An Introduction to Honey Bee Pests and Diseases in Ontario

Infosheet **APRIL 2012**

Like all other insects, honey bees (*Apis mellifera*) are susceptible to pests and diseases, the majority of which are specific to honey bees. These disorders can impact the health of a honey bee colony with effects ranging from minor stress to the death of the colony. Some of these disorders are quite common while others are rarely encountered. It is important for beekeepers to be aware of these disorders, learn to identify them and effectively manage disorders to maintain healthy colonies. This is particularly important because the health of one beekeeper's colony can impact another beekeeper's colony in the surrounding area.
(*See below for listing of honey bee pests and diseases in Ontario.*)





Images (from left to right): Varroa mites, American foulbrood, honey bee, small hive beetle, honey bee infected with deformed wing virus

RESOURCES

Beekeepers in Ontario have access to a variety of educational and training resources in apiculture management, with many focussing on pests and diseases. Beekeepers are encouraged to use these resources and adopt an integrated pest management (IPM) approach to managing the long term health of their honey bee colonies.

Apiculture Program, Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

This program addresses bee health issues in Ontario. The provincial apiarist tracks the health of the industry and directs apiary inspectors responsible for inspecting apiaries throughout the province under the *Bees Act* of Ontario. Before selling honey bees or used beekeeping equipment, beekeepers are required to have honey bee colonies and/or equipment inspected to validate the health of the material and must receive a permit. This is also required for imports or exports of bees between jurisdictions.

The Apiculture Program provides information regarding bee health on-line at the following link: http://www.omafra.gov.on.ca/english/food/inspection/bees/apicultu.html
For a list of regional apiary inspectors see:
http://www.omafra.gov.on.ca/english/food/inspection/bees/info_beeinspectors.htm

Ontario Beekeepers' Association (OBA)

This organization represents the beekeeping industry in Ontario. It is the largest group of commercial and non-commercial beekeepers in Ontario. The organization provides a variety of programs (research, marketing, etc.) and services to members and non-members. Access the OBA's website at http://www.ontariobee.com/.

Ministry of Agriculture, Food and Rural Affairs

Ontario

Technology Transfer Program, Ontario Beekeepers Association

This program works directly with beekeepers providing extension, applied research on regional pest management and disease control. A regular series of practical, intensive workshops on introductory beekeeping, integrated pest management and queen production are hosted in various parts of the province from spring to summer. These workshops are highly recommended to beginning and experienced beekeepers alike. The Technology Transfer program gives regular updates on research developments and current best management practices. Access the program on-line at http://techtransfer.ontariobee.com/; email: obatechtransfer@rogers.com or by telephone at 519-836-3609.

Local Beekeeping Associations

There are currently 25 regional beekeeping associations across Ontario. These associations provide beekeepers with local information on beekeeping conditions and issues. Associations usually hold monthly meetings with guest speakers and discussion forums. The OBA provides a list of local beekeeping associations at the following link: http://www.ontariobee.com/index.php?action=display&cat=8

Townsend Laboratory for Honey Bee Research (University of Guelph)

This research laboratory conducts apiculture research in Ontario, addressing issues of honey bee health and pathology with a focus on genetics, biology of honey bee parasites, immunity and behavioural ecology of honey bees. This lab produces scientific research on the fundamentals of apiculture, offers University courses in the field of apiculture and seminars at beekeeper meetings and conferences. A workshop is hosted by the lab every year. For more information visit their webpage at www.uoguelph.ca/ses/content/honey-bee-research-centre/

Wildlife Damage

Assistance with wildlife damage is available to beekeepers in Ontario.
http://www.omafra.gov.on.ca/english/livestock/predation.htm
http://www.omafra.gov.on.ca/english/food/inspection/bees/honeybeedamage.htm
http://www.mnr.gov.on.ca/en/Business/Bearwise/

Recommended Reading

OMAFRA infosheets on honey bee pests and diseases in Ontario http://www.omafra.gov.on.ca/english/food/inspection/bees/apicultu.html

OMAFRA 2012 Treatment Recommendations
http://www.omafra.gov.on.ca/english/food/inspection/bees/2012-treatment.htm

Ontario Beekeepers Association – Ontario Beekeeping Manual with an emphasis on integrated pest management

Canadian Association of Professional Apiculturists – Pests and Disease Manual

Honey Bee Pest and Disease Images
http://www.omafra.gov.on.ca/english/food/inspection/bees/honeybeepestphotos.htm

Pests and Diseases of Honey Bees in Ontario

Category	Example	Prevalence	Severity	Solutions	Resources
Viruses	• Deformed wing virus • Israeli acute paralysis virus • Kashmir bee virus • Black Queen cell virus • Sacbrood, etc.	• Many of honey bee viruses are widely distributed • The presence and levels of particular viruses may vary	• Moderate to severe	• Although there are no registered treatments specific to viruses beekeepers may manage virus levels to a certain extent by managing varroa infestations.	• Workshops • Treatment recommendations
Bacteria	• American foulbrood • European foulbrood	• Widely distributed, less common • Widely distributed, less common	• Highly virulent and contagious • Manageable	• Prevent with antibiotics, inspection, quarantine and destruction of infected equipment • Management with antibiotics	• Inspection Program • Treatment recommendations • Workshops
Fungi	• Chalkbrood • *Nosema apis* • *Nosema cearanae*	• Widely distributed, common • Widely distributed, common • Widely distributed, common	• Most often a minor pest, rarely serious • May be virulent in winter • Moderate to virulent	• Manage by requeening • Manage with antibiotics	• Workshops • Treatment recommendations
Parasitic Mites	• Tracheal mites • Varroa mites • Varroa mites resistant to fluvalinate and coumaphos	• Current distribution unknown • Widely distributed, common in most regions • Widely distributed, varies by region	• Moderate to serious • Highly virulent, if not managed will kill colony • Decreases the options for control	• Manage with registered chemicals treatments, tolerant bee stock • Manage with registered chemical treatments and cultural practices • Treatment options, sampling and monitoring for resistance	• Workshops, Treatment Recommendations, Ontario breeding stock
Insect Pests	• Wax moth • Small hive beetle	• Widely distributed • Restricted distribution, presently known sites under quarantine	• Pest of weak colonies and equipment • Pest of weak colonies and honey stores, may have implications for exporting bees to other regions	• Colony management, best management of equipment storage • Inspection and permits to prevent spread of pest, colony management, best management practices in the honey extraction facility	• Workshops • Inspection program, workshops, treatments recommendations
Predators (Insect and mammals)	• flies, hornets and wasps, mantids, spiders • mice, shrews • Racoons • Skunks • Bears	• Widely distributed • Widely distributed • Widely distributed • Widely distributed • More common in northern and forested regions	• Minimal impact • Manageable • Last three: • may result in severe damage	• Limited control, location of beeyards • Seasonal management • Best management practices • Best management practices • Best management practices	• Worshops cover all predators • Best management practices and Wildlife Damage Program covers (racoons, skunks and bears)

Notes:

Author credit
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