

Pollination

Fact sheet

The real value of pollination

Did you know that around 65 per cent of agricultural production in Australia depends on pollination by European honeybees?

The importance of pollination by honeybees to our horticulture and agricultural industries should not be underestimated.

In Australia, 35 industries are dependent on honeybee pollination for most of their production.

Crops vary in how much they rely on or respond to pollination by bees. Some industries, such as almonds, apples, pears and cherries, depend almost totally on bees for fruit and nut production.

Due to the large number of wild European honeybees in Australia, the vital role of pollination is not widely recognised or valued and only a small proportion of agricultural producers manage the process through paid pollination.

The potentially devastating impact of exotic pests such as Varroa mite, which is yet to reach Australia, pose a significant threat to honeybees and our pollination services.

Pollination Services in Australia

A new report, *Pollination Aware: The Real Value of Pollination in Australia*, (August 2010), quantifies our pollination services for the first time. It calculates and maps where and when bees are needed.

About 28% of honeybee businesses provide pollination services. Of these, three quarters (about 20% of all registered beekeepers) were paid for providing pollination services in 2006-07.

Pollination services to Australian horticulture and agriculture were valued at \$1.7 billion per annum in 1999-2000 for the 35 most important honeybee dependent crops.*

Australia has almost 10,000 registered beekeepers, operating around 500,000 hives. About one third of these are in New South Wales or Queensland.

For a copy of the Pollination Aware report visit the Pollination page of the RIRDC website at www.rirdc.gov.au

'Around one in every three mouthfuls of food that we consume comes from the aid of pollination by honeybees'

Table 1: Pollination responsiveness of selected crops (as percentage of yield)

Commodity	Responsiveness (%)	Commodity	Responsiveness (%)
Tree crops		Vine crops	
Almond	100	Blueberry	100
Apple	100	Cucumber	100
Apricot	70	Kiwi	80
Avocado	100	Pumpkin	100
Cherries	90	Rockmelon	100
Citrus	0-80	Squash	10
Grapefruit	80	Watermelon	70
Lemon & lime	20	Seed production	
Macadamia	90	Beans	10
Mandarin	30	Broccoli	100
Mango	90	Brussel sprouts	100
Nectarine	60	Cabbage	100
Orange	30	Canola seed	100
Papaya	20	Carrot	100
Peach	60	Cauliflower	100
Pear	50-100	Celery	100
Plum & prune	70	Clover	100
Ground crops		Lucerne	100
Peanuts	10	Mustard	100
Broadacre crops		Onions	100
Canola	15		
Cotton	10		
Soybeans	10-60		
Sunflower	30-100		

Source: *Pollination Aware: The Real Value of Pollination in Australia* (RIRDC Pub. No. 10-081, August 2010)



Significant threats

As demand for pollination services increases, the beekeeping industry faces more threats from the entry of exotic pests and diseases such as the highly destructive Varroa mite - which weakens bees and makes them susceptible to infections.

Scientists believe a Varroa mite incursion is inevitable, as it has already reached three of our nearest neighbours, Papua New Guinea, Indonesia and New Zealand.

The destruction of European honeybee populations (both managed and wild colonies) would decimate producers who rely on wild honeybee colonies and would reduce to insignificance incidental pollination by honeybees within 5-10 years.

The cost of paid pollination services would also increase dramatically and there would be a significant impact on urban food production through backyard fruit trees and vegetable gardens.

What's being done?

The apiary and related industries have joined forces to reduce the likelihood and consequences of exotic pests and diseases. Since 2007, Pollination Australia has been working to promote pollination research and development - and ultimately protect the honeybee from extinction.

The group is seeking to address the supply and availability of bees for pollination services and to optimise the effectiveness of paid pollination services, to generate high yield and high quality crops. They are also striving to improve the recognition and value of paid pollination services.

Existing capability: *supply vs demand*

- There are around 500,000 commercial beehives in Australia.
- Of these, some 102,000 hives are used for paid pollination and between 80,000 and 100,000 hives provide pollination services for honey production.
- Demand is forecast to increase to 222,000 hives by 2010, with increased demand from the almond industry.*

However, current capability falls well short to meet predicted demand if an outbreak of a serious pest or disease occurs.

- If pollination by wild European honeybees was eliminated by Varroa mite, almost 480,000 colonies of honeybees would be needed to provide pollination services every September.
- Peak demand could lift this to 750,000 - far exceeding current apiary capability.

The future

- Cost-effective use of commercial honeybee pollination services will become increasingly important.
- Many crops may not reach their full potential because they rely on wild European honeybees for pollination.
- A shift towards paid pollination will increase yields, quality and profits - although competition for paid services is of serious concern.
- The outlook is bleak for both wild and commercial honeybees if Varroa mite reaches Australia.
- Action is needed to mitigate the consequences on the apiary industry and preserve our agricultural production.

*RIRDC, Pollination Five-Year R&D Plan, 2009-2014, August 2009

The Pollination Program is a jointly funded partnership with the Rural Industries Research and Development Corporation (RIRDC), Horticulture Australia Limited (HAL) and the Australian Government Department of Agriculture, Fisheries and Forestry. The Pollination Program is managed by RIRDC and aims to secure the pollination of Australia's horticultural and agricultural crops into the future on a sustainable and profitable basis. Research and development in this program is conducted to raise awareness that will help protect pollination in Australia.

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