Ministry for Primary Industries
Manatū Ahu Matua

Apiculture

MINISTRY FOR PRIMARY INDUSTRIES 2017 APICULTURE MONITORING PROGRAMME

KEY POINTS

- The 2016/17 season produced an estimated honey crop of 14,855 tonnes, the lowest crop since the 2011/12 season when there were 47 percent (372,850) fewer hives. The average hive yield in 2016/17 of 18.7 kilograms was less than two-thirds of the ten year average. Poor weather was the most significant contributing factor to the low yield, which affected North Island beekeepers (15.2 kilogram per hive average yield), more than those in the South Island (30.1 kilogram per hive). Beehive stocking rates may also be a contributing factor.
- Total registered hives reached 795,578 in June 2017, an increase of 111,532 hives from the previous year. Strong market demand for mānuka honey is driving the increase in hive numbers with expansion led by both corporate and iwi investment.
- The number of registered beekeeping enterprises increased by 16 percent to 7814. Almost 40 percent of hives are managed by 37 enterprises, with the largest enterprise managing around 60,000 hives.
- The financial performance of many beekeeping enterprises in 2016/17 was impacted by lower honey crops, particularly in the North Island. The drop in yield was not buffered by higher prices, as prices for bee products and pollination services remained similar to the prior year.
- The value of New Zealand's pure honey exports increased by 5 percent in 2016/17 to $329 million, despite a drop in volume (of 4 percent). China was the largest market accounting for 25 percent of total honey exports by volume.
- The Ministry for Primary Industries (MPI) released a draft definition for mānuka honey in April 2017 for consultation. MPI finalised the definition on 29 January 2018. The definition is being implemented through a Notice under the Animal Products Act 1999, which came into effect on 5 February 2018. This means that all honey labelled as mānuka honey will have to be tested by an MPI-recognised laboratory, and must meet the scientific definition before it can be exported from New Zealand.
- The main issues of concern to the apiculture industry continue to be bee health (including hive stocking rates), competition for apiary sites, hive theft, and attracting and retaining staff. There is also some concern about the spread and potential impact of myrtle rust disease on mānuka plants, and uncertainty about what impacts this could have on mānuka honey production.

TABLE 1: KEY PARAMETERS OF THE NEW ZEALAND APICULTURE INDUSTRY, 2012 TO 2017

YEAR ENDED 30 JUNE		2012	2013	2014	2015	2016	2017
Beekeeper and hive numbers							
Number of registered beekeeping enterprises[1]		3,806	4,279	4,814	5,551	6,735	7,814
Number of registered bee hives[1]		422,728	452,018	507,247	575,872	684,046	795,578
Honey production							
New Zealand annual honey production	Tonnes	10,385	17,825	17,610	19,710	19,885	14,855
Honey yield per hive	kg/hive	24.6	39.4	34.7	34.2	29.1	18.7
Honey prices[2]							
Bulk honey price range for light clover honey	NZ$/kg	4.40-7.30	5.00-7.30	5.50-8.30	7.00-10.75	9.50-13.00	10.00-14.00
Bulk honey price range for mānuka honey	NZ$/kg	8.00-50.00	10.45-60.00	8.00-85.00	9.50-116.50	12.00-148.00	10.80-127.00
Honey exports (pure honey)[3]							
Honey export volume	Tonnes	7,675	8,054	8,702	9,046	8,831	8,450
Honey export value (at fob[4])	Million NZ$	121	145	187	233	315	329
Honey export price (at fob[4])	NZ$/kg	15.78	17.99	21.45	25.77	35.62	38.92

Notes
1 Registered beekeeping enterprises and hives under the National Pest Management Plan for American Foulbrood.
2 Prices paid to beekeepers for bulk honey. The beekeepers supply the packaging (drums or intermediate bulk containers) and cover freight costs to buyer's premises.
3 New Zealand honey is mainly exported as pure honey in retail packs and in bulk. The data shown is for pure honey exports only.
4 fob = free on board.
Source: AsureQuality Limited and Statistics New Zealand.

PRODUCTION AND FINANCIAL PERFORMANCE OF APICULTURE IN 2016/17

The profitability of most beekeeping enterprises in 2016/17, particularly in the North Island, was considerably lower than in recent years. This was mainly due to low honey production. Honey prices were similar to last year but with a greater price range due to a softening of prices for both mānuka and non-mānuka honeys. Those most severely impacted are likely to have been recent entrants to the industry, some of whom may have to return to alternative full or part-time paid employment.

HONEY PRODUCTION

Honey crop in 2016/17 the lowest in recent years

The 2016/17 season produced an estimated honey crop of 14,855 tonnes, the lowest production volume since the 2011/12 season when there were 47 percent (372,850) fewer hives (Tables 1 and 2). In recent years total honey production continued to increase due to increases in hive numbers more than offsetting any fall in average yield per hive. However, despite another record increase in hive numbers in 2016/17 of 111,532 hives, the gains in hive numbers could not compensate for the drop in yield per hive. The average hive yield was 18.7 kilograms, well below the 10 year average of 30.9 kilograms per hive.

The low honey production was primarily due to a poor crop in the North Island, which was barely two thirds of that harvested last season (Table 2). By contrast, the South Island produced a honey crop very similar in volume to last season. This difference in performance is further illustrated in the yield per hive, with the South Island achieving double that of the North Island at 30.1 and 15.2 kilograms, respectively. Approximately three-quarters of registered hives are in the North Island so the performance of North Island hives has a significant impact on total yield.

Northland and Coromandel had particularly poor honey crops in 2016/17. Difficult spring weather coupled with significant rainfall over the mānuka flowering period resulted in some hive yields dipping below 10 kilograms in these regions. On top of this, some beekeepers also reported high overwintering losses, thought to be due to late varroa treatment the previous autumn.

Poor honey yields across the remainder of the North Island and parts of the South Island were mainly attributed to the weather. Spring 2016 was very unsettled and brought above-average rainfall to many areas, particularly in the North Island and upper South Island but also to south Canterbury and eastern Otago. The reduction in effective foraging days during

TABLE 2: NEW ZEALAND HONEY CROP ESTIMATES, 2008 TO 2017

YEAR ENDED 30 JUNE	2008 (tonnes)	2009 (tonnes)	2010 (tonnes)	2011 (tonnes)	2012 (tonnes)	2013 (tonnes)	2014 (tonnes)	2015 (tonnes)	2016 (tonnes)	2017 (tonnes)	10-year average (tonnes)
Northland/Auckland/Hauraki Plains	1,186	1,756	1,285	2,000	1,200	1,905	2,580	2,175	2,500	2,025	1,861
Waikato/King Country/Taupō	1,436	1,864	1,584	1,400	1,535	2,465	2,980	3,120	2,860	2,115	2,136
Coromandel/Bay of Plenty/Rotorua/ Poverty Bay	2,492	2,250	2,376	1,425	845	3,270	3,525	3,310	3,095	1,855	2,444
Hawke's Bay/Wairarapa/Manawatu/ Taranaki/ Wellington	2,755	2,082	2,318	1,965	2,015	4,130	4,125	6,125	5,910	3,250	3,468
North Island total	**7,869**	**7,952**	**7,563**	**6,790**	**5,595**	**11,770**	**13,210**	**14,730**	**14,365**	**9,245**	**9,909**
North Island (Yield/hive) kg	37.4	35.0	31.3	26.4	19.5	37.7	36.4	35.0	27.7	15.2	30.2
Marlborough/Nelson/West Coast	966	1,140	1,400	470	940	1,110	1,335	1,720	1,710	1,620	1,241
Canterbury/Kaikōura	1,980	1,718	2,200	1,045	1,650	2,815	1,795	1,865	2,610	2,550	2,023
Otago/Southland	1,560	1,755	1,390	1,145	2,200	2,130	1,270	1,395	1,200	1,440	1,549
South Island total	**4,506**	**4,613**	**4,990**	**2,660**	**4,790**	**6,055**	**4,400**	**4,980**	**5,520**	**5,610**	**4,812**
South Island (Yield/hive) kg	33.7	34.2	36.9	20.0	35.2	43.3	30.5	32.1	33.3	30.1	32.9
New Zealand total	**12,375**	**12,565**	**12,553**	**9,450**	**10,385**	**17,825**	**17,610**	**19,710**	**19,885**	**14,855**	**14,721**
New Zealand Yield/hive (kg)	36.0	34.7	33.3	24.2	24.6	39.4	34.7	34.2	29.1	18.7	30.9

Note
See *Information about the Report* for details on how the annual honey crop is estimated.
Source: AsureQuality Limited.

this time impacted on the spring build-up of hives, and hence the potential honey yields from early flowering crops.

Despite the generally poor spring and early summer, both the rewarewa and tawari crops did reasonably well with beekeepers harvesting these crops commenting that it was an exception to an otherwise disappointing season. The rewarewa crop was also unexpected as it yielded well last season and it is unusual to get a good surplus in two consecutive years.

Summer in western and central regions of the North Island was characterised by cool temperatures and relatively high soil moisture content. This is ideal for vegetative growth in pasture plants but is not conducive to high nectar yields, which require the plants to be stressed.

The East Coast of the North Island had a dry summer with hot, dry, windy weather in January and February 2017. Significant wind events (fanning fires in some areas) further challenged bees attempting to collect a surplus crop.

By contrast, Canterbury beekeepers had a relatively settled summer which was warm and dry resulting in a particularly good season for clover, other pasture species and honeydew. Beekeepers also benefited from clover being planted into a lot of new pasture which further improved the season.

Rounding off the season, autumn was extremely wet, particularly in the North Island. Multiple significant rain events (including the 'Tasman Tempest', and ex-Cyclones Debbie and Cook) were recorded in March and April 2017 leading to flooding and access issues in some areas. This impacted harvest activities and late season honey yields, and resulted in the bees consuming some of the surplus honey.

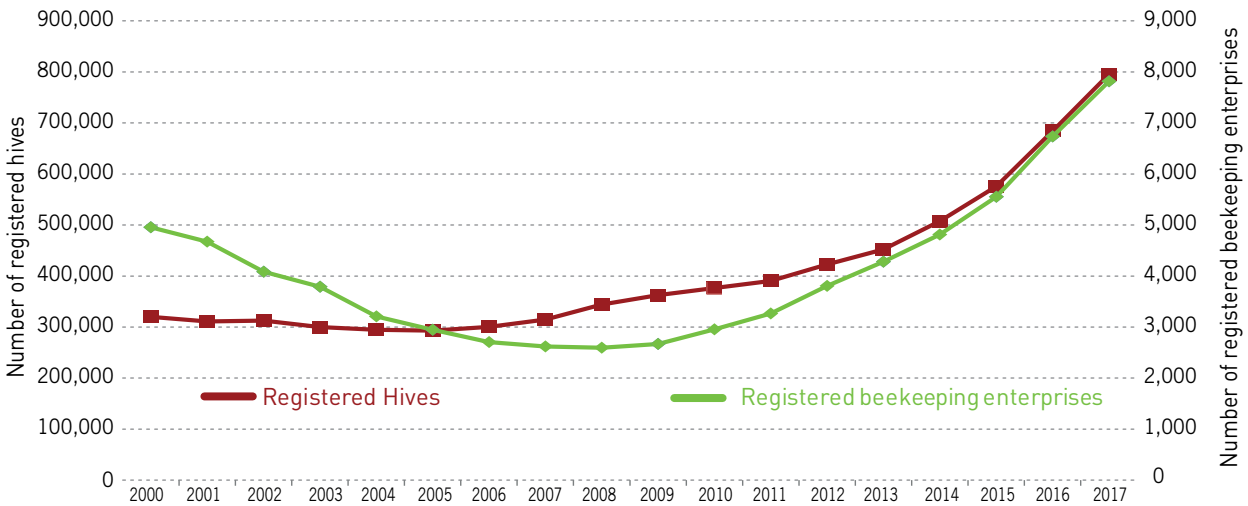
The West Coast of the South Island, like the western and central areas of the North Island, was badly affected by cool wet weather over the majority of the season resulting in poor crop yields from kamahi, mānuka and rata.

Otago and Southland beekeepers had mixed results. Coastal Otago and parts of Southland experienced cool, wet conditions resulting in lower yields. In contrast, central Otago had drier conditions with early willow setting the hives up well for the season. This progressed on to good honey yields from thyme and later from pasture species.

Hive numbers continue to increase

The beekeeping industry has experienced exceptional growth in hive numbers over the last few years with the 2016/2017 season being no exception. Wintering hive numbers in June 2016 were recorded at 684,046 hives. Aggressive hive splitting programmes through the spring saw an additional 100,000 registered colonies by mid-summer, increasing slightly over autumn to give a wintering total of 795,578 hives at June 2017 (Figure 1). This increase of 111,532 hives was similar in magnitude to that seen last season, with the drivers, such as the value of mānuka honey, remaining largely the same. As areas of the North Island reach a point where additional hives increasingly impact on the yield of other hives in the area, larger enterprises are likely to start looking at opportunities in the South Island.

FIGURE 1: REGISTERED BEEKEEPING ENTERPRISES AND HIVE NUMBERS IN NEW ZEALAND[1], AS AT 30 JUNE, 2000 TO 2017



Notes
1 Registered beekeeping enterprises and hives under the National Pest Management Plan for American Foulbrood. Varroa was discovered in hives in New Zealand in 2000.
Source: AsureQuality Limited.

Beekeeper numbers have continued on their growth trajectory with a further 1079 beekeeping enterprises (16 percent increase) registering over the course of the season (Tables 3 and 4). This has put considerable pressure on organisations such as the American Foulbrood Pest Management Agency who, despite educating record numbers of beekeepers in the identification and control of American foulbrood disease, is experiencing a shrinking proportion of beekeepers who are competent in this area.

The ratio of beekeeping enterprises between islands continues to move in favour of the North Island (Table 3) which accounted for 75 percent of the new registrations (809 additional enterprises) in the last year.

Corporate and iwi investment in beekeeping enterprises, typically in the "mega commercial[1]" category, continues to drive a significant portion of the increase in hive numbers via acquisitions, joint ventures and internal growth. Land acquisition, particularly land containing large areas of mānuka, remains common for larger family businesses who see this as a cost effective option when compared to competing with corporates for land access.

There are 37 "mega commercial" beekeeping enterprises in New Zealand as at June 2017 compared with 29 in the previous year. This group operates under 43 beekeeping codes[2] and with the growing numbers, now manage 38 percent of all registered hives. Amongst the ten largest beekeeping entities, hive numbers range from almost 9000 hives for the smallest to around 60,000 hives for the largest entity.

1 A "mega commercial" beekeeping business was defined by the National Beekeepers Association in 2015 as one with more than 3000 hives.

2 Every beekeeper is issued with a beekeeper registration number. Some larger beekeeping enterprises choose to operate different parts of their business (usually in separate geographical areas) under separate beekeeper registration numbers. These can also be structured into separate companies. Thus, one beekeeping enterprise can have multiple registration numbers.

TABLE 3: NEW ZEALAND BEEKEEPING ENTERPRISE, APIARY AND HIVE STATISTICS[1], AS AT 30 JUNE 2017

REGION	Beekeeping enterprises	Apiaries[2]	Hives[2]
Northland/Auckland/Hauraki Plains	2,113	9,439	149,332
Waikato/King Country/Taupō	718	5,345	107,565
Coromandel/Bay of Plenty/Rotorua/Poverty Bay	884	6,737	124,007
Hawke's Bay/Wairarapa/Manawatu/Taranaki/Wellington	1,794	13,910	228,147
North Island	**5,509**	**35,431**	**609,051**
Marlborough/Nelson/West Coast	607	4,384	53,542
Canterbury/Kaikōura	1,048	6,022	80,544
Otago/Southland	650	3,968	52,441
South Island	**2,305**	**14,374**	**186,527**
New Zealand	**7,814**	**49,805**	**795,578**

Notes
1 Registered beekeeping enterprises, apiaries and hives under the National Pest Management Plan for American Foulbrood.
2 Regional location of apiaries is at their wintering sites. The regional location of hives is based on the location of the apiaries.
Source: AsureQuality Limited.

TABLE 4: SUMMARY OF BEEKEEPING ENTERPRISES[1] BY HIVE NUMBER

AS AT 30 JUNE	2010	2011	2012	2013	2014	2015	2016	2017
5 hives or less	1,745	2,044	2,463	2,828	3,162	3,639	4,330	4,873
6 to 50[2] hives	695	678	774	843	964	1,109	1,446	1,781
51 to 500[3] hives	319	336	351	379	443	530	662	833
501 to 1,000 hives	99	109	115	122	124	129	135	155
1001 to 3,000 hives	81	84	87	90	92	111	126	129
>3,000[4] hives	18	16	16	17	29	33	36	43
Total	**2,957**	**3,267**	**3,806**	**4,279**	**4,814**	**5,551**	**6,735**	**7,814**

Notes
1 Registered beekeeping enterprises and hives under the National Pest Management Plan for American Foulbrood.
2 Beekeepers with 1–50 hives are considered hobby beekeepers.
3 Beekeepers with greater than 350 hives are considered commercial beekeepers
4 Data for >3000 hives category between 2010 and 2013 is as at 31 March as data at 30 June is not available. Data for 2014 to 2017 is at 30 June.
Source: AsureQuality Limited.

Around 7600 additional apiaries were registered over the 2016/17 season to accommodate the additional hives. Most of these new apiaries are in the North Island due to the distribution of mānuka forage. Apiary density is a very real concern for beekeepers, landowners and other stakeholders. While there is no definitive data available on actual beehive stocking rates, it is possible that overstocking along with the inclement weather and other factors, contributed to the lowest honey yield per hive for the North Island in the past decade (Table 2).

HONEY PRICES

Honey prices plateau in 2016/17

Honey prices paid to New Zealand beekeepers in 2016/17 (often referred to as bulk honey prices) were similar to last year with some price softening seen for both mānuka and non-mānuka honeys (Table 5). Contributing factors included:

- Several of the larger packing operations had taken advantage of the good season last year (2015/16) to increase their inventory. Doing so meant they did not need to compete as aggressively for product in 2016/17, so demand driven price increases did not occur.
- Uncertainty during the season around the scope and timing of implementation of the Ministry for Primary Industries (MPI) definition for mānuka honey resulted in reluctance from some honey packers to commit to high-value honey purchases, holding back from the spot market somewhat compared with last season. Hence beekeepers who typically sell on the spot market may not have achieved the prices they anticipated in 2016/17, but were still successful in finding buyers for their honey.

TABLE 5: RETURNS FOR APICULTURE PRODUCTS, 2011 TO 2017

YEAR ENDED 30 JUNE	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Bulk honey[1] ($ per kg)							
Light (clover type)	4.10-6.80	4.40-7.30	5.00-7.30	5.50-8.30	7.00-10.75	9.50-13.00	10.00-14.00
Light amber	4.00-5.80	4.30-6.00	5.50-8.50	4.50-8.00	7.00-9.00	9.00-11.50	6.50-13.00
Dark, including honeydew	4.50-5.00	5.00-6.00	4.50-8.50	5.50-10.00	7.00-12.50	8.00-14.50	8.00-16.00
Mānuka	8.00-80.50	8.00-50.00	10.45-60.00	8.00-85.00	9.50-116.50	12.00-148.00	10.80-127.00
Beeswax[2] ($ per kg)							
Light	7.00-7.80	7.00-7.50	7.50-8.50	8.00-10.50	9.00-12.50	11.00-15.00	12.00-17.00
Dark	6.00-6.80	5.00-7.50	6.50-7.80	6.50-7.80	8.00-10.00	9.00-10.00	12.00-17.00
Pollen[2] ($ per kg)							
Not dried or cleaned	16.00-20.00	16.00-28.00	16.00-30.50	16.00-30.50	16.00-27.00	16.00-25.00	16.00-25.00
Cleaned and dried	32.00-38.00	35.00-40.00	40-00-45.00	40.00-45.00	40.00-46.00	...	...
Pollination[3] ($ per hive)							
Pipfruit, stonefruit and berryfruit	60-120	60-120	60-120	60-120	60-140	60-150	70-180
Kiwifruit							
– Hawke's Bay	104-160	104-160	120-180	120-185	120-180	165-300	200-300
– Auckland	120-150	120-150	120-150	120-150	120-150	150-400	150-400
– Bay of Plenty	110-178	115-200	120-195	140-210	142-195	145-400	150-400
– Nelson	120-150	120-150	120-150	120-150	115-195	178-190	130-190
Canola and small seeds (carrots)	120-150	100-180	150-195	150-195	150-195	130-200	200-250
Live Bees[2]							
Bulk bees for export ($ per 1kg package)	26-27	27-28	27-29	27-32	28-32	31-35	31-35
Queen bees (per queen) local sales ($)	25	28	33-37	33-37	30-37	35-60	14-80[4]

Notes
... Data not available.
All prices are exclusive of GST.
1 Prices paid to beekeepers for bulk honey. The beekeepers supply the packaging (drums or intermediate bulk containers) and cover freight costs to the buyer's premise.
2 Prices paid to beekeepers. The beekeepers cover the freight costs to the buyer's premise.
3 Prices paid to beekeepers. Prices at the lower end of the range are for hives delivered to depot sites. Upper end prices include delivery into the orchard and sugar for 3 to 4 one–two litre feeds to stimulate the bees to collect pollen.
4 Queen bee prices for 2016/17 includes the price of virgin queens. The production and sale of virgin queens is an emerging trend.
Source: AsureQuality Limited.

There was a greater range of prices paid for non-mānuka honey in 2016/17. At the top end of the range, high spot prices were paid by honey buyers to fill orders, whilst prices at the lower end of the range were attributed to sellers having to make sales decisions based on cash flow.

New Zealand honey exports reduced but demand remains high

New Zealand exports of pure honey[3] in the year to 30 June 2017 were down 4 percent to 8450 tonnes but revenue was up by 5 percent on the previous year, to $329 million. The average export price for New Zealand honey increased again in the year to June 2017 (by 9 percent), despite the significant drop in global honey prices since 2014[4].

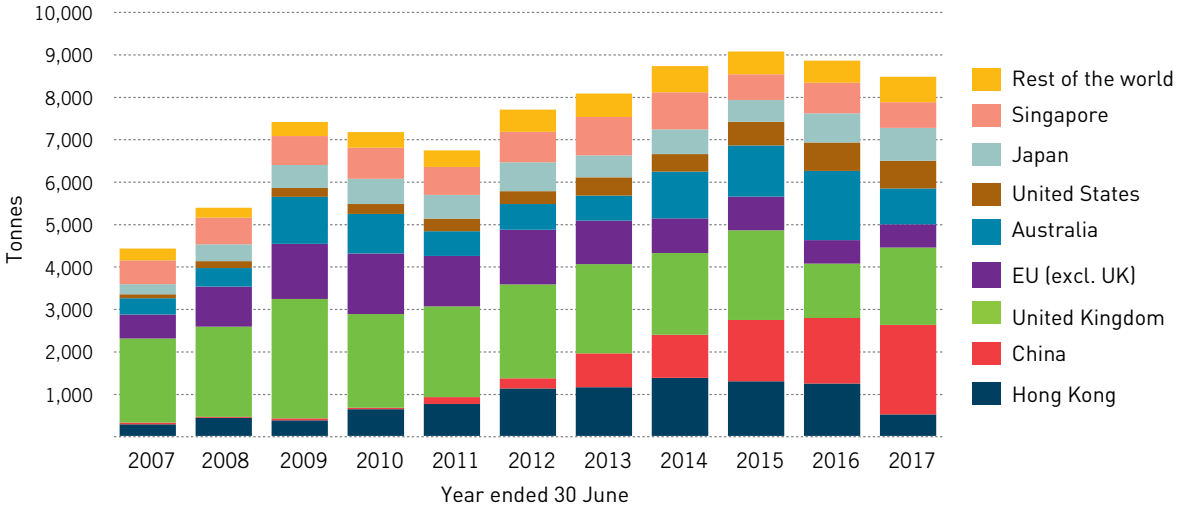
Increases in export volumes to China and the United Kingdom were balanced out by falls in export volumes to Australia, Hong Kong and Singapore (Figure 2). This level of exports, along with stable domestic market consumption (retail and manufacturing), and the reduced honey crop, has seen honey packers run down stock held over from previous years to maintain supply to markets.

Honey export volumes to the United Kingdom in 2016/17 returned to more normal levels after a 40 percent drop in volumes in 2015/16. Meanwhile, the Chinese market continues to grow, taking 25 percent of total New Zealand honey exports in 2016/17. Export volumes were down over the period July

3 Pure honey exports includes honey sold in bulk and retail packs, and as comb honey and honeydew. New Zealand honey is also exported as an ingredient in other food and non-food products such as bakery products, cosmetics, health supplements and medical products.

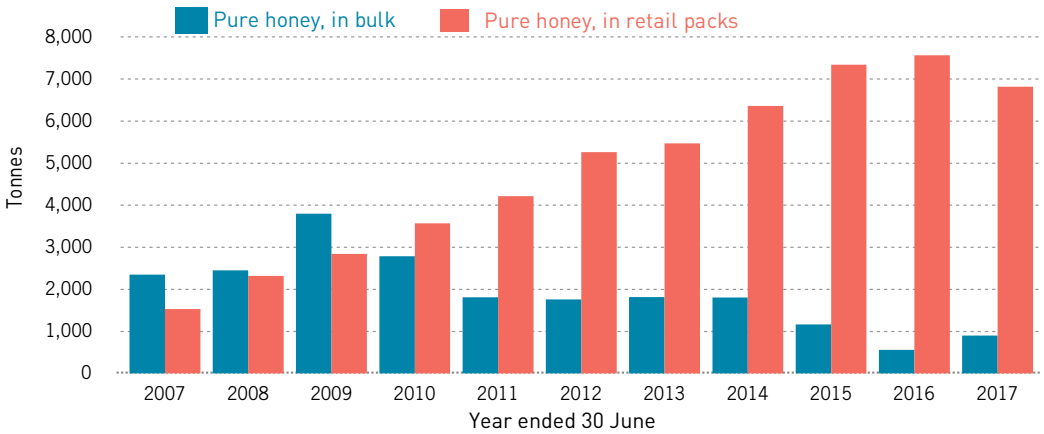
4 https://honey.com/honey-industry/statistics/international-bulk-prices

FIGURE 2: NEW ZEALAND PURE HONEY[1] EXPORTS BY DESTINATION, 2007 TO 2017



Note
1 New Zealand honey is mainly exported as pure honey in retail packs and in bulk. The data shown is for pure honey exports only.
Source: Statistics New Zealand.

FIGURE 3: NEW ZEALAND PURE HONEY[1] EXPORTS BY PRODUCT TYPE (EXTRACTED HONEY), 2007 TO 2017



Note
1 New Zealand honey is mainly exported as pure honey in retail packs and in bulk. The data shown is for pure honey exports only.
Source: Statistics New Zealand.

2016 to March 2017 but picked up significantly in the June quarter. This pattern may have resulted from a lack of buyer confidence in earlier quarters ahead of the draft definition for mānuka honey being released by MPI in early April 2017. Growth in the Chinese market continues to be driven by Chinese investment in the New Zealand beekeeping and honey industry.

The fall in exports to Australia and Hong Kong was most likely influenced by increased oversight by Chinese authorities of informal or unofficial channels being used to bring bee products, in particular honey, into China.

Bulk honey exports (honey in drums) increased from 560 to 903 tonnes in the year to June 2017 (Figure 3) with the main destinations being the United Kingdom, Belgium and Japan. Labelling in-market provides buyers with more flexibility on where the honey can be distributed and sold, and in pack sizes. Retail packs still account for the majority of total honey exports at 81 percent (6817 tonnes) of total exports in the year to June 2017, down from 86 percent in the prior year.

OTHER REVENUE SOURCES

Pollination

Demand for pollination services is increasing with on-going expansion in several horticulture sectors including kiwifruit, apples, avocados, stonefruit and blueberries.

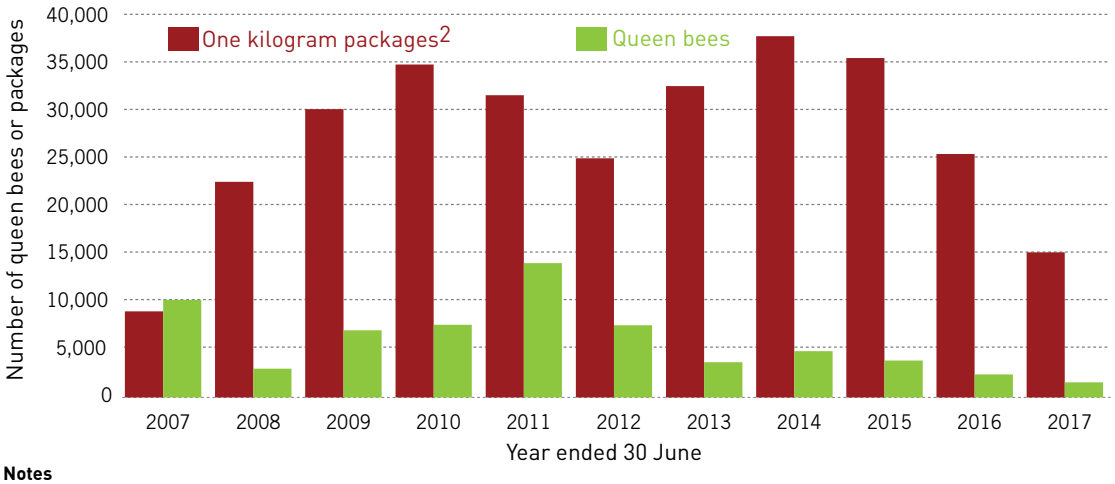
Many beekeepers are reluctant to supply hives for pollination due to the lucrative honey market and the increase in corporate beekeepers who do not see pollination services as part of their core business. However, with the poor honey crop this past season, there may be more interest amongst beekeepers to provide hives for pollination in the 2017/18 pollination season.

Live bee exports

Live bee exports from New Zealand fell to 15,139 one-kilogram packages in 2016/17, down from 25,407 packages last year (Figure 4). This was likely due to the depressed prices that Canadian beekeepers are receiving for their honey. In the period during which orders were being placed, the honey price was around two thirds of the previous year.

In contrast, bumblebee shipments to the Maldives doubled to 9600 individual bees sent in the year to 30 June 2017. These bees are mainly used to pollinate crops grown in greenhouses.

FIGURE 4: NEW ZEALAND EXPORTS OF LIVE BEES[1], 2007 TO 2017



Notes
1 Honey bees only. A small number of bumblebees are also exported.
2 A package of bees generally consists of 1 kilogram of bees housed within a ventilated cardboard tube or a cardboard and wire screen box about the size of a shoe box. The package may hold a supply of sugar syrup and a queen bee in a cage. All packages and the majority of the queen bees go to Canada. The exporting season is late January to May.
Source: AsureQuality Limited.

Propolis

Propolis is a resin collected by bees from some tree species and marketed as a dietary supplement. Market demand for propolis remains strong, particularly in Asia.

Beekeepers gather propolis off special mats placed in hives or by scraping boxes and frames. Propolis in this form is regarded as raw propolis as it contains some beeswax (the proportion varies throughout the season) as well as other contaminants such as parts of bees. Pure propolis is the processed product that has been separated from beeswax and other contaminants.

The recovery rate of pure propolis from raw propolis is approximately 37 to 47 percent early in the season. This decreases to 15 to 25 percent recovery when the nectar flow is on as bees add more wax to the propolis when honey is being produced. Beekeepers reported receiving similar prices to last season at $54 to $197 per kilogram for the raw unprocessed product, with quotes of $360 to $420 for the pure product.

Demand for propolis remained strong in 2016/17 with processors focusing on supporting their existing suppliers while growing their supply base where possible. Most processors provide services to support the collection and supply of propolis. This can include providing propolis mats, and a pick-up service for the mats. Beekeepers are attracted to this additional income opportunity as it is easy to manage within existing beekeeping practices.

Royal jelly and beeswax

Royal jelly is a substance secreted by the bees and fed to the developing queen larvae. Royal jelly is collected by beekeepers, typically via dedicated hives, and marketed as a health supplement. There is a small but increasing number of beekeepers keen to diversify their beekeeping operations to include harvesting royal jelly. This interest is driven by steadily increasing demand for the product which has resulted in a short supply. The level of expertise required to harvest royal jelly is high and the amount harvested is very low, but with current retail prices around $4000 per kilogram some beekeepers see this as a worthwhile diversification.

The continued growth of the local beekeeping industry (an additional 111,532 hives in 2016/17) has increased domestic demand for foundation wax or wax for coating plastic frames. In contrast, the supply of beeswax, while stable overall, is at much lower levels per hive than was the case historically. This has occurred due to changes in the honey extraction processes via the foregoing of uncappers in favour of prickers which reduces the amount of wax removed from the frames during the extraction process. Additionally, beekeepers are less inclined to recover and process wax from their own operation via scraping top bars, etc. as this requires investment in time and machinery better utilised in other parts of the business.

The result is another reduction in export volumes of beeswax in the year to 30 June 2017 from 27 to 24 tonnes (Table 6). Export prices for beeswax increased in 2016/17 to $21.25 per kilogram, compared with $17.04 last season.

Beehives

Despite increasing hive numbers, prices paid for bee colonies dropped this season due to a decline in demand for whole hives (Table 7). Peak prices of $1500 per hive have been reported, down from $2000 per hive last year, likely influenced by the reduced income in 2016/17 because of the lower honey crop. Typically beekeepers buy nucleus colonies (nucs) or single box hives. These units ranged in price from $275 to $600 with the higher prices received earlier in the season. Much of the increase in hive numbers in 2016/17 was related to beekeepers splitting existing stock rather than buying new hives.

TABLE 6: NEW ZEALAND EXPORTS OF BEESWAX, 2007 TO 2017

YEAR ENDED 30 JUNE	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Export volume (tonnes)	178	106	139	138	160	169	180	148	118	27	24
Export value ($ million fob[1])	1.40	1.01	1.36	1.21	1.45	1.59	1.85	1.71	1.57	0.46	0.51

Note
1 Free on board.
Source: Statistics New Zealand.

OPERATING COSTS (TABLE 7)

Sugar

Beekeepers paid between $960 and $1400 per tonne dry weight for sugar in 2016/17, a significant increase from last year due to world demand for sugar exceeding supply for the last two years. Sugar prices rose early in the season and reached a high of $1400 per tonne mid-season. The USDA Foreign Agricultural Service[5] indicates that global sugar production will likely exceed consumption in 2017/18. New Zealand beekeepers saw sugar prices dropping in the latter part of the season. This downwards pressure on prices is expected to continue into 2017/18.

Beekeepers typically buy sugar in a ready mixed liquid form to avoid purchasing the equipment required to mix large batches and to allow their beekeeping staff to focus on the core business of hive and crop management. Beekeepers continue to exercise caution around the use of sugar in beehives as many export markets routinely test for sugar adulteration in honey.

Fuel

Fuel prices rallied from the lower average prices last season to levels more similar to those seen in previous years. Fuel is a major expense for beekeepers, who are travelling greater distances than ever before. This has been driven by the premium paid for mānuka honey encouraging beekeepers into remote areas of marginal farming land more likely to contain mānuka. Additionally, overcrowding has also required beekeepers to search further afield for apiary sites.

Labour

The range of wage rates paid to beekeeping staff has remained static in recent years. However, staff retention is a constant challenge and companies will offer attractive packages to good staff. This includes more regular remuneration reviews or larger increments but also can include discounted housing, meals, extra holidays, and the use of extracting plant and machinery if employees own their own hives. In addition to these benefits, managerial staff can also typically receive production bonuses and company vehicles.

Apiarists remain on Immigration New Zealand's immediate skill shortage list, allowing businesses to recruit skilled beekeepers from overseas.

Businesses are increasing their efforts to attract and train unskilled staff. Training providers are partnering with employers to design and implement Cadetship programmes. Cadetship programmes are increasing in popularity across the primary industries, allowing workers to earn as they learn, and achieve relevant qualifications. Apiculture New Zealand is developing a New Zealand Apprenticeship in Apiculture with the aim of providing a benchmark in training standards.

Site rentals

The average price paid for apiary site rentals remained stable over the 2016/17 season. This is despite competition for sites increasing in intensity, in particular in the North Island with 90,870 additional hives in the past season. Over the last few years, many beekeepers have reported being asked to leave sites that they had occupied for many years on account of the landowner being offered a better deal by another beekeeping operation. However, reports are emerging of landowner dissatisfaction with beekeeper management techniques on their properties, particularly around harvest time. This may eventually result in more landowners considering other factors in addition to the remuneration rate when making decisions about which beekeepers can access their land.

5 http://apps.fas.usda.gov/psdonline/circulars/Sugar.pdf

TABLE 7: ESTIMATED EXPENDITURE FOR BEEKEEPING OPERATIONS[1], 2014 TO 2017

YEAR ENDED 30 JUNE			2013/14	2014/15	2015/16	2016/17
Labour	Worker	$ per hour	15-27	16-33	16-35	16-36
	Manager	$ per hour	24-75	28-75	30-75	30-75
	Average working week	hours	45	45	45	45
	Average ratio of hives per fulltime equivalent (FTE) with varroa present in the hives	hives:FTE (pre-varroa)	350:1 (800:1)	350:1 (800:1)	350:1 (800:1)	350:1 (800:1)
Fuel	Fuel (dependant on world price and exchange rate)			Variable		
Sugar	Bulk sugar (variable depending on overseas prices and NZ exchange rate)	$ per tonne	865-1,180	758-1,044	789-1,009	960-1,400
Varroa treatment	Varroa treatment (variable according to hive strength and product(s) used)	$ per hive	25-28	22-35	27-31	27-34
	Varroa strips (applied at recommended rates, two treatments per year)	$ per 1,000 plus strips	25-28	22-35	23-25	23-27
Protein supplements	Hives may require 1–2 kilograms per year	$ per 20 kilogram bag	162	155-163	162-182	160-182
Contract extraction costs	Extraction of mānuka honey (costs more as the frames must be pricked first to release the honey)	$ per frame	1.00-2.31	1.06-2.25	1.20-2.25	1.50-2.25
	Extraction of clover honey	$ per frame	0.50 -1.34	0.60-1.50	0.60-1.50	1.00-1.50
Hives	Perfect condition hive, includes 2 brood boxes, floor, lid and 1 honey super, no bees, assembled and paraffin waxed	$ per hive	210	226	201	217-235
	Reasonable condition hive, includes 2 brood boxes and 1-4 honey boxes with bees (including valuations as part of business sale)	$ per hive	300-510	600-1,000	780-2,000	700-1,500
	Reasonable condition single brood nest hive (no supers)	$ per hive	...	300-400	560-800	400-600
	4-5 Frame nucleus hive; new hives includes nuclei box	$ per hive	160-230	150-260	200-300	275-300
	Repairs and maintenance, 7% of hive purchase price	$ per hive	11-28	28-42	28-42	28-42
	Wax to coat plastic frames	$ per kilogram	9-11	14-16	...	...
	Hive Strappers, used as required	$ per unit	7-11	7-11	8-12	6-13
Bees	Queen bees	$ per bee	33-37	30-65	30-40	14-80
	Select queens	$ per bee	200	...	...	300
	Select breeder queens	$ per bee	...	1,000-1,638	900-1,700	600-2,000
Protective clothing		$ per suit	91-185	139-189	137-169	138-189
Honey drums	New or re-manufactured honey drum (holds approximately 300kg of honey)	$ per drum	55-100	79-100	60-79	64-100
Apiary rentals paid to landowners	Mānuka sites (rental is paid either as a per hive rate, percentage of crop when sold or a combination of both)	$ per hive	40-180	50-130	75-150	50-250
		$ per apiary	500-1,000	500-1,000	500-1,000	500-1,000
		% of crop	7.5-30	10-45	10-45	10-45
		$ per hive + % of crop	$25-60 10-38%	$25-60 10-38%	$60-100 10-40%	$50-100 10-40%
	Non-Mānuka sites	grams per hive		Variable, often 500		
Compliance costs	Risk Management Programme (RMP) annual audit costs	$ per audit for a processing RMP	up to 1,300	up to 1,350	up to 1,400	up to 1,500
		$ per audit for a storage RMP	up to 750	up to 795	up to 895	up to 1,000
	MPI Food Safety annual fees	$ if require export eligibility	577.5	590	...	1,006
	MPI Beekeeper Listing	$ application fee	n/a	n/a	n/a	155.00
		$ renewal fee	n/a	n/a	n/a	77.50
	Auditing of electronic certificates	$ per eligible document	up to 65	up to 67	up to 70	up to 70
		$ per month auditing 10% of eligibility declarations raised	65	up to 67	up to 70	up to 70
	Tutin tests	$ per sample (first sample)	90-125	90-125	80-125	80
		$ per composite (up to 10 samples can be composited)	15	10-15	10-15	10
	American Foulbrood Pest Management Plan Levy	$ per beekeeper	20	20	20	20
		$ per apiary	14	14	14	15.17
Apiculture New Zealand[2]	Non-Commercial (1-25 hives)	Annual subscription	n/a	n/a	86.25	86.25
	Commercial (26+ hives)	Base fee	n/a	n/a	172.50	172.50
		$ per hive	n/a	n/a	1.15	1.15
	Beekeeping Clubs	Annual subscription	n/a	n/a	230	230
	Packers and Processors	Base fee	n/a	n/a	172.50	172.50
		$ per kg of production	n/a	n/a	0.0345	0.0345
	Health Product & Food Manufacturers	Base fee	n/a	n/a	172.50	172.50
		$ per kg of production	n/a	n/a	0.115	0.115
	Affiliate Industry (e.g: supply companies etc)	Annual subscription	n/a	n/a	460	460

Notes
... Data not available.
n/a Not applicable.
1 Expenses are exclusive of GST.
2 Apiculture New Zealand was established in April 2016 as the peak industry group for the New Zealand beekeeping industry, replacing the National Beekeepers' Association and the Federated Farmers Bee Industry Group.
Source: AsureQuality Limited.

INDUSTRY DEVELOPMENTS AND ISSUES

MĀNUKA HONEY DEFINITION

A definition for mānuka honey was finalised by the Ministry for Primary Industries (MPI) on 29 January 2018, and is made up of a combination of five attributes (four chemicals from nectar and one DNA marker from mānuka pollen). The definition is being implemented through a Notice under the Animal Products Act 1999, which came into effect on 5 February 2018. Further information is available on the MPI website **www.mpi.govt.nz/growing-and-harvesting/honey-and-bees/manuka-honey/**

MPI released a draft definition for mānuka honey in April 2017 for consultation, following a three-year science programme to develop robust science-based criteria for identifying mānuka honey. An extensive consultation process was undertaken with industry and the public, including public workshops, meetings with industry organisations and individual companies, and a public consultation process. MPI received 120 formal submissions.

HIVE THEFT/HIVE VANDALISM

Beehive theft continues to be an area of concern for the beekeeping industry. Although the value of hives has dropped, they are still seen as a valuable asset. The police have increased resourcing in this area and are working with stakeholders to ensure a co-ordinated approach to this issue. Beekeepers are pleased that some progress has been made with some arrests and successful prosecutions laid. Additionally, beekeepers continue to experiment with the use of cameras and tracking technology.

BEE HEALTH

New Zealand Bee Colony Loss Survey

The second New Zealand Colony Loss Survey involved one-third of registered beekeepers and 40 percent of registered hives, and captured overwintering bee losses in the spring of 2016[6]. Estimated colony losses over winter 2016 were 9.8 percent, statistically the same as the previous year (winter 2015) at 10.7 percent. Colony death, queen problems and wasps accounted for the majority of losses (87.3 percent) over winter 2016.

The survey results for New Zealand compare favourably with other countries that complete similar surveys. Low hive to beekeeper ratios, made possible by the comparatively high return per hive enjoyed by New Zealand beekeepers, is likely to be a contributing factor to these results. These low ratios allow for a much more intensive management style, including more frequent hive inspections and the ability to react more quickly to developing issues such as starvation, failing queens, and varroa mite damage.

The third New Zealand Colony Loss Survey was run in spring 2017 with results anticipated in early 2018.

Bee Pathogen Programme

MPI's Bee Pathogen Programme has now completed three sampling rounds on sixty apiaries throughout New Zealand. After developing comprehensive sampling and testing protocols to match those conducted overseas, bee populations can be compared between geographic areas within New Zealand, and with US and Canadian national surveys. Data on apiary management, productivity and hive losses is being collected to complement the laboratory findings; this will help to identify the factors influencing bee health the most. A summary of the results will be made publically available following consultation with the research participants. The following pathogens are being measured:

- Varroa mites per 100 bees.
- Nosema spores per bee.
- Viral copy numbers per bee for the following viruses (Black Queen Cell, Chronic Bee Paralysis, Deformed Wing and Kashmir Bee).
- DNA copies per bee for *Nosema apis*, *Nosema ceranae*, *Paenibacillus larvae ssp. larvae* (American foulbrood) and *Lotmaria passim*.

GIANT WILLOW APHIDS

The giant willow aphid *(Tuberolachnus salignus)* continues to provide a significant autumn food source for both bees and wasps but the honeydew produced, via collection of the aphids' excretions, crystalises readily in the frames making it difficult to process. Researchers working on lessening the impact of the giant willow aphid are looking at a number of solutions including establishing the tolerance of existing willow cultivars to the aphid; investigation of RNA-based control techniques; and introducing a biological control agent. The research team has been successful in obtaining a parasitoid of the giant willow aphid from overseas with trials now underway in a containment facility.

6 https://www.landcareresearch.co.nz/science/portfolios/enhancing-policy-effectiveness/bee-health/2016-survey

MYRTLE RUST INCURSION

The plant fungal disease, myrtle rust, was first discovered on mainland New Zealand in early May 2017. Myrtle rust was first detected in Northland, followed by finds in other regions in the North Island. The impact of myrtle rust varies by plant species and is dependent on the environment. As at mid-January 2018, there has been one detection on mānuka *(Leptospermum scoparium)* out of more than 10,000 *Leptospermum sp.* plants surveyed. With regards to the susceptibility of mānuka, it is too early to say for the New Zealand situation. Leptospermum species have not been significantly impacted in Australia, but myrtle rust has had different impacts in each new location.

TECHNOLOGY

Significant investment is being made in technology solutions particularly targeting hive management, traceability, and product authentication. The risk of hive theft is also a driver in the use of traceability technologies. Monitoring of honey yields in apiaries via scales with remote sensing can help with decisions on when to harvest, particularly in remote locations. It also assists with transparency where there are revenue sharing arrangements.

These technologies leverage mobile devices which are increasingly used to record information for day-to-day hive management. Both the American Foulbrood Pest Management Agency and the MPI National Apiculture Surveillance Programme have embraced mobile devices across their respective programmes.

KAIKŌURA EARTHQUAKE

The November 2016 earthquake in Kaikōura had a significant impact on beekeepers in the area with large slips and other damage splitting beekeeping operations in two, and making access to hives in the area particularly difficult. Some beekeepers also experienced damage to infrastructure, including to honey processing facilities.

HEALTH AND SAFETY

Beekeepers have increased their level of knowledge and understanding of the requirements of the Health and Safety at Work Act 2015 which came into effect in April 2016. Last season saw many beekeepers engage the services of consultants who specialise in the development of Health and Safety programmes for agricultural businesses.

The Health and Safety at Work (Hazardous Substances) Regulations 2017 came into force on 1 December 2017 and cover the safe management of hazardous substances in the workplace such as diesel, pesticides, fertilisers and cleaning solutions. These changes will require beekeepers to more closely manage the identification, storage and use of the chemicals used in their businesses, including associated emergency planning.

BEEKEEPER LISTING

From 25 August 2016, all bee products (such as honey) intended for export to countries for which official assurances are required, have to be sourced from beekeepers who are listed with MPI. Beekeepers who supply bee products for export exclusively to countries not requiring official assurance need to be listed with MPI by 11 June 2018. Upon listing, beekeepers are issued with a listing number and this will ultimately be the number they reference on harvest declarations.

Beekeepers who are already operating under a registered risk based measure (such as Risk Management Programme (RMP) under the Animal Products Act 1999 or a National Programme Level 1 under the Food Act 2014), and beekeepers who supply bee products exclusively for the domestic market, are exempt from the listing requirement.

Hobbyist beekeepers, in particular those with 1 to 5 hives, are unlikely to list due to the costs involved (see Table 7). If so, they will likely find it more difficult to find commercial premises willing to extract their honey. It may also result in a small, but significant quantity of honey that will no longer be eligible for export.

INDUSTRY PRIORITIES

Apiculture New Zealand, the peak industry body established in April 2016, has identified five priorities within its strategy to enable sustainable industry growth. Apiculture New Zealand acknowledges that government support will be needed to help industry address these priorities. They are:

1. strengthen biosecurity and research;
2. underpin consumer trust and market confidence;
3. grow workforce and skills;
4. support good industry practice to ensure appropriate codes and guidelines are in place; and
5. implement a commodity levy to fund industry initiatives and programmes.

TABLE 8: MPI-FUNDED APICULTURE AND HONEY PROJECTS

PRIMARY GROWTH PARTNERSHIP	**High-performance Mānuka Plantations** (in progress) This PGP Programme led by Manuka Research Partnership (NZ) Limited aims to move mānuka honey production for medical use from wild harvest to science-based farming of mānuka plantations. Combining improved genetics with optimum husbandry practices could enable significant gains for New Zealand's mānuka honey industry. **More information: http://www.mpi.govt.nz/funding-and-programmes/primary-growth-partnership/primary-growth-partnership-programmes/high-performance-manuka-plantations/**
SUSTAINABLE FARMING FUND	**TREES FOR BEES: Strategic bee plantations for pollination and honey** (in progress) The aim of this project is to support the development of the wider agricultural sector to achieve sustainability and growth targets, through increased honey and related medical product exports, and by improved pasture, horticulture and arable crop pollination helping drive growth. This will be achieved by having healthy and thriving bee populations through focused research on floral pollen and nectar sources that meet bee nutrition requirements at the right time and in sufficient quantity, and strategic bee plantations that enable apiarists, farmers and landowners to ensure year-round bee feed supplies. These outcomes will be delivered through demonstration farms, workshops and field days and employ a suite of extension tools developed during the project. **More information: http://www.mpi.govt.nz/document-vault/11941**
	TREES FOR BEES: Producing abundant bee pollinators for sustainable farming (completed February 2017) This project aims to increase the number of strong, healthy honey bees to ensure pollination services for agricultural crops. In many areas, pollen and nectar sources are being removed leading to poor nutrition for bees. They become weakened, malnourished and sometimes starving. To restore flowers for bees we are installing demonstration plantations of trees and shrubs to show how to supply a steady source of high-protein pollen to support bee colonies. The result will be more bees for pollination services leading to increased crop and pasture yields. **More information: http://www.treesforbeesnz.org/research/project-4-producing-abundant-bee-pollinators-for-sustainable-farming**
	TREES FOR BEES: Flowers for healthy bees in times of pollen dearth (completed November 2014) The project aims to improve honey bee health by increasing the availability of nutritious pollen sources by: identifying good bee plants that have protein-rich pollen and flower at the right times especially when there is a pollen shortage; trialling the use of good bee plants that are the most practical plants for farms; and encouraging farmers to plant good bee plants to protect and support bees. **More information: http://www.treesforbeesnz.org/research/healthy-bees**
	Combating the Giant Willow Aphid (in progress) Willows are highly valued in New Zealand as early season nectar and pollen sources critical to the spring growth of honeybee colonies, and for soil erosion control and riverbank stabilisation. The giant willow aphid (GWA), an invasive exotic species first reported in New Zealand in December 2013, is now found throughout New Zealand and is causing a cascading series of impacts. Infestation causes tree stress that reduces willow health and productivity. Aphids secrete large quantities of honeydew, rich in melezitose sugar that is readily collected by bees and introduced vespulid wasps. Melizitose-enriched honey crystallises within the hive, resulting in a significant volume of honey being either rendered non-extractable or tainted by the melezitose. This programme responds to an urgent widespread need from various industry groups by tackling three areas: 1) the economic impact of GWA, 2) identifying GWA resistant willow cultivars, and 3) determining options for biological control of GWA.
	Classical biological control for *Vespula* wasps – Phase II (in progress) *Vespula* wasps are a serious invasive pest throughout New Zealand, causing direct economic losses and putting labourers at risk in various primary sectors. Biocontrol can offer a sustainable large-scale long-term control solution to complement current and future methods. This project will explore the potential of natural enemies, import the proposed parasitic flies, test their safety, apply to the EPA for release approvals and if approved, make initial releases. **More information: http://www.landcareresearch.co.nz/science/plants-animals-fungi/animals/invertebrates/invasive-invertebrates/wasps/wasp-biocontrol-updates**
	New mite for biological control of *Vespula* wasps (completed October 2017) European wasps of the genus *Vespula* are now a serious invasive pest throughout New Zealand, causing direct economic losses and putting labourers at risk in various primary sectors. A recent review concluded that available control options offer limited relief, and are restricted in range. Biocontrol, on the other hand, can offer a sustainable long-term solution that will complement current control methods. In addition to providing large-scale long-term control, biocontrol is environmentally-safe and highly cost effective in the long-run. This project will explore the potential of a new mite recently discovered in wasp nests as a biocontrol solution for *Vespula* wasps. Using lab studies we will develop the mite as a safe and effective biocontrol tool. Field surveys will be conducted to determine the spread and impact of the mite on wasp populations. **More information: http://www.landcareresearch.co.nz/science/plants-animals-fungi/animals/invertebrates/invasive-invertebrates/wasps/wasp-biocontrol-updates**
	A collaborative industry approach to reduce the threat of PAs in honey Phase 2: Risk modelling and mitigation in the supply chain (in progress) The presence of pyrrolizidine alkaloids (PAs) in honey represents a food safety and market access threat. Building on a previous Sustainable Farming Fund project, this project will identify mitigation strategies and a potential testing regime that is appropriate for the industry to continue to grow its international presence and position. A proactive response and industry selfregulation will ensure that New Zealand honey is positioned to meet any future national and international regulations related to PAs and that market access is not limited, and that the public perception of New Zealand honey continues to be 'honey is healthy for you'.
	A collaborative industry approach to reduce the threat of pyrrolizidine alkaloids in honey (completed August 2016) The Bee Products Standards Council (BPSC) is undertaking a significant research project to ensure that New Zealand honey remains a safe food. **More information: http://maxa.maf.govt.nz/sff/about-projects/search/12-018/index.htm**

SUSTAINABLE FARMING FUND	**Sustainable beekeeping by and for Māori landowners** (completed August 2016) The project aims to assess and develop year round nutritional resources for honey bees to promote sustainable residential beekeeping on Māori land.
	Developing a Bee Industry in Te Riu O Waiapu: A Project Management Role (completed October 2015) The project aims to address a core and critical phase of a long-term project and vision for a substantial beekeeping and whanau-based bee product industry for the Waiapu, a whanau-based community in the East Cape area.
	Honeybee genetics for sustainability and pollination security (completed November 2014) The project aims to deliver practical solutions that will increase the sustainability of beekeeping, and its effectiveness in servicing NZ's primary industries. We will apply new genetic assays to identify at-risk bee populations and provide breeding strategies to improve their genetic resilience. We will also trial a novel technique to identify bees with improved pollination performance and determine whether this trait can be selected for within breeding programmes. **More information: http://maxa.maf.govt.nz/sff/about-projects/search/12-017/index.htm**
OTHER MPI FUNDED PROJECTS	**New Zealand Colony Loss Survey 2015** (completed) Funded by the National Beekeepers Association of New Zealand, Federated Farmers Bee Industry Group, Agcarm and the Ministry for Primary Industries. **More information: https://www.landcareresearch.co.nz/science/portfolios/enhancing-policy-effectiveness/bee-health**
	New Zealand Colony Loss Survey 2016 (completed) A continuation of the 2015 New Zealand Colony Loss Survey (see above) and funded by the Ministry for Primary Industries. **More information: http://www.landcareresearch.co.nz/science/portfolios/enhancing-policy-effectiveness/bee-health**
	New Zealand Colony Loss Survey 2017 (in progress) A continuation of the 2015 and 2016 New Zealand Colony Loss Survey (see above) and funded by the Ministry for Primary Industries. **More information: https://www.mpi.govt.nz/growing-and-harvesting/honey-and-bees/bee-colony-loss-survey/**
	Bee pathogen programme (in progress) The Bee Pathogen Programme is funded by The Ministry for Primary Industries and runs from September 2016 to March 2019. The programme aims to find out (i) how common pests and pathogens are; (ii) how severely hives are affected by pests and pathogens; (iii) where pests and pathogens are located in New Zealand; and (iv) how pests and pathogens are affecting our apiary industries. **More information: https://www.mpi.govt.nz/protection-and-response/responding/preparing-to-respond/bee-pathogen-programme/**
	Mānuka honey science programme (completed December 2016) The aim of the programme was to develop and validate a robust scientific defintion for mānuka honey. **More information: https://www.mpi.govt.nz/growing-and-producing/bees-and-other-insects/manuka-honey/**

INFORMATION ABOUT THE REPORT

This report was developed from information gathered through surveys completed by beekeepers, honey packers and exporters and augmented with a review of export documents, the apiary database, published reports and publically available data from Statistics New Zealand.

Honey production, price and expenses figures are based on a survey of a range of beekeeping enterprises that account for 40 to 50 percent of registered hives in New Zealand. The survey is administered by AsureQuality Limited during their annual Risk Management Programme audits and/or hive audits, and via targeted interviews.

Surveys record honey crop information based on the beekeeper enterprise location, not apiary (or hive) locations. This means that honey production information is recorded against where the honey is extracted, not harvested. Therefore, with an increasing trend of migrating hives long distances to harvest mānuka, in particular in the North Island, caution needs to be exercised in interpreting the regional breakdown of honey production and yield per hive.

The data recorded in the surveys are extrapolated to provide an estimate of national honey production, price ranges for honey and honey products, and expenses for beekeeping operations.

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