

**A Canadian honey bee initiative
led by the Alberta Beekeepers Commission**

April 29, 2009

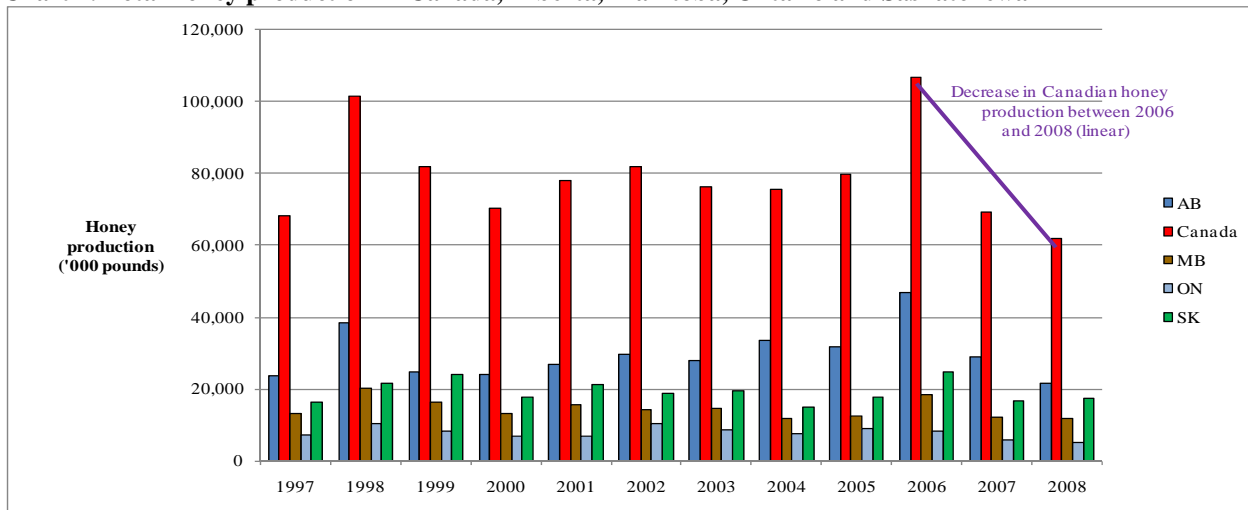
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The current situation and trends

The value of honey bee pollination of United States (US) crops is estimated at about \$15 billion (B) annually.¹ In Canada, the value of crop pollination ranges from \$1.3 to 1.7 billion (B).² The average rental fee per hive is \$120 with a range of \$90 for blueberries to \$150 for canola. The annual value of Canadian honey production is about \$122 million (M).³ However, the number of honey bee colonies has decreased from 5.9M in the 1940s to 4.3M by 1985 and to 2.7M by 1995,⁴ suggesting that the number of strong honeybee colonies for agricultural pollination is decreasing.⁵

Total honey production in the major honey producing provinces was steady between 1999 and 2005 but has been in sharp decline over the past three years (Chart 1). In 2008, Canadian honey production was at its lowest level in 12 years.

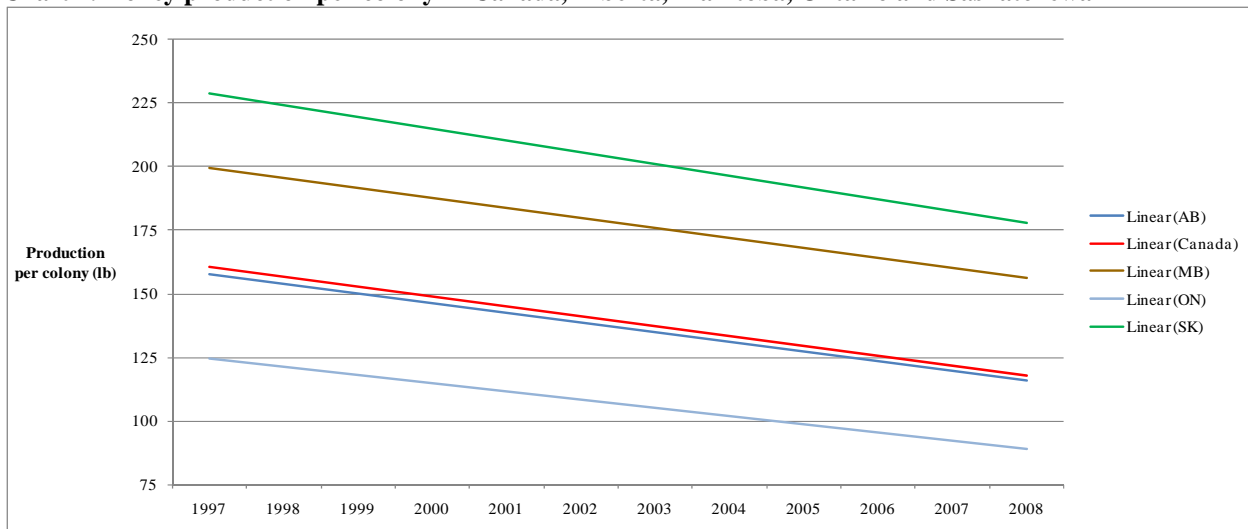
Chart 1. Total honey production in Canada, Alberta, Manitoba, Ontario and Saskatchewan



Source: Statistics Canada

Production per colony in Canada has been declining at a rate of almost four pounds (lb) per year since 1997, with a range of about 3.3 lb/year in Ontario to over 4.6 lb/year in Saskatchewan (Chart 2).

Chart 2. Honey production per colony in Canada, Alberta, Manitoba, Ontario and Saskatchewan



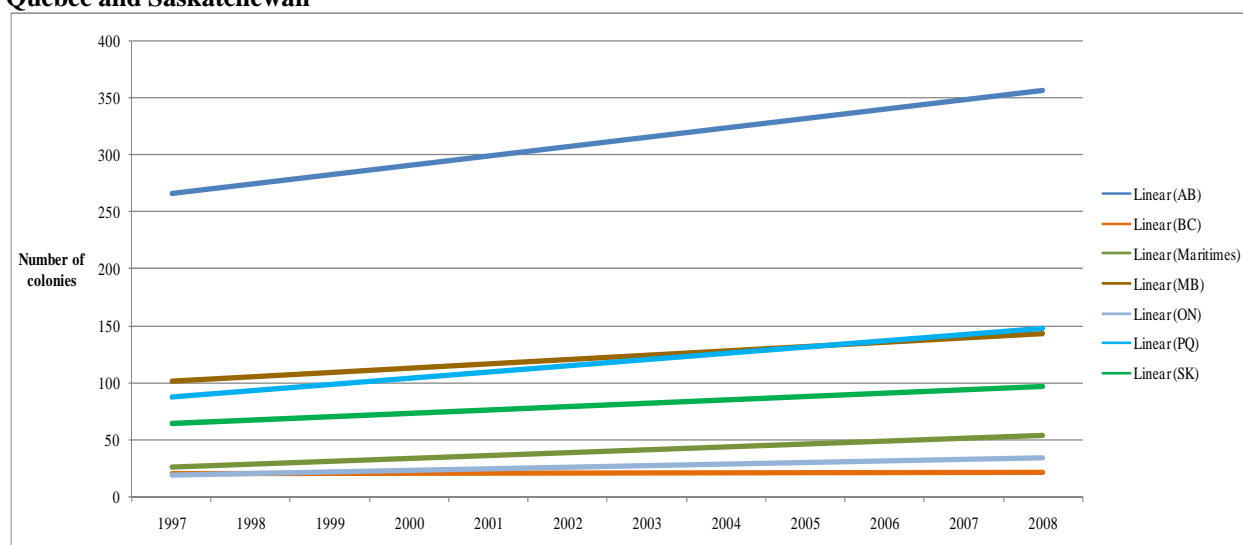
Source: Statistics Canada

The movement and transport of honey bees for commercial pollination puts colonies at risk.⁶ Nevertheless, hybrid canola producers in southern Alberta required about 45,000 colonies in 2006, 60,000 colonies in 2007 and 70,000 colonies were estimated for 2008.⁷ Hybrid canola seed sales surpassed \$200M in Canada in 2007 – and access to these top-yielding varieties fuels \$13.8B in economic activity.

British Columbia (BC) produced 36.7 million lbs of highbush blueberries in 2001 with a farm gate value of over \$44.2M.⁸ The total Canadian blueberry harvest in 2002, including willow lowbush blueberries from eastern Canada as well as highbush blueberries from BC was valued at almost \$90M in 2002.⁹ Blueberries also require pollination and this crop is at risk if blueberry growers have limited access to pollination services. In BC, blueberry pollination contracts went unfulfilled in 2008 because of a shortage of honey bee hives.¹⁰

Falling honey productivity may be forcing beekeepers to manage more colonies to maintain operational income and may, in part, explain the increase in the number of colonies being managed by individual beekeepers (Chart 3).

Chart 3. Colonies per beekeeper in Canada, Alberta, British Columbia, Manitoba, the Maritimes, Ontario, Québec and Saskatchewan



Source: Statistics Canada

Beekeepers have been adding from just over one hive per year in Ontario to over eight hives in Alberta. The number of colonies per beekeeper has remained flat in British Columbia over the past 12 years. Increasing demand for pollination services in hybrid canola along with declining honey production on a per hive basis could help explain this strong upwards trend in Alberta.

Overwintering losses

According to data from the Canadian Association of Professional Apiculturists (CAPA) Canadian honey bee overwintering losses increased from 29 percent in 2006-2007 to 35 percent in 2007-2008.¹¹ This is more than double the long-term “normal” loss of 15 percent experienced by beekeepers before the *Varroa destructor* mite was first found in Canada. Successive annual losses of this magnitude are unsustainable. Scientists in Canada and the US agree that what is described as Colony Collapse Disorder (CCD) in the US and high overwintering losses in Canadian honey bees are likely caused by several common interacting stress factors.

In Alberta in 2007, the potential loss in income from honey production due to overwintering losses in commercial operations with 400 or more hives ranged from \$7.866 million (M) to \$13.05M.¹² Potential losses in income from pollination services ranged from \$2.567M to \$4.225M for hive rental and the income derived from the honey produced during pollination. Combined overwintering losses for honey production and pollination services (plus honey) ranged from \$10.433M (\$7.866M + \$2.567M) to \$17.275M (\$13.05M + \$4.225M), or between \$43.47 and \$71.98 per hive.

In addition, beekeepers needed to replace colonies affected by overwintering losses. To save weakened colonies that survived the winter with fewer than three frames, beekeepers needed to add frames of bees and brood to strengthen them. The cost of imported package bees and Nucs ranges from \$120-\$140 per colony with a provincial replacement cost in the range of \$4.32M to \$5.04M. Beekeepers also needed to use additional medication to treat disease and improve bee health. The cost of strengthening colonies ranged from \$55 to \$65 per unit – which cost provincial beekeepers from \$1.98M to \$2.34M. The combined cost of restocking bee colonies to the previous year's levels ranged from \$6.3M (\$4.32M + \$1.98M) to \$7.38M (\$5.04M + \$2.34M).

Overall, the grand total of income lost due to overwintering losses in Alberta ranged from \$16.733M (\$10.433 + \$6.3M) to \$24.655M (\$17.275M + \$7.38M). Total loss in income per hive ranged from \$69.72 to \$102.73 and total loss in income per hive ranged from \$232.41 to \$342.43. Beekeepers in other provinces would likely be incurring similar costs, in proportion to their share of the Canadian honey and pollination services markets.

In light of these losses Canadian beekeepers have resolved to address honey bee health and industry sustainability. Resolutions were put forward in two areas:¹³

- Procuring and maintaining the availability of new and existing pest control products designed to improve honey bee health in Canada (Resolutions 2, 3, 7, 8 and 9)¹
- Identifying sources of healthy bees and developing the means and methods to secure healthy bees from the continental US and other regions to help ensure industry sustainability in Canada (Resolution 6)²

ABC would like to take the lead in this bee health initiative and help facilitate a positive outcome for Canadian beekeepers for Resolutions 2, 3, 6, 7, 8 and 9, passed at the Annual General Meeting of the Canadian Honey Council in December of 2008.

¹ **Resolution 2:** WHEREAS Manitoba producers have expressed appreciation for the emergency use registration of a hive health product (Apivar[®]) in late 2008, THEREFORE BE IT RESOLVED: That Canadian Honey Council (CHC) works with Canadian Association of Professional Apiculturists (CAPA) to evaluate the availability of, and possible registration of, additional resources to support honey bee health.

Resolution 3: WHEREAS the manufacturer of Apivar[®] is required to perform data requirements for re-registration of Apivar (amitraz), AND WHEREAS this will cost the company an estimated \$100,000 to do this work required to keep the registration current, THEREFORE BE IT RESOLVED: That CHC enters discussions with distributors and others to raise funds (to be held in a CHC account) for new miticide research (starting in 2009).

Resolution 7: WHEREAS the registration for CheckMite[™] expires this year (2008) and since CheckMite+ [™] is still a useful mite control agent in various parts of the country; and; WHEREAS CheckMite+[™] is the only registered product for diagnosis and control of Small Hive Beetle. BE IT RESOLVED that CHC lobbies Bayer Animal Health to continue renewal of registration for CheckMite+[™] and lobby Pest Management Regulatory Agency (PMRA) for an extension of its registration

Resolution 8: WHEREAS formic acid is a useful and effective *Varroa* and tracheal mite control, but very susceptible to fluctuation in behaviour under various atmosphere conditions, and; WHEREAS formic acid application can be modified to make various regional climatic conditions to improve efficacy. BE IT RESOLVED that the CHC lobbies PMRA to continue CAPCO 94-05 directive to make formic acid available to the industry for mite control programs.

Resolution 9: WHEREAS Apivar[®] has proven to be a useful tool in the face of failure by other various mite control products, and; WHEREAS beekeepers don't have a product with efficacy independent from climate conditions that can protect bees from mite kill, and; WHEREAS Apivar[®] can fit in a management program for resistance and be integrated with alternative chemical control; BE IT RESOLVED that CHC petitions PMRA and Arystra Life Science to continue the registration of Apivar[®] and further, that PMRA include *Varroa* mites in their screening tests for new pesticides, and that the CHC acknowledges the extraordinary effort that the PMRA expended in getting the Emergency Use Registration (EUR) for Apivar[®].

² **Resolution 6:** WHEREAS the CHC is currently lobbying the Federal Government for funds to assist the bee industry due to high winter losses country wide in 2007 and 2008, and; WHEREAS suggested allocations of these funds include a component to support research programs, and; WHEREAS there remains a shortage of replacement bulk bees for extraordinary winter losses that are more common due to *Varroa* mite infestations, *Nosema* infestations, and viruses affecting the hives; BE IT RESOLVED that if CHC is successful in lobbying the federal government for funds, including support for research programs, CHC includes in its programs a proposal to allocate an effective portion of research dollars to projects that will help identify sources of healthy bees and develop, in a timely fashion, the means and methods to secure healthy bees from the continental U.S.A. and other sources as an additional tool to help ensure industry sustainability in Canada.

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