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### **Annual Report for 2008**

#### **Extension Activities:**

##### **Workshops:**

**Activities:** I was actively involved in the workshop put on through Dyce lab this last spring and fall Cornell University, Master Beekeeper program: “The Northeast Beekeeper’s Apprentice Level Spring Course – 2 day workshop” Apr 26, 27, 2008 (22 students); May 17, 18, 2008 (22 students) and “Cornell University, Master Beekeeper program, The Northeast Beekeeper’s Apprentice Level Fall Course – 1 day workshop” Aug 9, 2008 (23 students). My responsibilities included assisting setting up the workshop, co-hosting the demonstrations and answering questions from the students.

All classes were filled to capacity. The students ranged from people who have never worked with bees before to those who have been keeping bees for several years. Four workshops were put on this last season, two spring workshops and two fall workshops. The spring workshops lasted two full days and the fall workshops lasted one full day (8 hr). Throughout the workshops lectures were presented on all manner of beekeeping (from basic biology to management techniques) in a classroom style. Students were encouraged to actively participate and ask questions at any time. During the workshops we used beekeeping equipment as props so that students could see real life examples of equipment and supplies. All workshops featured several live demonstrations including: assembling of beekeeping equipment, proper inspection of live honey bee colonies in the field, installing of honey bee packages, extracting honey and packaging of honey.

**Outcome:** As a result of the workshops put on this season, 67 students were trained in the appropriate techniques for managing honey bee colonies, appropriate control of parasites and disease within honey bee colonies using IPM techniques and the fundamentals of basic honey bee biology which underlie all manner of beekeeping. We have also made students of the course aware of additional services offered through Dyce. Students gained hands on experience working with honey bee colonies in the field, learning proper techniques through live demonstrations.

##### **Upcoming workshops:**

**Activities:** Dyce lab has updated and written new material for workshops that are planned for this upcoming spring, summer and fall. We have doubled the availability of the last season’s workshops and have added four new workshops, covering queen rearing, bee breeding, IPM in apiculture and an IPM lab workshop. Of particular interest are the two IPM workshops being offered to beekeepers. These two workshops have been in

development for the past few months. The IPM workshop focuses on the fundamentals of parasite and disease biology, proper sampling, control and treatment techniques for parasites and diseases within the proper management of honey bee colonies. The IPM lab will be devoted exclusively to training beekeepers in proper lab techniques for identifying and quantifying parasites and disease within honey bee colonies.

**Outcome:** Through the development of the two IPM courses beekeepers will be trained to use the fundamentals of IPM in their management of honey bee colonies and to highlight the importance of maintaining healthy colonies. The above courses will train beekeepers to identify healthy and diseased colonies through background knowledge of the biology and proper sampling techniques. Beekeepers will receive lectures as well as hands on demonstrations of proper identification of honey bee diseases and parasites in the field and through sampling techniques.

### **Insectapalooza:**

**Activities:** Insectapalooza is an event where the Dept of Entomology at the University of Cornell opens its doors to the general public with a large variety of display stations which highlight to importance of entomology. Dyce lab had a station devoted to apiculture and honey bee biology. This station contained a series of posters highlighting bee biology and activities in beekeeping, assorted beekeeping equipment, a honey tasting station and an observation hive. The observation hive was by and far everyone's favorite. Everyone got a close look at what the inside of a hive looks like. Overall, this was a tremendous opportunity to promote the importance of apiculture its contribution to agriculture in New York State and nation wide. The public had the opportunity to ask all sorts of questions on honey bees, including the current concerns with honey bee health and recent high levels of colony mortality throughout the US. This was also a great venue for promoting the importance of IPM within apiculture as we discussed the health concerns that honey bees face and the options that producers have to treat their colonies.

**Outcome:** As a result of Insectapalooza we increased the level of awareness of New York State's apiculture, honey bee biology and health, highlighted the need for apiculture and how IPM and research are a key component of healthy agriculture and a reliable food supply. We got people a lot of people interested in beekeeping and let everyone know how they can get started in beekeeping as well as promoting the series of workshops that Dyce lab is hosting this upcoming season. The overall attendance of Insectapalooza was approximately 2000.

**IPM Workshop:**

**Activities:** Writing, organizing and assembling a full day workshop including powerpoint lectures, hands on live demonstrations and field demonstrations of an IPM in beekeeping.

**Outcome:** Although the workshop has not been given yet, the projected outcome is to train beekeepers in the appropriate techniques of recognizing and identifying symptoms of common ailments of honey bee colonies through sampling, hive inspection and background biology. This workshop will stress the importance of applying IPM to apiculture with the goal of maintaining healthy colony and maintaining parasite levels below damaging levels. As well the workshop will train beekeepers in the available methods to control and treat for parasites and disease.

**IPM Lab:**

**Activities:** Writing, organizing and assembling a full day workshop including powerpoint lectures, hands on live demonstrations and lab demonstrations using lab equipment and actual colony samples for laboratory techniques.

**Outcome:** Although the workshop has not been given yet, the projected outcome is to train beekeepers in the appropriate techniques of recognizing and identifying symptoms and quantifying the severity of infections or infestations of diseases or parasites in honey colonies. The overall goal is to train beekeepers in laboratory techniques that they can use themselves.

**Factsheets:**

**Activities:** Writing extension material for beekeepers on pests and predators of honey bee colonies detailing information on the biology, identification, control and treatment in relation to proper honey bee management. I also spent time obtaining high quality images and photographs for use in extension factsheets. Two factsheets were written, a factsheet on small hive beetles and a factsheet on varmint predators of honey bees.

**Outcome:** Providing beekeepers with written extension material which they can readily access. This will expand the coverage of Dyce lab's extension services so that producers can have access to information via the web without having to directly contact us.

**Presentations:** I have given one research presentation to an audience consisting of beekeepers and representatives of New York's Apiculture Industry and one research presentation to the New York State IPM working group. The presentation given to beekeepers and members of the apiculture community was at the ESHPA fall meeting, held in Syracuse, New York (11/07/08) to a crowd approximately 100.

**Activities:** A one hour presentation on the research from my graduate degree on the control of parasitic varroa mite infestations in honey bee colonies using fumigation with formic acid during indoor winter storage of honey bee colonies, winter management of honey bee colonies and aspects of the Canadian beekeeping industry. I also answered questions from the audience for approximately five minutes. The presentation to The New York State IPM Working Group detailed the fundamentals and methods of the current applied research project that I am conducting through Dyce lab.

**Outcome:** For the first presentation: I presented the results of an applied research project to New York beekeepers and discussed new potential techniques for controlling parasites within honey bee colonies within the context of general honey bee colony management. For the second presentation: I shared details of my work and research with other members of the IPM working group. This was a great opportunity to get feedback on my project.

**Newsletter:** Recently Dyce lab put out a newsletter covering a wide variety of subjects in apiculture, including: current research in apiculture and honey bee biology, recent developments in extension services, articles of interest on events that are taking place in the US apiculture industry and highlighted the current and upcoming services offered through Dyce lab/IPM that are available to beekeepers.

**Activities:** Writing articles, assembling research and extension material, posting graphics and distribution of the document.

**Outcome:** This has increased producer's awareness of the projects that we have been developing and the services available to beekeepers through Dyce and IPM and even additional services offered through other organizations.

**Applied Research:**

Applied research is a large part of our work through Dyce lab. This season we continued work on a project implementing a potential non-chemical control for varroa mites in honey bee colonies. This involved modifying aspects of the honey bee hive environment using methods of physical control incorporated within the standard management of beekeeping in New York State. This type of research is very important as varroa mites are very serious parasites of honey bees and are responsible for large levels of colony death and the control of varroa is becoming increasingly difficult as varroa has displayed resistance to multiple classes of synthetic pesticides which are commonly used for their control. Another aim of this research project is to gain new important insights into the biology of honey bees and their parasites.

**Activities:** This project involved management of 40 honey bee colonies (half control / half experimental), while sampling various aspects of colony health throughout the field season. We are currently in the process of processing the samples and analyzing data.

**Outcome:** We are still in the process of analyzing data. Once we obtain the results we will be planning to write up a report for beekeepers as well as potentially publishing this research in a peer reviewed journal. This will provide beekeepers with more information on the biology of honey bees and their parasites and will hopefully lead to new potential treatment strategies for controlling varroa mites and maintaining healthy honey bee colonies.

**Extension:** A major service through Dyce lab is providing general extension services to both beekeepers and the general public. Anyone can phone and ask us any questions related to apiculture and beekeeping. This season we received a large number of calls, many from the general public. This includes people who have never worked with bees but are either interested in honey bees or have an outstanding issue with feral colonies. This includes people who have a honey bee swarm on their property or who have a honey bee colony established in a building. In these cases I have given the caller the appropriate advice and put them in contact with the services that would be able to resolve the situation. Dealing with the general public is very important because in a sense we are representing apiculture to people and this allows us to provide the public with reliable, accurate information on honey bees and promote beekeeping. We are also servicing both novice and experienced beekeepers with our extension calls. This is an important resource for those in apiculture industry as we answer questions on management and honey bee health. We also document the types of issues that are facing and their frequency.

**Activities:** Answering phone calls and emails from beekeepers and the public and maintaining a file of issues that beekeepers are facing.

**Outcome:** Providing beekeepers and the general public with valuable information related to research, providing detailed instructions on management of bee colonies, providing contact information for required services, answering questions on general biology of honey bees and associated disorders and details on rules and regulations.

**Introductions:** This being my first season with Dyce lab/New York State IPM, I have made every effort to meet as many members of the beekeeping community and apiculture industry. This may seem like stating the obvious, however making the public aware of my position is an important aspect of serving them.

**Activities:** Writing introductions in local apiculture circulations, attending local beekeeper meetings, and social events, presenting research to beekeepers, representing New York apiculture and IPM at industry conferences, meetings and events.

**Outcome:** Raising the awareness of my new position at Dyce lab promoting and making producers aware of the services offered through my position and the recent partnerships between IPM NY and apiculture in New York.

**Website:** I have also been active in updating our Master Beekeeper website run through Dyce lab. It is important to maintain readily available information and extension material and services to beekeepers.

**Activities:** Collecting and verifying current contact information for numerous New York Beekeeping groups.

**Outcome:** Updating the available information to producers, increasing the public and beekeepers access to information and services through the web as well as multiple links to additional services available.

**EAS:**

**Activities:** In August of 2009, Dyce lab will be actively involved in the annual meeting of the Eastern Apiculture Society, which will be held Ellicottville, Western New York.

We will be giving research presentations and hosting workshops for beekeepers, including the IPM lab workshop. This workshop focuses on laboratory techniques that beekeepers can use to identify and diagnose parasites and disease in honey bee colonies. This workshop will train beekeepers with many of the same skills that trained lab technicians would possess.

**Outcome:** Although the EAS meeting has yet to take place, preparations and development for the program have already begun. We have been in contact with the organizers and hosts of the event and are assembling contributions to this event. The expected outcome is that we will provide beekeepers from New York State and beyond with extension information and services, presentations of research and skills and training through our IPM workshops.