Spring 2021 | Vol 34 # 2

Hive Lights

www.honeycouncil.ca

The Official Magazine of the Canadian Honey Council, The Canadian Beekeeper and The Canadian Honey Packer

Investigating Food Fraud in the Honey Industry

Canadian Association of Professional Apiculturists Statement on Honey Bee Wintering Losses in Canada (2020)

Join the 2021 Mite-A-Thon

Honey Trade Statistics

$4.95

Dadant

Check out our website! (www.dadant.com) Canadian customers can now order online with all duties, fees, taxes and UPS shipping totaled at order time. No surprises at the border with additional unexpected charges to get your items. We make it easy to place your order and receive your products.

Quality that can't be beat anywhere in the industry

AP23®
Artificial Pollen 23
WINTER PATTIES
WITH HONEY-B-HEALTHY
M0016040PHW
1 CTN - 40 PATTIES

Ask about Quantity Pricing!

AP23®
POLLEN SUPPLEMENT
M0016040PH
AP23 PATTIES
40 LB BOX
M0016040
AP23
40 LB BAG

Premium Smokers

M00926 M00928

Apiguard for Varroa Mite Control
M01480

A Complete Line of Containers

Tools

Assembled Starter Kit
C52201P

M00010

New 2015 Edition of The Hive and the Honey Bee

A complete line of quality woodenware & foundations

Full Line of Honey House Equipment

Little Wonder Hand-Extractor Kits
M00396KIT - Hand
M00403KIT - Power

Many styles from which to choose

Economy Vent Suit
V01260(size)
Suit

WWW.DADANT.COM

51 S. SECOND STREET, HAMILTON IL 62341 • PHONE (217) 847-3324 • FAX (217) 847-3660 • TOLL FREE 1-888-922-1293
• CHICO, CA (877) 332-3268 • FRESNO, CA (877) 432-3268 • PARIS, TX (877) 632-3268 • SIOUX CITY, IA (877) 732-3268 •
• WATERTOWN, WI (877) 232-3268 • ALBION, MI (877) 932-3268 • WAVERLY, NY (877) 532-3268 •
• CHATHAM, VA (800) 220-8325 • FRANKFORT, KY (888) 932-3268 • HIGH SPRINGS, FL (877) 832-3268 •

Hivelights: The official magazine of the Canadian Honey Council, The Canadian Beekeeper and The Canadian Honey Packer.

The Canadian Honey Council (CHC) is the national organization of the Canadian beekeeping industry and Hivelights is the industry's magazine.

In order to receive Hivelights you must be a current member of your provincial association. Non members such as Hobby Beekeepers, Honey Packers, Urban Beekeepers or Canadians with interests in Beekeeping can subscribe to the magazine for a $25.00 subscription fee per year.

International and U. S. subscribers can receive our high quality magazine for a fee of $50 Canadian per year.

Schools, libraries, non beekeepers, university or government personnel can receive Hivelights magazine through special membership as "Friends of Canadian Apiculture" at no charge. Please contact the Hivelights office for more information: geoff@honeycouncil.ca

Hivelights is published quarterly (Spring, Summer, Fall, Winter). Deadline for submissions and adverts are 6 weeks prior to publication (i.e. Dec 15th for the Winter issue). The opinions expressed in the articles printed in Hivelights are those of the authors and do not imply endorsement of the Canadian Honey Council for the promotion of any product, goods or services mentioned unless specifically stated.

Publication Mail Agreement number
43070512
ISSN 1489-730X
Return undeliverable Canadian addresses to
Hivelights
PO Box 914, Station T Calgary,
Alberta T2H 2H4
geoff@honeycouncil.ca
www.honeycouncil.ca
(403) 512 2123

HiveIrghts

Spring 2021 Vol 34 #2

Funded by the Government of Canada | Canada

Cover photo: Chinook Honey Company

Table of Contents

Hivelights - The Magazine of the Canadian Honey Council is printed with all natural vegetable based inks. Please recycle this magazine.

2021 Directors • Canadian Honey Council / Conseil Canadien de Miel

Hivelights Magazine Editor & Advertising Sales
Geoff Todd Box 914, Stn. T., Calgary, Alberta T2H 2H4
T: 403-512-2123 E: geoff@honeycouncil.ca

Design and Production .....**Cristian Campean**
Advertising enquiries ..... **Geoff Todd**
Publisher .....**Bunker to Bunker Books Inc.**
Printed in Canada

Canadian Honey Council Report

Rod Scarlett, Executive Director, CHC

With 2020 in the rear-view mirror, the hope was 2021 would be different, but this spring of proved that assumption wrong. All seemed well and good for the importation of packaged bees needed to offset high losses in some regions of the country. Despite the best laid plans, Air Canada put a wrench into things first by reducing the number of flights from New Zealand and then by switching the type of plane making the flight. For Australian packages, plans for rerouting and changing carriers were commonplace. At the time of writing, the CHC, AAFC and numerous other organizations that have an interest in honeybees have been lobbying to get Air Canada to make some adjustments to their carriers. Even if this proves successful, it is apparent that the cost of packages will be going up as cargo charges have more than doubled.

Just like last year, commercial flights from Nicaragua to Canada were not in existence and the CHC chartered flights to bring in temporary foreign workers. Even though we had experience, this springs' work seemed doubly difficult due to changing rules, covid testing and new demands by the Nicaraguan government. Employers with other nationalities of temporary foreign workers also experienced the same issues often resulting in far greater expense.

It should be noted that despite the complications that the pandemic has caused, I have found staff at provincial and federal levels available and helpful. Service Canada, CFIA, and AAFC have all had difficult timelines and issues to deal with and those involved have been patient and willing to address the tough issues.

While the price of honey seems to have rebounded, it may be a good time to look at the expense side of the equation. Transportation costs have skyrocketing, stock prices have gone up, labour expenses have increased, the price of lumber is through the roof, the price of sugar is continually going up, and on it goes. For the most part, the CHC has focussed on the price of honey by trying to address adulteration and transhipping. Adulterated honey is a worldwide issue that has pricing implications in Canada but adulterated honey coming into Canada is not as serious when compared to other countries. Last year, Canada imported 15,745,884 lbs of honey with Brazil (organic honey) and the United States (surprise) the two largest export countries accounting for over 6 million lbs of that total. Yes, we had imports from suspect countries and yes, we need to vigilant. Testing all imported honey and all honey exported has tremendous benefit and we continue to push CFIA to do just that, but the issue of adulteration is much, much bigger elsewhere. Canada, through the work of the CFIA is a world leader being the first government to authorize NMR testing for honey adulteration and the certainly one of first, if not the first to set up a food fraud component.

An interesting side note on the honey export side – for the first time Japan became our largest customer overtaking the United States.

That being said, the expense side of the equation needs some particular attention. I am not sure how some of the issues can be addressed, but I am certain the Board will be looking at it intently. ■

Regional Reports

Atlantic

Chris Lockhart

It's the end of March and spring is trying to decide whether or not to arrive. After several very warm days with hives bringing some pollen in two and a half weeks earlier than normal a snow squall is on the horizon. With what the trees are looking like, signs are pointing to a slightly earlier spring than normal, especially if the warm weather feels like staying.

Demand for hives in the blueberry fields will be up again this season. With the struggles in the blueberry industry in the last four years after several consecutive record seasons, it would appear that frozen blueberry stock is getting low and therefor driving the price up. Most beekeepers have had their colonies already spoken for since fall of last year. With any luck at all we will see a strong blueberry price turn into a higher demand and colony rental price.

Initial reports seem to be at this moment relatively low winter losses. This is promising to see but we still have April to get through. With a little optimism finally in the blueberry industry, low winter losses, a slightly early spring, high honey prices and a huge demand for nucleus colonies there is reason to be optimistic in Atlantic Canada for the 2021 season. I would like to think that last years' drought is far behind us and the summer will go back to normal…..if there is such a thing anymore.

The NBBA and NSBA held their annual meetings online which were well attended. The Maritime Bee Tour will once again be postponed. We are eyeing a return in 2022 destined in Nova Scotia. The Atlantic "Bubble" is set to form up again this summer which should make traveling within Atlantic Canada a little bit easier. It is yet to be seen if it will be safe to have live field days.

In beekeeping spring is always busy enough. With our second spring dealing with Covid, you would think things would have gotten easier. Sadly things are more complicated than ever this time around. Whether it's flights for temporary foreign workers, package shortages, queens, CFIA honey testing, scheduling food expos, research projects, etc, etc, etc, nothing is simple anymore. I'm hoping we are seeing light at the end of the tunnel but we aren't at the end yet. Rod has gone above and beyond to deal with these impossible issues. The CHC is lucky to have him.

Québec

Maggie Lamothe Boudreau

Bon printemps à tous !!

J'espère qu'il est aussi clément pour vous qu'il l'est pour moi.

Je suis heureuse de vous annoncer que notre Assemblée Générale Annuelle (AGA) virtuelle a eu lieu le 19 mars en avant-midi. Je tiens à féliciter les nouveaux membres du conseil d'administration qui contribueront à l'avancement de plusieurs dossiers importants à l'apiculture québécoise. En voici la liste :

Président : Raphaël Vacher
1ere vice-présidente : Maggie Lamothe Boudreau
2e vice-présidente : Julie Fontaine
Administrateur et président du comité de la Montérégie : Alexandre Mainville
Administrateur et président du comité du Nord-Ouest : Dominic Bilodeau
Administrateur et président du comité de la région de Québec : David Lee Desrochers-Croteau
Administrateur(-trice) et président(e) du comité Mauricie-Estrie-Centre-du-Québec : Steve Michel
Administratrice et représentante de la relève : Sophie Roy
Administrateur et représentant de la catégorie « petite échelle » : Julien Levac Joubert

Comme promis lors du dernier rapport provincial je reviens sur quelques dossiers qui ont occupé nos administrateurs durant la dernière année. Premièrement, le projet d'études technico-économiques en apiculture réalisé en partenariat avec la Financière Agricole du Québec. Cette étude sera une source d'information précieuse, actuelle et de qualité pour les entreprises apicoles québécoises. En effet, elle permettra de comparer les performances techniques, économiques et financières de chacune de nos entreprises avec celles des autres afin d'apporter les ajustements nécessaires à la rentabilité. Nous sommes encore à la recherche de participants, il reste seulement quelques places gratuites. Si vous êtes intéressé, que vous êtes un apiculteur québécois et que vous avez plus de 50 ruches, n'hésitez pas à contacter notre organisation pour vous inscrire.

Ensuite, l'organisation travaille très fort vers la mise sur pied de divers projets de recherches apicoles. Le premier concerne le nourrissage automnal des ruches en régie biologique. Ce projet souhaite comparer le nourrissage au sirop de sucre comparativement au nourrissage au sirop de sucre biologique ou au miel. En effet pour le moment la majorité des études que nous possédons stipule qu'il est essentiel de nourrir les ruches au sirop de sucre conventionnel afin qu'elle passe l'hiver adéquatement. Le nourrissage à l'aide du miel et du sirop biologique occasionnerait beaucoup plus de mortalité au cours de l'hiver. Cette hausse de mortalité est à l'encontre de la philosophie de base de la filière biologique a à cœurs le bien être des animaux et non la mort de ces derniers. Deuxièmement, l'organisation contribuera financièrement et non financièrement à un projet de recherche en collaboration avec les producteurs de bleuets grâce entre autres à plusieurs de ses membres que je tiens à remercier pour leurs implications bénévoles dans diverses parties du projet.

Ensuite, nous continuons de faire pression auprès des diverses instances concernées en ce qui a trait aux pesticides et leurs effets néfastes sur l'environnement. D'ailleurs, dernièrement Madame Julie Fontaine a fait l'objet de quelques entrevues télévisées sur le sujet afin de faire comprendre l'objectif de notre organisation. Une réduction massive et utilisation raisonnée de l'utilisation des pesticides dans l'optique de protéger les pollinisateurs. Bravo Julie, continu ton fabuleux travail.

Sur une note finale, je tiens à donner mes félicitations à Stéphane Leclerc, qui a quitté le poste de présidence. Il a donné cœur et âme pour les apiculteurs du Québec et je tiens à souligner que son mandat ne fut pas de tout repos. En effet, il a dû reprendre la gestion de l'organisation suite à la démission du précédent président à mi-mandat. Il a dû faire face aux nombreux défis d'Apimondia, de la pandémie Covid-19, de l'entrée illégale de PCR au Québec et même d'un empoisonnement massif de 600 ruches en 2020. Merci pour ton dévouement au milieu Apicole Stéphane, au plaisir de travailler avec toi dans un proche futur.

……

Happy spring to all!!

I hope it is as lenient for you as it is for me.

I am pleased to announce that our Virtual Annual General Assembly (AGM) took place on the morning of March 19th. I would like to congratulate the new members of the Board of Directors who will contribute to the advancement of several important issues in Quebec beekeeping.

Here's the list:
Chair: Raphael Vacher
1st Vice-President: Maggie Lamothe Boudreau
2nd Vice-President: Julie Fontaine
Director and chairman of the Montérégie Committee: Alexandre Mainville

▶ pag. 7

Director and Chair of the Northwest Committee: Dominic Bilodeau
Director and Chair of the Quebec City Region Committee: David Lee Desrochers-Croteau
Director and Chair of the Mauricie-Estrie-Centre-du-Québec Committee: Steve Michel
Administrator and succession representative: Sophie Roy
Director and representative of the "small scale" category: Julien Levac Joubert

As promised in the last provincial report, I will give you more details on a few of the issues that have occupied our directors over the past year. First, the technical-economic study in beekeeping carried out in partnership with the "Financière Agricole du Québec". This study will be a valuable, current and quality source of information for Quebec beekeeping companies. Indeed, it will compare the technical, economic and financial performance of each participant in the study. This will result in a document that each company will be able to use in order to compare with and make the necessary adjustments for profitability. We are still looking for participants, there are only a few free places left. If you are interested, are a Quebec beekeeper and have more than 50 hives, please contact our organization to register.

Second, the organization is working very hard towards the development of various beekeeping research projects. The first is the fall feeding of hives under organic management. This project wants to compare feeding with sugar syrup compared to organic sugar syrup or honey feeding. For the time being, the majority of the studies we have stated that it is essential to feed the hives with conventional sugar syrup so that they will overwinter properly. Feeding with honey and organic syrup would cause much more mortality over the winter. This increase in mortality is contrary to the basic philosophy the biological sector as at heart, the welfare of animals. Second, the organization will contribute, to a research project in collaboration with blueberry growers, thanks in part to several of its members whom I would like to thank for their volunteer implications in various parts of the project.

Second, we continue to lobby the various jurisdictions concerned about pesticides and their harmful effects on the environment. In fact, recently, Ms. Julie Fontaine has been the subject of a few television and radio interviews on the subject in order to make the objective of our organization understood. A massive reduction and reasoned use of pesticides in order to protect pollinators. Well done Julie, keep up your fabulous work.

On a final note, I would like to congratulate Stéphane Leclerc, who has left the presidency. He has given heart and soul to Quebec's beekeepers and I would like to stress that his mandate was not easy. Indeed, he had to take over the management of the organization following the resignation of the previous president midterm. He faced many challenges of Apimondia, the Covid-19 pandemic, the illegal entry of PCR into Quebec and even the massive poisoning of 600 hives in 2020. Thank you for your dedication to the Beekeeping community Stéphane, looking forward to working with you in the near future.

Ontario

Albert Devries

Spring has arrived in Ontario. Bees in my area started getting pollen mid-March. With the exception of a cold Feburary, this past winter was mild with warm temperatures. Reports of high winter mortality are mixed with reports of low losses. It is hard to understand why there is so much variation. Interest in joining the OBA is strong. There are over 1500 members and still more new people signing up. There are a lot of interested people that want to learn to keep bees. This has led to a high demand for nucs. The OBA continues its search for a new Tech Tranfer lead. Currently there are several good candidates being considered. It is my hope everyone has a good season. I am optimistic for the year ahead and the hope it holds.

Manitoba

Osee Podolsky

On February 27th, the MBA held its Annual Convention and AGM online via Zoom, which worked out well given the logistical and technical challenges. As beekeepers we become experts at overcoming challenges and obstacles. A huge thanks goes out to everyone on the Convention committee and involved in any way with the convention for putting in the time and effort to make this possible, as well as all who gave their time to speak and give presentations for the viewers and participants. We appreciate all of you!

Aside from the rather brief deep freeze we had a mild and pleasant winter season for the most part, followed by a mild early March. Some beekeepers used this opportunity to get into their hives early to start putting on pollen patties, getting in mite treatments, and putting feeder pails on. This was a blessing to be able to get such work done so early in Manitoba. Although this was a double-edged sword, as beekeepers who wintered indoors and did not have refrigeration were forced to move their hives out as the temperatures inside their wintering facilities were running away on them. In the coming weeks came periods of cold weather with nights dipping below -15C at some points, and to top it off the winter storm which blew across the prairies bringing snow and high winds up to 80km/h. I hope that all the beekeepers forced to move their hives out were able to find well sheltered spring yards to keep their bees protected from the frigid winds and snow. Even though the bees should be okay and able to keep warm in their clusters, it is still an uneasy feeling knowing that your hives are out there in the elements. In the coming weeks as everyone is able to get back into their hives, I wish that all will find that their bees held up well through winters attempt at a second coming and keep exceling throughout the spring season.

Saskatchewan

Jake Berg

Twenty twenty one promised to be a better year than the great dumpster fire of 2020. But as we approach the end of the first quarter, 2021 is presenting just as many challenges as 2020.

The first Nicaraguan charter flight is in the books. The second charter flight is scheduled to fly in just over a week with a third flight some time in May. This has been an absolute lifesaver for the beekeepers who have gotten their Nicaraguan TFW's because of these flights. The industry as a whole owes Rod and Cheryl Scarlett a huge debt of gratitude for all extra work and effort they have put into making these charter flights a reality. Without their dedication, beekeeping on the prairies would have looked much different last year and again this year. If we would not have been able to get our TFW's to Canada, our businesses and bees would have suffered immensely.

Offshore packages are again becoming an issue with international commercial air travel as flights are not at the operating levels they were pre-Covid. Finding adequate cargo space on the appropriate types of aircraft to transport bees from Australia and New Zealand has become a huge problem. CHC has been working with all the parties involved in transporting bees and are working on a solution. At the time of writing this article, it appears that the number of packages that will arrive in Canada will be less than packages ordered. But hopefully, the queens will find their way to Canada in a timely and orderly fashion and there are no hiccups in the importation of replacement queens this spring.

I've been hearing of bulk honey being sold at record high prices of over $3 per pound. To my knowledge, there's not a lot of bulk honey left to move in western Canada. It's very encouraging to see these record high prices for Canada honey and I believe we should see strong honey prices continue for the 2021 crop. Although it is yet to be seen what impact these prices will have on the economics of our industry as our input costs are climbing just as rapidly.

As I'm writing this on the 31st of March, there are a lot colonies on the move out of wintering sheds tonight in northeastern Saskatchewan. So far, from almost all reports I've heard, everyone is quite happy with their survival rates and strength of their bees coming out of winter. It looks like 2021 could be a great year for beekeepers!

Alberta

Curtis Miedema

Here we are again, spring has sprung! It's been a busy month in Alberta for allot of beekeepers. Milder weather has allowed allot of guys to get a good start on their spring work. There are mixed reports on winter losses. As the milder weather was easy on the bees it seemed also to be easy on the mites. Beekeepers are seeing areas with devastating losses and it seems that mites are the culprit. Hopefully new products are on their way to help with mite management.

Other challenges facing Beekeepers is the regulations placed on returning workers from overseas. Having to do additional testing before departure and after being in isolation for 10 days are just

▶ pag. 8

a few of the hoop's workers need to jump through to work in Canada this year.

Reports are coming in about issues with package bees arriving from New Zealand and Australia.

Having multiple orders show up dead in Vancouver, then Airlines changing the planes they use and not being able to haul bees at all. Hopefully we see some supply come from the domestic market as it would be ideal to be self-sufficient.

As we move forward through the challenges this year has we do see good demand for honey along with encouraging prices. Wishing everyone a great spring!

Alberta

Ron Greidanus

It is springtime in Alberta. I am not really sure if this is a planned thing or not but it seems to me that Odd Years are early springs and Even years are late springs. In spring of 2020 April brought 2 weeks of minus 20 degrees. So did 2018. 2017 was the one year when for, as long as I can remember, there was pollen coming in prior to the first of April. 2021 is going to give 2017 a run for its money. The catkins on the poplars are pushing out and the first pussy willows look like they could bloom any day. Unfortunately, early springs also tend to be dry. We have not had a decent drought in awhile… hears hoping that on top of COVID woes, drought isn't the cherry on the Sunday.

Most Alberta beekeepers, like children around the tree on Christmas morning, have been in their bees seeing what survived and it's a mixed bag. It either really sucks or it's the best spring that you have ever had. More producers than not, are over the moon with elation, that finally, at long last, they are experiencing an above average survival rate.

It is my experience, speaking with many people on a wide variety of topics, that we as people like everything reduced to simplest terms and we like to focus on just one thing. It is easier to process and comprehend. From 65 003 feet above the earth – at the edge of space - the view is amazing. There is so much to take in that the human mind simply cannot. And it does not. It focus's on the one small microscopic detail.

Why did your hives die? Nobody wants the truth – they want that one simple explaination: Varroa; or Noseema; or starvation. The reality is that beekeeping is not so simple. The producers that are facing another year of higher than acceptable winter loss are scratching their heads wondering what went wrong. And the answer will not be simple.

There are a number of significant contributing factors that will affect winter survivability and some of those factors the producer can do something about and others they simply can not.

The significant contributing factors that are contributing to the survivability of hives in Alberta this season are as follows:

1. Efficacy of Varroa treatment. Many producers are trying to limit the dependence on Apivar. The continual use of Apivar is suspected of creating a resistance to the treatment. The nice thing about finding out you had resistance mites is that in the spring, winter will kill those mites. Unfortunately, it usually does the hive in too. No mites and no bees – that sucks.

2. A hive can survive if it has mites or virus's but not both. Sometimes, Hives are demonstrating clinical symptoms of a serious varoa infestation. So the producer treats, comes back the 40 days later – great no more mites and next spring, no more bees. What happened? You can get rid of the mites but if the winter bees have the virus's and have not recovered with a healthy population. Its too late.

3. Noseema – this is the silent insidious killer. And it can be affected by many different things. Sometimes small, seemingly inconsequential things like moving the location to ground that is 10 meters higher and a little farther from the sloughs edge will make the difference between an outbreak or not. Sometimes moving the bees from the open into a spot where a heat dam can be created will make the difference. Sometimes one last shot of feed or delaying putting on pollen patties. There is no simple solution to slaying this hydra that will ascend from the abyss in the blink of an eye. Feed your bees some fumagillin – if nothing else it will make you feel like you are doing something to limit the risk.

4. Queens. How many times have I heard, "I requeen them all and I still have 30% dead! I got no clue, I think they starved." One clear indication that something genetically is wrong with your hive is whether or not it puts on weight in the fall. If it is light after feeding – shake it out. It won't make it. If the hive stays light, the queen is usually a drone layer or well on here way or just not right. Looking at a queen, you can not tell if the spermatheca is full or empty, if she has good sperm or bad. I usually tell my guys, "By her fruit you will know her." But late fall checking kills queens… sometimes it pays to do nothing.

5. Starvation. In the fall of 2019, I spent more on sugar and fed more sugar to my bees than I ever had. And in the spring of 2020 I had a 50% winter loss. The bees starved. It seems to me, that the warmer a winter is, the more feed the bees consume and the colder a winter is, they seem to consume less. I am theorizing that in warmer winters, the bees break cluster more often, need to consume more feed to keep the ambient temperature in the hive at a balmy 22 than they do in Colder winters. In warmer winters the bees can get caught away from feed and starve on their brood after the winter solstice. Also, in warm snaps in early march and late February – resist the siren call to feed and put on pollen patties – sometimes we are our own worst enemies. If the year is odd – stay out till April. Its impossible to know what winter will bring – feed lots in the fall. Don't be cheap – sugar is cheaper than packages.

6. Virus's – you can't do a thing about them – work really hard at controlling the varroa In the spring so you wont have a flare up in the fall. Seriously consider using oxalic just as the hive populations start to taper off from the summer peak plateau as a knock down.

7. Bacterial diseases EFB and AFB. I don't want to be a proponent of prophylactic distribution of antibiotics but… make a plan and work your plan. Monitor; and don't stick your head in the sand because once things are clinical its way too late. Kinda like deciding that your just going to go back after you've jumped off the cliff.

8. Test, monitor and sample and replace combs. This is a strategy so that you will accurately know what is going on and when your scratching your head wondering what happened, you can look back and connect the dots. Switching combs in your hives regularly will not seem to have an impact but over time, you will notice that you aren't finding chalk brood as often and your no longer having EFB or AFB as often and that your having fewer mite farms…

The short story is simply this, for the past ten years I have struggle with higher than acceptable winter losses and to get ahead of it, I have had to stop pinning the tail on the single cause donkey. It really sucks feeling like every spring you have to rebuild again from square one. Any of you in that situation this spring, you have my heartfelt sympathy. I have been there. I hope that this is the last year that you are there.

Here is to a prosperous 2021. The future is always perfect.

British Columbia

Stan Reist

Officially, we are now in spring. Days are longer depending on how you look at it, rearranging the clock by an hour has that effect. Good or bad that is what it is. The executive of the BCHPA has been very, very busy. One of our goals for the last number of years has been to gain back our Tech Transfer team. The term gain back might make some people question the term gain back / Back in the 90's we had probably the first tech Team in Canada and it was compromised of Paul Van Westendorp, John Gates and Kerry Clark, however, by the late nineties, it was gone because the Government of the day considered it to lavish and cut the funding.

Our Agriculture Minister in the Legislature wanted to celebrate our 100 Anniversary as an Association, and this was her way of showing support for the industry in B.C. We all appreciate it. We have been working on a budget for the program for about two months and a few of the executive have really done a tremendous amount of work. Heather, Mickey, Jeff, Dan, Ian and Kerry have been very much involved. I apologize if I missed anyone. With the announcement, they were back at the drawing board reworking the budget to get it in line with the amount we were given.

So now the task of job descriptions for tech lead; an administrator for the program and also the assembling of the steering committee has to be completed. The executive has enough to do without the added tasks of this. The faster some of this can be completed the easier the work load will be on the executive.

We just completed our Semi Annual meeting via Zoom and it was a great success. Dan and Jeff worked overtime to make it happen. The business portion when without a hitch mostly. I had to get instructions on using share screen but hay, we did it and it worked out. The education portion was really well received. Dewey Caron had a great presentation along with Dr. Sam Ramsey, Ellen Topitzhofer, Dr. Leonard Foster, Dr. Alison McAfee, and Carolyn Essaunce.

The package season has come and gone with a lot of packages going out the door but a lot more people missed the time line. The Nuc lists are growing and the delivery dates could be a little down the road to fill all the orders. However, saying that, we have learned over the years that people are on several lists and whoever supplies first,

sells the Nuc and that's ok, because we will sell everything we can produce.

The overwintering losses this year run from 4% up to 100% some beekeepers that have between twenty five and seventy five hives have lost all of them, and knowing most of them it's puzzling why they did so poorly. I have my suspicions but suspicions are just that, there is no testing to back up any theory. The beekeepers will just try again next year. It sure is a hard thing to wrap your head around.

For those that know and those that don't, we brought a hundred single body colonies from northern Saskatchewan late last fall, from Calvin Parsons's operation. This is an experiment to see how many Nucs we could make for sale. The information required is to find out how far ahead of Saskatchewan's climate can this be done and when can they be ready for market? We want to do comparison with Sask.

The hives were put on pallets and set in yards on the Island. They left Sask at 13`F and were put on the ground at 40`F a very few hives flew. A few days later some found the Ivy still in bloom but otherwise they didn't fly. In comparison to our normal stock, they have not flown all winter. They just stayed in their hives. They were about 3 weeks behind our regular hives when they started to fly. When we went through them, the winter loss was 4% and two of that four percent were drone layers. They averaged 6 and a half frames of bees and brood. Now they are really putting on steam and some are on their second boxes. There's good populations, they still had stores left, not just a bit but lots and they are gentle.

In comparison to our normal stock we are expericing a 22% loss this year, way up from last year. Part of the reason is we had two yards that we had troubles with last summer, fall and they just didn't winter, period. The populations, at this time are really good, they are taking down pollen patties and syrup. Looks like build up is early and strong.

This year, whether we like it or not its queen rearing time. We have chosen the stock we are going to use. I have been told they are called Saskabearians, they have been bread to survive on the Canadian Prairies. They do not to eat you out of house and home. They are supposed to produce 300 lbs. crops and be gentle.

We have been breeding Queens basically for our own use on a limited scale, it's really hard to do everything when there are just three of us and therefore have relied on the commercially available stock for our hives. As of lately we have noticed the commercial stock has had challenges with longevity, production and wintering. We keep hearing about VHS Queens, mite resistant hygienic and the list goes on. At what point in time, have we bread the Queen out of the queen and now have an egg layer? Is it past time we went back to the basics and just bread queens from survivor stock that produced great crops and winter in Canadian conditions? Isn't it also time that we stopped breading super mites, which I think, we have done a fantastic job over the last number of years! It seems, we have better mite survival than bee survival so why don't we concentrate on the destruction of the mite. I mean destruction not control! Control, to me, has meant stronger mites and that is not sustainable. What is happening, is more mite products that are not eliminating the problem. To this time, without the Companies making these products, I don't know where we would be but things have to change. That is what one of the presenters, at our Semi Annual meeting, told the group, that in the U.S. they are using two different chemicals in the spring and two different chemicals in the fall to treat for mites. I don't consider myself an environmentalist but something has to change. So, whether it's bees or other crops, we need to concentrate on the destruction of the pest and stop pumping chemicals into our animals and the environment, which is definitely not sustainable.

Bee Maid Honey Limited Scholarship and Research

In 2004, the Fiftieth Anniversary Scholarship was created to commemorate the formation of Bee Maid Honey Limited in 1954. The Scholarship recognizes and encourages children and grandchildren of members and staff as they enter post-secondary study. The Scholarships are designed to stimulate the pursuit of excellence by rewarding outstanding achievement. The scholarships are also intended as a process by which young people can bring fresh ideas and attitudes to the Bee Maid family.

Bee Maid Honey Limited is pleased to announce that the winners for the 2021 Fiftieth Anniversary Scholarships are Keri Unrau, from MacGregor, Manitoba (child of Manitoba Cooperative Honey Producers members Mark and Laura Unrau) and Jordan Hansen from Grande Prairie, Alberta (child of Alberta Honey Producers Co-operative Member Bill Hansen). Keri is registered at Providence University College to complete prerequisites to enroll in Ultrasound Diagnostic Medical Sonography. Jordan plans on completing a Bachelor of Science in Agriculture at the University of Saskatchewan with a major in Horticulture. Congratulations to them both and we wish them the best of luck in their studies.

The Bee Honey Research fund was established to support research in any area of apiculture, hive health or honey production. A call for proposals was sent out in late 2020 and the Bee Maid Honey Research Committee is pleased to announce the following project was selected for funding assistance.

• "Residue analyses of a New Acaracide against Varroa in a full-Scale Field Trial" conducted by Dr Steve Pernal and Dr. Erika Plettner.

Join the 2021 Mite-A-Thon

Both Spring and Fall Mite-A-Thons returning for 2021!

SPRING: Saturday, May 1 to Sunday, May 16

FALL: Saturday, August 14 to Sunday, August 29

What is the Mite-A-Thon? Mite-A-Thon is an international effort twice a year to help beekeepers gain knowledge of the level of mite infestation that their hives are carrying at the beginning of the season and just before the overwintering season begins.

Who can participate? All beekeepers can participate from Canada, the United States, and Mexico. Their *Varroa* monitoring data will be uploaded to www.mitecheck.com and a report will be produced (without identifying individual participants). The data collected by participants also helps to visualize *Varroa* infestations in honey bee colonies across North America within a two-week window.

What can beekeepers gain by participating? The parasitic mite, *Varroa destructor* (*Varroa*), and the viruses it vectors is a significant driver honey bee colony mortality. Yet, indicators suggest that many beekeepers are not monitoring honey bee colony *Varroa* infestations and therefore aren't able to connect infestation to colony loss.

What are the reasons the Mite-A-Thon is being held? There are two objectives of the Mite-A-Thon:

1) To raise awareness about honey bee colony *Varroa* infestations through effective monitoring methods.
2) To make available management strategies for discussion within bee organizations utilizing Mite-A-Thon partner developed information and outreach materials.

Why are there two testing periods? Testing early in the season is recommended for getting a leg up on mite infestations and learning monitoring techniques, and late testing is important because overwintering success is at least partially dependent on mite loads. Having 2 testing periods, Spring Mite-A-Thon and the Fall Mite-A-Thon at the end of August, encourages training and monitoring at crucial times, as well as throughout the summer.

For more information contact Pollinator Partnership at 415-362-1137 or miteathon@pollinator.org or visit http://www.pollinator.org/miteathon.

POLLINATOR PARTNERSHIP

How will it work? Participants will monitor the level of mites (number of mites per 100 bees) using a standardized protocol utilizing two common methods of assessment (powdered sugar roll or alcohol wash) and then enter data, including location, total number of hives, number of hives tested, local habitat, and the number of *Varroa* mites counted from each hive. The published information will not identify individual participants, but will contribute greatly to ongoing research.

What is the next step for a beekeeper or beekeeping organization? Put these dates on your calendar NOW. Determine your preferred method of testing for mites and commit to testing in May, August, and throughout the summer. Report your data at www.mitecheck.com. There is a prize for the beekeeping organization that creates the best outreach and participation. Take photos of your group events and stay tuned for details near the fall Mite-A-Thon.

Who is organizing the Mite-A-Thons? The two Mite-A-Thons are being organized by a group of stakeholders dedicated to supporting beekeeping everywhere in North America, including the American Honey Producers Association, Bee Informed Partnership, USDA, University of Maryland, Pollinator Partnership, American Beekeeping Federation, Michigan State University, Honey Bee Health Coalition, University of Minnesota Bee Lab and Bee Squad, Canadian Honey Council, Mite-Check, Project Apis m., Bee Friendly Farming, Newfoundland and Labrador Beekeeping Association, Manitoba Ministry of Agriculture and Resource Development, Saskatchewan Ministry of Agriculture and Almond Board of California.

Need Help? Visit the Mite-A-Thon Web site and sign up for updates at https://www.pollinator.org/miteathon/miteathon-signup or view the report from 2020 at https://www.pollinator.org/miteathon.

For more information contact Pollinator Partnership at 415-362-1137 or miteathon@pollinator.org or visit http://www.pollinator.org/miteathon.

POLLINATOR PARTNERSHIP

Honey Trade Statistics

submitted by Stephen Page

With December 2020's monthly data we can roll-up the years's 'raw' trade data for honey.

2020 was an interesting year, with Japan emerging as the top destination for exported Canadian honey by both value and volume, and with monthly average prices to the US in December catching up with prices to Japan. Exports generated a total of C$47 million for 9.3 million kgs (20.5 million lbs.) of honey.

Honey imports for 2020 totalled C$42.6 million with C$14 million from NZ and $5.9 million in organic honey from Brazil. The remaining $22.6 comes from a wide variety of countries. Notably low average prices in the top ten source countries for the year include India, Thailand, Vietnam.

Honey Imports to Canada

	2020/Jan		2020/Feb		2020/Mar		2020/Apr		2020/May		2020/Jun	
	C$	KG	C$	KG	C$	KG	C$	KG	C$	KG	C$	KG
TOTAL	**3,358,265**	**386,816**	**1,588,253**	**270,190**	**4,090,507**	**564,634**	**4,968,768**	**658,763**	**2,998,662**	**619,509**	**3,320,268**	**571,689**
New Zealand	1,592,382	40,702	497,761	13,977	2,027,656	39,880	2,278,480	63,755	573,380	16,623	1,086,243	20,603
Brazil	163,912	49,895	412,454	104,725	370,247	104,817	591,380	170,261	545,232	173,988	370,009	102,123
United States of America	335,135	78,142	222,381	49,776	192,623	36,612	416,256	105,705	403,937	77,389	273,046	83,098
India	213,840	38,690	43,642	12,596	225,390	60,530	255,452	72,175	262,185	72,975	252,085	104,177
Australia	320,126	29,394	0	0	173,344	10,714	466,982	33,946	172,899	15,704	199,095	19,666
Thailand	376,857	100,052	222,175	60,030	165,655	88,800	303,896	81,203	14	3	149,786	78,880
Spain	76,737	3,874	0	0	370,834	87,573	0	0	236,405	41,823	410,439	54,764
Greece	114,061	32,585	14,676	1,455	167,448	32,144	219,773	43,337	86,334	17,633	47,697	7,571
Viet Nam	79	7	0	0	111,650	38,868	25	2	236,372	142,389	90,899	24,202
Saudi Arabia	0	0	0	0	208	120	159,027	15,900	151,898	14,176	206,874	17,858
Italy	66,410	3,022	8,768	1,474	74,090	17,315	72,483	22,773	69,892	4,697	3,154	169
Germany	0	0	12	1	40	5	21,530	1,862	112,375	15,066	135	15
Argentina	3	0	0	0	67,167	21,778	75,879	20,060	46,360	18,881	27,847	4,717
Turkey	1,014	272	177	11	63,136	8,014	8	2	8,066	1,062	78	6
Russian Federation	0	0	84,872	16,087	0	0	83,460	24,547	0	0	0	0
Ukraine	54	2	15,675	2,664	6	4	0	0	0	0	0	0
Tanzania, United Republic of	0	0	0	0	57,400	14,909	0	0	0	0	28,831	18,810
Moldova, Republic of	20,498	1,483	0	0	0	0	0	0	14,930	700	20,992	3,210
France	493	38	276	25	485	32	8,509	1,379	11,341	404	17,421	3,879
Canada	16,772	1,266	15,238	1,201	441	45	0	0	0	0	125	15
Hungary	0	0	15,742	2,250	0	0	90	4	0	0	0	0
Cuba	0	0	0	0	0	0	0	0	0	0	57,587	18,000
Poland	4,404	319	12,803	2,487	0	0	13,479	1,594	8,027	200	13,638	1,733
Kuwait	0	0	9,079	232	0	0	0	0	12,186	559	0	0
Portugal	3,505	360	0	0	0	0	146	45	15,890	1,650	30,220	3,000
Zambia	9,336	1,195	0	0	9,598	1,197	0	0	0	0	9,696	2,281
Croatia	14,869	1,944	0	0	0	0	0	0	19,768	2,340	0	0
Romania	14,896	1,566	0	0	0	0	0	0	0	0	11,915	1,512
Israel	1,768	71	0	0	0	0	0	0	4	0	0	0
United Kingdom	213	7	7,718	458	144	5	24	3	773	23	15	1
Austria	6,642	1,127	0	0	10,936	1,008	0	0	0	0	0	0
Yemen	0	0	0	0	0	0	0	0	474	42	0	0
Japan	0	0	42	4	39	4	993	98	60	1	219	24
South Africa, Republic of	0	0	0	0	0	0	0	0	0	0	0	0
Georgia	1,579	134	0	0	0	0	0	0	6,478	867	9,622	1,097
Iran	0	0	2,589	602	0	0	0	0	0	0	0	0
Lithuania	0	0	0	0	0	0	0	0	0	0	0	0
Sudan	0	0	0	0	0	0	0	0	0	0	0	0
Jamaica	0	0	0	0	0	0	0	0	2,405	234	28	2
Lebanon	0	0	432	12	0	0	0	0	0	0	1,204	117
Egypt	1,990	610	0	0	0	0	0	0	17	1	0	0
Morocco	0	0	0	0	0	0	0	0	0	0	0	0
Taiwan	0	0	0	0	0	0	0	0	1	0	0	0
Guyana	0	0	0	0	0	0	0	0	0	0	0	0
Jordan	0	0	0	0	9	2	6	2	12	1	3	0
Mexico	4	0	5	0	21	3	17	5	109	10	65	10
China	0	0	715	41	275	14	0	0	68	5	56	3
Pakistan	0	0	0	0	0	0	148	12	0	0	0	0
Ghana	0	0	0	0	0	0	0	0	0	0	0	0
Nepal	34	2	107	3	0	0	7	1	0	0	28	1
Haiti	101	12	40	9	14	3	574	52	0	0	227	28
Malaysia	39	3	0	0	0	0	0	0	0	0	720	76
Senegal	0	0	0	0	0	0	0	0	0	0	0	0
Sri Lanka	0	0	0	0	0	0	144	40	0	0	0	0
Hong Kong	0	0	432	44	527	60	0	0	27	2	79	9
Uganda	0	0	0	0	1,000	122	0	0	0	0	0	0
Nigeria	9	1	22	1	110	50	0	0	38	3	0	0
Others	503	41	420	25	14	6	0	0	705	58	190	32

▶ pag. 14

	2020/Jul		2020/Aug		2020/Sep		2020/Oct		2020/Nov		2020/Dec	
	C$	KG	C$	KG	C$	KG	C$	KG	C$	KG	C$	KG
TOTAL	**3,251,301**	**615,220**	**3,091,503**	**555,026**	**3,431,705**	**619,127**	**4,254,927**	**823,871**	**3,147,188**	**512,993**	**5,061,592**	**944,375**
New Zealand	865,506	25,559	386,323	10,329	1,031,956	18,349	981,330	16,355	1,214,577	22,127	1,586,657	43,203
Brazil	317,745	112,512	279,808	87,108	541,103	177,418	468,549	156,985	200,467	48,227	1,599,055	460,041
United States of America	423,494	98,106	321,349	70,997	493,065	116,871	843,854	191,006	558,933	138,549	454,644	103,844
India	289,048	102,620	664,875	214,603	424,168	144,907	192,074	51,422	147,500	59,950	371,371	144,813
Australia	289,007	26,274	244,705	17,176	157,759	8,515	235,829	19,237	65,929	6,563	393,275	35,921
Thailand	477,462	120,060	375,658	69,145	0	0	378,713	101,340	0	0	0	0
Spain	78,970	18,501	64,330	16,800	161,706	28,840	65,769	16,806	351,127	96,436	196,382	50,458
Greece	70,686	6,568	391,167	40,987	87,301	18,943	73,265	18,233	148,918	34,413	17,688	1,313
Viet Nam	168,086	51,871	182,149	11,409	3,985	4,423	434,835	182,546	21,592	21,424	96,235	64,609
Saudi Arabia	0	0	0	0	79	3	303,670	25,384	63	17	167,532	17,557
Italy	11,377	581	3,069	171	4,477	281	9,588	948	14,968	597	5,453	519
Germany	29,138	2,412	130,135	3,123	16,681	1,492	136	13	87	8	30,860	2,795
Argentina	77,815	18,577	0	0	0	0	0	0	0	0	0	0
Turkey	8,744	1,078	13,911	3,267	129,546	13,849	4,713	568	36,152	3,148	20,734	1,533
Russian Federation	0	0	0	0	80,006	24,235	0	0	40	3	0	0
Ukraine	39,773	19,175	28	4	74,253	21,167	21,946	3,564	56,893	21,186	3,485	1,097
Tanzania, United Republic of	0	0	0	0	83,603	20,717	0	0	0	0	0	0
Moldova, Republic of	9,352	1,800	14,902	8,215	17,169	7,411	0	0	67,987	22,243	0	0
France	50,750	3,486	409	43	1,669	100	16,339	2,239	41,259	3,436	235	9
Canada	611	60	649	51	1,478	180	34,778	7,267	67,489	12,684	2,335	272
Hungary	43	2	21	1	138	5	71,995	4,387	602	9	34,108	3,716
Cuba	0	0	5	1	0	0	54,607	18,026	852	95	0	0
Poland	6,051	705	11	3	4,966	746	6,595	1,011	10,529	2,880	28,412	1,968
Kuwait	0	0	0	0	59,852	3,564	0	0	0	0	0	0
Portugal	3,658	360	0	0	3,600	300	0	0	17,595	1,697	0	0
Zambia	10,123	2,382	0	0	10,333	1,306	0	0	15,445	1,960	0	0
Croatia	0	0	0	0	0	0	0	0	23,858	4,380	0	0
Romania	5,873	522	0	0	0	0	15,469	1,566	0	0	0	0
Israel	1,136	104	5,066	258	6,510	437	32	8	25,562	3,116	0	0
United Kingdom	9,851	606	5,510	130	2,764	522	7,080	634	2,301	455	2,588	77
Austria	0	0	37	2	0	0	53	5	19,407	2,690	2	0
Yemen	0	0	127	2	14,386	857	0	0	29	1	19,901	7,432
Japan	851	28	1,168	73	426	12	0	0	10,857	270	8,649	133
South Africa, Republic of	0	0	0	0	0	0	20,805	2,613	0	0	0	0
Georgia	0	0	0	0	0	0	0	0	0	0	0	0
Iran	4,088	1,011	0	0	2,707	714	3,301	888	994	432	462	70
Lithuania	0	0	0	0	0	0	0	0	0	0	11,606	1,344
Sudan	0	0	0	0	0	0	0	0	8,441	1,986	3,044	716
Jamaica	0	0	1,989	89	4,700	1,106	0	0	0	0	1,844	387
Lebanon	0	0	0	0	0	0	0	0	7,257	397	0	0
Egypt	0	0	0	0	0	0	0	0	5,672	1,180	0	0
Morocco	0	0	0	0	4,843	1,135	0	0	0	0	0	0
Taiwan	0	0	3,099	990	0	0	1,153	308	266	30	0	0
Guyana	0	0	0	0	4,373	262	0	0	0	0	0	0
Jordan	3	0	0	0	1	0	4,278	108	0	0	0	0
Mexico	1,587	219	155	8	82	19	2,014	118	14	1	11	4
China	53	8	0	0	0	0	1,259	166	26	2	1,421	39
Pakistan	140	10	0	0	0	0	0	0	300	37	2,004	300
Ghana	0	0	0	0	1,846	429	20	2	29	6	0	0
Nepal	21	2	134	6	13	1	93	5	435	33	750	54
Haiti	0	0	0	0	0	0	230	28	0	0	291	35
Malaysia	0	0	364	20	16	1	99	5	0	0	156	11
Senegal	7	3	0	0	5	0	21	14	1,227	150	10	1
Sri Lanka	15	2	0	0	0	0	41	14	1,000	100	51	5
Hong Kong	0	0	0	0	76	5	0	0	20	2	0	0
Uganda	0	0	0	0	60	5	20	10	0	0	0	0
Nigeria	137	12	31	1	4	0	63	21	257	55	164	87
Others	100	4	319	14	0	0	311	21	232	18	177	12

	2020 Full Year			Dec Prices		2020 Average Prices	
	C$	KG		per pound		per pound	
TOTAL	**42,562,939**	**7,142,213**		$ 2.44		$ 2.71	TOTAL
New Zealand	**14,122,251**	**331,462**		$16.69		$19.37	New Zealand
Brazil	**5,859,961**	**1,748,100**		$ 1.58		$ 1.52	Brazil
United States of America	**4,938,717**	**1,150,095**		$ 1.99		$ 1.95	United States of America
India	**3,341,630**	**1,079,458**		$ 1.17		$ 1.41	India
Australia	**2,718,950**	**223,110**		$ 4.98		$ 5.54	Australia
Thailand	**2,450,216**	**699,513**				$ 1.59	Thailand
Spain	**2,012,699**	**415,875**		$ 1.77		$ 2.20	Spain
Greece	**1,439,014**	**255,182**		$ 6.12		$ 2.56	Greece
Viet Nam	**1,345,907**	**541,750**		$ 0.68		$ 1.13	Viet Nam
Saudi Arabia	**989,351**	**91,015**		$ 4.34		$ 4.94	Saudi Arabia
Italy	**343,729**	**52,547**		$ 4.78		$ 2.97	Italy
Germany	**341,129**	**26,792**		$ 5.02		$ 5.79	Germany
Argentina	**295,071**	**84,013**				$ 1.60	Argentina
Turkey	**286,279**	**32,810**		$ 6.15		$ 3.97	Turkey
Russian Federation	**248,378**	**64,872**				$ 1.74	Russian Federation
Ukraine	**212,113**	**68,863**		$ 1.44		$ 1.40	Ukraine
Tanzania, United Republic of	**169,834**	**54,436**				$ 1.42	Tanzania, United Republic of
Moldova, Republic of	**165,830**	**45,062**				$ 1.67	Moldova, Republic of
France	**149,186**	**15,070**		$11.87		$ 4.50	France
Canada	**139,916**	**23,041**		$ 3.90		$ 2.76	Canada
Hungary	**122,739**	**10,374**		$ 4.17		$ 5.38	Hungary
Cuba	**113,051**	**36,122**				$ 1.42	Cuba
Poland	**108,915**	**13,646**		$ 6.56		$ 3.63	Poland
Kuwait	**81,117**	**4,355**				$ 8.47	Kuwait
Portugal	**74,614**	**7,412**				$ 4.58	Portugal
Zambia	**64,531**	**10,321**				$ 2.84	Zambia
Croatia	**58,495**	**8,664**				$ 3.07	Croatia
Romania	**48,153**	**5,166**				$ 4.24	Romania
Israel	**40,078**	**3,994**				$ 4.56	Israel
United Kingdom	**38,981**	**2,921**		$15.28		$ 6.07	United Kingdom
Austria	**37,077**	**4,832**				$ 3.49	Austria
Yemen	**34,917**	**8,334**		$ 1.22		$ 1.90	Yemen
Japan	**23,304**	**647**		$29.56		$16.37	Japan
South Africa, Republic of	**20,805**	**2,613**				$ 3.62	South Africa, Republic of
Georgia	**17,679**	**2,098**				$ 3.83	Georgia
Iran	**14,141**	**3,717**		$ 3.00		$ 1.73	Iran
Lithuania	**11,606**	**1,344**		$ 3.93		$ 3.93	Lithuania
Sudan	**11,485**	**2,702**		$ 1.93		$ 1.93	Sudan
Jamaica	**10,966**	**1,818**		$ 2.17		$ 2.74	Jamaica
Lebanon	**8,893**	**526**				$ 7.68	Lebanon
Egypt	**7,679**	**1,791**				$ 1.95	Egypt
Morocco	**4,843**	**1,135**				$ 1.94	Morocco
Taiwan	**4,519**	**1,328**				$ 1.55	Taiwan
Guyana	**4,373**	**262**				$ 7.59	Guyana
Jordan	**4,312**	**113**				$17.35	Jordan
Mexico	**4,084**	**397**		$ 1.25		$ 4.68	Mexico
China	**3,873**	**278**		$16.56		$ 6.33	China
Pakistan	**2,592**	**359**		$ 3.04		$ 3.28	Pakistan
Ghana	**1,895**	**437**				$ 1.97	Ghana
Nepal	**1,622**	**108**		$ 6.31		$ 6.83	Nepal
Haiti	**1,477**	**167**		$ 3.78		$ 4.02	Haiti
Malaysia	**1,394**	**116**		$ 6.45		$ 5.46	Malaysia
Senegal	**1,270**	**168**		$ 4.55		$ 3.44	Senegal
Sri Lanka	**1,251**	**161**		$ 4.64		$ 3.53	Sri Lanka
Hong Kong	**1,161**	**122**				$ 4.33	Hong Kong
Uganda	**1,080**	**137**				$ 3.58	Uganda
Nigeria	**835**	**231**		$ 0.86		$ 1.64	Nigeria
Others	**2,971**	**231**		$ 6.70		$ 5.85	Others

Canadian Association of Professional Apiculturists Statement on Honey Bee Wintering Losses in Canada (2020)

Prepared by CAPA National Survey Committee and Provincial Apiarists: Gabrielle Claing (chair), Melanie Kempers, Karen Kennedy, Paul Kozak, Rhéal Lafrenière, Chris Maund, Cameron Menzies, Samantha Muirhead, Medhat Nasr, Lynae Ovinge, Steve Pernal, Jason Sproule, Paul van Westendorp, Geoff Wilson and Shelley Hoover

Summary

The Canadian Association of Professional Apiculturists (CAPA) and Provincial Apiarists coordinated the annual honey bee wintering loss report for 2019-2020. As in previous years, the survey consisted of harmonized questions based on the national beekeeping industry, with Provincial Apiarists collecting survey data across all provinces. Respondents collectively operated 410,451 honey bee colonies across Canada, representing 50% of all colonies wintered during 2019-2020. The national winter loss, including non-viable bee colonies, was 30.2% with provincial losses ranging from 16.9% to 40.5%. The overall national colony loss reported in 2020 is in the higher range of reported losses since 2007. Through the hard work of beekeepers replacing losses and making increases, Statistics Canada reports show that the total colony count across Canada has increased by 34.8% during the period between 2007 and 2019.

Respondents reported some variation in identifying and ranking the top four possible causes of colony losses across the country. The most frequently cited causes were weather, poor queens, starvation, followed by weak colonies in the fall.

Beekeepers also responded to questions on the management of three serious parasites and pathogens to beekeeping: Varroa destructor mites, Nosema spp. and Paenibacillus larvae (the causal bacterium of American foulbrood disease). The majority of beekeepers in most provinces reported that they monitored for varroa mites. The most commonly reported varroa treatments were: Apivar® or formic acid treatments in the spring; Apivar® or formic acid in the summer or fall; and oxalic acid in late fall. Nosemosis and American foulbrood were treated by many Canadian beekeepers. In 2019, the supply of Fumagilin-B® was disrupted leading to delayed or absence of treatment for nosemosis in beekeeping operations where this treatment has typically been used in the past. Across the country, registered antibiotics were the commonly used treatments, nevertheless methods and timing of application varied from province to province.

Provincial Apiarists, technology-transfer agents and researchers have been working with beekeepers across Canada to encourage them to monitor for honey bee pests, especially varroa mites and nosema, and adopt recommended integrated pest management practices to keep these pests under control. Through working groups encompassing diverse stakeholders, CAPA members continue to work on developing and improving management options for beekeepers to keep healthy bees.

Disclaimer and Credits: Survey data were supplied by the Provincial Apiarists (listed in Appendix A). Data were then compiled, further analyzed and an initial draft of this report written by Gabrielle Claing and Geoff Wilson, with subsequent review by the CAPA National Survey Committee.

▶ pag. 19

Introduction

For over a decade, many countries, including Canada, have surveyed beekeepers and reported overwintering mortality rates of honey bee colonies and management practices used for varroa mites, nosema and American foulbrood. The Canadian Association of Professional Apiculturists (CAPA) has worked with the Provincial Apiarists on reporting winter losses of honey bee colonies and possible causes of bee mortality in Canada since 2007. The objective of this national report is to consolidate provincial honey bee data across the country based on information collected through harmonized survey questions. The possible causes of winter loss, as reported by beekeepers, and information on pest surveillance and control are collated herein. The survey results aid in identifying gaps in current management systems, developing strategies to mitigate colony losses, and also provide guidance for improving bee health, biosecurity practices, and industry sustainability.

Methodology

In 2020, the Provincial Apiarists and the CAPA National Survey Committee members reviewed the questions used in the 2019 survey and made necessary revisions. Examples of these revisions include new treatments or strategies for beekeepers to manage pests and diseases as they are developed over the years. The result was an updated harmonized set of questions that was used in the 2020 survey (Appendix B). These questions took into account the large diversity of beekeeping industry profiles, management practices and seasonal activities within each province. Some provinces also included supplementary regional questions in their provincial questionnaire. The results of these regional questions are not included in this report and are reported in summary form. Further questions about results from a specific province may be accessed by contacting the Provincial Apiarist of the province in question (Appendix A).

Beekeepers that owned and operated a specified minimum number of colonies (Table 1) were included in the survey. The survey reported data from full-sized producing honey bee colonies that were wintered in Canada, but not nucleus (partial) colonies. Thus, the information gathered provides a valid assessment of honey bee losses and commercial management practices.

The common definitions of a honey bee colony and a commercially viable honey bee colony in spring were standardized as follows:

- Honey Bee Colony: A full-sized honey bee colony either in a single or double brood chamber, not including nucleus colonies (splits).
- Viable Honey Bee Colony in Spring: A honey bee colony that survived winter, with a minimum of 4 frames with 75% of the comb area covered with bees on both sides on May 1st (British Columbia), May 15th (New Brunswick, Nova Scotia, Ontario, Prince- Edward-Island and Quebec) or May 21st (Alberta, Manitoba, Saskatchewan and Newfoundland and Labrador).

The colony loss and management questionnaire was provided to producers using various methods of delivery including mail, email, an online and a telephone survey; the method of delivery varied by jurisdiction (Table 1). In each province, data were collected and analyzed by the Provincial Apiarist. All reported provincial results were then analyzed and summarized at the national level. The national percent winter loss was calculated as follows:

$$\text{Percentage Winter Loss} = \left(\frac{\text{Sum of the estimated total colony losses per province in spring 2020}}{\text{Sum of total colonies in operation in each province for 2019}}\right) \times 100$$

Results

Throughout Canada, a total of 524 beekeepers responded to the 2020 survey. These respondents represented 35% of all the surveyed beekeepers. Respondents operated 50% of all registered colonies that were wintered in the fall of 2019. Although the number of respondents decreased from the 2019 survey (44%), the rate of participation and number of colonies continues to represent a substantial proportion of the commercial beekeeping industry in Canada.

▶ pag. 21

Province	Total number of colonies operated in 2019	Estimated number of colonies lost based on the estimated provincial winter loss	Type of data collection	Number of beekeepers targeted by survey	Number of respondents (% of participation)	Size of beekeeping operations targeted by survey (# colonies)	Number of respondents' colonies that were wintered in fall 2019	Number of respondents' colonies that were alive and viable in spring 2020	Percentage of surveyed colonies as a proportion of the total number of colonies in the province	Provincial Winter Loss including Non- viable Colonies
Newfoundland and Labrador	396	71	Email	10	9 (90%)	≥ 20	396	325	100%	17.9%
Prince Edward Island	5 500	924	Email, Telephone	40	19 (48%)	All sizes	4 602	3 826	84%	16.9%
Nova Scotia	25 268	4 902	Email	40	13 (33%)	≥ 50	14 381	11 595	57%	19.4%
New Brunswick	11 302	2 814	Email, Telephone, Postal	35	18 (51%)	≥ 50	10 198	7 663	90%	24.9%
Quebec	67 025	22 675	Email, Telephone	333	80 (24%)	≥ 10	27 166	17 977	41%	33.8%
Ontario	88 723	16 946	Online, Telephone	119	59 (50%)	≥ 50	40 562	32 831	46%	19.1%
Manitoba	114 668	28 282	Email	224	67 (30%)	≥ 50	52 334	39 426	46%	24.7%
Saskatchewan	115 000	23 160	Online	120	38 (32%)	≥ 100	38 234	30 534	33%	20.1%
Alberta	309 230	138 022	Online	174	87 (50%)	≥ 100	172 640	102 682	56%	40.5%
British Columbia	57 313	11 648	Online	407	134 (33%)	≥ 10	49 938	39 789	87%	20.3%
CANADA	**794 425**	**249 444**		**1502**	**524 (35%)**		**410 451**	**286 648**	**50%**	**30.2%**

Table 1: Survey parameters and honey bee colony mortality (2019-2020) by province

Proven Queens

Wooten's Queens & Bees, Inc., Steve Park Apiaries, Inc. & Wooters Bee Farms look forward to continuing to produce gentle, quality Park Italian queens with hygienic behavior and mite resistant traits that produce ample brood and large honey crops. Our continued relationship with the Bee Informed Partnership ensures we are selecting the highest quality Park Italian Queens that will be more tolerant of bee viruses, varroa mites, and nosema disease.

Queens shipped Mid April- August

Wooten's Queens & Bees, Inc. | Steve Park Apiaries, Inc. | Wooters Bee Farms

Major Credit Cards Accepted | 888-565-8439 | order@wootensqueensbees.com
www.wootensqueensbees.com

Province	Outdoors	Indoors		
	Number of colonies	Percent (%)	Number of colonies	Percent (%)
NFL	342	86	54	14
PEI	4 602	100	0	0
NS	3 635	25	10 746	75
NB	4 685	46	5 513	54
QC	6 912	25	20 254	75
ON	27 216	67	13 346	33
MB	26 690	51	25 644	49
SK	33 415	87	4 819	13
AB	139 472*	81	33 168	19
BC	49 147	98	791	2
Canada	**296 116**	72	**114 335**	28

Table 2: Overwintering method by province as reported by responding beekeepers - Fall 2019

*Includes AB colonies overwintered in BC

Province	Outdoors			Indoors		
	Total number of colonies in fall 2019	Total number of viable colonies in spring 2020	Percent of losses of colonies (%)	Total number of colonies in fall 2019	Total number of viable colonies in spring 2020	Percent losses of colonies (%)
NFL	342	283	17.3	54	42	22.2
PEI	4 602	3 826	16.9	0	0	N/A
NS	3 635	2 743	24.5	10 746	8 852	17.6
NB	4 685	3 477	25.8	5 513	4 046	26.6
QC	6 912	4 508	34.8	20 254	13 469	33.5
ON	27 216	21 253	21.9	13 346	11 578	13.3
MB	26 690	19 315	27.6	25 644	20 111	21.6
SK	33 415	26 873	19.6	4 819	3 661	24.0
AB	139 472	88 797	36.3	33 168	13 885	58.1
BC	49 147	39 321	20.0	791	468	40.8
Canada	296 116	210 396	28.9	114 335	76 112	33.4

Table 3: Indoor and outdoor wintering mortality as reported by responding beekeepers

The survey delivery methods, size of beekeeping operations and response rate of beekeepers for each province are presented in Table 1. It is important to note that the total number of colonies operated in a province reported by this survey may vary slightly from Statistics Canada official numbers. In some provinces, the data collection periods for the provincial database and the Statistics Canada report at different times of year. This can result in minor discrepancies between the official Statistics Canada total number of colonies and this survey's total reported colonies per province.

Survey results showed that the national level of wintering loss including non-viable colonies was 30.2% with individual provinces ranging from 16.9% to 40.5%. The overall winter loss for 2019-2020 was higher than 2018-2019 which had a loss rate of 25.7%. The level of winter loss varied from province to province, and among beekeeping operations within each province. In general, most provinces reported lower mortality in 2019-2020 than the previous year, the exceptions being Nova Scotia reporting similar mortality to last year, and Quebec, Manitoba and Alberta reporting higher mortalities than last year. Alberta reported the highest winter losses of 40.5% in 2020 with weather cited as being the most frequent cause contributing to colony mortality. The lowest winter loss (16.9%) was reported by Prince Edward Island.

Overall 70% of the colonies owned by respondents were wintered outdoors in fall 2019, with remaining colonies (30%) wintered indoors (Table 2). The highest percentage of colonies wintered indoors was in Nova Scotia and Quebec (75%), followed by New-Brunswick (54%) and Manitoba (49%). The mortality rate for colonies wintered outdoors and indoors for each province is presented in Table 3.

For detailed information about the winter losses in each province, please contact the office of the Provincial Apiarist directly.

Contributing factors as cited by beekeepers

Beekeepers were asked to rank possible contributing factors to colony losses. These responses are summarized in Table 4. Weather, poor queens and starvation were considered as important factors for winter loss across the country. Beekeepers reported that a considerable number of colonies perished in April and into early May, likely as a consequence of cold spring weather.

In seven provinces, poor queens were reported as the second most common factor contributing to reported winter losses. Poor queens can result in weakened colonies entering the winter with an insufficient number of bees to survive. If a queen becomes infertile or dies during the winter, the colony will also perish as there is no opportunity for the beekeeper to replace the queen or for the colony to naturally re-queen itself. Poor and failing queens may be the result of many factors including: inadequate rearing conditions, poor mating weather, reduced sperm viability, queen age, or exposure to pesticides within the hive or from the environment. This marked increase in poor queen quality as a reported cause of winter mortality is a concern that merits further investigation.

Starvation was a frequently reported cause of winterkill by beekeepers in several regions across Canada. Starvation can result from the inability of bees in weak colonies to store enough food during the fall, the inability of bees to move to new resources within the hive during winter, the rapid consumption of stored food because of early brood production, or insufficient feed provided by the beekeeper in the fall or spring. During 2019-20, starvation may also have been associated with increased consumption of stored honey or sugar syrup during the extended cold weather in the spring of 2020.

Another contributing factor identified across Canada was weak colonies in the fall. This can be caused by a variety reasons including: making late splits (nuclei) (as was reported by Newfoundland/Labrador beekeepers), underlying pest and disease issues, exposure to pesticides, or poor foraging and nutrition.

Ineffective varroa control was reported as the second or fourth possible contributing factor to winter colony loss in only three provinces. While the Varroa mites and their impacts on the honey bee health are

▶ pag. 23

still a serious issue for Canadian beekeepers, survey results indicate that most beekeepers are treating for varroa using multiple treatments per year. Unfortunately, some individual producers treat for varroa too late in the season, which results in wintering bees being less healthy from the impacts of varroa and associated viruses. Some treatments may also be affected by environmental factors during fall months, when the weather is cold. Monitoring varroa levels, selecting effective treatments and verifying treatment efficacy are all necessary elements of an effective management strategy for this economically-important pest.

Several beekeepers reported that they did not know why their colonies perished, although this answer was not identified among the top four causes for losses among most provinces. Inability to identify a possible cause for colony mortality may be associated with lack of applying best management practices including monitoring for pests, diseases and other general colony health parameters during the season, or a multitude of underlying problems that cannot be identified without the assistance from specialists.

Province	1st.	2nd.	3rd.	4th.
NL	Weak colonies in the fall	Weather	Starvation	Poor queens
PEI	Starvation	Poor queens	Poor weather	Weak colonies in the fall
NS	Weather	Starvation*	Poor queens*	Weak colonies in the fall
NB	Weather	Poor queens	Weak colonies in the fall	Don't know
QC	Weak colonies in the fall*	Poor queens*	Weather	Ineffective varroa control
ON	Other (pesticides and varroa from nearby beekeepers)	Poor queens	Weather*	Starvation*
MB	Starvation	Poor queens	Weather	Weak colonies in the fall
SK	Starvation	Poor queens	Nosema	Weather
AB	Weather	Poor queens	Starvation	Ineffective varroa control
BC	Weak colonies in the fall	Ineffective varroa control	Starvation	Weather

Table 4: Top four ranked possible causes of honey bee colony mortality by province, as cited by beekeepers who responded to the 2019-2020 winter loss survey

* indicate causes that were equally ranked in their respective province.

Operations that reported greater than 25% winter losses were asked to rank the top four possible causes of bee colony mortality in the 2019-2020 survey. These data are summarized in Table 5. Weather, starvation and poor queens remain the 3 most-cited causes of winter loss, followed by weak colonies in the fall for these operations. Overall, there were no striking differences between reported causes of winter losses across the provinces and for those operations that reported 25% or more losses.

Province	1st.	2nd.	3rd.	4th.
NL	Weather	Starvation	Poor queens	Weak colonies in the fall
PEI	Poor queens	Weather	Starvation	Nosema
NS	Weather	Starvation	Weak colonies in the fall	Poor queens
NB	Don't know	Weather	Poor queens	Weak colonies in the fall
QC	Weather	Ineffective varroa control	Weak colonies in the fall	Poor queens
ON	Weather	Poor queens	Weak colonies in the fall	Starvation
MB	Starvation	Weather	Poor queens	Don't know
SK	Starvation	Poor queens	Nosema	Starvation
AB	Weather	Poor queens	Starvation	Ineffective varroa control
BC	Weak colonies in the fall	Ineffective varroa control	Starvation	Weather

Table 5: Top four ranked possible causes of bee colony mortality by province, as cited by beekeepers who reported greater than 25% losses in the 2019-2020 winter loss survey

Bee Pest Management Practices

In recent years, Integrated Pest Management (IPM) has become the most important practice to maintain healthy honey bees. To successfully manage bee health, beekeepers must identify and monitor pests and diseases to take timely action in accordance with approved methods. This survey focused on asking beekeepers questions about their management of three serious threats that may impact bee health, survivorship and productivity (Appendix B).

A. Varroa monitoring and control[1]

The varroa mite continues to be considered by beekeepers and apicultural specialists as one of the main causes of honey bee colony mortality.

During the 2019 production season, a large majority of surveyed beekeepers monitored for varroa mite infestations (Table 6). The alcohol wash of a sample of 300 bees per colony was the most preferred technique in all provinces, except Quebec where beekeepers favoured the use of sticky boards and British Columbia where beekeepers preferred the technique using icing sugar to dislodge mites from bees (38%). The frequency of use for the alcohol wash technique in various provinces ranged from 29% to 90%. The frequency of use for the sticky board method ranged from 0% to 54%. Some beekeepers

[1] *No varroa mites are found in Newfoundland and Labrador; data were only analyzed for provinces having this pest.*

► pag. 25

used both sticky boards and alcohol wash methods to evaluate levels of mites. These results demonstrate that most Canadian beekeepers recognize the value of monitoring varroa. Nevertheless, the desired goal is to have **all beekeepers** regularly monitoring varroa populations throughout the beekeeping season, particularly at times prior to treatment application windows, and subsequent to treatment to verify efficacy. Such sampling will ensure optimal timing of treatments and selection of the most effective treatment options for varroa control. While education and extension programs delivered to Canadian beekeepers have facilitated the adoption of recommended practices for managing varroa, ongoing innovation and improvement are always sought.

In Canada, there are a variety of registered miticides available to beekeepers for mite control. Beekeepers are encouraged to use the most effective miticide that fits their region, season and operation. Beekeepers are encouraged to rotate miticides to prevent the development of resistance to these products. In the current survey of bee winter losses, beekeepers were asked "what chemical treatment was used for varroa control during the 2019 season". Beekeepers' responses are summarized in Table 6. In the spring of 2019, the percentage of beekeepers that treated with chemical methods ranged from 35% in Quebec to 95% in Saskatchewan. The main miticide used for spring varroa control was Apivar® (a synthetic miticide with the active ingredient amitraz). The second most common treatment was formic acid in late spring, followed by oxalic acid. In fall of 2019, most Canadian beekeepers ranging from 29% in Manitoba to 100% in Ontario treated their colonies for varroa. The main miticides used at this time of the year were oxalic acid, Apivar® and formic acid. It was noted that some beekeepers used Apivar® twice in the same year in 2019, once in spring and again in fall. In some provinces, a greater number of beekeepers have started to combine Apivar® with formic or oxalic acid during the fall for keeping control of mite populations. As varroa is not present in Newfoundland and Labrador, no treatments were required in that province.

Few beekeepers used Apistan® (a synthetic miticide with the active ingredient fluvalinate) or Checkmite+® (a synthetic miticide with the active ingredient coumaphos). Beekeepers may be wary of these products because of previously reported resistance to these active ingredients in Canada. Bayvarol® (a synthetic miticide with the active ingredient flumethrin) was also rarely used; there have been concerns and reports from beekeepers about the limitations in the efficacy of this product, which have been confirmed by projects in Canadian provinces.

Once again, these surveys show that Apivar® is one of the most commonly used miticides for treating varroa in Canada. Because of the repeated use of Apivar®, it is only a matter of time before the development of resistance to this miticide. Preliminary findings of decreased efficacy have been observed in some provinces. It is becoming increasingly important that beekeepers become aware of the principles associated with resistance development and the importance of monitoring the efficacy of all treatments, in particular Apivar®. This will help to mitigate abrupt and widespread failures of treatments. Beekeepers are encouraged to incorporate resistance management practices such as using appropriate thresholds for treatment, and alternating miticides with different modes of action in their varroa treatment programs. Good biosecurity and food safety practices will also promote healthy bees and safe, high quality hive products while reducing disease pressure. In addition, having a wide suite of legally-registered treatments with different functional activities and methods of application available to beekeepers is critical for maintaining a sustainable integrated varroa management strategy in Canada.

Province	Beekeepers screening for varroa mites		Varroa control: treatment and methods			
			Spring 2019		Summer/Fall 2019	
	Sticky boards (%)	Alcohol wash (%)	% of beekeepers	Methods of treatment	% of beekeepers	Methods of treatment
NL	0	67	N/A	N/A	N/A	N/A
PEI	11	74	68	Apivar®, liquid Formic acid, Mite Away Quick Strips®	90	Oxalic acid, Apivar®, liquid Formic acid
NS	31	62	92	Apivar®, Apistan®, Mite Away Quick Strips® & Oxalic acid	92	Apivar®, Mite Away Quick Strips®, Oxalic acid
NB	17	28	44	Apivar®, Oxalic acid, liquid Formic acid	94	Apivar®, Oxalic acid, liquid Formic acid
QC	54	29	35	Liquid Formic acid, Apivar® & Thymovar® & Mite Away Quick Strips® & Oxalic acid	88	Liquid Formic acid, Oxalic acid, Apivar®
ON	15	78	89	Apivar®, liquid Formic acid, Oxalic acid	100	Apivar®, Oxalic acid, liquid Formic acid
MB	10	58	75	Apivar®, Formic acid, Oxalic acid	29	Oxalic acid, Apivar®, Formic acid
SK	5	90	95	Apivar®, Oxalic acid, Apistan®	84	Oxalic acid, Apivar®, Formic acid
AB	23	74	67	Apivar®, Oxalic acid, Formic acid	76	Oxalic acid, Apivar®, Formic acid
BC	0	31	72	Formic acid, Apivar®, Oxalic acid	85	Formic acid, Oxalic acid, Apivar®

Table 6: Varroa monitoring and chemical control methods as cited by the respondents of the 2019-2020 winter loss survey. Chemical treatment is in order from most to least commonly used.

B. Nosemosis management practices

Nosema is a fungal parasite that infects honey bees. *Nosema ceranae* has gradually replaced

Nosema apis to become the most frequently found nosema species in Canada. The real role of

N. ceranae in honey bee colony survival during winter may vary by

▶ pag. 27

Province	Use of antibiotic and alternative treatments for nosemosis (% of respondents)					
	Spring treatment			Fall treatment		
	Fumagillin	Other product	main alternative products	Fumagillin	Other product	main alternative products
NL	0	0	N/A	0	0	N/A
PEI	18	0	N/A	17	0	N/A
NS	23	0	N/A	23	0	N/A
NB	6	0	N/A	17	0	N/A
QC	3	4	Probiotics, Hive Alive	4	6	Apple cider vinegar, probiotics, HiveAlive
ON	7	3	Comb replacement, teatree oil	17	6	Comb replacement, tea tree oil
MB	7	6	N/A	7	4	N/A
SK	13	13	Probiotics	29	0.2	Probiotics
AB	19	6	Prohealth, Hive Alive, Bee Strong	39	6	Prohealth, BeeStrong, Nozevit, Hive Alive
BC	16	0	N/A	13	0	N/A

Table 7: Antibiotic (fumagillin) and alternative treatments for nosemosis as cited by the respondents of the 2019-2020 winter loss survey

climatic region and bee populations in Canada. In certain regions and under specific circumstances this parasite may have an impact and play a role in spring build up (Guzman et al., 2010). It was not cited by all surveyed beekeepers as a possible cause of colony mortality during the 2019-2020 winter loss survey, except in Saskatchewan, and in Prince Edward Island for operations with more than 25% losses.

In the survey, beekeepers reported the use of fumagillin for the treatment of nosemosis in spring and/or in fall of 2019 (Table 7). The percent of beekeepers that reported using this drug varied widely from province to province. Beekeepers were also asked to report all alternative treatments that they used during the spring or the fall to control nosemosis. Fumagilin-B® is the only product registered by Health Canada for nosema treatment. It was also noted that there was a slight disruption in the supply of Fumagilin-B® during the spring and fall 2019, leading some beekeepers to apply the product late in the season, to replace fumagillin with a probiotic or prebiotic treatment, or not to treat altogether. Any other products mentioned by beekeepers are not currently registered for the treatment of this disease, though some are marketed and used as general promotors of honey bee health. It is also worth noting that there are some regions of Canada where Fumagilin-B® is not used by most beekeepers. This may be due to the uncertainty surrounding the impacts of nosema on winterloss, research on new active ingredients by Canadian researchers, and biosecurity practices (i.e. replacement of brood comb) that are promoted to complement the use of treatments. Nosemosis is still an issue impacting bee health and further research is required to understand its role in colony or production loss.

Province	Use of American Foulbrood Treatments (% of respondents)					
	Spring treatment			Summer/Fall treatment		
	Oxytetracycline	Tylosin	Lincomycin	Oxytetracycline	Tylosin	Lincomycin
NL	0	0	0	0	0	0
PEI	13	3	0	18	0	0
NS	23	0	0	15	0	0
NB	61	0	0	22	0	0
QC	5	0	0	1	0	0
ON	73	0	0	56	3	0
MB	29	0	0	18	6	0
SK	45	0	0	55	3	0
AB	23	0	0	25	10	0
BC	6	<1	0	4	2	0

Table 8: Antibiotic treatments for American foulbrood (oxytetracycline, tylosin and lincomycin) as cited by the respondents of the 2019-2020 winter loss survey

▶ pag. 29

C. American foulbrood management practices

American foulbrood (AFB) is a bacterial disease of brood caused by Paenibacillus larvae. AFB is considered endemic in Canada, and it has been of great concern to beekeepers. Oxytetracycline and more recently tylosin and lincomycin are antibiotics registered for treating AFB in Canada. The pattern of use for these antibiotics, as reported by beekeepers, is presented in Table 8. Oxytetracycline was more frequently used by beekeepers in spring and fall than other treatments.

Honey Bee Winter Loss and Population in Canada Since 2007

Reported winter loss has been variable from year to year in Canada since 2007. This year, the reported Canadian winter mortality averaged 30.2%. This is higher than the long-term suggested baseline/ threshold for winter losses of 15%. In fact, since the beginning of this survey in 2007, this suggested acceptable threshold has never been reached. As can be seen in Figure 1, the national winter losses were highest in 2008, 2009 and 2018 which ranged from 32.6% to 35.0%. From 2010 to 2020, the national winter losses ranged from 15.3% to 32.6%, averaging 24.3%. During the period between 2007 and 2019 Statistics Canada reports showed that the total colonies in Canada increased by 34.8%.

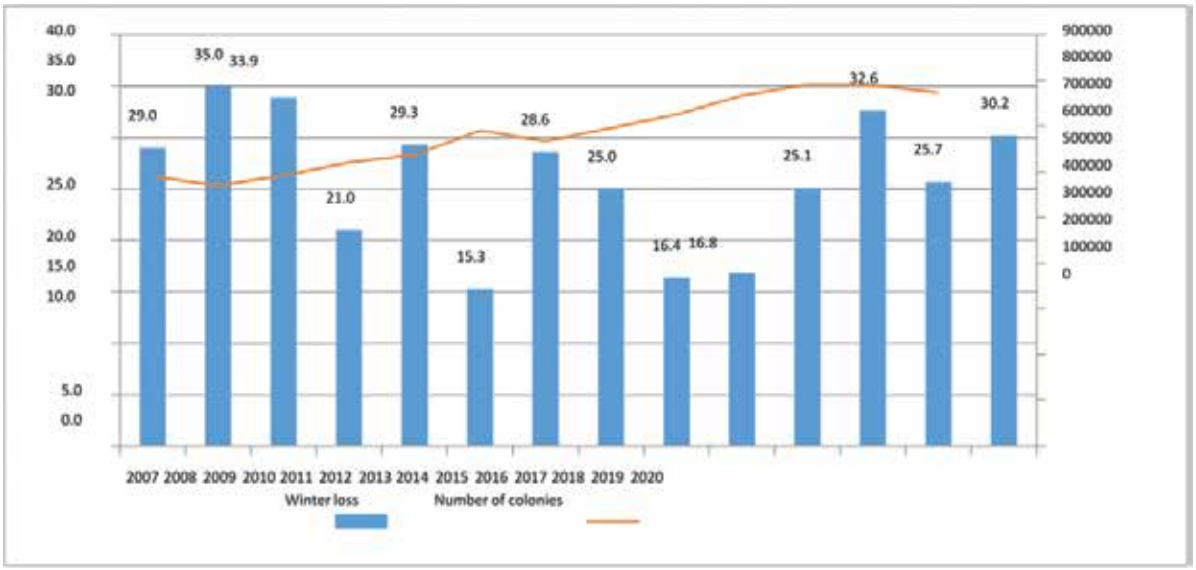

Figure 1. Summary of bee colony numbers and bee losses in Canada from 2007-2020 (based on data as reported by Stats Canada)

Individual beekeepers experiencing high winter losses face considerable expenses replacing dead colonies. These increased expenses greatly affect profitability and can put some beekeeping operations at risk of going out of business. Nevertheless, the Canadian beekeeping industry as a whole has been resilient and able to grow, as proven by the overall increase in the number of bee colonies since 2007 (Figure 1) despite the difficulties faced every winter.

Since the inception of this harmonized survey in 2007, beekeepers have faced challenges keeping healthy bees. Bee health concerns include pest management, climatic conditions, nutrition, and pesticide exposure within hives and from the environment. Another added challenge facing beekeepers is the economics of beekeeping which include variable honey prices and increasing costs of production. Even though responses from this annual survey have provided evidence that beekeepers from various regions are using recommended practices for monitoring and managing honey bee pests and diseases, there are always the opportunities to make further improvements.

It would appear that stresses caused by parasites in combination of other stressors warrant further study to provide alternative management practices for maintaining honey bee health. At this time, beekeepers have a limited number of products to control varroa, and all of these options have their limitations. New options are important to mitigate the risk of developing resistance. Additionally, the only product registered to treatment of nosema is fumagillin. If resistance develops to the primary treatment for varroa (Apivar®) or to fumagillin, beekeepers could experience even greater – and likely extreme – difficulties keeping their bees alive. Ultimately, beekeepers will need more effective and additional options (miticides, antibiotics and non-chemical management options) in their "tool box" if they are to continue effective integrated pest management to maintain healthy bees.

Further Work

CAPA members continue to work closely with industry stakeholders, and provincial working groups to address bee health and industry economics. Members of CAPA and Provincial Apiarists have also been involved in conducting surveillance programs at the provincial levels and across the country to monitor the status of bee health including emerging pests. CAPA and the Provincial Apiarists are also involved in conducting outreach and extension programs to promote IPM and biosecurity practices to beekeepers. Researchers within CAPA are active in evaluating alternative control options for varroa mites and nosema and developing genetic stocks more tolerant to pests which will hopefully enhance the integrated pest management (IPM) practices and address honey bee health sustainability.

For more information about this report, please contact:

Dr. Shelley Hoover, President of Canadian Association of Professional Apiculturists (CAPA) s.hoover@uleth.ca Tel: 587 220-3775

Dr. Gabrielle Claing, acting Chair of the CAPA National Survey Committee gabrielle.claing@mapaq.gouv.qc.ca Tel: 450 778-6542 Ext. 5894

Investigating Food Fraud in the Honey Industry

Ron Phipps, Vice President, Apimondia Scientific Commission on Beekeeping Economy

Submitted by Rod Scarlett - The Canadian Honey Council

With a growing focus on healthy eating, the demand for honey has been increasing. Producers of genuine honey cannot compete with the fraudsters since their honeys are continually being undercut by cheap imitations.

In this interview, Ron Phipps talks about food fraud within the honey industry and the methods for investigating it.

Can you give us an overview of food fraud and why it is such an issue for honey production?

Food fraud has devastating consequences, particularly in the field of honey production, which the U.S. Pharmacopeia has classified as the third largest area of adulteration in the current era. Our aim is to find solutions to solve this problem and prevent its recurrence.

During the past two decades, there has been a food fraud epidemic. This has involved economically-motivated adulteration, customs fraud, label fraud and other types of fraud; including a variety of products such as honey, meats, coffee, wines, juices, maple syrup, edible oils and frozen versus fresh fish.

The USP's food fraud list describes foods that have been the most common subjects of adulteration. In response to this food fraud epidemic, a growing international movement is working to oppose food fraud - this includes the United Nations Food and Agricultural Organization.

Food fraud in the sphere of international honey has provided the international community with a very vivid case study. Over a 20 year period there has been explosive growth in the quantities of product produced, but at the same time, the number of beehives throughout the world has been stable.

During the same period, numerous factors affecting bees and plants have caused productivity (measured by the weight of honey per hive) to decline. This decline in productivity is coupled with the collapse of honey pricing resulting from food fraud.

How has this impacted the honey market?

We have seen a contradiction between retail and wholesale honey prices - patterns that have been described as manifesting a complete aberration of the laws of economics. Demand has increased and prices have increased on the retail level, but on the beekeeper level, both prices and productivity have declined while the cost of production has substantially increased.

In this scenario, the prices of input should dramatically increase, not collapse. Food fraud has created an existential economic catastrophe for beekeepers producing authentic honey, who now find themselves in price competition with sellers of low-priced fraudulent products. Dr. Stan Daberkow (Emeritus Economist from the U.S. Department of Agriculture) has illustrated this contradiction, whereby the prices of honey on the retail level have increased and the prices for the beekeepers have collapsed.

Two scientific committees representing the World Congress of Beekeepers issued a report regarding the decreasing prices of honey. This report describes adulteration as the greatest threat to beekeepers in the history of beekeeping, showing that the economic damage to beekeepers who produce authentic honey is approximately $1 billion. When we look at a more macro position, however, the losses are in fact many billions of dollars just during the past 5 years.

What methods are being used in honey adulteration?

Authentic honey can be understood as honey resulting from the complete interaction of zoological and botanical lifeforms, bees transforming nectars and other secretions of plants into honey. Reports of adulteration in Europe, Canada, Australia, and India, as well as numerous reports in the Chinese press and the Indian press indicate that adulterated honey is being sold to consumers all over the world.

In the United States, honey anti-dumping orders resulted in a number of prosecutions by the U.S. Department of Commerce, charging honey importers with criminal activity, and highlighting the collusion of packers, importers and exporters. This was referred to as Honeygate and was described as the largest example of food and customs fraud in the

▶ pag. 32

history of the United States.

There are various modes of adulteration in the honey industry, including addition of extraneous sweeteners, use of resin technology, added pollen, and extraction of unripe honey, and these modes are used separately and/or in combination with one another. It is relevant to note that currently a composite containing adulterated products - irrespective of the percentage of the adulterants - is regarded as adulterated. This is per Codex standards.

These methods of illicit production have created a situation where the quantities of adulterated honey have no ceilings and their prices have no floors. This allows those engaged in adulteration to reap illicit profits while those who produce authentic honey have faced declining economic incentives, putting in jeopardy their economic survival as beekeepers.

Recently a report of French beekeepers who were interacting with a Chinese delegation in France was published on the website Apiservices. The beekeepers were mocked by the Chinese delegation who described the French modes of authentic honey production (which are similar to American, Canadian and Argentine modes of production) as archaic. Walter Haefeker (President of the European Beekeepers Association) described the Chinese method of honey production as comparable to a modern European brewery, certainly not the classic modes of honey production. He further contrasted the methods as "fast food vs. slow food.".

What methods are being employed to investigate the authenticity of honey products?

The detection of any of the above modes of adulteration requires the use of most advanced scientific instrumentation, along with a comprehensive global honey database. This is especially true for a food product like honey, which is the product of many variables and manifests great chemical diversity.

Fortunately, the analytic toolbox for detecting food fraud in honey, as well as numerous other products, contains very sophisticated scientific methodologies. The quality and authenticity of food products cannot be abstracted from either their chemical constituents or the modes of production of those products.

Nuclear magnetic resonance (NMR) is one of the most prominent scientific tools used for the analysis of honey. This technology is continuously being updated, and there are currently approximately 20,000 samples which form the global database of honey, which is continuously expanding.

This contrasts with the database of traditional methods used to deal with the types of adulteration that were prevalent 20 years ago - then, the database had only 100 samples, and 98% of these were from American beekeepers.

NMR can be used to test over 36 parameters characterizing the chemical profiles found in authentic honey. It can detect numerous features including geographic and local origin, as well as botanical origin, and must be used in a comprehensive way.

The struggle against food fraud and for justice in the honey industry has led to a wide range of countermeasures including deferred prosecution for honey circumvention involving 30 countries. All of the honey that was being circumvented, in order to avoid anti-dumping duties, was believed to be adulterated honey, produced using models of production which are not consistent with the authenticity of honey.

Where can our readers find out more about the issue of honey adulteration?

There is a very important Netflix documentary 6 part series called Rotten, the first of which concerns honey adulteration. Also, the U.S. Department of Agriculture released a commercial description of honey in December, 2019, and the U.S. Pharmacopeia's has released a standard for honey in 2020 and has now completed its comment period.

Professor Michael Roberts, a legal expert in food fraud, has two important "White Papers" regarding food fraud in the honey industry. These should be mandatory reading because they describe the importance of honey on a global basis. Not only are beekeepers an endangered species, as Michael describes, but their endangerment constitutes a grave threat to global food security and ecological sustainability.

What are the global honey industry's next steps in the fight against adulterated honey?

The Apimondia Forum on Honey Adulteration was held in September 2019 in Montreal, Canada. It had 5,000 members in attendance, a thousand of which attended the largest meeting on honey adulteration in the history of the honey industry.

That meeting was an inflection point, because those who had historically opposed NMR testing and those who had supported modes of adulteration like adding bio-engineered sweeteners, use of resin technology, or extraction of immature honey before it has been properly transformed from nectar into honey, became totally isolated. These members were forced to realize the impact that improper practices had on the honey industry, and these milestones can be understood as a tributary flowing into a large river, leading to an era of justice for beekeepers.

The struggle against food fraud, both in the sphere of honey and more generically, is evolving and is being manifested in many spheres. The foundation of these efforts resides in scientific advances in detecting modes of adulteration and food fraud. It also includes developing a rigorous, comprehensive, and more intrusive traceability regime that more fully incorporates the methods of production within the traceability.

A demarcation between legitimate and illegitimate modes of production is emerging and we are in an era of unprecedented awareness, opposition, and concern with food fraud in general.

Ron Phipps is Vice President of the Apimondia Scientific Commission on Beekeeping Economy, and author of International Honey Market Reports which appear in the American Bee Journal and the apiservices.biz website. He is also chief author of Marketing of the American Honey Crop in the Hive and the Honeybee (Dadant, 2015). He has organized international symposiums on Honey and Health. He is a pioneer in the international honey trade and actively involved in efforts to promote authenticity of honey as the foundation for the creative marketing of honey.

Bees need both protein and carbohydrate for good build-up and large honey crops.

Feed protein patties in spring to ensure colony health, maximum build-up and maximum production

Be ready this spring. Save time, money, hassle and mess.

Call now and order

Ready-Made Pollen Patties

made to *your* specifications

Global is faster, better and cheaper than your other options.
Order one of our standard formulas using yeast, soy, pollen*, sugar and Latshaw's vitamin & mineral supplement or request your own recipe and patty size.

We'll supply all the ingredients, or use our supplies you provide.

Call Mike at 1-866-948-6084 today

or email *Mike@globalpatties.com*

Global Patties can be delivered in boxes or on pallets

Visit us at www.globalpatties.com

*Pollen in our formula is irradiated by Iotron for prevention of bee disease

BJ SHERRIFF

EST. 1968

PROUDLY CRAFTED IN BRITAIN

Specialist makers of fine quality beekeeping apparel

Trusted for over 48 years to deliver a range of robust and reliable safety work wear designed to last and last. Handcrafted in Cornwall, a BJ Sherriff is the only beesuit you'll ever need.

Canadian Stockists

Alberta Honey Producers Co-op Limited
Alberta
ccaines@beemaid.com
001-780-962-5573

Countryfields Beekeeping Supplies
Nova Scotia
timpurdy@countryfields.ca
001-902-576-3079

Flying Dutchman
British Columbia
flydutch@telus.net
001-250-390-2313

Propolis
Quebec
defrance@propolis-etc.ca
001-450-772-2637

HEALTHY BEES ARE OUR PRIORITY

Healthy bees start with quality ingredients, and we at Mann Lake ensure that your bees receive only the best. Put your bees on track to overall vitality and well-being by using our premium products such as Ultra Bee Pollen Substitute, Pro Health Feeding Supplement and ProDFM Direct Fed Microbials. Accept nothing less for your bees.

MANN LAKE
WE KNOW BEES

800-880-7694
www.mannlakeltd.com

Hackensack, MN • Wilkes-Barre, PA • Woodland, CA • Marshall, TX

*Free shipping applies to most orders over $100 sent standard ground service within the lower 48 states. Prices are subject to change without notice.

Proud sponsor of the Canadian Honey Council