2010

2010 Vol 23 Supplement

Hive Irghts

www.honeycouncil.ca

Reports from 69th Canadian Honey Council Meeting in Orlando, Florida

Canadian Honey Council Activities

Canadian Bee Research Reports

Industry Statistics

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Front Cover:

Board of Directors at Orlando meeting.
(left to right) Heather Clay (CEO), Ted Hancock,
Corey Bacon, Tom Trueman, Lee Townsend,
Gordon Marks, Dan Walker, Jerry Poelman, Bruce Podolsky

Photo: Garry McCue

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Canadian Honey Council
Suite 236, 234-5149 Country Hills Blvd NW
Calgary AB T3A 5K8

Phone: (403) 208-7141 Fax: (403) 547-4317
Web: http://www.honeycouncil.ca
Email: chc-ccm@honeycouncil.ca
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Canadian Beekeepers Association 1940-1972

President				Secretary			
Year	Name	Town	Prov	Year	Name	Town	Prov
1940-41	William R. Agar*	Brooklyn	ON	1940	W.T. Patterson	Winnipeg	MB
1942	Sam M. Deschenes*	Montreal	QC	1941-48	Roy M. Pugh	Tisdale	SK
1943	J. W. Braithwaite*	Brandon	MB				
1944	P.C. Colquhoun*	Maple Creek	SK				
1945	Allan T. Brown	Peterborough	ON				
1946	W.E. Phillips*	Dauphin	MB				
1947-49	Frank Garland*	Winnipeg	MB				
1949-51	J.N. Dyment	Smithville	ON	1949	W.G. LeMaistre*	Edmonton	AB
1952	Peter Kowalski*	Edmonton	AB	1950-59	Roy M Pugh*	Tisdale	SK
1953-54	W.H. Turnbull*	Vernon	BC				
1955-56	H.C. Allen*	Toronto	ON				
1957-58	Sid J. Lye	Oakville	ON				
1959-65	Victor Mesley*	Kemptille	ON	1960-62	R.M. McKay	Ottawa	ON
1966-67	Earl J. Burnett	Roland	MB	1962-69	John E. King*	Ottawa	ON
1968-69	Robert Asher	Brooks	AB				
1969-71	Lou Truscott	Creston	BC	1969-72	Hank R. Taylor	Ottawa	ON

Canadian Honey Council 1972-2010

1971-72	Don F. Peer*	Nipawin	SK				
1972-74	Robert Bird	New West-minster	BC	1972-75	Frank R. Garland*	Winnipeg	MB
1974-76	Jack M Smith*	Beaverlodge	AB	1975-82	Fred Rathje*	Bassano	AB
1976-78	Gerry Paradis*	Falher	AB				
1978-80	Tom Taylor	Nipawin	SK				
1980-82	Howard Bryans	Alvinston	ON				
1982-84	Merv Abrahamson	Pelley	SK	1982-85	Bob Douglas	MacGregor	MB
1984-86	Jerry Awram	Hines Creek	AB	1985-98	Linda Gane	Nipawin	SK
1986-88	Dale Hansen	Farmington	BC				
1988-93	Roger Congdon	Cottam	ON				
1993-95	Barrie Termeer	Rollyview	AB	National Coordinator			
1995-99	Wink Howland	Yorkton	SK	1998- 2008	Heather Clay	Calgary	AB
1999-01	Merv Malyon	Brandon	MB				
2001-02	Dave MacMillan	Thornloe	ON				
2002-04	Wink Howland	Yorkton	SK				
2005-06	Alain Moyen	Mirabel	QC				
Chair of Board				Chief Executive Officer			
2007-2008	Ed Nowek	Vernon	BC	2008-	Heather Clay	Calgary	AB
2009 - 2010	Corey Bacon	Kinistino	SK				

*Deceased

SECTION 1:

Canadian Honey Council
69th Annual General Meeting
Summary Minutes

Orlando, Florida – Tuesday, January 12, 2010

(8:15 AM to 5:30 PM) Board Members: Chair, Corey Bacon; Vice-Chair, Tom Trueman; Treasurer, Jerry Poelman; Secretary, Ted Hancock; Luc Desaulniers (retiring for ABA); Gordon Marks; Bruce Podolsky; Lee Townsend (newly appointed for ABA); Dan Walker; Heather Clay, CEO (ex officio)

At 8:15 the Chair welcomed the Board members to the 68th Annual General Meeting of the Canadian Honey Council.

Motion:

To approve the agenda for the 68th AGM. Ted/Bruce. **Carried.**
Corey introduced all the Directors.

1. Minutes of Previous Meeting

There were no additions or changes to the minutes of the previous meeting held in Sackville, New Brunswick.

Motion:

To approve the minutes of the previous meeting. Dan/Ted. **Carried.**

2. Business Arising from Minutes

The CEO explained, in response to a question, that an information sheet would be distributed for Directors to use during their time at the CHC booth at the Trade Show.

Heather confirmed the Canada night program, with two Ottawa speakers.

CEO's Report

These are the key points from the CEO's report to the Board:

• A letter of agreement regarding the terms of the CEO's employment for the next three years has been signed.

• All the provinces except Quebec have met their commitment to belonging to CHC.
"We notice the lack of communication between our organization and theirs and I am sure they do too. They have a concern about SHB as it might spread and it continues to be an issue in border areas of their province. The lack of government action may cost their industry a lot of money for monitoring and treatment and may affect our national position regarding importation of honey bees."

• Hivelights is doing well and is now in a profit situation with revenues exceeding expenses.

• Income for the CHC is down because of the hive loss situation and lower fees. It was also harder to recruit sponsors.
"We expect that 2010 will see an increase in revenues from a higher hive count as the industry recovers from the devastation of two years in a row with 35% losses. Although sponsorship was not as good as expected we are pleased that Odem International has agreed to renew their sponsorship for a second year."

• Save our Bees has been slowly gaining momentum.
"We may have to revise our approach and work out a better way of promoting the issue."

• At the Sackville meeting the board did not approve project proposals for a Bee Resource Centre and the suggestion is that CHC will not apply for any more externally funded projects.
"We need projects in order to go forward. The reason we achieved the restructure and got to our current position is by taking a shared responsibility with the government and other partners to meet our goals. We have used project money to restructure; to determine the strategies for hive health, queen bee importation protocols, labeling; for a long term international strategy, and to develop a C-BISQT manual for on farm food safety. The only reason that we are at an international venue is because of the vision of the team in 2005 that set a goal of an international meeting in 2010 and went after the funding to achieve those aims. Forward thinking and long term planning is key to success."

• CHC operates in an open manner and an action summary has been circulated showing the status of action items. It is available online for all to see. A summary of the CHC response to last year's resolutions has been sent out and the progress on resolutions is very clear.

• Communication has been strengthened through b-TALK and Hivelights magazine.
"We have regular board meetings which is a big improvement on the past history. A power point presentation was also prepared by the office for all the directors for their annual meetings.

• Educational material for teachers of Grades 1-3 was prepared using project funding and the kit is online.

"We have had good feedback from teachers."

• Pierre the Bear has made appearances at several shows in SK and AB.

• The CBISQT manual is in the final stages of completion.
"There is funding within the traceability program to finish the manual but this would require staff time…. No project funding has been applied for and the project is on hold."

• On a positive note we were approved by Agriculture Marketing Program (AMP) for funding of $59,000 which among other things is helping to pay for our trade show and helping to raise our profile in the industry.
"Although we have been invited to submit applications for further funding to complete extend the AMP project none has been submitted pending the outcome of the board's decision."

• CHC is a higher profile organization than in the past.
"We have international influence with invitations to North American meetings as demonstrated by this event. We are on the CANPOLIN board of directors and getting good press for it. Corey is a director on the Canadian Agricultural Human Resource Council. This week the CHC received an invitation to join a CFIA bio-security committee to help determine policy for on-farm bio-security. CHC has been invited to participate in advisory work for control of disease on bee farms. Also, CFIA would like to meet with CHC regularly in future, preferably face-to-face. (This indicates that CHC has been heard at the Minister's level.)

Motion:

That the CEO's report be accepted as presented. Bruce/Gordon. **Carried.**

3. Executive Committee Report was presented.

4. Finance Committee Report

The financial statements were reviewed.

Motion:

To approve the financial statements for 2008/09 as received from Parker Quine. Tom/Gordon. **Carried.**

Motion:

To approve Parker Quine as Auditor for the coming year, on the understanding that the financial statements would be completed in a timely manner; i.e., 30 days after receiving the information from the CHC national office. Jerry/Dan. **Carried.**

It was generally agreed that the projected budget shortfall has to be addressed and that the CHC must consider:
– Being cautious with costs for Director meetings.
– Using project moneys or potential Ottawa agency connections to help find money for Director meetings.
– Raising more sponsorship funds.

The Treasurer made a commitment that potential projects and sponsorship opportunities would be explored within a month of the AGM.

Motion:

To approve the preliminary budget for 2009/2010 as presented. Jerry/Bruce. **Carried.**

5. Membership and Events Committee Report

Following up on the concerns expressed about CHC income, the Chair of Membership and Events Committee, Ted, reported that this Committee had proposed a notification (to go into Hivelights) inviting applications to other organizations for membership in CHC.

6. Ad hoc Committee Reports

Foreign Workers Committee
Corey, as Chair of Foreign Workers Committee, reported that NOC codes developed by the Foreign Workers Committee were distributed and feedback was received from some, but not all, provincial associations prior to this meeting. ABA sent a letter to the Committee, which Lee read. The proposed NOC codes are seen as unacceptable by the ABA. Bruce and Corey explained the work done by the Foreign Workers Committee.
The Board acknowledged the work done by the ad hoc Foreign Workers Committee, to date.

Issues Committee
Tom, Chair of Issues Committee, reported that a representative from Alberta would be invited to assist, as a resource person, with Issues Committee's work outstanding from last year (related to battery boxes).

Hive Health Committee
Jerry, Chair of Hive Health Committee, concluded his report by stating that priorities for the Committee are clearer, based on feedback the Committee requested from provincial associations. There are three major areas for Hive Health work:

• A "Hive Health Manual" to help beekeepers with monitoring and treating bee diseases including what to do and what not to do
The manual should be in 3 languages and should be available in a format that can be used in the truck.) The Hive Health Committee is asking the CHC Board to ask CAPA to act on this. (Corey reminded the Board that, in the past, CAPA seemed interested in handing off such "extension work" to CHC.)

• Screening programs for efficacy of treatments (like seed trials)
There could be 6 to 8 locations across the country to screen current miticides to generate data for now and the future. Funding for this may be available through the program (DIAP) that Dr. Steve Pernal has identified. This would be a large project and could also be organized as an educational tool, e.g. with a field day IPM approach. (Proposals to DIAP have to be industry driven, so would have to come from Honey Council and Dr. Pernal has offered his full assistance.)

• A coordinated bee breeding program (to follow-up existing independent programs across the country)
Stock has to be propagated to be used commercially. A single organization should exist to oversee this, with standards set in Canada for propagation of bees in the southern hemisphere.

The Chair stated that a national hive health program with the components outlined by the Committee could be pulled together.

Motion:

That the Hive Health Committee Report be

accepted as presented. Luc/Dan. **Carried.**

7. Resolutions from Member AGMs

ALBERTA High Priority

Resolution AB 1: Labeling standards for honey

Moved.

Jerry/Bruce. Amended. Corey/Ted. **Carried as amended.**

WHEREAS there are many products using the word "honey" as a selling tool when in fact there is no or very limited honey included;

and,

WHEREAS there is artificial and imitation honey (i.e. sugar syrup blends) being sold as honey;

BE IT RESOLVED that in order to protect the integrity of Canadian honey Canadian Honey Council lobby the Canadian Food Inspection Agency to enforce labelling standards of honey.

Resolution AB 2: Request CHC to streamline importation of queens from mainland USA

Moved as amended.

Luc/Jerry. Tabled until after discussion of MBA resolutions and subsequently tabled until after the proposed stakeholder meeting, where the importation of queens is to be on the agenda.

WHEREAS the Small Hive Beetle has been found in Canada, i.e. in the province of Quebec, and the federal government has not taken any action to eradicate this pest,

and,

WHEREAS our main source of queens (Hawaii) may be in some jeopardy;

BE IT RESOLVED that Canadian Honey Council recommend to CFIA to streamline the protocol for the importation of queens from mainland USA in order to increase the supply of queens to Canada, specifically to:
First: Allow queens to be imported in Battery Boxes (just as they are in the shipments from Hawaii). Putting queens in separate cages and adding bees adds considerable time and extra cost to the source beekeepers whether in California or Hawaii. (As an added precaution, a label could be put on the outside of the box advising beekeepers to destroy the attendant bees and replace them with their own.)

Second: Since beekeepers in Canada, in Hawaii, and in mainland U.S.A. all have well-established Varroa mites, Varroa testing should no longer be required from the source beekeepers, in either Hawaii or California. (Again, as an added precaution, a label could be put on the outside of the box advising beekeepers to destroy the attendant bees and replace them with their own.)

Third: Since Small Hive Beetle (SHB) is not a threat to Canadian beekeepers, the need for testing for SHB should no longer be required. However, control measures could be taken to minimize the movement of SHB via the battery boxes, such as putting control strips in the battery box (as recommended by Canadian Association of Provincial Apiculturist) to eliminate any SHBs that might be missed by a source beekeeper. Also proper storage of the battery box material will prevent exposure to SHB.

Resolution AB 3: Request PMRA to extend emergency registration of Apivar to 2011

Moved as amended.

Jerry/Bruce. **Carried.**

WHEREAS Apivar has been an effective tool for controlling Varroa mites in Alberta,

and;

WHEREAS the emergency registration of Apivar expires June 30th, 2010,

and;

WHEREAS beekeepers in Alberta need several tools for controlling Varroa mites because of resistance to other treatments;

BE IT RESOLVED that the CHC petition the PMRA and Arystra to support an application for an emergency registration of Apivar for one additional year, to 2010-2011.
Heather reported that PMRA would probably support such a petition.

ALBERTA Moderately High Priority

Resolution AB 4: Request CHC to conduct a national survey to open the US mainland border

---

Moved as amended.

Luc/Bruce. Tabled until after MBA resolutions and subsequently tabled until after the stakeholder meeting, for which the survey will provide information.

WHEREAS the Alberta Beekeepers Importation Committee has determined it is necessary to conduct a survey of all Canadian Beekeepers regarding their opinion on the continued closure of the continental US border to packages;

BE IT RESOLVED that Canadian Honey Council to conduct a survey, with the assistance of the Alberta Beekeepers Importation Committee, of all Canadian beekeepers to evaluate the national opinion of Canada/USA border closure.

Resolution AB 5: Request CHC to lobby HRSDC for renewable LMO's

---

Moved as amended.

Bruce/Luc. **Carried.**

WHEREAS in each year, the Alberta beekeeping industry depends on off-shore seasonal workers to fill a well-documented shortage of Canadian sources of skilled and unskilled labour,

and

WHEREAS these foreign workers have shown they are an extremely valuable resource to sustain and grow our industry,

BE IT RESOLVED that Canadian Honey Council lobby HRSDC to offer a renewable Labour Market Opinion (LMO) for returning foreign workers.

MANITOBA

Resolution MB 1: MBA to work with CHC

on Hive Health Priorities

MOVED AS AMENDED.

Bruce/Luc. **CARRIED.**

WHEREAS MBA is a paid up member of the national Canadian Honey Council organization,

AND;

WHEREAS the MBA Strategic Plan distributed at the 2008 Annual Meeting described several hive health issues important to Manitoba producers,

AND;

WHEREAS The CHC Hive Health Committee has requested MBA and others to provide input to their deliberations

THEREFORE BE IT RESOLVED that CHC and the Hive Health Committee maintain a priority on Healthy Sources of Bee stocks, More Varroa Treatment Options, and Retention of Formic Acid Treatment Options.

Resolution MB 2: Request CHC to organize a Stakeholder Meeting on the importation embargo

MOVED AS AMENDED.

Bruce/Luc. **CARRIED.**

WHEREAS the MBA was originally supportive of the importation embargo initiated in 1988 to prohibit the importation of packaged bees and queens from the continental USA,

AND;

WHEREAS in response to growing industry concerns over the supply of available queens in the Spring, the MBA surveyed its membership in 2002 to determine if support for the importation embargo of queen had changed,

AND;

WHEREAS the survey results revealed that the majority of the responding beekeepers supported changes to allow greater access but wanted protocols in place to minimize the risk of importing important diseases, pests, and Africanized bees,

AND;

WHEREAS at the request from industry, the CHC organized a Stakeholder Meeting to develop importation protocols to support importation of queen honey bees from the continental USA,

AND;

WHEREAS in 2004, the MBA passed a resolution to support the CFIA proposed amendment to allow the importation of queens from the continental USA under the conditions of the import permit developed with industry and other stakeholders,

AND;

WHEREAS there are growing industry concerns over high winter losses and the availability of replacement bees in the Spring,

AND;

WHEREAS in 2009, the MBA conducted a survey of its membership to determine their interest in, and views on, alternative sources for packaged bees,

AND;

WHEREAS the survey results revealed that the majority of responding beekeepers supported greater access to packaged bees than what is currently available.

THEREFORE BE IT RESOLVED that the Canadian Honey Council seek funding to organize a Stakeholder Meeting to identify risks and develop mitigating strategies and new protocols, to recommend to CFIA, to allow greater access to bees from the continental USA and other suitable countries under the conditions of an import permit developed by industry and other stakeholders, and that such a meeting be funded with funds obtained from elsewhere than the current CHC operating budget.

Resolution MB 3: Request CHC to seek federal opinion on challenging the "no comb" law

MOVED AS AMENDED.

Bruce/Luc. Tabled to be reconsidered after stakeholders meeting, where the "no comb" law could be on the agenda.

WHEREAS under NAFTA rules there may be provisions where American beekeepers may be successful in challenging the standing "no comb" law, if the border is opened to package bees,

THEREFORE BE IT RESOLVED that CHC seek an opinion from Federal Government as to the probability of an American beekeeper successfully challenging the standing "no comb" law.

Discussion:
• The federal government will not "give an opinion".
• This should be one of the issues discussed at the stakeholders meeting.

BC
Resolution BC 1 Request "open" AGMs

Be it resolved that the CHC AGM shall be open to all beekeepers who are members of CHC's member organizations so that they can observe the meetings proceedings.

MOVED.

Ted/Corey. Defeated with 1 abstention.

The Chair commended the format of the Saskatchewan resolutions before discussion of these resolutions began.

SASKATCHEWAN First Priority: Hive Health – Strengthened Importation Protocol 1.

Request CHC to ask CAPA and CFIA to review current import protocols for queens

MOVED.

Corey/Ted. Defeated. [Note: Import protocol is to be addressed in proposed stakeholder meeting.]

WHEREAS hive health has been identified by industry and CHC as the number one priority,

AND

WHEREAS the negative impact and spread of viruses and their relation to CCD is still unknown,

and

Whereas Africanized honeybees and Africanized honey bee hybrids likely continue to expand their territory in the United States,

and

Whereas Small Hive Beetles continues to expand its presence in the US

Therefore be it resolved that CHC requests that CAPA and CFIA review the current import protocols for queens from continental US to ensure they remain adequate to protect the Canadian honeybee industry

Resolution SK 2: Request CHC to ask CFIA to investigate non-compliance with varroa protocols and implement compliance measures

---

Moved.

Corey/Ted. Defeated.

Whereas hive health has been identified by industry and CHC as the number one priority,

and

Whereas current CFIA import protocols for package honey bees mandate that Varroa mite levels are less than 1%,

and

Whereas much higher levels of Varroa mites have been observed in imported packages

Therefore be it resolved that the CHC approach CFIA to investigate why exporting countries are not meeting protocols and implement measures to ensure protocols are being met

Resolution SK 3 Request CHC to ask CFIA to expand import protocols

---

Moved as amended.

Corey/Ted. Defeated.

Whereas hive health has been identified by industry and CHC as the number one priority,

and

Whereas Varroa mites have shown great ability to adapt to control treatments,

and

Whereas approved treatment products vary from one jurisdiction (country) to another and there are reports of products not registered for use in those jurisdictions being used by countries that import bees into Canada,

and

Whereas it is conceivable that we are importing Varroa mites that are already developing resistance to the treatment products used in the originating jurisdiction

Therefore be it resolved that CHC ask CFIA to expand import protocols to include a four-year treatment history of the exporting operation.

Resolution SK 4: Request CHC to continue supporting the CFIA ban on packaged honey bees from continental USA

Moved.

Corey/Ted. Defeated.

Whereas the current import protocols do not allow importation of package honey bees from the continental US,

and

Whereas no evidence of improvement of the health of US honey bee stock has been seen,

and

Whereas hive health has been identified by industry and CHC as the number one priority,

Therefore be it resolved that CHC continue to support the CFIA import ban of package honey bees from the continental US

• This resolution re-confirms CHC's current support of the CFIA ban. Defeat of this resolution does not imply CHC support for an open border.

SASKATCHEWAN Second Priority: Hive Health – Treatment Products

Resolution SK 5: Request CHC to support full registration of Apivar

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Moved.

Corey/Jerry. **Carried.**

Whereas hive health has been identified by industry and CHC as the number one priority,

and

Whereas resistance has been found to both Checkmite+™ and Apistan®

Whereas Varroa mites continue to be a threat to the beekeeping industry

Whereas formic acid and oxalic acid have variable efficacy and still need to be adapted to prairie conditions

Therefore be it resolved that the CHC support the full registration of Apivar® and, failing the full registration of Apivar®, CHC pursue emergency use registration of Apivar® for another year

Resolution SK 6: Request CHC to work with PMRA on mite control options

---

Moved as amended.

Corey/Bruce. **Carried.**

Whereas hive health has been identified by industry and CHC as the number one priority,

and

Whereas resistance has been found to both Checkmite+™ and Apistan®

Whereas Varroa mites continue to be a threat to the beekeeping industry

Whereas formic acid and oxalic acid have variable efficacy and still need to be adapted to prairie conditions

Whereas there are limited additional approved products to control Varroa mites

Therefore be it resolved that CHC continue to work with PMRA and the industry to continue to increase the number of options for mite control (e.g. organic acids and essential oils)

Resolution SK 7: Request CHC to lobby PMRA to maintain status-quo with CAPCO (C94-05)

Moved.

Corey/Dan. **Carried.**

Whereas hive health has been identified by industry and CHC as the number one priority,

and

Whereas PMRA intends to remove CAPCO (C94-05) eliminating the ability to use liquid formic acid for mite control in bee hives,

and

Whereas there is not yet enough scientifically validated research to meet full registration requirements of liquid formic acid

Therefore be it resolved that the CHC lobby PMRA and the Canadian government to maintain the status-quo with CAPCO (C94-05)

Resolution SK 8: Request CHC to encourage and support companies that could develop and register better organic treatment for mites

---

Moved.

Corey/Bruce. **Carried.**

Whereas hive health has been identified by industry and CHC as the number one priority,

and

Whereas resistance has been found to registered products Checkmite+™ and Apistan®,

and

Whereas Varroa mites continue to be a threat to the beekeeping industry

Be it resolved that the CHC encourage and support companies that develop and/or have the potential to develop and register new and/or better organic treatments for the control of mites.

SASKATCHEWAN Third Priority: CHC/ Industry Support

Resolution SK 9: Request CHC to initiate and maintain project funding applications

---

Moved as amended.

Corey/Bruce. **Carried.**

Whereas there are multiple federal program funds available for organizations such as CHC

and,

Whereas project funding has benefited the beekeeping industry and the national organization in the past

Therefore be it resolved that the CHC regularly apply for funding for relevant projects that fall within CHC's four strategic priorities, while funding is available

Resolution SK 10: Request CHC to ask federal government for more research resources

---

Moved.

Corey/Danny. **Carried.**

Whereas honeybees are under threat in Canada and world wide,

and

Whereas there has been a decrease in the research facilities and staff and there is a lack of research staff for performing necessary work to assist the beekeeping industry stay ahead of the current concerns,

and

Whereas the government of Canada made a previous commitment to developing a research facility and increasing research personnel

Therefore be it resolved that CHC request that the federal government increase support to the beekeeping industry by funding additional research personnel and facilities

Resolution SK 11: Request CHC to seek opportunities for bee keeper training and development

---

Moved.

Corey/Luc. **Carried.**

Whereas there is no industry-specific training or professional development program for beekeepers and staff in Canada

Therefore be it resolved that the CHC seek opportunities to have such programs developed and implemented

SASKATCHEWAN Fourth Priority: Food Safety/Quality

Resolution SK 12: Request CHC to implement strategy for full registration of facilities for honey sales

---

Moved as amended.

Corey/Tom. **Carried.**

Whereas food safety is becoming an increasing concern in Canada,

and

Whereas Canadian quality standards for honey need to be maintained and enhanced,

and

Whereas national and international standards are becoming increasingly important

Therefore be it resolved that CHC develop a strategy and time line for full registration of all beekeeping facilities preparing honey destined for export and retail sales.

SASKATCHEWAN Fifth Priority: Export Protocol

Resolution SK 13: Request CHC to lobby for greater permit for shipment period

Moved as amended.

Corey/Ted. **Carried.**

Whereas permits for shipment of honey bee queens from the US into Canada is valid for 90 days while permits from Canada to the US are valid for 10 days,

and

Whereas this can create timing problems for Canadian beekeepers to meet shipping protocols,

and

Whereas lengthening the time frame of permits required for Canadians to ship bees into the US from 10 days to 45 days would not increase health risks to the US beekeeping industry

Therefore be it resolved that the CHC lobby the ABF and AHPA to increase the permit period from 10 days to 45 to 90 days.

8. Long Term International Strategy (LTIS)

The Chair reminded the Board that the LTIS is a requisite for any future funding for promotional and marketing activities, from the federal Agri-Marketing program (AMP). Future changes to the LTIS, generated by CHC, will be accepted by AMP.
Heather pointed out the key aspects of the forward plan in the LTIS would be considered for future project proposals.
It was also confirmed that there is no future commitment on CHC's part implied by the approval of the document.

Motion:

To accept the Long Term International Strategy document as presented with required additions to be made before it is submitted. Gordon/Dan. Carried.

9. Strategic Priorities

The Chair asked whether the Board had any issues with CHC'a stated priorities. He asked for project suggestions, related to these priorities.
It was generally agreed that there is enough work coming out of the resolutions, particularly the stakeholder meeting project (for which MBA is prepared to pay a portion).
The Chair of Hive Health Committee repeated that the Committee is seeking direction.
It was agreed that the (importation) stakeholder meeting should be the top priority.
Based on the meeting discussions, these [other] immediate priorities were identified by Board members:
- A new Hive Health Manual for Employees
- Programs for Screening for Treatment Efficacy
- A Bee Breeding Coordination Organization
- Advancing Food Safety (completing and following up on CBISQT)
- Continuation of the School Kits Project

10. Board Calendar

The CEO reviewed the calendar.

11. Other Business

Guest Peter Kevan (NSERC-CANPOLIN) who had asked for a place on the agenda did not appear.

Rathje Award
The Chair invited the nominators to speak to the Board on behalf of their nominated individuals. After discussion and a secret ballot vote, the Chair declared the recipient of this year's award: Medhat Nasr. Dr. Nasr will be acknowledged at Canada night and will be awarded at the ABF banquet on Saturday evening.

Motion:

To destroy the Rathje Award ballots. Ted/Luc. **Carried.**

The Chair thanked Luc Desaulniers for his contribution to CHC and adjourned the Annual General Meeting at 5:30 PM.

Addendum to Minutes of AGM

Election and Announcement of Officers

Chair - Corey was elected by acclamation.
Vice-Chair – Tom was elected by acclamation.
Treasurer – Gordon was elected by acclamation.
Secretary – Lee was elected by secret ballot.

Committee Appointments
(Note that Corey, as Chair, is an ex officio member on all CHC standing and ad hoc committees.)
Finance Committee appointees are Gordon (Chair), Jerry and Bruce.
Membership and Events Committee appointees are Lee (Chair), Gordon and Ted.
Issues Committee includes Tom (Chair), Dan, and Bruce with resource persons Dan Tegart and/or Brian Ash.
Foreign Workers Committee will include Corey (Chair), Lee and Bruce, with Dave or Tod from Alberta as resource persons.
Hive Health Committee will continue with the membership as appointed previously: Jerry (Chair), Albert Robertson, Alison van Alten, Heather Clay, Medhat Nasr, Merv Malyon, Rhéal Lafreniere and Steve Pernal.
CHC's representative on CAHRC will be Corey with Lee as alternate.
Appointees to CFIA's Bio-Security Committee will be Heather plus members of the Executive (Gordon, specifically).
CHC's representative on the CANPOLIN Board is Heather.

2010 CANADIAN HONEY COUNCIL BOARD OF DIRECTORS

Chair

Corey Bacon
Saskatchewan Beekeepers Association
B's Bee Ranch
Box 84
Kinistino SK S0J 1H0
ph. 306-864-3774 fax 306-864-3260
beeranch@sasktel.net

Vice Chair

Tom Trueman
Maritime Beekeepers Association
Trueman Farms
200 Etter Ridge Rd
Aulac NB E4L 2V2
ph 506-536-2854 fax 506-536-3088
ttrueman@eastlink.ca

Secretary

Lee Townsend
Alberta Beekeepers
TPLA Honey Farms
443 St. Andrews Crescent
Stony Plain AB T7Z 1W8
ph 780-968-4624
Lee@tplrhoneyfarms.com

Treasurer

Gordon Marks
Bee Maid Honey
147 Shoreline Drive
Winnipeg MB R3P 2E9
ph 204-487-4535
gordon@beemaid.com

Directors

Jerry Poelman
Alberta Beekeepers
Poelman Apiaries
PO Box 1887
Fort MacLeod AB T0L 0Z0
ph 403-687-2244
jpoelman@xplornet.com

Dan Walker
Ontario Beekeepers Association
Walker Apiaries
9327 Scotchmere Dr
Strathroy ON N7G 3H3
ph 519-245-5361
walkerb655@hotmail.com

Bryan Ash
Manitoba Beekeepers Association
Ash Apiaries
Box 63
Gilbert Plains, MB R0L 0Y0
ph. 204-548-2036
flash@mts.net

Ted Hancock
BC Honey Producers Association
Meadow Honey
General Delivery
Dog Creek BC V0L 1J0
ph 250-440-5689
bchpachc@gmail.com

CHC Office

Chief Executive Officer
Heather Clay
Suite 236
234-5149 Country Hills Blvd
Calgary AB T3A 5K8
ph 403-208-7141
fax 403-547-4317
chc-ccm@honeycouncil.ca
www.honeycouncil.ca

Fred Rathje Award Winners

2009	Dr. Medhat Nasr (AB)
2008	Roger Congdon (ON)
2007	Heather Clay (AB)
2006	Dale Hansen (BC)
2005	Domiongo d'Oliveira
2004	Wink Howland (SK)
2003	Mark Winston (BC)
2002	Doug McRory (ON)
2001	Don Nelson (AB)
2000	John Gruszka (SK)
1999	Doug McCutcheon (BC)
1998	Jean Pierre Chapleau (PQ)
1997	Merv Malyon (MB)
1996	Lorna & Jack Robinson (ON)
1995	Gordon Kern (BC)
1994	Kelly Clark (BC)
1993	Linda Gane (SK)
1992	Babe & Charlie Warren (BC)
1991	Gerry Paradis (AB)
1990	Cam Jay (MB)
1988	Don Dixon (MB)
1987	John Corner (BC)
1986	Gerry Smeltzer (NS)
1985	Paul Pawlowski (AB)
	First year of award

Honourary Members

1950	Hon J. G. Gardiner (ON)
1950	Tom Shield (ON)
1950	Harry Jones (PQ)
1950	G.H. Pearcey (BC)
1951	P.C. Colquhoun (SK)
1951	C.G. Bishop (PQ)
1955	J.N. Dyment (ON)
1956	F.R. Armstrong (ON)
1963	C.F. Pearcey (BC)
1964	Percy Hodgson
2002	Kenn Tuckey (AB)

CAPA President's Report to CHC for 2009

Stephen F. Pernal, Ph.D.
President, CAPA

I would like to welcome you all to Orlando for the North American Beekeeping Conference. This year CAPA and CHC are meeting in conjunction with several other organizations from the U.S. which include the American Beekeeping Federation, the Apiary Inspectors of America and the American Association of Professional Apiculturists. Papers normally presented during the joint CAPA/CHC Research Symposium will this year be incorporated into the American Bee Research Conference, organized by AAPA. This large and complex meeting would not have taken place without the efforts of many individuals who have given of their time to coordinate the needs of these organizations. I would specifically like to recognize Rhéal Lafrenière, who could not attend these meetings, for his efforts as CAPA/CHC liaison to the local organizing and program committees of the ABF.

This, my fourth year as CAPA President, has continued to be one of great concern over the health of honey bees in Canada and has required CAPA as an organization to provide advice and action on a number of fronts. Honey bee losses in Canada and the U.S. were extremely high for a third consecutive year. In Canada, the final estimate of winter and spring losses was 33.9% for 2008-09, while colony losses in the U.S. were 29%. In Canada, two biotic factors present in operations having substantial losses continue to be high levels of varroa mites, typically with multiple acaricide resistance, and the presence of nosema, often Nosema ceranae.

Compilation of national colony loss statistics has also resulted in an evaluation of the criteria used by each province to assess losses. Our ad-hoc National Survey Committee studied this issue over the last year and proposed a standardized set of survey questions. It is hoped that when implemented in the spring of 2010, this standardization should minimize ambiguities over loss reporting. Similar questions are being addressed in the EU where standardization of colony loss reporting is being carried out through the COLOSS network. I will be participating in a working group this month examining these questions and hope that international efforts at harmonizing loss reporting may ensue.

CAPA members are continuing their efforts to provide extension services and applied research to address problems facing producers. One example of this is the Canadian Pollination Initiative (CANPOLIN), whose scientific director is Peter Kevan. This five-year project, encompassing work on many types of pollination systems, completed its first year in 2009. This month, Rob Currie, Ernesto Guzman and myself published a paper summarizing the recent colony losses in Canada. More information on the CANPOLIN-NSERC strategic network may be found at: http://www.uoguelph.ca/canpolin/.

During the last year, the CAPA Chemical Committee dealt with a number of emerging issues. On June 4, 2009 the Pest Management Regulatory Agency (PMRA) issued: "Reassessment of Note to the Canadian Association of Pest Control Officials C94-05: Proposed Scheduling of 65 Percent Formic Acid for the Detection and Control of Honey Bee Mites". In this document, a timeline of December 10, 2010 was proposed for the phase-out of Note to CAPCO C94-05 and the submission of applications for registration of 65% liquid formic acid. CAPA provided written comment to PMRA that this period was insufficient for registration of existing formulations of formic acid and recommended that it be extended to December 2014.

CAPA Chemical Committee members were also involved with reapplication for Emergency Use Registration for Apivar®, a strip formulation of amitraz for varroa mite control. Approval for Apivar® use was granted by the PMRA for the fall of 2009, continuing until June 2010.

CAPA's Import Committee was also busy, providing consultation on several issues. Included was an examination of the distribution of small hive beetle in Australia and the suitability of current export certification standards for that country. At the request of CFIA, certification requirements for package bees from Chile and Queens from the Big Island of Hawaii were reviewed to ensure safe and uninterrupted access to offshore stock by Canadian producers.

This year also saw the reintroduction of small hive beetle (SHB) into southern Quebec apparently based on natural migration from the U.S. A previous introduction into Quebec was reported in 2008. The Department of Agriculture, Fisheries and Food of Quebec (MAPAQ) has been conducting surveillance in the area of introduction.

In terms of public communication, several CAPA members appeared on the CBC television program "The Nature of Things" on January 7, 2010 in an episode examining honey bee losses. Another event with high public profile was a fundraising art auction for the Canadian Bee Research Fund in September. The event, dubbed "BeeCause", was coordinated by Honey Design of London, Ontario and raised $5,000 for the CBRF.

Several CAPA members were recognized for contributions to their field in 2009. For his pioneering efforts in ecology, botany and for being a world leader in pollinator conservation, Peter Kevan was elected as a Fellow of the Royal Society of Canada. Two other members were recognized for their commitment to excellence in extension work: Ernesto Guzman was awarded the Ontario Agricultural College Alumni Distinguished Extension Award and Dr. Medhat Nasr received the Beekeeper Achievement Award from the Alberta Beekeepers. Congratulations are richly deserved by all.

This meeting is the likely one of the last at which long-standing member, Doug McRory, will be in attendance. Doug retired from his position as Provincial Apiculturist for the Province of Ontario in 2009. I encourage you all to thank Doug for his many years of service to the industry. We are, nonetheless, extremely pleased to welcome the new Provincial Apiculturist from Ontario, Paul Kozak, who has been selected to succeed Doug. We also welcome Geoff Wilson, the Provincial Apiculturist from Saskatchewan who has served for one year in that capacity and is now flying solo with the retirement of John Gruszka in December of 2009.

CAPA, as an organization, wishes to continue its cooperative relationship with CHC well into the future and participate in collective initiatives that will benefit the beekeeping industry of this country. After this meeting, I will step down as President to assume my role as Past-President. I wish to thank CEO Heather Clay and all of the Directors of the Canadian Honey Council for their support during my term.

I hope your time in Orlando is enjoyable and productive.

SECTION 2:

Canadian Bee Research Fund Reports

Integrated Management of Nosema & Detection of Antibiotic Residues

Research Report for 2009

Stephen F. Pernal, Abdullah Ibrahim and Andony P. Melathopoulos
AAFC Beaverlodge Research Farm

Significant progress was made towards our objectives during the second year of our *Nosema* project in 2009. First, a large field experimental study was established to examine the efficacy of alternative methods for disinfecting *N. ceranae* on comb. In addition, we established two field studies to evaluate different formulations of fumagillin against *N. ceranae*, either applied in the spring or in the fall. Finally, we continued efforts to establish the seasonal phenology of *N. ceranae* infections across Canada.

Objectives in 2009:

1. To evaluate acetic acid fumigation, heat treatment and irradiation as methods for disinfecting *N. ceranae* spores on comb.

2. To compare fumagillin formulated in bulk syrup feed (label application), to experimental formulations in a reduced volume syrup drench, a protein patty and a dry sucrose dusting.

3. To determine the seasonal phenology of *N. ceranae* by surveying the change in spore levels among beekeepers at various locations in Canada.

A. Comb Disinfection Experiment:

The reuse of contaminated comb is a significant avenue for spreading *Nosema apis*, a closely related parasite of European honey bees. While the mode of transmitting *N. ceranae* remains poorly understood, we hypothesized methods previously demonstrated to kill *N. apis*[1,2] would also be effective at decontaminating *N. ceranae*.

The experiment involved artificially infecting frames of comb with *N. ceranae* spores, placing these frames in brood chambers, disinfecting them using acetic acid fumigation, heat or irradiation and comparing the subsequent infection after establishing bees on the comb. The hypothesis would be supported if the levels of spores remained low relative to colonies established on inoculated comb that was not disinfected.

Comb Inoculation. One hundred and ninety-two full-depth Langstroth frames containing fully-drawn honey comb were sprayed with an aqueous suspension of *N. ceranae* spores, prepared the previous day from adult bees sampled from infected colonies. Confirmation of *N. ceranae* was performed by Polymerase Chain Reaction (PCR)[3]. Each inoculated brood chamber prepared for the experiment had four of these frames placed in its centre, surrounded by five additional non-inoculated frames. Consequently each inoculated brood chamber contained an overall dose 4.51×10^8 *N. ceranae* spores.

Treatments. The brood chambers were allocated to one of five different treatment groups:

1. Acetic Acid: Vertical stacks of four brood chambers, whose interfaces were sealed with duct tape, were fumigated with 480 mL of 80% (v/v) acetic acid in an insulated, outdoor chamber (4.52 × 1.78 × 2.42 m high) from 22 April to 29 April 2009. Two electric heaters were set to maintain a nominal temperature of 30 °C over the fumigation period of 7 days. Acetic acid was poured into a Styrofoam pan on the top bars of the uppermost box and covered by an additional empty box and telescoping lid. The airborne concentration of acetic acid in each stack was monitored every 12 h using Dräger tubes and was observed to range from 3 ppm at the beginning of the fumigation to 385 ppm on 28 April.

2. Heat: Inoculated brood chambers were subjected to 49 ± 0.1 °C for 24 h in a constant temperature oven.

3. Irradiation: Inoculated brood chambers were irradiated with an electron linear accelerator (Impela® 10/50) operated by Iotron Industries Canada Inc. (Port Coquitlam, BC) that had a beam energy, power and width of 10 MeV, 60 kW and 107 cm (nominal), respectively. Brood chambers passed through the accelerator on a linear conveyor, in normal vertical orientation to receive 10 kGy to their top surfaces and were then inverted to receive 10 kGy to their bottom surfaces. Radiation exposure was measured using radiachromic film dosimeters and frames received a total irradiation dose ranging between 16.7 and 23.6 kGy.

4. Inoculated: These brood chambers received no disinfection procedure.

5. Non-Inoculated: These brood chambers contained honey comb that received neither inoculation nor disinfection.

Treatment Evaluation. We evaluated treatments using two different techniques. The first involved comparing the proportion of spores surviving disinfection using a laboratory histological assay and the second compared the growth of colony-level nosema infections when bees were hived on the treated comb.

A laboratory histological technique was recently developed by Dr. Thomas Webster of Kentucky State University to microscopically determine the proportion of viable *N. ceranae* spores in a sample. In collaboration with Dr. Webster we developed a protocol to evaluate spore viability following disinfection. The protocol involved

attaching two glass slides and two wooden splints to the top bar of the central frame of each brood chamber prior to disinfection. Each slide or splint had 1×10^8 *N. ceranae* spores dried across its surface. Immediately after disinfection the slides and splints were removed and sent to Dr. Webster to assay. We predict that if a disinfection treatment is efficacious then a large proportion of spores will be rendered non-viable.

Disinfection was also assessed by installing spring packages of bees into the different brood chamber treatment groups to determine if the residual spore levels were sufficient to cause colony-level infections. Sixty 1-kg package bee colonies were imported from New Zealand to establish 12 replicate colonies in each of the five treatment groups. These were installed on 2 May 09. All colonies were put together in one apiary site (AAFC's Beaverlodge Research Farm, 55° 18' N; 119° 17' W); however, to prevent the spread of infection from inoculated colonies to the disinfected and non-inoculated colonies, inoculated colonies were placed 50 m away, separated by a belt of trees.

The severity of nosema infection was assessed for each colony by collecting, and then macerating 30 foraging-age bees and microscopically determining the density of spores they contained using a counting chamber[4]. The remaining macerate was retained for *Nosema spp*. determination using a PCR protocol in 2010.

Sampling occurred on a weekly basis during the spring, then biweekly until wintering. Sampling continued on a monthly basis during the winter, after the colonies were moved indoors and kept at 5° C.

The effect of treatment on colony productivity was determined by assessing colony population growth and overall honey yield. Adult and immature populations were estimated using a standard technique of visually assessing the area of each frame covered by either adult workers or sealed worker brood. Population was assessed on 3 July and again on 30 August 2009. Honey production was measured by determining the net weight gain of previously irradiated honey supers added above the treated brood chamber beginning on 3 July and ending on 9 September 2009.

JMP IN version 4.0.3[5] was used for all analyses in this and subsequent experiments. Data are expressed as means ± standard error.

Results and Discussion:

Samples of splints and slides were sent to the University of Kentucky and are in the process of being assayed. We expect to receive results from this portion of the project during the spring of 2010.

Multivariate analysis of our field experiment indicated significant

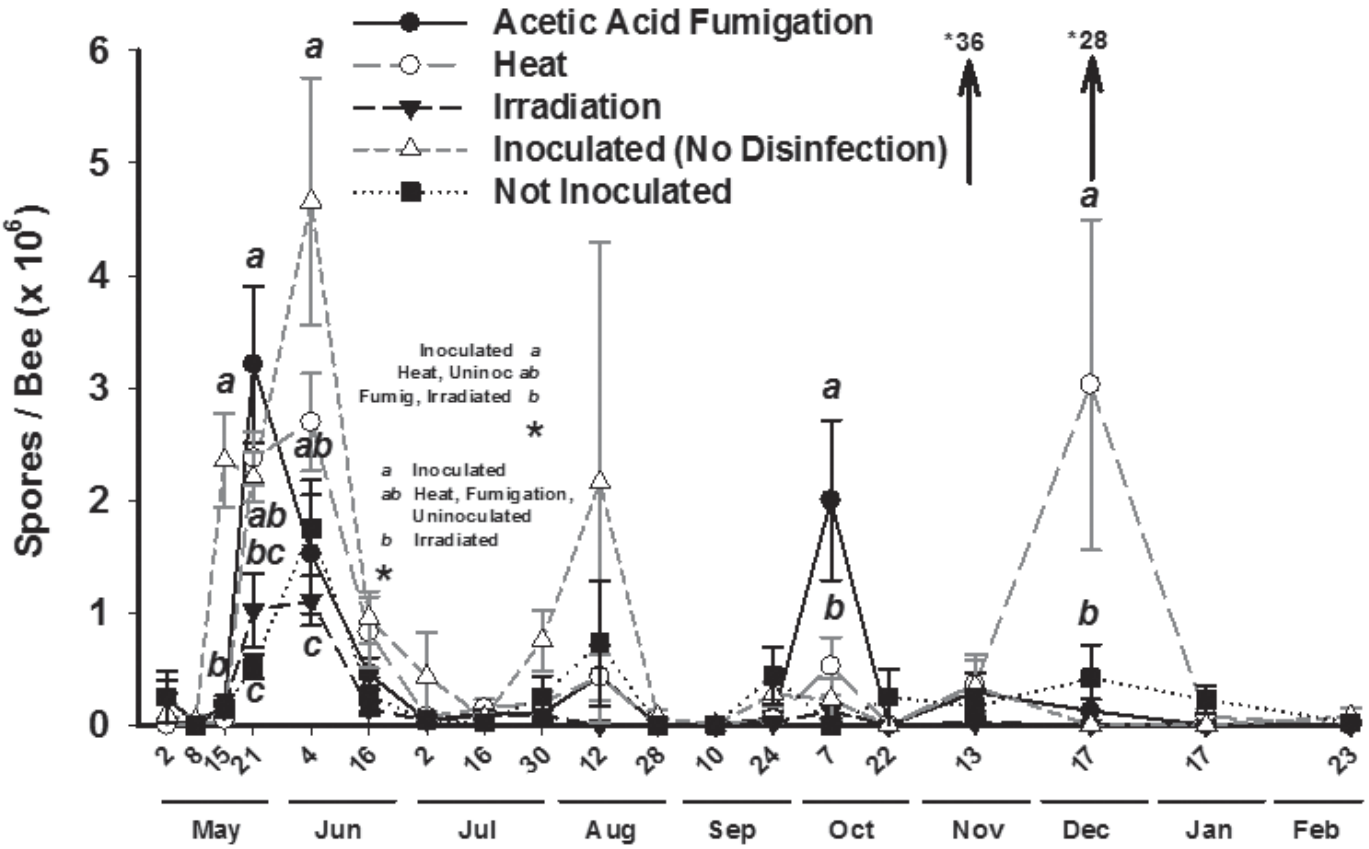

Figure 1. Mean number of Nosema spores per bee following the establishment of colonies on Nosema-inoculated comb treated with one of three different disinfection techniques (acetic acid fumigation, heat, irradiation) versus comb inoculated and left untreated and comb nether inoculated nor treated. Bees were hived onto comb on 2 May 09 (n = 12 colonies / treatment). Different letters above each date denote significant differences among means (Tukey-Kramer HSD, α=0.05). Spore densities (millions of spores per bee) underscored by arrows indicate colonies on given dates that fell well outside the range of the others in the group. In the two cases illustrated, both were from the heat treated group.

differences among treatments (F=6.13 df=4,47; P=0.0005), over sampling dates (F=4.84; df=18,30; P<0.0001) and confirmed a significant time*treatment interaction (Wilkes' Lambda: F=3.11; df=72,120.32; P<0.0001). Thirteen days after hiving package bees on comb, spore levels within inoculated, untreated colonies rapidly proliferated to 2.4 ± 0.4 x 10^6 spores per bee while all other treatments remained below a maximum of 167,000 spores (Fig. 1). Nevertheless, by 21 May spore levels in the acetic acid fumigated and the heat treated colonies were similar to inoculated, untreated colonies whereas irradiated colonies still remained at levels similar to non-inoculated, untreated colonies. Over successive weeks, separation among treatments diminished until on 16 July spore levels in all colonies, including those inoculated and untreated, were at or below an average of 100,000 spores per bee.

We expected to see increases in spore density as the season progressed, notably among the untreated inoculated group.

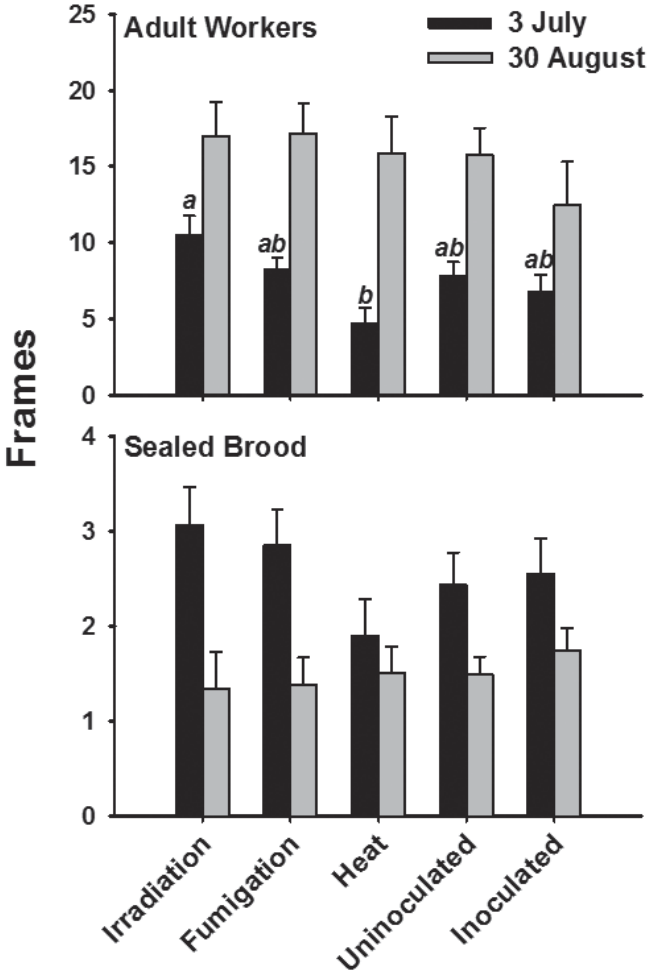

Figure 2. Mean number of Nosema spores per bee following the establishment of colonies on Nosema-inoculated comb treated with one of three different disinfection techniques (acetic acid fumigation, heat, irradiation) versus comb inoculated and left untreated and comb nether inoculated nor treated. Bees were hived onto the comb on 2 May 09 (n = 12 colonies / treatment). Population assessments were made on two different dates, 3 July 09 and 30 August 09. Different letters above each treatment for adult worker measurements denote significant differences among means for a given assessment date (Tukey-Kramer HSD, α=0.05).

Nevertheless, spore densities increased in this group only on 12 August and variation within the group was too great to resolve any statistical difference. Although the untreated inoculated group remained uniformly low in spore density since that date, we did observe periodic and transitory increases among other treatments, namely the acetic acid group on 7 October and the heat treated group on 13 November and 17 December. The latter two excessively high infections (> 25 million spores per bee) represent individual colonies and were only observed during the winter.

In general, the acetic acid fumigation, heat and irradiation treatments suppressed spore development in bees for a short duration of time during the spring, however only spore levels in the irradiated treatment were maintained at levels similar to non-inoculated colonies for the duration of the season.

Significantly more adult bees (F=4.52; df=4,52; P=0.0033) were found on the 3 July colony population assessment in the irradiation versus heat treatment, with the fumigation, non-inoculated and inoculated treatments being intermediate in number (Fig. 2). No significant differences among treatments were found for the area of sealed brood on this date, or both parameters when evaluated on 31 August. In addition, there was no significant difference (F=2.24; df=4,52; P=0.0771) in honey production among the different treatment groups (Fig. 3).

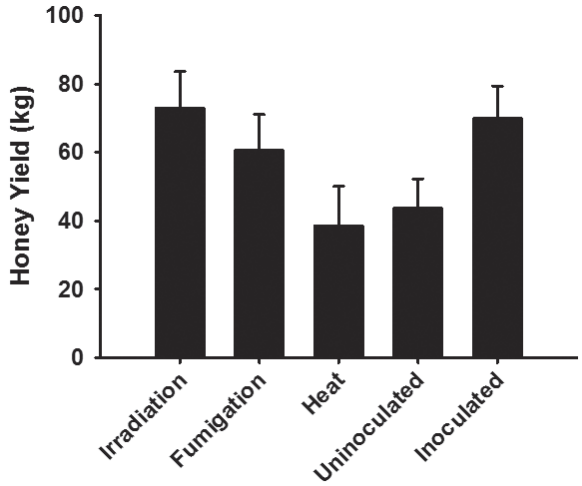

Figure 3. Mean honey yield per package colony following establishment on Nosema-inoculated comb treated with one of three different disinfection techniques (acetic acid fumigation, heat, irradiation) versus comb inoculated and left untreated and comb nether inoculated nor treated. Bees were hived onto the comb on 2 May 09 (n = 12 colonies / treatment). No statistical differences in honey yield exist among treatments (see text for analysis of the hypothesis).

Spring 2009/Fall 2009 Experimental Fumagillin Formulation Trials

Fumagillin is the only registered treatment for *Nosema* spp. in honey bees. While its use in managing *N. apis* is well understood, it remains unclear how best to apply fumagillin to provide optimal control of *N. ceranae*. For example, label recommendations for applying fumagillin to control *N. apis* in overwintered colonies may not be optimal for *N. ceranae*, as the latter has been suggested

to be more prevalent during summer months[6]. Furthermore, recommendations for syrup-feeding fumagillin to individual colonies are becoming increasingly inapplicable with the widespread adoption of barrel feeding. In order to test the importance of the timing of treatments as well as the effectiveness of alternative formulations, we established two experiments, one in the early spring and the second in the fall.

Spring 2009

Sixty single brood chamber colonies from a commercial honey bee operation in Girouxville, AB were identified as having infections of *N. ceranae* in February and March of 2009. These colonies were situated in a common apiary and randomized into five treatment groups, each with twelve replicates.

Treatments. Four treatments containing fumagillin (Fumagilin-B, DIN 02231180, Medivet Pharmaceuticals, High River, AB) were applied to colonies at a rate of 50 mg a.i. per application, using different formulations. ***Drench*** treatments consisted of 250 mL sucrose syrup (1:1 v/v), ***Dust*** treatments consisted of 20 g of icing sugar, ***Patty*** treatments consisted of 100 g pollen patties (40% milled irradiated pollen, 20% soy flour and 40% sucrose syrup) while ***Syrup*** treatments consisted of 2 L of sucrose syrup. The ***Control*** treatment consisted of 2 L of unmedicated syrup per colony. All treatments were applied in two successive applications on 22 April 09 and 6 May 09, so that each medicated colony received a cumulative dose of 100 mg a.i. fumagillin, the spring label rate.

Management and Sampling of Colonies. Colonies were managed, sampled and evaluated in a manner consistent with the previous experiment. Second brood chambers were provided to colonies as required for expansion of the brood nest. Adult bee and brood areas were measured on 30 June 09 and 26 August 09. Honey supers were added on 22 June 09 and were removed on 11 August 09.

Results and Discussion:

At the commencement of the spring-applied fumagillin experiment (22 April 09), colonies had an average of $4.3 \pm 0.5 \times 10^6$ spores per bee. Based on a multivariate analysis of spore levels over the experiment, significant differences among treatments (F=3.24 df=4,37; P=0.0224), over sampling dates (F=2.31; df=18,20; P<0.036) as well as a significant time*treatment interaction (Wilkes' Lambda: F=1.16; df=72,81.002; P<0.26) were detected. Clear suppression of *N. ceranae* was evident after the first week of treatment application: irrespective of the formulation, 100 mg applications of fumagillin lowered *N. ceranae* spore levels until 27 May (Fig. 4). On this date, levels of spores in the untreated colonies remained below 0.6×10^6 spores per bee and similar to the levels in the patty and syrup treatments. From 3 June onward, spore levels in untreated colonies remained low and indistinguishable from those in other treatments.

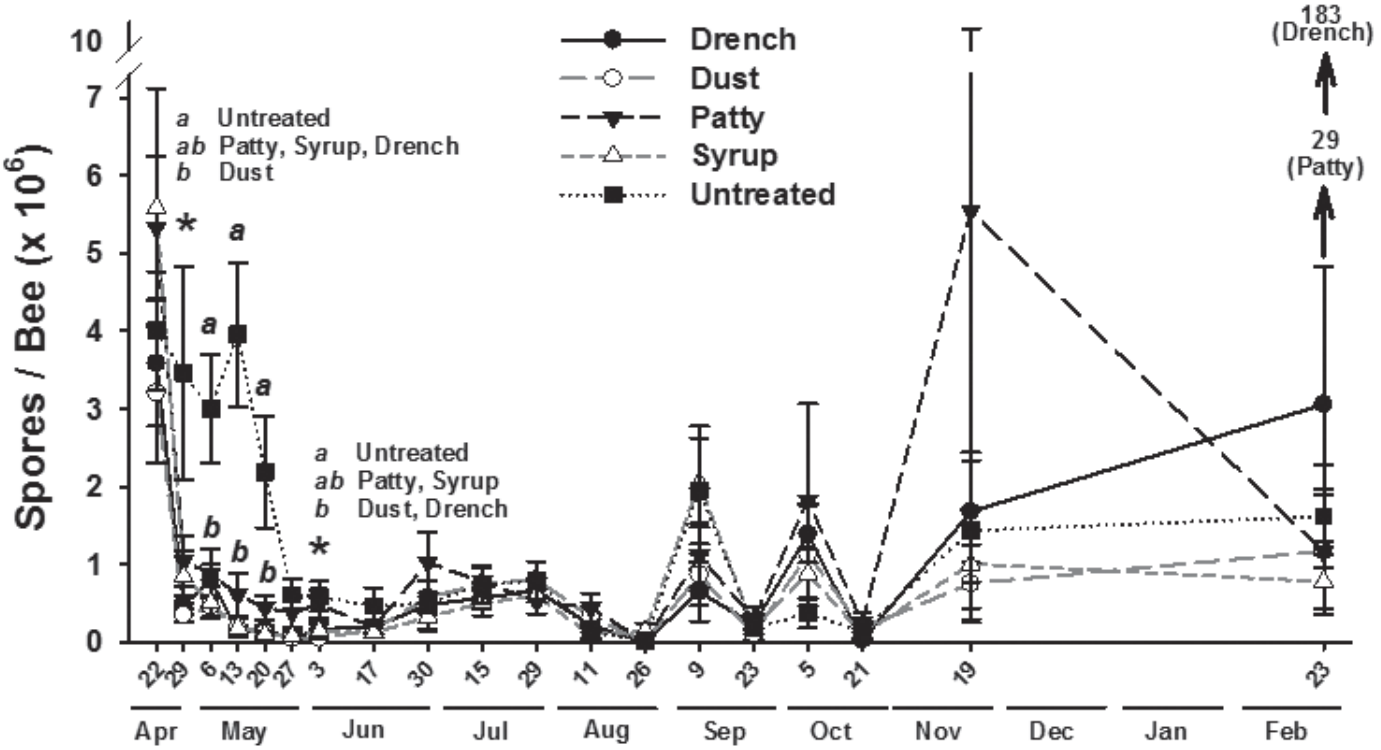

Figure 4. Mean number of Nosema spores per bee among overwintered colonies following spring applied treatments of fumagillin (two applications of 50mg a.i. per colony on 22 April 09 and 6 May 09) formulated using four different techniques (Drench = low volume sucrose syrup applied onto bees; Dust = Icing sugar dustings; Patty = pollen patties; Syrup = bulk sucrose syrup feed) (n = 12 colonies / treatment). Different letters above each date denote significant differences among treatment means (Tukey-Kramer HSD, α=0.05). Spore densities (millions of spores/bee) underscored by arrows indicate colonies on 23 Feb that fell well outside the range of the other colonies in the group. The name of the treatment group of these outlying colonies appears in parentheses below the number.

While levels continued, on average, to remain low through fall and winter, and while no treatment differences could be discerned, we did observe an increase in the variability of spore densities among colonies, similar to that observed in the comb disinfection trial. These high, infrequent and transitory winter infections were found among all fumagillin-treated colonies, with the exception of the syrup treatment. On 23 February, one colony in the drench treatment was found to have an infection level that was estimated to be in excess of 180 million spores per bee.

Viewed over the course of the year, there appears to be an overall trend toward *N. ceranae* spore levels declining during mid-summer, and more extreme variability over winter months. This phenology is similar to that normally seen among *N. apis*-infected colonies in temperate climates[7], and is in contrast to reports from Europe in which *N. ceranae* infections persist throughout the summer months[6].

No significant differences were detected for areas of adult bees (F=0.96; df=4, 53; P=0.43) or sealed brood (F=0.82; df=4, 53; P=0.51) on 30 June, or for adult bees (F=0.40; df=4, 53; P=0.81) or sealed brood (F=0.35; df=4, 53; P=0.84) on 26 August (Fig. 5). Honey production (Fig. 6) was also similar among treatments (F=0.48; df=4,53; P=0.7498). There was a general lack of correlation among honey yield, colony population, and spore levels across most dates, suggesting that colony level productivity in northern climates is independent of *N. ceranae* spring infection levels.

Fall 2009

Colonies with naturally-occurring *N. ceranae* infections were identified within the same commercial honey bee operation used for the spring 2009 trial. These colonies were assigned to 14 blocks of homogenous levels of initial *N. ceranae* infection. Colonies were then randomly assigned to three treatment groups within these blocks on 21 August 09. The treatments groups were identical to the syrup, drench and control treatments described in the spring 2009 protocol. The only differences were that the amount of fumagillin applied was doubled to 100 mg a.i. per application, so as to reflect the higher fall treatment dose specified on the label, and the total volume of each application of bulk syrup feeding treatment was increased to 2 L. Treatments were applied twice, one week apart, on 9 and 15 September 09. Colonies were sampled biweekly from August 21 until October 21, after which time they were moved indoors to winter at 5° C and sampled monthly.

Results and Discussion:

The average infection after treatment groups were established was $1.30 \pm 0.14 \times 10^6$ spores per bee and did not differ among treatment groups (F=0.88 df=2,40; P=0.4216, Fig. 7). Two weeks later (9 September), immediately prior to the application of the treatments, the average infection decreased to $0.90 \pm 0.31 \times 10^6$ spores per bee. Furthermore, on this date untreated colonies had higher densities of spores compared with colonies in the treated groups (F=3.58 df=2,40; P=0.0371). Within three weeks of the treatment (5 October), however, this difference was no longer apparent (F=1.50

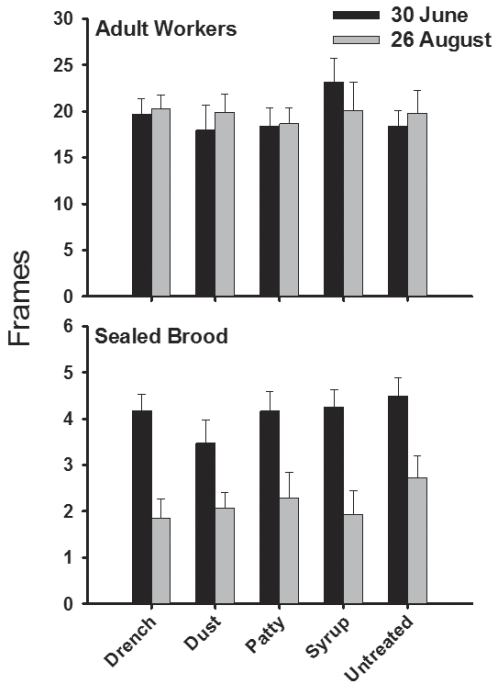

Figure 5. Mean adult worker and sealed brood area among overwintered colonies following spring applied treatments of fumagillin (two applications of 50mg a.i. per colony on 22 April 09 and 6 May 09) formulated using four different techniques (Drench = low volume sucrose syrup applied onto bees; Dust = Icing sugar dustings; Patty = pollen patties; Syrup = bulk sucrose syrup feed) (n = 12 colonies / treatment). Population assessments were made on two different dates, 30 June 09 and 26 August 09. No statistical differences in honey yield exist among treatments (see text for analysis of the hypothesis).

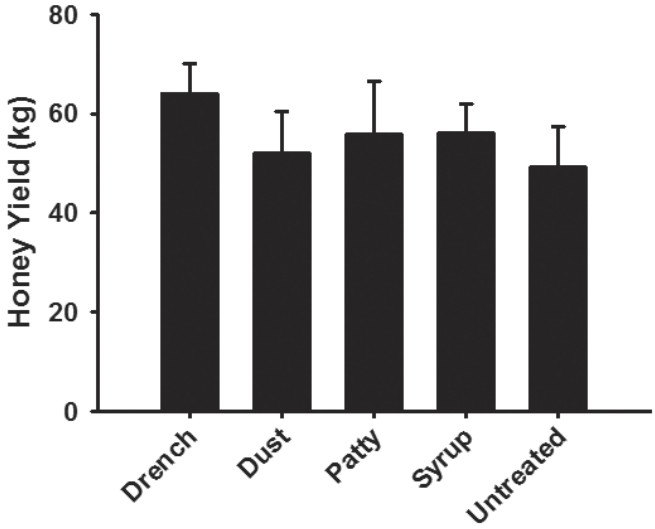

Figure 6. Mean honey yield among overwintered colonies following spring applied treatments of fumagillin (two applications of 50mg a.i. per colony on 22 April 09 and 6 May 09) formulated using four different techniques (Drench = low volume sucrose syrup applied onto bees; Dust = Icing sugar dustings; Patty = pollen patties; Syrup = bulk sucrose syrup feed) (n = 12 colonies / treatment). No statistical differences in honey yield exist among treatments (see text for analysis of the hypothesis).

df=2,39; *P*=0.235). Spore levels remained low until 23 February when higher levels of infection, and considerable variability, were apparent in the untreated colonies.

It remains too early in the experiment to draw conclusions about the relative effectiveness of these fall applied treatments. We expect that additional samples obtained during the winter of 2009-10 and those to be collected during the spring and summer of 2010 will allow us to resolve whether these treatments can protect overwintered colonies from the effects of *N. ceranae*.

B. N. ceranae Phenology

This component of the project surveyed the seasonal occurrence of *N. ceranae* and *N. apis* across different regions in Canada. A more complete understanding of the seasonal occurrence of these two species will help formulate a more effective strategy for managing both nosema species.

The phenology study began in 2008. In 2009 we continued to obtain samples from the same colonies sampled in 2008, but also included new beekeepers from different areas. As a consequence, the number of cooperating producers changed slightly for 2009 (2 BC, 3 AB, 1 SK, 1 MB, 2 ON, 2 PQ). The beekeepers were largely selected on the basis of there being *N. ceranae* previously identified among colonies within their operations by provincial apiculturists.

As was the case in 2008, these beekeepers sampled their apiaries on a biweekly basis from April until October in 2009. For beekeepers sampling a small number of colonies, 50 foragers were sampled per colony. In situations were larger apiaries are sampled, a minimum of 10 foragers per colony were sampled. Samples were placed in isopropyl alcohol for preservation.

Results:

We are currently analyzing our 2009 samples and are not able to report new data at this time. Data will be available for presentation at upcoming meetings during spring and summer 2010.

Overall, based on analysis of samples collected in 2008, no single, unique pattern of spore abundance was observed across producers. Some producers were noted to have unusually high levels of infection between mid-June and August which are not typically seen with *N. apis* and suggest *N. ceranae*. Species composition of samples will be confirmed by PCR analysis.

The possibility of high *N. ceranae* infections during mid-summer also emphasizes the need for active management of this disease during the spring. Based on these findings we are encouraging beekeepers to take samples from colonies that fail to build-up and produce honey by mid-summer and have them inspected for the presence of *N. ceranae*.

General Conclusions

1. Irradiation is the most effective method of disinfecting comb contaminated with *N. ceranae* spores.

2. Applications of 100 mg a.i. fumagillin, irrespective of the formulations evaluated, are effective at suppressing active infections of *N. ceranae* over spring and summer months.

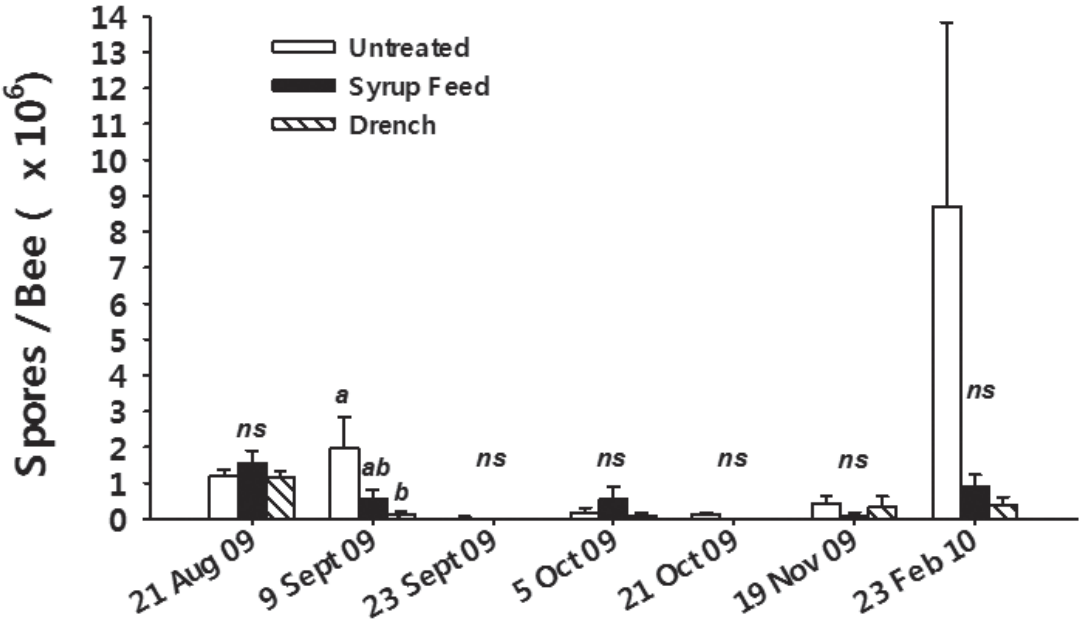

Figure 7. Mean number of Nosema spores per bee among colonies treated in late-summer with fumagillin (two applications of 100 mg a.i. per colony, 9 and 15 September 09) formulated using two different techniques (Drench = low volume sucrose syrup applied onto bees or Syrup = bulk sucrose syrup feed) (n = 12 colonies / treatment). Different letters above each date denote significant differences among means (ns=non-significant; Tukey-Kramer HSD, α=0.05).

3. In northern Alberta, *N. ceranae* spore levels appear to naturally decline during mid-summer, similar to patterns historically seen for *N. apis*. Nevertheless, survey results suggest that some beekeepers are experiencing persistent summer infections.

Project Personnel

Four summer students were hired to assist with this project in 2009. Pauline Pozsonyi (University of Alberta) and Timothy Leer (Grande Prairie Regional College) were postsecondary students employed from May to August. In addition, high school students Magnus von Tiesenhausen and Sacha Lutsenko were employed as supplementary labour in July and August to assist with colony management and honey extraction.

Mr. Johan van den Heever commenced his graduate tenure as a part-time Ph.D. student in January of 2009. Mr. van den Heever has been devising an LC-MS/MS residue detection technique for fumagillin and its degradation products in honey. Once this technique has been validated, he will determine residue levels from samples collected during our spring 2008 efficacy experiment.

Though the hiring of a postdoctoral fellow was initially delayed, we are very pleased to announce that Dr. Abdullah Ibrahim has been employed with our program since May of 2009. The initial six weeks of his employment were spent learning PCR detection techniques for *Nosema* spp. in the laboratory of Dr. Ernesto Guzman at the University of Guelph. He has been resident in Beaverlodge since June of 2009 and has taken over responsibility for conducting field experiments associated with the project. We look forward to his continued contributions to the project over the next two years.

Our beekeeping field assistant at AAFC Beaverlodge, Mr. Sterling Smith, retired from his position in February of 2009. Dr. Pernal has received permission to readvertise this position at a higher level of classification, which is hoped to attract a broad field of candidates during the spring of 2010.

Outlook for 2010

With a postdoctoral fellow now resident, we are optimistic about our achievement in the next project year. In the summer of 2010, we will again focus our attention towards screening alternative compounds for *Nosema* control and will conduct renewed fall experiments to evaluate the efficacy of additional formulations of fumagillin against nosema. We also anticipate that our PCR diagnostic capacity will be operational and that we will have our first fumagillin residue data set completed.

Acknowledgements

This research was generously supported by Medivet Pharmaceuticals, the Alberta Beekeepers' Commission, the Canadian Bee Research Fund, Bee Maid Honey and the Matching Investment Initiative of Agriculture & Agri-Food Canada. In-kind support was also received from Iotron Industries Canada Ltd.

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Final Report for the Canadian Bee Research Fund:

Optimization of real-time PCR to identify and quantify co-infections of the microsporidians Nosema apis and Nosema ceranae in honey bees.

Karen Burgher-MacLellan[1], Geoff Williams[2,3], Kenna MacKenzie[1], Dave Shutler[3], Dick Rogers[4]

[1] Atlantic Food and Horticulture Research Centre, AAFC, Kentville, NS
[2] Department of Biology, Dalhousie University, Halifax, NS
[3] Department of Biology, Acadia University, Wolfville, NS
[4] Wildwood Labs, Kentville, NS

Introduction

Western honey bees are parasitized by the microsporidians *Nosema apis* and *Nosema ceranae*. Prior to discovery of *N. ceranae*, *Nosema* infections were primarily detected using light microscopy, but due to morphological similarities between *N. apis* and *N. ceranae* spores, molecular techniques are now needed to accurately identify infecting species (Fries *et al.*, 1996). Although conventional duplex PCR allows both *Nosema* species to be detected simultaneously, its two-step method of PCR assays and gel analysis is laborious. Real-time PCR (R-T PCR) is a gel-free, high-throughput sensitive technique that is capable of identifying and quantifying distinct *Nosema* species with species-specific primers and PCR standards.

Objectives

The primary objectives of this study were to:

1. Determine if previously published species-specific primers for *N. apis* and *N. ceranae* duplex PCR could be optimized for SYBR Green I R-T PCR with melting curve analysis.
2. Determine the relative intensity and spore equivalent/bee for each *Nosema* species using quantitative simplex R-T PCR (qPCR), including standard curves, to measure infection in individual and composite samples.

For a detailed description of relevant background information and project objectives, please refer to our submitted CBRF application form and/or our recently accepted manuscript (Burgher-MacLellan *et al.*, 2010, *TCE10-010*).

Summary of Project Results

Worker honey bees were collected in late summer 2007 from the hive entrances of colonies known to be co-infected by *N. apis* and *N. ceranae* (one each in Nova Scotia (NS) and Prince Edward Island (PEI)), and from one colony in Newfoundland (NF) infected with *N. apis* only. In spring 2008, as part of another study, workers were collected from the hive entrances of >100 colonies from six beekeeping operations in NS. *Nosema* intensity (spores per bee) was estimated at the individual bee and colony levels (composite samples consisting of 15 worker bees' abdomens per colony) using light microscopy and a haemacytometer. Forty-nine individual crushed bee samples and 28 composite samples, representing the range of *Nosema* spore intensity (0 to over 52 million spores/sample), were chosen for total DNA extraction and PCR testing.
Three PCR primer sets (NOS-FOR & REV (Higes *et al.*, 2006), 218MITOC-FOR & REV, 321APIS-FOR & REV (Martín-Hernández *et al.*, 2007)), and one we designed, were tested for suitability with the R-T PCR assay. The previously published PCR primers sets described by Martín-Hernández *et al.* (2007) had been used successfully to identify *Nosema* infection in honey bee DNA by our research group and were renamed NCERANAE and NAPIS for simplified reporting. The NCERANAE and NAPIS primer sets met basic criteria for R-T PCR (Bustin et al., 2009), and were further optimized to determine the best R-T PCR reaction conditions, including calibration curves, to test assay performance and determine accuracy of R-T PCR. Primers were tested under simplex (one primer set) and duplex (both primer sets) conditions and all treatments were repeated in triplicate.
Nosema prevalence estimated by spore counts was 87.0 % (n = 67/77), whereas *Nosema* prevalence estimated by conventional PCR was 93.5 % (n=72/77) (Table 1). Optimized R-T PCR similarly estimated *Nosema* prevalence as 93.5%; however, R-T PCR was more sensitive at determining species because one composite sample thought to be infected with *N. apis* only using conventional PCR gel analysis was found to be co-infected with *N. ceranae* (Table 1).
Using qPCR, we determined that *N. ceranae* prevalence was greater

		Conventional duplex PCR		Optimized duplex real- time PCR	
	Spore counts	Individual (%)	Composite (%)	Individual (%)	Composite (%)
N. apis	--	17.0 (34.7)	3.0 (10.7)	17.0 (34.7)	2.0 (7.1)
N. ceranae	--	18.0 (36.7)	22.0 (78.6)	18.0 (36.7)	22.0 (78.6)
Co-infection	--	9.0 (18.4)	3.0 (10.7)	9.0 (18.4)	4.0 (14.3)
Negative samples	10.0	5.0 (10.2)	0.0	5.0 (10.2)	0.0
Total samples	77.0	49.0	28.0	49.0	28.0
Nosema Prevalence		89.8%	100%	89.8 %	100%
Overall *Nosema* prevalence	**87%**	**93.5%**		**93.5%**	

Table 1. Comparison of methods to measure Nosema apis and Nosema ceranae presence/prevalence in crushed honey bee suspensions (spore counts) and bee DNA with conventional and real-time PCR.

than *N. apis* (62% vs. 38%), however, *N. ceranae* prevalence may be higher than in other studies because colonies were deliberately selected that were known to have this species. Mean relative intensity (gene copy number relative to PCR standards) was greater in *N. ceranae*-infected samples than in *N. apis*-infected samples (mean x 1000 ± SD; 580 ± 1800 vs. 190 ± 250) and mean relative intensity was 4.5 fold greater in the individual samples than the composite (mean x 1000 ± SD; 590 ± 1475 vs. 130 ± 151). Among the co-infected bees, *N. ceranae* relative intensity was greater than that of *N. apis* (mean x 1000 ± SD; 74 ± 71 vs. 41 ± 84); however, the overall mean relative intensity was seven times lower in

co-infected samples than the singly infected bees (mean x 1000; 58 ± 14 vs. 390 ± 940).

Conclusions and Project Assessment

We found that conventional PCR and R-T PCR were more sensitive at determining *Nosema* prevalence than were traditional spore counts. This is possibly because PCR can detect DNA from *Nosema* spores and vegetative cells which are not detected with spore counts. Conventional PCR using species-specific primers distinguished singly- and co-infected bees; however, we found weak or confounding PCR gel analysis results were resolved with the sensitivity and specificity of R-T PCR. The primary benefit of using R-T PCR is the application of qPCR to measure relative intensity of *Nosema* in co-infections. We found approximately three-fold higher relative intensity and a seven-fold higher overall variation in *N. ceranae*- vs. *N. apis*-infected samples, supporting claims that *N. ceranae* appears to be displacing *N. apis* (Klee et al., 2007). This same trend was found in a small subset of co-infected samples where *N. ceranae* relative intensity was twice that of *N. apis*. The conversion of relative intensity to spore equivalents/bee (Bourgeois et al., 2009), reflected the trends in the data (Figure 1), and showed how molecular techniques can describe infection to monitor the pathology and control of *Nosema* spp. in honey bees.

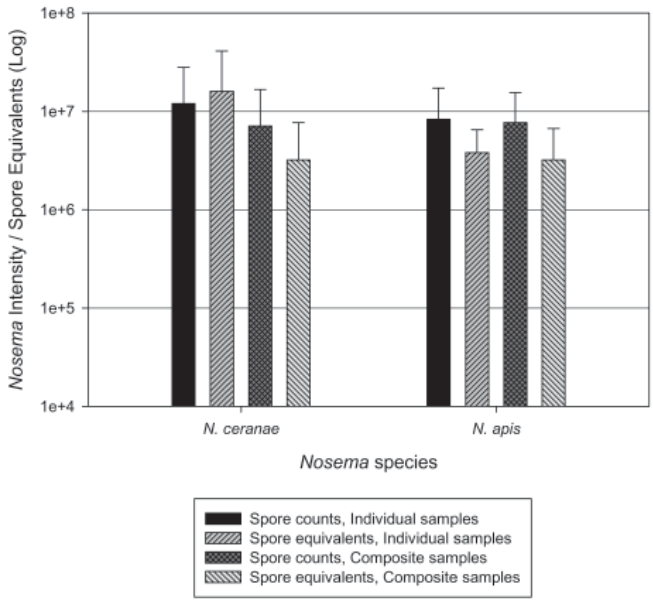

Fig. 1. Comparison of Nosema intensity determined by spore counts and qPCR (spore equivalents/bee, calculated from relative intensity with NCERANAE and NAPIS primers) in 44 Individual and 28 Composite bee DNA samples that tested positive for N. ceranae and/or N. apis infection (spore counts vs. spore equivalents/bee RSq= 0.6065, P=<0.0001).

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Refereed Publications

Burgher-MacLellan, K.L., Williams, G.R., Shutler, D., MacKenzie, K.E., Rogers, R.E.L., 2010. Optimization of duplex real-time PCR with melting curve analysis for detection of microsporidian parasites *Nosema apis* and *Nosema ceranae* in *Apis mellifera*. The Canadian Entomologist, *TCE10-010 accepted for publication*.

Poster Presentations

Burgher-Maclellan, K.L., Williams, G.R., MacKenzie, K.E., Shutler, D., Rogers, R.E.L., Assessment of *Nosema apis* and *Nosema ceranae* infection in western honey bee (*Apis mellifera*) with qualitative and quantitative real-time PCR. Entomological Societies of Canada and Manitoba Conference. October 18-21, 2009, Winnipeg, MB.

"Cultural and Chemical Treatments to Synergize Honey Bee Resistance Mechanisms against the Parasite Mite"

R.W. Currie, S. Desai, R. Bahreini

Abstract

This multi-year project has focused on three major objectives in the past year. First, we have been working towards understanding the impact of honey bee viruses on honey bee colonies and developing methods to control them (Ph.D. student Suresh Desai); second, we have been studying the effects of manipulating ventilation during wintering in different genetic sources of bees on the mortality rates of bees and mites to determine if this can be used to enhance the kill of mites during wintering (Rasoul Bahreini); and third, we have been screening a number of compounds in direct contact and fumigation assays to assess their potential as methods to control the varroa mite.

We now have the capacity to detect and quantify seven of the most economically important honey bee viruses and are completing analysis of their interactions with varroa and combined effects on the survival rates of single inseminated queens, multiple-inseminated queens and open mated queens. The results showed that black queen cell virus and deformed wing virus were the most common viruses present in our initial surveys, however, Israeli acute paralysis virus (IAPV) was also present in a high proportion of colonies. The latter virus has been associated (in combination with other factors) to colony losses in the U.S. (CCD) however, it did not seem to cause significant losses in colonies under our conditions.

Using new molecular methods called RNA interference (RNAi), it is now possible to create a form of double stranded RNA that can be designed to attack and destroy specific viruses. We have been successful in producing several forms of double stranded RNA against deformed wing virus and are testing them on larvae and adults in the lab. Deformed wing virus can cause considerable bee mortality even in "normal-winged" bees and thus a method to control this virus could be an important tool in helping us prevent winter loss of colonies. Preliminary trials with one construct that we have produced in our lab showed that it can reduce the number of bees that develop with deformed wings, improve survival of immature bees and improve survival of "normal-winged" bees that are infected with virus.

Studies on the manipulation of ventilation have been carried out on full sized colonies enclosed within a special Plexiglas chamber that allows airflow into the chamber to be tightly controlled. The chamber also is equipped with infra-red monitoring camera that allows bee ventilation to be observed under total darkness. Colonies were maintained a 5 degrees Celsius for a period of about 1 month during winter and the experiment was repeated in an environmental chamber in summer. Airflow was reduced slowly over a number of days from 20 standard cubic feet per hour (SCFH) to about 0.5 SCFH which is the point where increased levels of fanning by bees were observed. Decreases in the ventilation rate were associated with increased CO2 levels in the cluster up until the point where fanning was initiated. The bees responded in a similar way to reductions in ventilation under both winter and "simulated winter" conditions but the level of CO2 in the cluster was lower in summer. Increased mite mortality appeared to be associate with increased cluster CO2 and we are now carrying out experiments to determine if ventilation levels can be optimized to increase varroa mortality without having an effect on worker survival.

There are a number of compounds that are known to increase the mortality of varroa, however many do not achieve high levels of efficacy when applied to colonies. Many of these products might displace mites on the bee's bod y without killing them and thus could potentially be more effective in bees that are selected for enhanced grooming behaviour. We are currently screening a number of compounds in laboratory assays (new formulations of essential oils, new formulations of neem, folicel and other products) to assess their efficacy against varroawhen applied as either contact formulations or fumigants. We have worked out concentration * time mortality relationships for each of these compounds and determined dose*time responses required to get moderate to good control of varroa without causing significant bee mortality. The next step of this research that is ongoing in the lab is to select compounds from this group that have moderate and good control and screen them in assays with high and low grooming bees to determine if product efficacy can be enhanced by using stocks of bees selected for grooming.

The Saskatraz Project: Selection of productive honey bee genotypes with tolerance to varroa and tracheal mites

Albert J. Robertson
Meadow Ridge Enterprises Ltd. Group Site 602 Box 1 RR6, Saskatoon SK. S7K 3J9.

Abstract

The objective of the Saskatraz project is to breed gentle, productive honey bee colonies with tolerance to mites and brood diseases. Efforts are also being made to identify genetic diversity and correlate important phenotypes with molecular (microsatellites) markers. These objectives were approached by assembling a large gene pool at an isolated apiary called Saskatraz.To access a source of honey bees adapted to the Saskatchewan environment and selected for many years for honey production, overwintering ability and good overall hive health , a request was made for Saskatchewan and Manitoba queen breeders to provide their best breeding lines to the program. Fourteen queen breeders provided 35 colonies. To provide breeding stock previously demonstrated to have mite tolerance, a few breeders provided reselected Russian and German breeding lines. All of the colonies at the Saskatraz apiary were normalized for varroa and tracheal mite infestation levels. No synthetic chemical miticides were applied and natural selection was used to identify the most productive and mite tolerant phenotypes.Initial selections were made over three and a half years. In the spring of 2007 varroa mite infestations and the stresses of associated pathogens killed all of the original Saskatraz colonies. Breeding lines selected in 2006 were outcrossed and subjected to recurrent selection to maintain the selected gene pool, to maintain genetic diversity, and to enrich for economic traits. Re-selected colonies are returned to the Saskatraz apiary and the natural selection process continues to be repeated in the search for genotypes with increased expression of mite tolerance and honey production without the use of chemical miticides. A model showing the logistics of the Saskatraz breeding program operation is presented in Figure 1.

In general, our approach has been to select for families with balanced traits, with increased honey production as our primary selection criteria. These families show varying degrees of increased honey production, good resistance to tracheal (Acarapis woodi) mites and chalk brood, and some tolerance to varroa (Varroa destructor) mites. None of the families show resistance to varroa mites and continued efforts are required to breed lines with improved varroa tolerance. Varroa infestation in Apis Mellifera is a serious world –wide problem, threatening the existence of the domesticated honey bee and is part of the cause of colony collapse disorder (CCD). Since 2006, the Saskatraz breeding program has released 14 families (SAT –14, 17, 23, 28, 30, 34, 63, 65, 84, 86, 87, 88, 96, 98.) to queen breeders for multiplication. As of October 15, 2009, 4220 queen cells and 67 breeder queens were released to Canadian queen breeders.

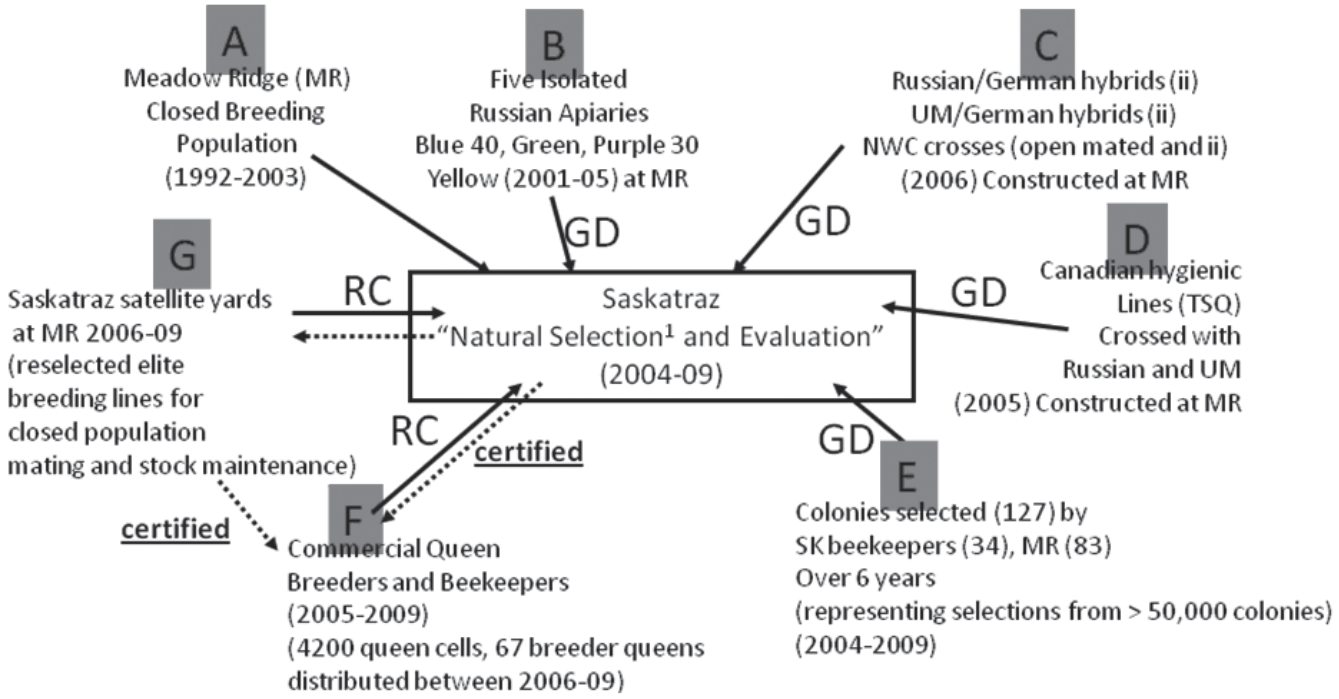

Figure 1: Letters A to G represent isolated apiaries and the year of establishment at Meadow Ridge. Solid arrows indicate genetically diverse gene (GD) flow into Saskatraz, dashed arrows gene flow out of Saskatraz. (ii) denotes instrumental insemination. RC denotes recurrent selection. 1 Denotes no chemical miticides.

Canadian Honey Council - General Fund

Calgary, Alberta
Statement of Financial Position as at October 31, 2009
(Unaudited)

	2009	2008
Assets		
Current Assets		
Cash and cash equivalents	44,784	5,527
Short-term investments		51,091
Accounts receivable - note 5	7,519	18,731
Receivable from project fund	23,901	41,000
Prepaid expenses	6,412	431
	$ 82,616	$ 116,780
Liabilities and Net Assets		
Current Liabilities		
Accounts payable and accrued liabilities - note 6	10,170	20,268
Deferred revenue - note 7	16,007	16,122
	26,177	36,390
Net Assets		
Unappropriated	56,439	80,390
	$ 82,616	$ 116,780

Approved on behalf of the board:

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The notes to financial statements are an integral part of these financial statements.

Canadian Honey Council - General Fund

Statement of Changes in Net Assets
For the year ended October 31, 2009
(Unaudited)

	2009	2008
Balance (deficit), beginning of year	80,390	(23,680)
Excess (deficiency) of revenue over expenses for the year	(24,669)	(36,032)
Interfund transfer		103,003
Transfer from reserves	718	37,099
Balance, end of year	$ 56,439	$ 80,390

The notes to financial statements are an integral part of these financial statements.

Canadian Honey Council - General Fund

Statement of Operations
For the year ended October 31, 2009
(Unaudited)

	2009	2008
Revenue		
Memberships	67,934	70,107
Director fees	60,000	68,250
Project administration fee	25,687	15,000
Hivelights	34,950	21,914
Annual general meeting	2,372	23,464
Investment income (loss) - note 2(b)	1,026	(7,947)
Promotion materials	7,299	8,950
Sponsorships and donations	5,430	6,001
Website hosting	720	750
Other	50	2,542
	205,468	209,031
Expenses		
Apimondia committee	1,237	1,241
Awards and donations	380	175
Bad debt	6,970	
Consulting fees	32,662	60,927
Credit card charges	161	774
Delegates	21,744	10,044
Hivelights	31,878	31,335
Honorariums		2,000
Insurance	1,620	1,620
Interest and bank charges	210	123
Meetings	5,761	27,812
Office	6,009	10,407
Office management contract	22,000	
Oxalic acid registration		1,958
Professional fees	2,750	2,825
Promotion expenses	10,447	8,349
Rent - office	6,321	6,596
Telephone	3,648	4,055
Travel - employees	12,013	10,281
Wages and benefits	64,326	64,541
	230,137	245,063
Excess (Deficiency) of Revenue Over Expenses for the Year	$(24,669)	$(36,032)

The notes to financial statements are an integral part of these financial statements.

Canadian Honey Council - General Fund

Statement of Cash Flows
For the year ended October 31, 2009
(Unaudited)

	2009	2008
Cash Provided By (Used In):		
Operations		
Excess (deficiency) of revenue over expenses for the year	(24,669)	(36,032)
Add items not requiring cash resources		
Market value adjustments on held-for-trading investments	94	13,343
Net change in working capital	12,117	(33,230)
	(12,458)	(55,919)
Investing activities		
Additions to short-term investments	(1,120)	(65,396)
Proceeds on disposal of short-term investments	52,117	80,500
	50,997	15,104
Interfund transfers	718	70,316
Net Cash Increase for the Year	39,257	29,501
Cash position, beginning of year	5,527	(23,974)
Cash Position, End of Year	$ 44,784	$ 5,527
Represented By:		
Cash and cash equivalents	$ 44,784	$ 5,527
Net change in working capital consists of:		
Decrease (increase) - accounts receivable	11,212	(18,731)
- prepaid expenses	(5,981)	1,000
- other current assets	17,099	(41,000)
Increase (decrease) - accounts payable and accrued liabilities	(10,098)	16,285
- other current liabilities	(115)	9,216
	$ 12,117	$(33,230)

The notes to financial statements are an integral part of these financial statements.

Capital Disclosure

The organization manages its General Fund capital with the goals of maintaining a responsible financial position allowing it to meet its goals and obligations. Capital consists of cash and net assets.

	2009	2008
Accounts Receivable		
Accounts receivable are comprised of the following items:		
Trade accounts receivable	14,489	18,731
Allowance for doubtful accounts	(6,970)	
	$ 7,519	$ 18,731
Accounts Payable and Accrued Liabilities		
Accounts payable and accrued liabilities are comprised of the following items:		
Accounts payable	9,115	15,125
Payroll deductions payable	1,055	5,143
	$ 10,170	$ 20,268
Deferred Revenue		
Prepaid Hivelights advertising	8,507	8,622
Prepaid memberships and director fees	7,500	7,500
	$ 16,007	$ 16,122

Production and Value of Honey
Statistics Canada

	Beekeepers [1]	Colonies [1]	Honey		
			Production of honey, total [2]	Production of honey, total [2]	Value of honey, total [3]
	number		thousands of pounds	metric tonnes	thousands of dollars
Canada [4]					
Average 2004 to 2008	7,567	600,231	79,199	35,934	97,160
2008	6,931 r	570,070 r	64,895 r	29,444 r	105,184
2009 p	6,728	575,676	64,788	29,396	..
Prince Edward Island					
Average 2004 to 2008	22	2,452	139	63	286
2008	24 r	4,000 r	260 r	118 r	520
2009 p	28	3,530	265	120	530
Nova Scotia					
Average 2004 to 2008	294	18,880	629	285	1,128
2008	210 r	19,200 r	392 r	178 r	784
2009 p	200	19,500	420	191	840
New Brunswick					
Average 2004 to 2008	218	5,108	203	92	289
2008	187 r	3,000 r	174 r	79 r	348
2009 p	180	2,700	189	86	378
Quebec					
Average 2004 to 2008	247	32,845	2,956	1,341	6,551
2008	256 r	36,123 r	3,186 r	1,446 r	8,527
2009 p	250	35,000	2,100	953	..
Ontario					
Average 2004 to 2008	2,430	76,280	7,080	3,212	11,746
2008	2,200	80,000	4,586 r	2,081 r	9,190
2009 p	2,150	81,200	4,571	2,074	..
Manitoba					
Average 2004 to 2008	594	80,635	13,510	6,130	14,681
2008	523 r	75,173 r	12,028 r	5,457 r	17,440
2009 p	474	70,746	12,310	5,585	..
Saskatchewan					
Average 2004 to 2008	1,056	97,000	18,237	8,275	21,222
2008	1,045	90,000 r	16,560 r	7,514 r	24,840
2009 p	971	85,000	17,000	7,713	..
Alberta					
Average 2004 to 2008	700	243,200	33,399	15,154	39,128
2008	620 r	226,000 r	25,990 r	11,792 r	37,755
2009 p	625	240,000	25,920	11,760	44,865
British Columbia					
Average 2004 to 200 8	2,006	43,832	3,047	1,382	8,094
2008	1,866	36,574	1,719 r	780 r	5,779
2009 p	1,850	38,000	2,014	914	7,544

1. Beekeeper and colony numbers include pollinators that may not extract honey.
2. Production excludes inventory.
3. Value excludes inventory sales except for in Québec.
4. Does not include Newfoundland and Labrador.

Note(s): Figures are compiled by Statistics Canada from provincial data, except fo r New Brunswick and Prince Edward Island where data are collected through a Statist ics Canada mail survey.

Next Canadian Honey Council Annual Meeting
will be the North American Beekeeping Conference
held jointly with
the Americam Beekeeping Federation
and the
American Honey Producers Association

January 4th to 8th 2011

Location is the San Luis Resorts, Galveston Texas

More information at www.honeycouncil.ca

Photography by Lee DeForke, Jr.