

2015 Provincial Apiarist Report

Ontario Ministry of Agriculture, Food and Rural Affairs
Apiary Program

April 2016

BEEKEEPING INDUSTRY SUMMARY

- Number of registered beekeepers: 2,562
- Number of producing colonies: 101,135
- Average honey yield/colony: 93 lb (42 kg) per colony
- Total estimated honey crop: 9,405,088 lb (4,266,076 kg)
- Overall reported 2015 overwinter honey bee losses: 38 %

PREVALENCE OF DISEASES AND PESTS

- American Foulbrood: 0.95%
- European Foulbrood: 0.13%
- Chalkbrood: 5.80%
- Sacbrood virus: 0.54%
- Small Hive Beetle: 0.51%
- Varroa mite: 14.47%

SUMMARY

The overall overwinter honey bee loss for the winter of 2014-2015 was reported to be 38 per cent, which is lower than the 58 per cent reported during the winter of 2013-2014. In 2015, approximately 32,000 honey bee colonies were shipped outside of Ontario for the pollination of cranberry and blueberry crops in Eastern Canada. The ministry engaged in regular and targeted inspections for the presence of an invasive pest, the small hive beetle (SHB). SHB was identified in 25 bee yards in the County of Niagara and all honey bee colonies and associated equipment have been detained in these yards. The SHB Quarantine Area (Essex County and part of Chatham-Kent County) remains in place.

WEATHER PATTERNS

The weather was favourable for honey production throughout most of Ontario in 2015 with high temperatures through summer and a hot, humid September. These conditions resulted in a strong fall nectar flow.

HONEY PRODUCTION

Honey survey questionnaires were mailed to commercial beekeepers in Ontario (those operating 50 or more colonies) to estimate the average honey production in the province for 2015. Responses were received from 20 per cent of commercial beekeepers, representing 9000 colonies across the province. Based on the responses from the 2015 Honey Survey the estimated honey production in Ontario was 93 lbs (42 kg) per colony. Many beekeepers anecdotally reported a high yield in 2015 honey production across Ontario for both summer and fall nectar flows.

OUT-OF-PROVINCE POLLINATION

The demand for pollination services for berry crops in Eastern Canada (Quebec, New Brunswick and Nova Scotia) has increased in recent years. The number of honey bee colonies leaving Ontario to pollinate crops in Eastern Canada has increased from 12,600 colonies in 2010 to 32,000 colonies in 2015. Bees raised for pollination services now represent nearly one third of the managed honey bee colonies in Ontario.

PREVALENCE OF PESTS AND DISEASES

The prevalence of pests and diseases were assessed by ministry apiary inspectors during the inspection of 8,822 colonies during the 2015 beekeeping season.

Varroa destructor mites

Ministry apiary inspectors sampling for varroa mites during regular apiary inspections found low levels of infestation in many operations throughout the beekeeping season. The degree of varroa infestation is relative to treatment thresholds established by Guzman et al. (2010) who recommended that colonies be treated for varroa in May if the infestation is greater than two per cent and be treated in August if the infestation is greater than three per cent.

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PREVALENCE OF PESTS AND DISEASES (continued)

Varroa destructor mites

While varroa is widely distributed across the province, the low degree of infestation may confirm the success that some beekeepers have had with the management of varroa mites. Across the province, 5,883 colonies were inspected for varroa using a standard alcohol wash and 851 of those were found to be positive. Among commercial operations (those having 50 or more colonies), the mean varroa infestation was below treatment thresholds and ranged from 0.48 per cent in May to 0.59 per cent in October (Fig. 1). The mean varroa infestation was below recommended treatment thresholds at all sampling dates.

The degree of varroa infestation among small-scale operations (those having 49 or fewer colonies) was variable, ranging from 0.27 per cent in June to 4.53 per cent in October (Fig. 1). The mean varroa infestation was above recommended treatment thresholds in April, September and October and below treatment thresholds in May, June, July and August.

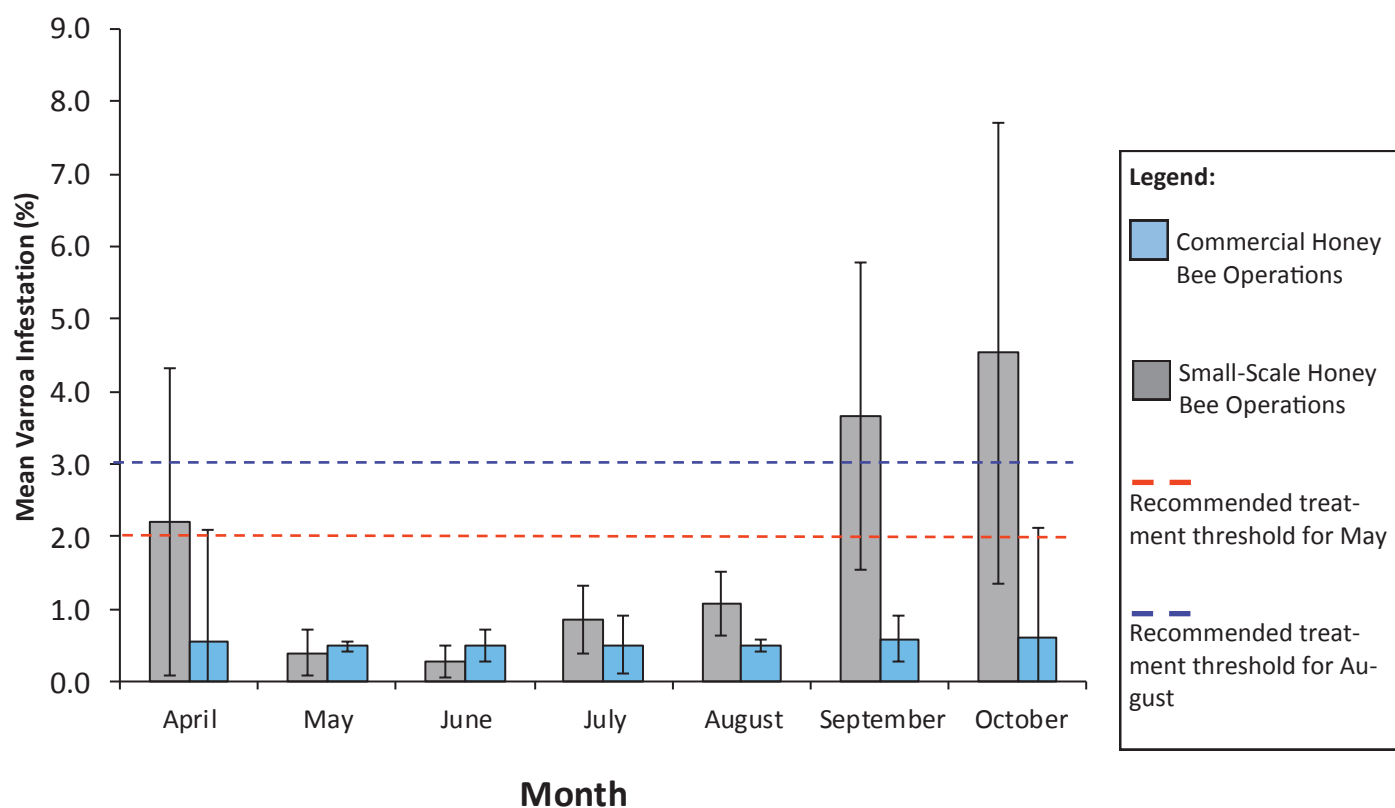


Figure 1. Mean infestation of the varroa mite (*Varroa destructor*) in per cent (%) plus or minus the standard error in colonies inspected by the Apiary Program in 2015, among commercial (blue bars) honey bee operations having 50 or more colonies and small-scale honey bee operations having 49 or fewer colonies. The red line denotes the recommended treatment threshold for May (2 %) and the purple line denotes the recommended treatment threshold for August (3 %) as described by Guzman *et al.* (2010).

Management Practices

Ontario beekeepers have a variety of chemical treatment options available to manage varroa mites. According to a survey of beekeepers, the most popular synthetic acaricide is Apivar® and the least utilized treatment is Checkmite++™. To date, there have been documented resistance issues with both Checkmite++™ and Apistan® in Ontario. Additionally, many beekeepers are using 65 per cent liquid formic acid as a regular varroa treatment option.

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PREVALENCE OF PESTS AND DISEASES (continued)

American Foulbrood (AFB) and Other Brood Diseases

In 2015, American Foulbrood (AFB) was found in 84 honey bee colonies or 0.95 per cent of the colonies inspected in Ontario. Samples of AFB that have been tested for resistance to known treatments have confirmed that the strains of AFB circulating in Ontario are still susceptible to registered antibiotics. There have been no instances of antibiotic resistant AFB in Ontario to date. Other brood diseases that were tracked by the Apiary Program include European Foulbrood, *Melissococcus plutonius*, chalkbrood, *Ascosphaera apis*, and sacbrood (see page 1).

Small Hive Beetle (SHB)

Following the discovery of SHB in Niagara County, the ministry began enhanced SHB surveillance. Ministry apiary inspectors visited targeted apiaries within a 15 km radius of known SHB positive sites in the Niagara Region, and further expanded SHB surveillance to the western part of the Niagara Region and to areas surrounding apiaries where SHB had been confirmed in prior years. In 2015, a total of 25 apiaries, both commercial and small-scale operations tested positive for SHB.

As the status and presence of SHB is evolving in Ontario, the province is transitioning from an eradication strategy to a management strategy which is consistent with other jurisdictions. Effective management of SHB is important to minimizing the spread of this new pest. For more information, please review the SHB materials found online at www.ontario.ca/beekeeping or call 1-877-424-1300.

2015 ONTARIO APICULTURE SURVEY RESULTS

Overwinter Honey Bee Losses

A survey was used to estimate overwinter honey bee losses. The survey was distributed to 199 registered commercial beekeepers, those having 50 colonies or more. Responses were received from 55 per cent of commercial beekeepers representing 38,667 colonies across the province. Based on the results of the survey, commercial beekeepers reported an approximate 38 per cent overall honey bee colony loss during the 2014-2015 winter (Fig. 2). This is substantially less than the estimated 58 per cent overall winter loss reported in 2014. Although this decrease in winter loss is positive for the health of the beekeeping industry, it is still more than double what is considered to be sustainable by apiculturists. In Canada, 15 per cent is considered the maximum acceptable winter loss (Furgala and McCutcheon, 1992; CAPA, 2007 to 2015).

In-season Honey Bee Mortality Incidents

During the beekeeping seasons of 2012, 2013, 2014 and 2015 there have been reports of in-season honey bee mortality incidents from beekeepers throughout Ontario. A honey bee incident can be defined as atypical effects characterized by bee mortality or sub-lethal effects observed in a honey bee colony reported by a beekeeper that is suspected by the beekeeper to be related to pesticide exposure. These incidents have been reported to Health Canada's Pest Management Regulatory Agency (PMRA) and have been tracked by OMAFRA, the Ministry of Environment and Climate Change (MOECC) and the PMRA.

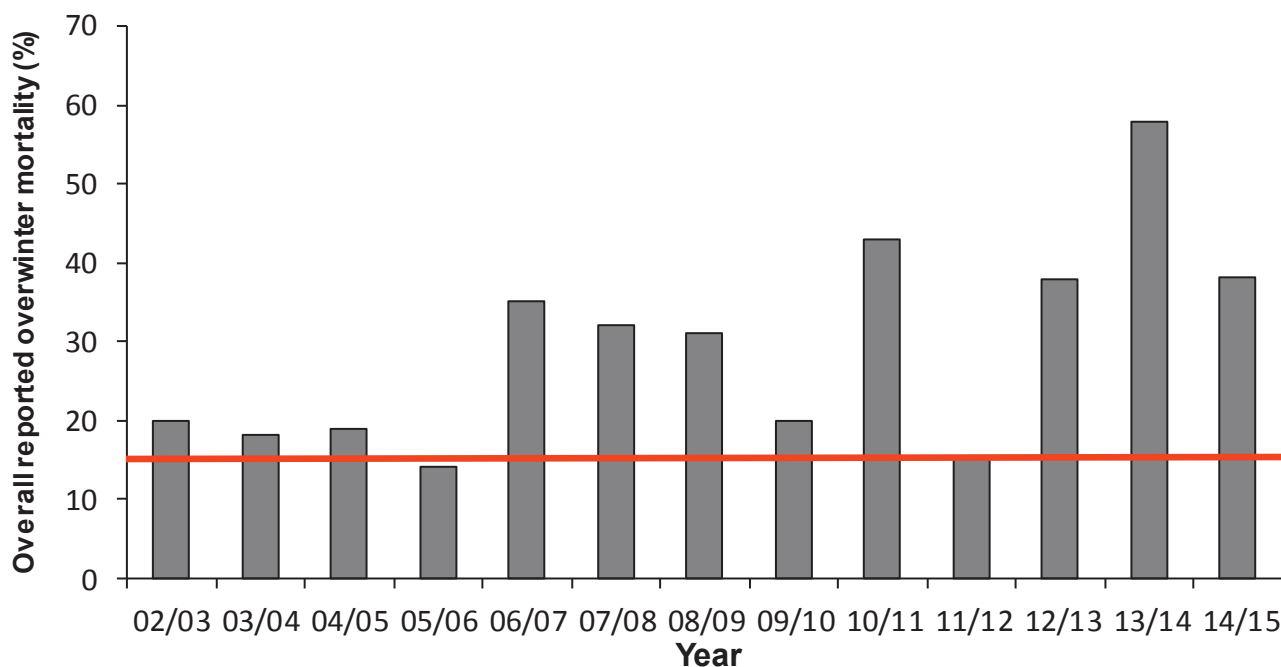


Figure 2. The overall overwinter loss reported annually by Ontario beekeepers from 2002-2003 to 2014-2015. The red line denotes what is considered the maximum acceptable overwinter loss (CAPA, 2007 to 2015).

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ONTARIO'S POLLINATOR HEALTH STRATEGY

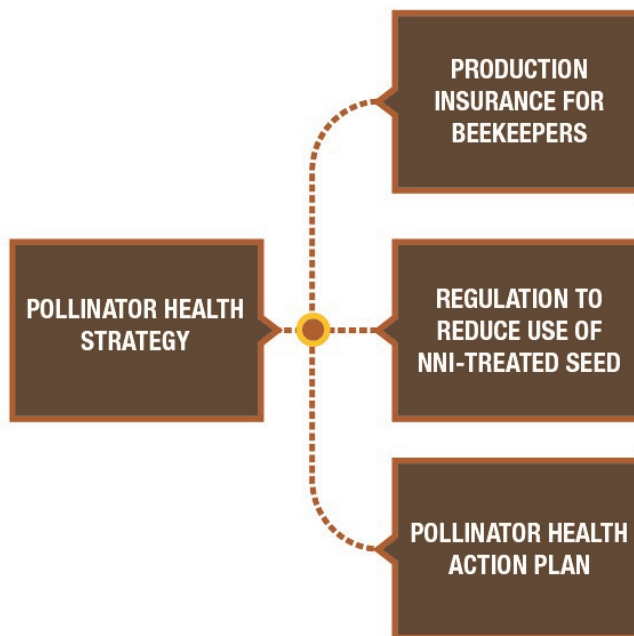
The Ontario government has initiated a Pollinator Health Strategy to address current and emerging threats to pollinator health under four broad categories:

- Reduced Habitat and Poor Nutrition
- Diseases, Pests, Genetics
- Exposure to Pesticides
- Extreme Weather and Climate Change

In November, 2014, the Ontario government highlighted two aspirational targets:

1. To reduce overwinter mortality rates for managed honey bees to 15 per cent by 2020.
2. To achieve an 80 per cent reduction in the number of acres planted with neonicotinoid (NNI) treated corn and soybean seed by 2017.

Two components of the strategy – financial support for the beekeeping sector and a regulation to reduce the use of NNI-treated corn and soybean seeds – have already launched. A third component of the strategy is the development of a Pollinator Health Action Plan. Stakeholders, including the public, provided input to help shape the draft Action Plan which was released for public comment in January 2016.



REFERENCES

Canadian Association of Professional Apiculturists (CAPA) Statement on honey bee losses in Canada. 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014 and 2015. www.capabees.com

Guzman-Novoa, E., Eccles L., Calvete, Y., McGowan, J., Kelly, P. and Correa-Benitez, A. 2010. Varroa destructor is the main culprit for death and reduced populations of overwintered honey bees in Ontario, Canada. *Apidologie*. 4 (4) 443-451



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www.ontario.ca/beekeeping