurity issues*

SOME OF THE SERIOUS PESTS and diseases that affect honeybees are present in Australia. However, there are very serious mites that are still exotic to Australia but pose a real threat of incursion. These include the Varroa mite (*Varroa destructor*), the mite *Tropilaelaps clareae* and tracheal mite (*Acarapis woodi*). The Asian bees *Apis dorsata* and *Apis cerana* are also vectors for mites as well as being pests in their own right. If they enter Australia and are able to establish, the impact on the honeybee industry and the pollination of horticulture and agriculture could be devastating.

In addition, the honeybee industry faces many diseases. The most serious endemic diseases are:

- American foulbrood (AFB), caused by the bacterium *Paenibacillus larvae*;
- European foulbrood (EFB), caused by the bacterium *Melissococcus pluton*;
- Chalk brood caused by the fungus *Ascosphaera apis*;
- Nosema caused by the protozoan parasite *Nosema apis* Zander;
- Sacbrood caused by the sacbrood virus;
- Small hive beetle (*Aethina tumida*), introduced into Australia in around 2001 in New South Wales and spreading fast; and
- Brouler fly in Tasmania.

Other pests, diseases or predators of honeybees include wax moth, ants, cane toads, the rainbow bee eater and others. Generally these can be controlled by good beehive management.

All serious exotic pests and diseases are notifiable diseases under state law and come under the AUSVETPLAN, a national coordinated response plan for all important exotic diseases and pests. Each exotic pest or disease has a specific technical response plan that describes all steps that must be taken and those responsible for each step in the event of an exotic incursion. Being part of Animal Health Australia (AHA) (and also Plant Health Australia), and being a signatory of the Emergency Animal Disease Response Cost Sharing Deed of Agreement the industry has an obligation to share in the costs of response activities following a decision to attempt to eradicate an incursion. A levy on honey has been established to create a fund so that the industry's obligations can be met.

Pests

Varroa mite

The host of Varroa mite is the Asian honeybee *Apis cerana* and despite current surveillance in place at Australian ports, an incursion of the Varroa mite could easily take place if the Asian bees are transported to Australia undetected (for example, on a ship) and settle in Australia while being infected with Varroa mite. Because of the difficulty in detecting the mite in early stages of infection, and the migratory activities of beekeepers, the mite is likely to spread rapidly even before detection. An eradication attempt would be decided based on the nature of the incursion but would be extremely costly if it was decided that an attempt should be undertaken. Not one country in the world has ever successfully eradicated the Varroa mite.

Australia is the only major honeybee producing country in the world where Varroa mite is not present. If the pest became established in Australia it would spread rapidly unless very expensive control measures were enforced. Control costs would substantially add to costs of honey and honeybee product production, having a devastating effect on the industry. It is likely that most small beekeepers would find it uneconomic to continue beekeeping.

The cost of Varroa mite establishing in Australia could be massive. Although it is unlikely that a Varroa mite incursion would wipe out all honeybees within Australia, it is likely that all feral honeybee colonies could be wiped out, or at least severely reduced, leaving horticulture and agriculture producers with no option but to purchase pollination services. Although the demand for pollination services by managed bees would increase, it is expected that the price of these services would rise substantially, thereby adding a significant amount to growers cost of production and reducing Australia's competitive advantage. This situation is currently occurring throughout the world but would be particularly devastating in Australia due to the heavy reliance by agriculture of pollination by feral bees (see box 3.1)

3.1 Impact of Varroa mite in the US and New Zealand

In the US, the Varroa mite established itself in 1987 but has since spread right across the entire country, destroyed feral bee populations, and had a massive impact on managed bee colonies. The US Agriculture Department's Research Service estimates that the US has lost at least half their managed hives, with as much as 70 per cent of hives being destroyed in some areas (The Times, 2005). Growers are also worried about the reduction in the supply of pollination services, the increased competition for hives, and subsequent rise in price for pollination services. Although beekeepers use miticides (which adds additional cost to their production) to protect their bees, the Varroa mite is becoming resistant to the chemicals.

The same situation is occurring in New Zealand. The Varroa mite established in 2000 but has since spread across the north island and has recently established itself in the south island. This has had a devastating impact on feral bee populations and substantially increased the cost of production for beekeepers as they try to control the mite. Just before Varroa mite established itself in New Zealand the average price to rent a hive was \$80. Since then the price has doubled to \$160. This is because the cost of control has forced many beekeepers out of the market, with numbers being reduced from around 5 000 when the mite entered the country to approximately 2 800 in 2006. This has also reduced the number of managed hives from around 320 000 to approximately 292 000. Consequently the reduction in hives has increased competition for pollination services and subsequently the cost to growers for pollination services.

Tropilaelaps and tracheal mite

An incursion of *Tropilaelaps* would have an even more devastating effect on the Australian honeybee industry than the Varroa mite. Its host is *Apis dorsata* the giant honeybee. However, the chances of it being introduced are less than for the Varroa mite because it is not present in countries such as USA and Europe.

Tropilaelaps can be controlled by use of acaricides but it would be expensive to eradicate. If that option was not possible, it would severely impact on the profitability of the industry due to the high control costs.

The Tracheal mite infects bees' tracheas and slowly weakens and eventually kills them. *Apis mellifera* has a reasonable degree of tolerance to the mite and establishment of the pest would not be as serious as Varroa or *tropilaelaps*.

Wax moth and small hive beetle

Although wax moth does not pose as much a threat to the industry as some pests, the control cost is still significant. Similarly, the control of small hive beetle imposes a significant cost on the industry but in this case the problem is still growing so the costs could become quite large.

Currently there are only two products that have been registered to control wax moth, including fumitoxin coated insecticide tablets and sanphos fumigation tablets. These products may also have an application in dealing with small hive beetle.

However in order to use these products, beekeepers in New South Wales have to undertake training courses through TAFE to gain a certificate of competency in fumigation. In other states beekeepers are required to do a ChemCert, SmartTrain or similar course. It is the industry's belief that the training requirements for the use of these products in NSW is too rigid and that they impose an unnecessary cost on the industry. However, this is not to say that beekeepers should not be trained properly in the safe use of chemicals and assistance should be provided for training courses. A national agreed training programme needs to be developed. Research also needs to be undertaken into non chemical controls such as cold rooms, freezers etc.

The potential use of friponil

Control of small hive beetle could also be undertaken by the use of friponil, which is a highly effective insecticidal chemical. However BASF, the company who currently has exclusive intellectual property rights on friponil, will not allow the honeybee industry to use the product. The industry therefore believes the government should make a request to BASF to make available Friponil to control small hive beetle and in the case of emergency disease pest incursions.

Endemic disease

Many of the endemic diseases are widespread and mostly are not of major concern if good beekeeping practices are maintained. For example, viral diseases such as Sacbrood are frequently present in colonies and only become a problem under certain conditions when colonies are under stress. The same goes for most of the fungal diseases such as Nosema and Chalkbrood. Incidents of those diseases are minimised by good husbandry. Even EFB infection can be minimised by good beekeeping practices.

American Foulbrood

American Foulbrood is the greatest disease concern for the industry as it is highly infectious and actions by one beekeeper whose hives are infected can cause the disease to spread rapidly, thereby imposing costs on many other beekeepers. Most activities of state agencies are directed at controlling this disease.

Although AFB infects and kills only the bee larvae, if unchecked it will affect the hive and honey production and eventually the colony will die out. The disease is spread in many ways, including naturally such as infected bees drifting into healthy hives, healthy bees robbing a weak infected hive, healthy bees feeding on contaminated

honey or where watering places are contaminated by infected dead bees. The disease can also be spread by beekeeping practices, for example through the interchange of combs of brood and honey between infected and healthy hives. In order to reduce the spread of the disease, beekeepers must be vigilant in testing for the disease in their hives.

Control of AFB is regulated in all states and territories with each state having its own legislation. Use of OTC to control the disease is not permitted except in Tasmania. Indiscriminate use of OTC for treating EFB can suppress symptoms of AFB and resistance may be built up to this antibiotic. A contamination of any honey with OTC could severely damage the industry's image and result in reduced honey consumption.

Even though AFB is a notifiable disease, it is very difficult for state agencies to enforce compliance of their state legislation due to the migratory nature of commercial beekeeping operations, the very large number of small hobby beekeepers and the limited and, in some cases, decreasing resources of state agencies devoted to beekeeping inspection activities. The Australian Capital Territory has no apiary inspection officers and some states are scaling back their inspection services. In some states, general stock inspectors are now required to take up the task of apiary inspections.

Despite all measures to control the disease, evidence suggests that it continues to spread, although to a degree, the reported increase in occurrences could be due to better detection methods. A report on a national approach to management and control of AFB has already been prepared and state agencies are focused primarily on control of this disease. AHA has also prepared a proposal for a nationally coordinated program for the improved management and control of AFB (AHA 2003-04). It is proposed that AHA would manage the implementation of this national program. Its key elements are:

- enhanced research and development;
- review of current state legislation and control mechanisms and uniform management techniques;
- better quality assurance and biosecurity systems by having beekeepers formally adopt biosecurity measures;
- national monitoring and surveillance and reporting program; and
- a communication and awareness program.

Due to the serious threat of AFB, the industry proposed that a national approach to management and control of AFB should be funded through agreement between industry, state/territory governments and the Australian government. Unfortunately this proposal was dropped due to the government's unwillingness to commit resources to the plan. However the industry believes a program of this type is essential for an efficient and effective approach to controlling AFB.

Other biosecurity concerns

Colony collapse disorder

Colony Collapse Disorder (CCD) is a relatively new phenomenon affecting the health of bee hives. Although no one knows exactly what causes it², the major symptom is the complete disappearance of adult bees in colonies while capped brood are still in the colony and the presence of honey and bee pollen. The disappearance of adult bees means all production of honeybee products stops and the brood left in the hive dies.

The size of the problem in the US is huge. Estimates suggesting CCD has caused the loss of about one quarter of the 2.4 million colonies within the last year (The Age, 2007). Although this problem has traditionally been associated with the US, beekeepers in Europe have also experienced similar symptoms.

Although Australian beekeepers have not experienced colony collapse disorder, the unknown nature and the gradual spread of the disorder means it will be very hard to stop coming into the country or to control if there is an incursion. The impact this disorder has had on the US means any incursion into Australia is likely to significantly cost the industry and horticulture and agriculture industries that rely on pollination from honeybees.

There may also be a link between CCD and *nosema ceranae*, although this still requires further research.

Bumblebees

Bumblebees were introduced into Tasmania in 1992 by accident and have since been contained in Tasmania. However some industries such as the tomato industry and those that are grown under similar hydroponics are calling for the introduction of the bumblebee to pollinate their crops. Currently the majority of tomato pollination is done by mechanical vibration.

However there are some concerns held by the honeybee industry regarding the introduction of bumblebees to mainland Australia. Firstly it is unknown whether the bumblebee harbours pests that are dangerous to the honeybee industry (such as the Varroa mite). Nor is it known what other parasites or pathogens bumblebees might carry that are as yet unknown to the honeybee industry.

In addition, the industry is concerned that the bumblebee will compete for nectar and pollen with the honeybee, and because the bumblebee can forage at lower temperatures and can start foraging earlier in the morning, they have a competitive

² Possible causes have been put down to poor nutrition or malnutrition, pesticides, pathogens and immunodeficiency, genetically modified crops, and electromagnetic radiation.

advantage over the managed honeybee. Bumblebees would also increase competition with native species that forage earlier in the day than honeybees.

The industry is also concerned that feral bumblebee colonies might be dangerous to the environment. This is because bumblebees specialise in pollinating certain types of flora, which contain many agricultural weeds. This means these weeds become more prolific, thereby invading native plants and in some cases choking rivers.

It is therefore the position of the industry that bumblebees should not be introduced on the mainland of Australia.

Biosecurity programs

Plant and Animal Health deed

There is currently a five year review of the Emergency Animal Disease Response Agreement. The industry therefore supports the Committee of Review recommendations on and proposed changes to the agreement on the basis of ensuring a Response Agreement that ensures protection of Australia's agricultural and pastoral industries from introduced bee diseases and pests. Specifically, the industry supports:

- appropriate response capabilities in respect of an emergency animal disease or pest incursion of the bee pests, *Apis cerana* or *Apis dorsata* and sharing the costs of the response;
- the desire of existing participants to provide a cost sharing mechanism; and
- an agreement between Animal Health Australia and Plant Health Australia for plant industries to contribute to cost sharing.

National Sentinel Hive Program (NSHP)

Following consultations between Biosecurity Australia, state departments of agriculture and AHBIC, the NSHP was established in 2000 to enhance surveillance for exotic honeybee pests, most notably *Varroa*, in the immediate vicinity of Australian ports. Sentinel hives with sticky strips can trap exotic mites, thus enhancing the chances of detecting an incursion and eradicating it at minimal cost. In addition, the industry uses bait hives at various ports.

In 2005 the program was reviewed by Biosecurity Australia. The review covered 20 ports in New South Wales, Victoria, Queensland, South Australia, Northern Territory and Western Australia. The key recommendations of this report include:

- a comprehensive analysis of the benefits of the program to be conducted by the honeybee industry and those horticultural and seed crop and pastoral industries identified as significant beneficiaries of pollination;

- a review of the long term funding and coordination of the program, including the costs;
- surveillance for Asian honeybee be extended to all ports on the eastern seaboard as far south as Brisbane;
- investigating the feasibility of establishing or re-establishing hives at various locations; and
- increasing the intensity of surveillance by more regular sampling of hives at certain locations.

In 2006, responsibility for the NSHP was transferred from Biosecurity to the Office of the Chief Veterinary Officer (OCVO) within DAFF. In February 2007 the Primary Industries Standing Committee (PISC) agreed that DAFF should develop a business plan to map the future of the NSHP and to address the recommendation to conduct a review of the long term funding and coordination of the program, including the costs. It is industry's hope that PISC will support this proposed plan

Since then a draft business plan has been produced and it will be presented to PISC. After completion of the business plan, AHA will take over the management of the NSHP.

The dangers of some of these exotic pests, particularly *Varroa* and *Tropilaelaps clareae*, becoming established and the relative ease with which incursions could occur in the absence of good surveillance cannot be overstressed. Not only would the beekeeping industry be seriously affected by a successful incursion, but so too would most of Australian agriculture through effects on pollination.

Eastern Creek quarantine station

Any bees that are brought into Australia (which are mostly queens and their escorts) are inspected for pests and disease at the AQIS run quarantine station located at Eastern Creek, NSW. However the lease currently held by the Australian government is up for renewal in 2010 with a final lease date to 2015, which means there is a possibility that honeybee quarantine inspection services may need to be relocated as early as 2010.

The industry believes that if there is a relocation, then the new facility should be run to the same high standards that are currently being undertaken at the Easter Creek quarantine station, and that current funding arrangements for the maintenance of the program should continue.

Recommendations

In consultation with AHBIC executives and all major committees of AHBIC, the industry makes the following recommendations.

Recommendation 4 Training requirements should be revised for beekeepers who want to use fumitoxin coated insecticide tablets and sanphos fumigation tablets in order to remove an unnecessary cost on the industry.

Recommendation 5 A national program for the improvement and control of American Foulbrood should be implemented. This should be based on the nationally coordinated program that has already been created by AHA but has not yet been implemented due to a lack of funds from the Commonwealth government.

Recommendation 6 The government should continue to prohibit the introduction of the bumblebee into mainland Australia. This is because it is unknown whether the bumblebee harbours pests that are dangerous to the honeybee industry, and if the bumblebee becomes feral then it could impact the honeybee industry and adversely affect the environment through over pollination of introduced weeds. Native bees may also be adversely affected.

Recommendation 7 The government should make a request to BASF to make Fiponil available to the industry in order to control small hive beetle and emergency disease pest incursions.

Recommendation 8 If the Eastern Creek quarantine station is relocated in 2010/2015, then the new facility for the inspection of imported honeybees should be run to the same high standards that are currently being undertaken, and that current funding arrangements for the maintenance of the program should continue.

Recommendation 9 All recommendations from the 2005 National Sentinel Hive Program review should be implemented and managed by AHA in order to enhance the surveillance for exotic honeybee pests in the immediate vicinity of Australian ports.

Recommendation 10 All hive products from countries that are not free from *nosema ceranae* should be banned.

4. Trade issues

Australia is one of the largest and most diverse honey exporters in the world, exporting to over 38 countries. Australia is known for exporting a premium quality product as exports are relatively free of chemical residues, antibiotic residues and high microbial counts (Ward and Trueman, 2001). In the last world honey conference in 2005 (called Apimondia), Australian honey was recognised as the worlds best honey.

The total value of Australian honey exported to the rest of the world was \$30.7 million in 2004. Although the value of exports has been steadily increasing in the last five years, this has been primarily due to higher average prices received for exports, although recently world honey prices have tended to come back down.

The destination of Australian honey exports has also changed in recent years, shifting from the Asian region such as Indonesia, Malaysia, and Singapore, to the North American market and the Middle East, especially Saudi Arabia. This has been on the back of strong demand for Australian honey in these areas.

Australia normally imports a relatively small quantity of honey as consumers prefer the taste of Australian honey. However in 2002 and 2003, Australian companies were forced to increase imports due to low domestic production levels from drought and bushfires along the eastern states and obligations to fill export contracts over this period of time.

However there are several trade issues both domestic and internationally that have limited the capacity of the Australian honeybee industry to maximise trade opportunities. These include:

- non-tariff barriers faced by Australian exporters;
- the risk of contaminated honeybee products being sold in Australia; and
- the lax regulations on 'Organic' labelling in Australia.

These issues are further discussed below.

Non-tariff barriers faced by Australian honeybee exporters

Honey exports face ad valorem tariffs and non tariff barriers. Ad valorem tariffs range from approximately one per cent to 248 per cent. However there is also evidence of non-tariff barriers faced by Australian honey exporters.

Prohibited imports of Australian honey into New Zealand

In August 2006 the prohibition on the importation of Australian bee products (which has been in place for over 20 years) was lifted by the New Zealand government through the use of an Import Health Standard (IHS), a document that prescribes conditions which the bee products from Australia must meet to be imported into New Zealand.

However the New Zealand Beekeepers Association took this matter to the high court of New Zealand, arguing there was a risk of Australian honeybee products introducing a new organism despite an assessment by the Ministry of Agriculture and Forestry that the importation of Australian honey poses no discernible risk.

In March 2007 the judge ruled against the New Zealand Beekeepers Association and the interim stay on the operation of the IHS was lifted.

Despite this, the New Zealand Beekeepers Association has now lodged an appeal and gained an interim injunction to stop imports pending the matter be heard by the Appeals Court. This means Australian honeybee products are once again banned from being imported into New Zealand until the appeal has been heard, which could take up to six months.

Quotas on the total amount of honey that can be exported to South Korea

Australian honey exporters currently find it very difficult to export Australian honey products into South Korea due to its quota system. This is despite the obvious demand for the product.

Each year, if a business wants to import honey into South Korea it must first tender a submission expressing their interest to do so to the Korean government. The government then conducts a lottery to determine which businesses get the right to import honey at the within-quota tariff rate of 25 per cent. Businesses are then allocated a limit on how much they can import for the coming year.

As the right to import honey is allocated randomly, it is very hard for Australian honey exporters to develop a permanent relationship with Korean businesses. This is because the amount of honey each business can import each year is highly variable. If a business wants to import honey into Korea but does not get a quota from the government, then they are charged an out-of-quota tariff rate of 248 per cent, which makes it unviable.

Therefore, the industry believes that any negotiations between the Australian and Korean governments in the up coming free trade negotiations should address these issues. Specifically, the industry would like the Australian government to lobby for the complete removal of all trade barriers to Australian honeybee products.

Animal health requirements for bees exported from Australia to Canada

In 2005 and 2006 the Canadian authorities found small hive beetles in at least two colonies of packaged bees exported from Australia. As a result of this, Canada placed severe restrictions on the import of Australian packaged bees as they believe the previously established import conditions were not sufficient in protecting Canada from another small hive beetle incursion.

After the discovery of small hive beetle in Australian colonies sent to Canada, hives had to be certified by the state's Department of Primary Industry agent that there was no small hive beetle discovered within 25 kilometres of where the hives were situated prior to export. This provided some freedom for Australian packaged bee exporters in the eastern states where small hive beetle is confined.

However the new restrictions that have recently been put in place by the Canadian authorities means that only packaged bees exported from Western Australia are currently allowed to enter the country. This is because Western Australia has never reported small hive beetle. This means that all packaged bees from eastern states are completely banned from exporting to Canada, and those states that are also free of small hive beetle (South Australia, Northern Territory, and Tasmania) will be considered on a case by case basis.

Animal health requirements for bees exported from Australia to Japan

Queen bee exports represent a significant opportunity for the Australian honeybee industry. However, the industry believes that there are unfair health restrictions on exports of queen bees from Australia to Japan. In particular, for Australian queen bees to be exported to Japan, the following restrictive conditions must be met:

- American foulbrood, European foulbrood, Varroasis, Chalkbrood, Acariosis and Nosemosis are designated as notifiable diseases in Australia; and
- No case of American foulbrood, European foulbrood, Varroasis, Chalkbrood, Acariosis and Nosemosis has been reported for at least eight months prior to the export to Japan within a radius of five kilometres from the apiary.

The industry believes these are unfair restrictions on trade. This is because:

- Chalkbrood is present in Japan and is so common that it is not a listed disease in Japan;
- it is very hard to detect European foulbrood because a hive can remain diseased for years without any obvious signs of disease. Furthermore, European foulbrood has been present in Japan since 1996 and without control measures since 2003; and
- although Nosemosis is a notifiable disease in Japan, it has been present intermittently since 1998.

The industry supports continual lobbying by the Australian government to the Japanese government in order to get these unfair restrictions changed. In particular, the industry would like this issue addressed within the free trade negotiations that are currently being undertaken between Australia and Japan. Japan represents a potentially enormous market for queen bees due to our competitive advantage that is provided by the absence of Varroa and other mites in Australia.

The risk of contaminated honeybee products

Australia has an enviable reputation in world markets for producing high quality, clean and green honey and honeybee products. However, this reputation is under threat from contaminated honey being imported into Australia, or exported to international markets, and also from lax labelling laws on the country of origin.

The major concern around the world regarding honey contamination is the amount of residue found in honey from pest control activities undertaken by beekeepers. To address this issue, provide advice on residue policy, and mitigate risks involved with contamination, AHBIC established the Australian Prevention of Residues Committee.

Currently, AQIS is responsible for certification of export product to countries seeking AQIS certification and the administration of the *Import Control Act*. It can either test honey exported at the request of the exporter to satisfy customer needs (on a fee for service basis), or it can act as a competent authority which requires it to issue documentation certifying the goods meet a trading partners requirements. This has only been established with Papua New Guinea, the EU, Canada, Brazil, and New Zealand. In addition, there is some private testing being undertaken by some packers and marketers.

However, there is a real risk that contaminated honey may slip through the AQIS barrier, either from imports mixed into Australian honey or from local producers using unregistered chemicals and antibiotics. Therefore the industry would like to see programs established that are approved by AQIS and require a product for export 'meets the market and is fit for purpose' and that 'good manufacturing practice' was used in its production (Jordan 2004). This has been achieved by the development of new regulations for honey under the Export Control Act and industry supports their immediate introduction.

It is also the industry's belief that imports meet the same requirements as demanded by exporters for AQIS certification on all products.

Development of honey orders under the Export Control Act 1982

Currently there is a system in place that can provide honey exporters with a certification of non-prescribed goods if the exporter requests it. Alternatively EX188

certificates and letters of facilitation can be provided if AQIS is required to issue export documentation by certain trading partners (EU, Canada, PNG, Brazil, and NZ). However the EU is about to harmonise its directive relating to honey so AQIS certification needs to be based on compliance with a standard. In order to ensure honey is fit for human consumption and meets overseas country import requirements, a separate set of Orders under the Export Control Act 1982 will be developed specifically for honey.

Industry also notes there is disparity between Australia's export and import requirements. The industry would like to pursue import controls to meet the same standards for exporting to the above major trading partners.

National Residue Survey

The National Residue Survey (NRS) monitors residues of chemicals and environmental contaminants in Australian honey. Funding of individual residue testing projects is undertaken through direct levying of the industry at 0.03 cents per kilogram.

Under the current legislation the industry believes that the NRS is unable to assist the industry to the fullest in reducing residue contamination. The industry has raised requests to use its money, which have been denied due to the restrictive nature of the controlling legislation. It is therefore the industry's view that the levy should be reduced to 0.01 cents per kilogram, with the additional 0.02 cents per kilogram being redirected to Animal Health Australia. This is because the industry already has large reserves with the NRS and there exists a greater need for industry to strengthen its AHA contingency fund.

'Made in Australia' and 'Product of Australia' labelling

Labelling rules regarding the country of origin are currently administered under the Trade Practices Amendment (Country of Origin Representations) Bill and it is the responsibility of the Australian Competition and Consumers Commission (ACCC) to enforce this. In general, to claim that a honeybee product is 'Made in Australia', it must have been substantially transformed in Australia and at least 50 per cent or more of the cost of manufacturing the good must have been incurred in Australia. To claim the product is a 'Product of Australia', each significant ingredient of the product must have come from Australia and virtually all processes in its production must have happened in Australia (ACCI, 2005).

However, industry consultations suggest there may be a large amount of royal jelly and propolis being imported into Australia from China by Australian health food distributors and then re-exported to Asia and Europe with a 'Made in Australia' label without meeting the appropriate labelling standards. Due to the high risk of antibiotic contamination in Chinese products, inappropriate labelling introduces a

huge risk to the Australian honeybee industry because a contaminated product that is mislabelled 'Made in Australia' or 'Product of Australia' could impose a massive cost to Australia's clean and green image around the world. Already there have been two incidents where Chloramphenicol was detected in royal jelly that was labelled Australian made.

The complicating factor is that these distributors are technically satisfying the current labelling laws due to the small portion of royal jelly and propolis content within the products (around 0.03 per cent royal jelly in some cases). Therefore the majority of the product (the filler) is actually made in Australia. This means there is a problem with labelling the products as 'royal jelly' or 'propolis'.

In order to reduce the risk to the Australian industry of contaminated honeybee products, the industry believes that the government should better enforce the rules and regulations associated with product labelling of honeybee products. In addition, this should be supported by the enforcement of labelling on honeybee product descriptions so re-exporters are not allowed to attach a label that relates to a specific ingredient when in fact the majority of the product is made up of filling material.

'Organic' labelling

The industry is concerned with the integrity of organic honeybee products that are being marketed in Australia and the 'Certification' claims that are being made. There is also some concern held by the Australian Competition and Consumer Commission that some food and beverage businesses in general are taking advantage of strong consumer demand by labelling their products 'organic' but are, in some cases, misleading (ACCC, 2006).

The industry therefore supports the development of a domestic standard for organic products to ensure consumers are fully informed regarding honeybee products.

Recommendations

In consultation with AHBIC executives and all major committees of AHBIC, the industry makes the following recommendations.

Recommendation 11 There should be continual lobbying by the Australian government to the New Zealand government over the prohibition of Australian honeybee exports into New Zealand.

Recommendation 12 The Australian government should ensure that any negotiations with the South Korean government addresses the current non-tariff barriers faced by the Australian honeybee industry. This means the Government should seek to remove all quotas on Australian honeybee products imported into South Korea.

Recommendation 13 The Australian government should continue to lobby the Canadian government over highly restrictive quarantine requirements placed on Australian queen bee exports. The industry believes that it has sufficient protocols in place to minimise the risk of Small Hive Beetle being unintentionally brought into Canada through queen bee exports from Australia.

Recommendation 14 The Australian government should continue to lobby the Japanese government over reducing unfair trade restrictions on queen bees from Australia. The industry believes that because Japan already has Chalkbrood, European Foulbrood, and there have been intermittent cases of Nosemosis, these should be removed from the notifiable disease list.

Recommendation 15 The levy for the National Residue Survey should be reduced from 0.03 cents per kilogram to 0.01 cents per kilogram, with the difference being redirected to Animal Health Australia. This is due to the industry's inability to access substantial funds within the National Residue Survey.

Recommendation 16 In order to reduce the risk of contaminated honeybee products being imported into Australia and then being re-exported with a 'Made in Australia' badge, the government should enforce the rules and regulations associated with product labelling. In addition, this should be supported by the enforcement of labelling on product descriptions so re-exporters are not allowed to attach a label that relates to a specific ingredient when in fact the majority of the product is made up of filling material.

Recommendation 17 The government should development a domestic standard for organic products to ensure consumers are fully informed regarding honeybee products.

5. The impact of land management and bushfires

THIS SECTION ADDRESSES the threats to the floral resources accessed by beekeepers including:

- access to public land:
 - why access to public land is important; and
 - state government policies and perspectives.
- the lack of evidence regarding honeybees as an ecological threat;
- other public and private land management issues that need addressing to secure the honeybee industry's future; and
- climate change.

Access to public land

Without access to native flora the commercial beekeeping industry would not exist. Continued access to native flora on private but more especially public land is the essence of the Australian beekeeping industry.

A typical commercial apiarist with, for example, 20 apiary sites with resources available on an infrequent basis, requires a foraging area of native flora of around 16 000 hectares per annum. This emphasises the dependence of beekeeping on native flora on public and private land. An individual beekeeper is unable to secure 16 000 hectares under private control.

Access to native forests on public land is essential for the honeybee industry - state forests, national parks, Crown lands, stock routes, etc contain the majority of remaining native forest which provide most of the floral resource on which the industry depends for honey flows, a 'safe harbour' and clean rehabilitation. Honeybees are rested in native forest on public lands after completing the pollination services which generate very little honey and on which Australian agriculture and horticulture depend for food production.

As the commercial beekeeping industry is migratory, beekeepers require access to a number of areas within the year. Furthermore, the same 16 000 hectares are unlikely

to be used from one year to the next. For example, native flora, which provide 80 per cent of the industry's floral resource, flower on an irregular and often infrequent basis.

In response to concerns about vehicular access to apiary sites and the equivocal empirical data about the impact of introduced honeybees on ecological processes, state governments have placed restrictions on access to public land. For example, the Queensland and Northern Territory state governments have a policy of denying beekeepers access to national parks. In addition there has been a nation wide trend toward taking public lands out of resource use purposes and placing them under conservation tenures.

A summary of key land management issues and access restrictions on a state-by-state basis is provided in Table 5.1.

5.1 Land Management Issues State by State

	Key land management issues
New South Wales	<ul style="list-style-type: none"> ▪ Feral honeybees listed as a key threatening process under the <i>Threatened Species Conservation Act 1996</i>, NPWS preparing a threat abatement plan to control feral hives; ▪ NSW Apiarists Association negotiated a 'no further loss in sites' policy with NPWS; and ▪ Removal of infrastructure that allows access to important bee sites eg logging roads and tracks not maintained and vegetation allowed to regenerate.
South Australia	<ul style="list-style-type: none"> ▪ Similar processes to NSW.
Victoria	<ul style="list-style-type: none"> ▪ Similar processes to NSW; and ▪ Resource conflict between loggers and beekeepers. Scarcity of floral/timber resources post Regional Forestry Agreements is forcing loggers to work in close proximity to bee sites with resultant damage to hives and loss of honey production.
Tasmania	<ul style="list-style-type: none"> ▪ Industry reliant on leatherwood trees but current forestry practices favour clear felling of forestry coupes and leatherwood trees are lost. Leatherwood is slow maturing and coupes are clear felled a second time before leatherwood flowering occurs.
Western Australia	<ul style="list-style-type: none"> ▪ Urban expansion resulting in loss of the most productive forestry sites. ▪ Beekeepers losing access to all categories of conservation reserves, national parks and forests.
Queensland	<ul style="list-style-type: none"> ▪ Beekeepers denied access to all categories of conservation reserve except as part of a phase-out process; and ▪ Newly created national parks in Queensland's south east have resulted in reduced access to 3,000 apiary sites from 2004 with complete removal of all apiary operations by 2024.
Northern Territory	<ul style="list-style-type: none"> ▪ Beekeepers denied access to national parks.

At least 60 per cent of beekeeping activities are undertaken on public land that is controlled by state governments. Future access to these lands is at best uncertain.

The lack of evidence regarding honeybees as an ecological threat

Managed honeybees have either a minor or no effect on native insect pollinators or fauna competing for nesting hollows in public forests. Managed honeybees are moved often and harvest only excess honey flows.

A recent paper on managed honeybees in conserved forests has reviewed both sides of the argument for and against honeybees in conservation areas (Moncur, 2005). The overall conclusion reached is that the findings of the limited scientific investigations into competition between honeybees and native flora and fauna have been inconclusive. In some instances honeybees have a negative effect while in others they have a neutral or positive effect. But while the research has been equivocal, conservation agencies have used the precautionary principle and desire for only native ecosystems in conservation reserves to justify an exclusion policy. The precautionary principle, in effect, excludes activities for which the empirical evidence is equivocal.

Other critical public and private land management issues

In addition to erosion of access to resources on public lands, the following are also threats to floral resources accessed by beekeepers:

- Land clearing for agriculture – some 40 per cent of apiary sites are on private land, until recently there were 400 000 ha of private land cleared, mostly for agriculture each year. Clearing impacts negatively on available floral species for honeybees.
- Forestry activities that remove flowering trees – mature flowering trees are removed and harvested a second time before maturation as a honey resource. This is an issue on both public and private forested land.
- Replacement of felled trees with pine and low honey and pollen yielding eucalypt plantations –densely planted radiata pine and blue gum monocultures harvested before maturation are of little value to the honeybee industry.
- Fire and natural bushfires destroy the apiary value of land. There is evidence of increasing bushfire prevalence and intensity on the Australian east coast. Climate change may exacerbate this trend (see section below).
- Reduction in vehicle access to potentially high yielding apiary sites – public land converted to conservation area often has access routes removed as part of ‘rehabilitation’ processes.

- Competition with loggers as forest resources contract. Scarcity of floral/timber resources post Regional Forestry Agreements is forcing loggers to work in close proximity to bee sites.
- Salinity affecting the health of the available flora – for example there has been a reduction in river red gum flowering events along the inland waterways of Australia. This once important resource is now infrequently visited by commercial beekeepers.
- Droughts which reduce flowering and interrupt growth cycles. Again there is evidence that Australia is entering a long phase of dryer than average climatic conditions similar to the first half of the twentieth century.
- Control of weed species that provide pollen and nectar for honeybees – for example 20 per cent of NSW honey production is reliant on Patterson’s Curse. Other ‘weed’ species important to apiculture include Capeweed, St Barnaby’s thistle, Flat weed, Scotch thistle and Turnip weed.
- Urban sprawl, which reduces mature vegetation and limits the size of apiary sites due to human safety concerns. This includes both rural and urban subdivisions. A related issue is the use of most valuable apiary species (box and ironbark) as a source of firewood in rural areas and large cities such as Canberra. An estimated one third of homes in Canberra are heated by wood.
- Access to native flora on private lands because of a perception by some landholders that honeybees are harmful to the ecosystem or concern that bee stings may expose the landholder to potential litigation.
- Aging and dying of mature eucalypt trees across the general landscape in temperate Australia – many farm trees are reaching the end of their 100 year plus lifespan.
- Landcare and other rehabilitation initiatives – are small scale in their response and often do not replant with species advantageous to honey production. Restrictions on private native forestry are advantageous.

In addition to public and private land access restrictions, there are a series of major issues relating to the decline in the quality of the industry’s floral resources. Increase in the area of crops such as canola, almonds and others is not offsetting the loss of native resource.

Climate change

The dominant native flora of Australia is programmed to survive for lengthy periods of minimal water supply, but in so doing during such periods, flowering activity is virtually non-existent. Long term climate change that may have the impact of increasing drought durations and frequency will equate to reduced reliability of the floral resources within Australia to regularly and reliably flower. These long-term dry periods may also equate to an escalation in fire events, which potentially remove

a floral resource for many years until regrowth is mature enough to return to a regular flowering pattern.

Prolonged droughts followed by periodic 'normal seasons' will also see dramatic differences in the total honey crop obtained by the industry from year to year, which will affect the marketability of such a commodity and the regularity of income.

The industry has a relatively low carbon cost of production compared to the production of substitute products such as sugar and other products.

6. Research, development and education needs

This section addresses:

- priorities agreed in the new five-year research and development plan;
- problems with the current funding level and funding mechanisms;
- supplementary research and development needs identified at an April 2007 national workshop;
- education and training needs, including:
 - overview of industry education and training needs; and
 - the need for national traineeship arrangements for the industry; and
- recommendations.

Research and development priorities

Industry research and development is principally funded by the research levy on honey currently managed by RIRDC. Apiarists pay a levy for research, which is matched on a dollar for dollar basis by the Australian Government. The levy raises between \$350 000 and \$450 000 per annum and funds approximately 12 projects per year. A further \$10 000 per annum is also provided via queen bee producers.

The industry has voted to support an increase in the levy over the life of the new research and development plan. The levy has increased from 0.8 cents/kg of honey sold by apiarists to 1.2 cents/kg in 1 July 2006 and will increase again to 1.5 cents/kg from 1 July 2009. The levy will increase research and development funds available to the industry by approximately \$200 000 per annum when Australian Government matching funds are added to the additional levy.

Research and development projects are usually completed on a joint funding basis and honeybee research and development is conducted by a range of bodies including Departments of Primary Industries (DPI), universities and other research institutes.

The new five-year research and development plan 2007-2012 is the fifth research and development plan for the honeybee program. Honeybee research has developed progressively since the mid 1980s. Each of the previous five-year plans, 1986-91,

1991-96, 1996-2001 and 2002-07 reflected the priorities of the honeybee industry at their time of development and this plan builds on their achievements.

The new plan reflects the state of the industry in 2006 – a supply-limited producer of a suite of quality products with issues in profitability, training, resource access, and pest and disease management.

The plan was prepared after extensive consultation with industry that included surveying of the industry at the NSW, Victorian, Western Australian, South Australian and Queensland State Conferences and at the National Conference of the Australian Honeybee Industry Council, Launceston, Tasmania 11 July 2006. Around sixty complete data sets were received from stakeholders during the research and development plan's preparation detailing future industry research and development priorities.

The 2007-2012 plan was prepared with knowledge of the issues raised in this Inquiry submission and an annual budget of between \$600 000 and \$700 000 per annum. The plan identified six key priority areas for research and development investments to be made on behalf of the industry and Australian Government. The Research and development plan's objectives are:

- pest and disease protection;
- productivity and profitability enhancement to lift beekeeper income;
- resource access security and knowledge;
- pollination research;
- income diversification, new product development; and
- extension, communication and capacity building.

The plan proposes that 45 per cent of available budget be allocated on pests and diseases and a further 10 per cent be allocated to pollination research.

The plan has insufficient resources to manage industry's response to an outbreak of Varroa and other mites or the holistic development of the pollination industry.

Problems with the current funding levels and mechanisms

As noted above the current plan is based on a total annual budget of between \$600 000 and \$700 000 per annum and assumes average seasons.

However, the industry's gross value of production falls dramatically after a sequence of drought years and with it, industry's capacity to attract matching funds from the Australian Government. The industry is currently suffering a 'double whammy' effect (less of its own levy resources and less matching funding) at a time in its history when it can be least afforded. The industry is also concerned at the potential

loss of levies as a result of the recent development of farmer markets and alternative marketing channels where levies are not collected.

Another issue is that there is no provision in the current levy arrangements for Voluntary Contributions by industry to be recognised by the Australian Government and so attract matching funding for an approved project. Voluntary Contributions with Australian Government matching funding is recognised in horticulture and is a very valuable part of the Horticulture Australia Limited research and development portfolio. An offer from a major honey packer and marketer to fund research on the therapeutic qualities of honey to the value of \$500 000 could not be matched with industry funds even though this project was consistent with the new research and development plan.

Supplementary research and development needs

The national workshop to address recommendations from the Australian Parliament Inquiry into Rural Skills, Training and Research 23 and 24 April 2007 included representatives from industries that benefit from pollination services. The workshop reviewed the new industry research and development plan and agreed on the need to supplement both its budget and its coverage.

The workshop agreed that a broad set of stakeholders should determine research and development priorities to reduce the effect of honeybee viruses. Other avenues include research and development into breeding Varroa mite resistant bees and to reduce the development of resistance by mites to insecticides. Workshop participants suggested the following areas should be investigated:

- beehive health, production, ecology (environment), climate change, and pollination;
- higher education, including undergraduate and postgraduate;
- training, including vocational, registered training organisations and other types of training;
- staff development, employment opportunities;
- biosecurity, including quarantine, state issues, and policy development; and
- industry development and value adding.

In addition to these resolutions a clear strategy needs to be put in place on who will manage the industry's response to Varroa and other mites should they arrive in Australia. Emergency response cost sharing agreements are in place with AHA.

Education and training needs

The CIE prepared recommendations for industry education and training in the 2005 Taking Stock and Setting Directions project (CIE, 2005) and these remain valid priorities. They include:

- Developing an education outlook for the industry should be a priority in order to remove any impediments to planning for ongoing industry growth. Although a number of issues relating to education were identified, any formal education program developed to address the needs of the honeybee industry must be based on a detailed analysis on the expected future industry training and education requirements. This requires an understanding of both the current numbers and age structure of participants within the industry and how they might change in the future.
- Any formal education within the honeybee industry should be undertaken by registered educational organisations. This means the organisation must be able to demonstrate that it employs qualified personnel, that it has the necessary beekeeping equipment and class resources, and that the course is accessible to the industry. This will build greater confidence in educational standards within the beekeeping industry and help promote the standardisation of courses and the transfer of skills.
- Educational training needs to be accompanied with promotional activities to develop an educational brand that represents quality and consistency and is recognised throughout the industry.
- Educational programs should be standardised to ensure confidence and consistency, which will facilitate the transfer of qualifications and skills.
- The industry needs to invest in developing its training capacity to ensure the necessary educational infrastructure is available. This includes investigating current training programs and the possibility of augmenting them to encapsulate the full skills set of the honeybee industry.
- AHBIC should lobby the government for more educational funding, and provide advice to current and potential trainers on how to address various state requirements for funding.
- Educating the government and public should address not only the perceived impacts beekeepers have on native flora and fauna but also the cost imposed on society by beekeepers using national forest. This will only be effective if the industry has a nationally recognised code of conduct relating to the use of national forests.

The need for national traineeship arrangements for the industry

The industry has recently had a range of competencies endorsed by the Department of Education, Science, and Tourism for the delivery of training to its members. As the

industry is dispersed right across Australia, the industry believes that there will be problems getting a critical mass of trainees together for specialised training. While a lot of the training will be based in the workplace there will be a need for trainees to interact with industry specialists and experts.

It is the industry's preferred model to have a designated Registered Training Organisation (RTO), which the industry would support in delivering the traineeship. This RTO would run specialist courses at the most appropriate location and have trainees attend from across Australia. It is the industry's understanding that trainees are fully based on state delivery and it is very difficult if not impossible to enrol trainees from interstate and have them attend a RTO.

This is a real impediment to the up-skilling of the honeybee industry for future changes that are likely to affect it. It is therefore suggested that institutional arrangements be put in place for a Commonwealth traineeship to be run that would enable trainees to attend their training anywhere in the country. The traditional travel support and other arrangements for trainees would therefore be available to these trainees to attend the training.

The industry believes that the current state-by-state arrangements are unnecessarily bureaucratic, and from experience in other industries it seems that they are a real impediment to small industries like the Australian honeybee industry to have a critical mass of trainees for specialised training.

Recommendations

In consultation with AHBIC executives and all major committees of AHBIC, the industry makes the following recommendations.

Recommendation 18 Resources should be found to manage a Varroa and other mites outbreak and the resultant impacts on pollination dependent industries.

Recommendation 19 Australian government matched funding for research and development should not be cut in response to drought related drops in industry gross value product.

Recommendation 20 Australian government matched funding for research and development should be extended to recognise industry voluntary contributions.

Recommendation 21 Institutional arrangements should be put in place for a Commonwealth traineeship that would allow trainees within the honeybee industry to attend training anywhere in the country.

Recommendation 22 Assistance should be given to the industry to allow it to promote the benefits of the industry to society.

7. Existing industry and government work for the Honeybee industry

Recent investment by industry and Government in the Australian honeybee industry includes:

- Industry Partnerships Program:
 - Stage 1 'Taking stock and setting directions'; and
 - Stage 2 ' Developing a National Code of Conduct'.
- CRC Grant for Queen bee breeding - \$200 000 to \$300 000 grant;
- Emergency Animal Disease/Pest Response:
 - Work with Plant and Animal Health Australia;
 - National Sentinel Hive Program; and
 - Industry Training and Response.
- Honeybee research and development plan – 2007-2012;
- Completion of the development of competency standards:
 - Training materials for EMS units and emergency response; and
 - Training for emergency animal disease/pest response.
- Sought funding for development of course materials for the remainder of apiary competency units; and
- Funding of a workshop to address industry issues and build on recommendations from the Australian Parliament inquiry into Rural Skills, Training and Research.

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