

Project Summary

Propolis harvest – an economic opportunity for Australian beekeepers

Consistent with the [Honey Bee and Pollination Program Five Year RD&E Plan 2014/15 – 2018/19](#), AgriFutures Australia commissioned consultants AgEconPlus to investigate the status of propolis production in New Zealand and Australia, the market for Australian produced propolis and whether there is opportunity for additional profitable supply.

The project, designed and delivered in consultation with commercial beekeepers, showed that profitable production of propolis by Australian beekeepers is possible. New Zealand provides a useful model for the creation of a propolis sector in Australia. There is a market for Australian produced propolis and the market is forecast to grow. The value chain is interested in sourcing Australian produced propolis and credible buyers are interested in investing in the sector.

What is propolis?

Propolis is a resinous mixture that honey bees produce from saliva, beeswax and the exude of tree buds, sap flows and other botanical sources. It is used by honey bees as both a sterilising agent and a sealant for unwanted open spaces in the hive. The medicinal properties of propolis have been known to humans since ancient times. Modern research has shown that propolis is an effective antimicrobial that may also be useful in the treatment of skin cancers. Contemporary propolis products include ingestible capsules, tinctures, lozenges, toothpaste and soap.

How is propolis harvested?

Propolis is recovered from honey bee hives by scraping used hive components including supers and frames. Propolis recovered in this way may contain significant volumes of beeswax and contaminants such as wood and bee body parts. Propolis recovered from hive scrapings has a commercial value and is readily sold, for example, in both the United States and New Zealand. Beekeepers participating in commercial propolis production typically add slotted plastic mats on top of the frames in the hive's top super and underneath the hive lid. The greatest volume of propolis is recovered from hive mats – Figure 1.

Raw propolis sourced directly from the hive in Australia has value and value increases as the product is refined and concentrated into a smaller volume. Refinement

is not difficult but commercial production suitable for incorporation into manufactured consumer products requires scale, appropriate equipment and technical knowledge. Figure 2 shows raw propolis collected from an Australian hive. Figure 3 shows processed pure propolis resin ready for manufacture into consumer products.

Pure propolis is 98% resin and 40% flavonoid. Flavonoid level and type determines the pharmaceutical properties of the propolis.



Figure 1: Propolis mat with a small amount of propolis on it



Learn more
agrifutures.com.au/honey-bee-pollination



AgriFutures™
Honey Bee
& Pollination



Figure 2: Raw propolis collected from an Australian hive



Figure 3: Refined propolis resin ready for manufacture into consumer products

Status of propolis production in New Zealand

New Zealand has a profitable and expanding propolis industry with most propolis sourced from poplar, willow and birch. The country has two well-resourced and professional propolis processors with others looking to expand their industry footprint. There is competition between processors for raw propolis supply and a filled mat pickup and extraction service is offered to beekeepers. Beekeepers making use of this service do not incur labour costs associated with cracking and scraping propolis mats.

Propolis harvest is appealing to New Zealand beekeepers:

- Production can be incorporated within the beekeepers existing calendar of operations and removal of mats can be completed at the same time as honey harvest.
- There is no loss of honey or pollination fee income from the addition of propolis mats.
- Limited labour is required – especially if only un-scraped mats are supplied to the processor.
- Capital outlay is limited – mats may be provided by the processor and filled mats/hive scrapings can be stored by the beekeeper in an existing cool room/freezer.
- Processors pay on the basis of recovered yield and raw propolis with as little as 15% pure propolis will be purchased.
- High prices are achieved for raw propolis and there has been an upward trend in the price of the product.

Raw propolis supply can be profitable for New Zealand beekeepers including those with small apiaries. On average, New Zealand hives produce 220 grams of raw propolis per annum and beekeepers receive between \$NZ54 and \$NZ197/kg for this product. New Zealand produces approximately 30 tonne/year of raw propolis, the equivalent of 12 tonnes of pure propolis. New Zealand imports many times this volume of processed propolis. Imports are required for lower cost consumer products but are also a recognition of New Zealand's limited ability to increase domestic supply.

Status of propolis production in Australia

Some propolis is produced in all Australian honey bee hives but few beekeepers harvest it at the current time. Actual propolis yield in Australia is variable and dependent on location and hive specifics. A number of Australian regions have per hive production levels approaching that of cold countries such as New Zealand. Few studies are available on the chemistry of propolis produced by honey bees in Australia. Those studies that are available, point to additional unique and potentially useful chemistries. The quality of Australian propolis is understood to be acceptable to processors and their final customers. Propolis harvest by Australian beekeepers has been held back by the absence of consistent buyers. This is starting to change with other businesses looking to join the current processor who produces pure propolis for the consumer products sector. Propolis processing requires capital equipment, technical

knowhow, scale and access to markets. Small-scale processing of propolis into tinctures is currently practiced by beekeepers for both personal use and for sale.

Market for Australian produced propolis

The market for propolis products in Australia, which includes re-export of consumer products to Asia, has grown rapidly and is forecast to grow at an average 10% per annum through to 2022. Australia imports an estimated 60 to 80 tonne per annum of pure propolis and propolis harvested by Australian beekeepers could at least partially offset some of this imported material. Companies with a potential future interest in raw Australian propolis include a honey packer, an established processor looking for additional supply, a New Zealand processor exploring opportunities to set up in Australia and a buyer of imported pure propolis. There is a market and willingness to pay for Australian sourced propolis. There is both lower and higher quality Chinese propolis available in Australia. Pure Australian propolis will need to achieve price premiums of between 200% and 300% to be profitable. If Australian product is well marketed, price premiums of this magnitude are possible. Australian propolis competitive advantages which might be used to establish price premiums include trust in the integrity of Australian origin products, a raw product that should be naturally low in chemical residues and unique chemistries in propolis sourced from native flora.

Potential for additional profitable propolis production in Australia

Using “best estimate” assumptions, harvest of raw propolis is modestly profitable. Propolis harvesting appears to be a useful addition to total income for all beekeepers, especially smaller operations where the beekeeper is more likely to have uncommitted time and additional income may provide a boost to overall enterprise viability. For example, raw propolis production in a 100 hive enterprise has the potential to add \$900/year to net revenue if paid labour is used and \$1,400/year if the owner’s labour is employed and has no opportunity cost. The economics of raw propolis production is enhanced for all beekeepers if the processor provides a New Zealand style mat pickup and extraction service. Mat pickup and extraction is thought to require access to at least five tonne of raw propolis and substantial capital for processing equipment if a sustainable enterprise is to be created. Production of value added propolis tincture is relatively straightforward and is profitable for beekeepers for the “best estimate” assumptions used.

Next steps for beekeepers interested in propolis production

Suggested next steps for beekeepers interested in propolis industry participation are:

1. Buy a small number of mats and trial them for a full year – or longer to account for seasonal, locational and hive strength variation.
2. Weigh propolis recovered from mats and scraping separately – some potential purchasers have indicated they may not be interested in propolis recovered from hive scrapings.
3. Keep an approximate record of the time required to crack mats and scrape hive materials – decide on the appropriate cost of labour for your enterprise.
4. Follow up with the potential buyers identified in this report – determine willingness to purchase, standards/specifications used to purchase, their assessment of the propolis harvested and proposed commercial arrangements.
5. Rework guide budgets provided in this report for your enterprise to determine whether either propolis harvest or tincture production is economically viable for your business.

In time, it is possible that the Australian propolis harvesting industry might reach a size comparable to the New Zealand propolis industry, create opportunities in the value chain and deliver new, more effective medical treatments.

Contact

Michael Clarke
AgEconPlus Pty Ltd
clarke@ageconplus.com.au

AgriFutures Australia Project No.: PRJ-010777
AgriFutures Australia Publication No.: 19-021

Learn more
agrifutures.com.au/honey-bee-pollination

AgriFutures Australia is the trading name for Rural Industries Research & Development Corporation.
AgriFutures is a trade mark owned by Rural Industries Research & Development Corporation.



AgriFutures™
Honey Bee
& Pollination