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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

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Hivelights

Winter 2023 Vol 36 #1

Funded by the Government of Canada | Canada

Cover picture: Long Langstrot Horizontal Hive
Photo Credit: Heather Broccard-Bell

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

2022-2023 Directors • Canadian Honey Council / Conseil Canadien de Miel

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

Canadian Honey Council Report

Rod Scarlett, Executive Director, CHC

After two years of Covid-19 restrictions, the initial hopes of 2022 ushering a "normal" year were dashed as record high winter losses across much of Canada severely impacted honey production and pollination services. While stock replacement became the most important issue for many, high honey prices and higher pollination contacts helped ease some of the pain. Still, stock issues seemed to dominate much of the work of the Canadian Honey Council. Transportation complications, domestic stock production and of course, opening the border to US packages again became issues nationally.

Needless to say, there is merit to both sides of the argument concerning opening the border to US packages but the discussions often get overrun by emotion. Certainly, there are some commercial operations that want the free and open access to US packages that meet, what they believe, are appropriate scientific protocols. Unfortunately, it has been insinuated that since the CHC has not openly supported this approach that it does not represent commercial beekeepers in Canada. Nothing could be further from the truth.

In the last quarter, three provinces wrote letters of support for the CHC and in each case, it was quite apparent that their respective province and their beekeepers are quite willing to rely on science in determining where stock can come from. In fact, it was clear that if the Canadian Food Inspection Agency determined that the risks of importing stock from either a specific location within the United States or from anywhere in the US, they would accept that decision. This too has been the position of the CHC since I started work with them in 2010. I know that people will argue differently but the CHC does not determine where or how CFIA does its risk assessments. In fact, the CHC is not asked if a risk assessment should be completed for a country or if there should be a prioritized list. Because we are not scientists and provide concrete scientific evidence it would make no sense for CFIA to ask about the inherent risks from other countries. It may seek advice on what we see in our domestic stock but even then, it would not be scientifically based. CAPA and the provincial tech transfer teams may be able to provide some of that information.

There are also arguments that commercial considerations should also be a determining factor. This opens up a myriad of problematic issues that may be even more divisive than bee health concerns. If Canada veers away from science-based decisions in CFIA and PMRA, we expose ourselves to wide array of outside interest groups influencing the results.

Still, while stock replacement concerns are ever present there are numerous other issues that the CHC are dealing with, issues where we do have influence and where all beekeepers benefit. Honey fraud, honey sales, labour, MRL's and pollination concerns all require immediate attention.

As the year closes and we prepare for our AGM, the composition of the Board is changing for the first time in three years. Our 1st Vice Chair, Curtis Miedema decided to step down and subsequently was elected Chair of the Alberta Beekeepers Commission. Curtis chaired our labour committee and was instrumental in arranging charters when flights were not available during Covid. Curtis brought a down to earth goodness and a sense of humour to all situations, and he will be missed on the Board. We are also excited that former ABC Chair Jeremy Olthof was elected as a CHC representative. Jeremy will be an outstanding contributor to our Board. Thank you to both gentlemen. ■

Regional Reports

Atlantic

Chris Lockhart

Fall and winter has been quite warm so far in our region of Atlantic Canada. With October and the beginning of November seeing 20 Celsius regularly and winter seeming quite mild so far there is some concern about winter stores inside the hives.

The blueberry industry shook out very well. While most berry producers aren't reporting record crops (some are), many producers are reporting record revenues. It can be easy to forget last seasons' scramble for bees in the fields with all the high losses. This year is shaping up to be no different. Blueberry producers are praying with beekeepers that spring losses won't be high again. With a strong berry price, the push to develop more fields and increase stocking densities is only getting stronger. With colonies being in such high demand it appears that colony rental price is going to remain strong. I think with a very strong rental price for colonies, beekeepers may be able to manage colonies differently. Atlantic beekeepers are always handcuffed with geographic space more than anything. As your colony numbers increase your honey production and lbs/hive decreases. With a strong honey price it can be difficult to justify increasing colony numbers especially when the rental prices are low. If rental prices can stabilize at a level where beekeepers can afford to make a bit less honey and buy more syrup it may in fact stimulate some more growth within the industry. The next 5 years or so are going to be crucial. Northern New Brunswick alone will have hundreds of acres of land coming into production. It is going to be interesting to see what will incentivise beekeepers to keep up with demand.

Sadly this will be my last correspondence in the Hivelights magazine as the Atlantic director. My time is up with CHC. I would like to thank Rod and my fellow directors for making this experience such a positive one. I have learned so much from all of you and look to learn more in the future as I have made some lifelong friends on this journey. It has been my pleasure serving the Atlantic Beekeepers to the best of my ability. See you all again soon.

Québec

Maggie Lamothe Boudreau

J'ai l'impression de me répéter depuis 3 ans, encore une année mémorable qui se termine. En effet, 2022 fut très difficile pour bien des apiculteurs. La fin de la pandémie, l'inflation constante et exagérée, l'augmentation des taux d'intérêt, une mortalité atteignant près de 50 % des ruches canadiennes sans oublier des importations de paquets d'abeilles très limitées par les vols réduits. Ajoutons à cela quelques changements majeurs au sein de l'équipe québécoise. En effet, des démarches sont en cours afin de remplacer le conseiller provincial en apiculture ainsi que notre coordonnateur au sein de la table filière apicole québécoise.

D'importantes négociations avec les producteurs de bleuets ont été entreprises au cours du printemps 2022 et se poursuivent encore cet hiver. Un sondage a été mis sur pied par l'équipe du Conseil canadien du miel. Celui-ci vous sera acheminé au cours de janvier 2023. Que vous participiez ou non à la pollinisation, il est important que chaque apiculteur y réponde. Les réponses permettront d'obtenir de l'information essentielle en vue de travailler plus ardemment sur les points névralgiques reliés à la location de ruches, à l'importation des paquets d'abeilles, à l'importation des reines, ainsi qu'au transport des ruches en pollinisation. Une hausse des prix semble se pointer à l'horizon en vue de la prochaine saison de pollinisation. Gardez le contact avec votre association provinciale pour demeurer informés concernant ce dossier.

Depuis cet été, le projet de recherche ApibleuMax est en pleine action au sein de la faculté de recherche apicole de l'Université Laval et du CRSAD. Ce projet permettra d'obtenir de nombreuses réponses sur l'optimisation de la pollinisation du bleuet nain par les abeilles domestiques et les bourdons. Ce projet permettra à l'industrie apicole de mieux comprendre la dynamique entre le bleuet nain et la densité de ruches nécessaire, leur force minimale exigée ainsi que la qualité de la pollinisation par l'abeille domestique en comparaison avec les bourdons commerciaux. En effet, les résultats permettront de déterminer les paramètres optimaux pour les apiculteurs, mais aussi pour les producteurs de bleuets, ce qui contribuera fort probablement à limiter l'impact négatif subit par l'industrie apicole lorsqu'elle participe à cette activité économique.

Enfin, pour terminer sur une bonne note, le prix du miel se maintient. Les prix en vrac au Québec varient entre 3,10 $/livre et 3,30 $/livre selon la variété et la rareté du miel en question lors de la transaction.

Si vous avez des questions, n'hésitez pas à contacter notre équipe.

……..

I feel like I've been repeating myself for 3 years, another memorable year has ended. Indeed, 2022 has been very difficult for many beekeepers. The end of the pandemic, constant and exaggerated inflation, rising interest rates, the mortality of nearly 50% of Canadian hives, not to mention the imports of bee packages very limited by the reduction in theft. Let's add to that some major changes within the Quebec team. Indeed, steps are being taken to replace the provincial beekeeping advisor and our coordinator at the Quebec beekeeping industry roundtable.

Important negotiations with blueberry growers began in the spring of 2022 and will continue throughout winter. A survey was developed by the Honey Council of Canada team. It will be sent to you during January 2023. Whether or not you are involved in pollination, it is important that every beekeeper responds. The answers will

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provide essential information to work on hotspots related to renting hives, importing bee packages, importing queens, as well as transporting hives. For pollination An increase in renting prices seems to be on the horizon for the next blueberry pollination season. Stay in touch with your provincial association for more details and information about this issue.

ApibleuMax research project has been in operation within the Faculty of Beekeeping Research at Université Laval and CRSAD since last spring. This project will provide many answers about optimizing pollination of the dwarf blueberry by honey bees and bumblebees. This project will allow the beekeeping industry to better understand the dynamics between lowbush blueberries and the density of hives required, their minimum strength required, and the quality of honeybee pollination compared to commercial bumblebees. Indeed, these results will also help blueberry producers care for pollinators which will most likely help limit the negative impact suffered by the beekeeping industry when it participates in this economic activity.

Finally, to end on a good note, the price of honey is maintained. Bulk prices in Quebec range from $3.10/lb to $3.30/lb, depending on the variety and rarity of honey in question at the time of the transaction.

If you have any questions, please do not hesitate to contact our Quebec team.

Ontario

John Van Alten

Happy New Year. Taking a moment away from family holiday festivities. Dec. 30, 2022 to write this report. If it wasn't for deadlines no reports would ever be filed.

Ontario had a very successful in person AGM in Kingston this past November. It felt great to be able to chat face to face with friends and colleagues after a few years of video conferences. I really hope we can continue to meet in person moving forward. We have become very adept at virtual meetings and will use that skill for future Hybrid meetings. Ontario being a very large province, the use of technology allows members from all across the province to join in the meetings. Our board is planning a spring meeting in the greater Toronto area. Dates and details to follow.

OBA executive is actively engaged with our provincial ministry of Agriculture and will be meeting to review all the insurance and support programs early in the new year. The goal being to improve existing programs and investigate better ways to deliver the benefits to our members.

The new OBA strategic plan (S.P.2.01) is set to be finalized in January. This document is meant to guide the board as to priorities and direction for the next five years. The last plan (S.P. 1.01) was completed almost ten years ago and was an integral part of the explosion of membership we have experienced during that time. We have quite diverse dynamics when it comes to our membership. There are some very different needs between the recreational and commercial beekeepers. The strategic plan should help to address those and help the board to navigate our path moving forward.

The numbers below are from OMAFRA and illustrate the growth in the recreational beekeeping sector.

Total # of registered beekeepers: 3,735. Total registered commercial beekeepers: 226. Total number of registered colonies: 102,900. Total number of registered commercial colonies: 81,086.

I want to wish everyone a healthy and prosperous 2023. Regards John Van Alten.

Manitoba

Osee Podolsky

I hope everyone is getting their much needed break with the bees tucked away for winter. Things have been fairly quiet in Manitoba as of lately we do hope that you will attend our AGM in late February if possible, dates to be announced in the near future.

Some Manitoba beekeepers have been reporting slow response times from Service Canada for processing LMIA's, it is advised that you get your application in sooner rather than later if you plan on hiring Temporary Foreign Workers for next season.

I hope everyone had a Merry Christmas and a Happy New Year.

Saskatchewan

Jake Berg

Well another challenging year of beekeeping has come and past. This past year was an extraordinary struggle with bee health across the country. The much higher mortality rate across the country fueled the more than 30 year old debate of whether or not to allow packages from the Mainland US into Canada.

Putting my own personal views on the subject aside for a moment and examining both sides of the argument. On one hand, if the US could supply packages to Canada it would be a much easier way to source replacement stock for the country. In the short term, there would be financial gains to be made for some beekeepers if packages were allowed in and it really becomes a financial argument in some ways. Beekeepers need bees to maintain financially viable farms.

But on the other hand, looking at the long term risks and financial impacts of those risks could have some very substantial impacts on beekeeping across Canada. It really depends on which side of the debate you place yourself; a net financial gain or a net financial loss. From a bee health perspective importing bees from anywhere in the world is a risk. Trying to navigate the amount of bee health risk we submit Canadian bees to is a balancing act. Balancing the risk tolerance across the country is a very hard thing to do. Regionally, there are many regions that could benefit from access to more imported packages. But there are also many regions in the country that would be irreparably harmed by the added bee health risks that would come along with these packages.

I realize this great debate will only end when the border opens. However, I have observed all the time and effort that is wasted every year on this cumbersome debate and would rather the beekeeping industry focus more effort towards research and management of bee health. In the meantime, neither side of the argument is willing to give in and will fight tooth and nail back and forth until the border reopens. Hopefully, Spring 2023 brings healthy and strong colonies and tempers the argument. Happy New Years & All the Best in 2023!!

Alberta

Curtis Miedema

By the time you will be reading this the holidays will be over, and we will all be getting back to work preparing for the new season. I hope everyone had a great Christmas and was able to relax and enjoy some down time.

In Alberta we had our AGM at the end of November, and it was great to see everyone back in

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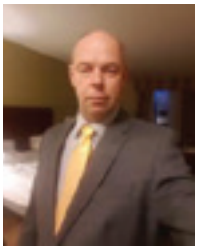
person. There I was elected as chair of Alberta Beekeepers Commission, as I take on this new position It was decided to delegate a new board member to take my place on CHC. This defiantly comes with mixed emotions as I have enjoyed my time serving on this board. It is a great experience, and I am thankful for the opportunity I had to represent my province and my country in this industry. I look forward to working closely with the CHC in my new role and I am sure that Jeremy will do a great job in this position moving forward. Wishing you all the best in 2023.

Alberta



Ron Greidanus

Canada is a huge Country. And as one of the Alberta CHC representatives, I am travelling across it. Canada experienced the worst wintering losses in the Spring of 2022 in the industries history. And now more than ever, the Canadian Beekeeping industry needs to recover and grow. Canadian Beekeepers will have much better success rebuilding if we work together.

Step number 1 is talking to one another. No province is an island. The reality of keeping bees in one province is different and unique to each province. And the solutions that are thought to build the industry in one region, are perceived to harm the industry in another. It's good that you cheer for your team. Keep Cheering, but that doesn't mean someone else's team sucks.

In October, I went to the BCHPA for two days. And I had good conversations with many producers. We still differ on the details, but I found that we all agree, the industry needs to rebuild and grow. I was approached by a number of beekeepers from BC that were interested in selling nucs. If you want nucs for spring 2023, let me know and I will get you in touch with producers in BC who would love to do nothing better than to supply beekeepers with nucs. I will make sure that both interested parties, selling or buying, will be posted on the CHC website.

After a brief break enjoying Canada's west coast, It was off to the OBA in Kingston. I did my best to talk to as many producers as I could at the OBA just to find out what it was to be a commercial producer in Ontario.

Beekeepers in BC, Alberta, Saskatchewan, Manitoba, and Ontario are all worried about what happens if we have another wreck in spring 2023: what then? A lot of beekeepers who have their entire life's work invested in their business have no reserves left after the '22 season.

My next stop was the Alberta AGM. Alberta's AGM is by far the largest industry tradeshow in Canada by far. It had the greatest representation of attendees from different provinces: BC, Sk, MB and ON. These connections are important if we are to move forward together.

My final AGM was SK held one week after the AB AGM in Saskatoon. The SBDC does an excellent job putting on a good spread for everyone at their meetings. The past president of the ABC even sold off his beard as a fund raiser at the SBDC banquet on Friday evening! Who knew that red hair was worth $1600?

Although no substantial resolutions emerged from any of the AGM's that I attended for CHC to deal with, there are some undercurrents that need to be paid close attention too.

1) The CHC and CBF. This winter, I was given a book called, 'The imperfect Board member.' The book is a fictional account of what a board is to be. Although Canadian Honey Council is not a board – it is a Council (there is a difference). Despite being a Council, there are some key principles that are applicable to all types of boards or councils. The board or Council is responsible to its Owners and needs to Respect them. The board or Council needs to Direct and Protect on behalf of the Customers and the Owners. The fact that the CBF exists today goes way beyond a border issue it speaks to the issue that there are two different types of producers in Canada and one group does not feel heard by CHC. The other group feels threatened by the CBF. In Canada there are three different business models that producers will use to stay economically viable: 1) large scale honey production marketed in wholesale volumes 2) Smaller hive count retail marketing of honey and value added products 3) pollination contracts. The more hives a producer has, the larger the balance sheet. Large Balance sheet operations (> $2 000 000.00) are typically found on the prairies. The number of Large Balance sheet operations is exponentially eclipsed by Small Balance sheet operations (<$1 000 000.) CHC's budget is provided disproportionately by Large Balance Sheet operations.
   I think Bishop Desmond TuTu said it best, "If you want peace, you must speak with your adversaries." CHC and CBF need open channels of dialogue and have a degree of collaboration.
2) What is the best method of rebuilding the Canadian beekeeping industry? The domestic Bee Breeders want to do their part to help rebuild and restock the deadouts and expand the hive count in Canada. Large honey producers and pollinators need hives demanded by other commodity groups. Australia, New Zealand and Chile(???) are fully committed and Italy and Ukraine are yet unproven suppliers. Canada needs more hives. The prohibition on Package bee importation from the Mainland USA needs to be revisited to examine 'How do we do this?' and not, 'Should we do this?'
3) We need more tools in the toolbox to deal with Varroa Mites. Right now there are three research products into potential new products being explored. The Federal working group is aware of all three, but a new product needs to be fast tracked because there is Apivar Resistance in all provinces.

I could go on and on, but that's three pages. Go reward yourself for reading my entire sermon and enjoy a good cup of coffee with a couple of OlieBollen. Happy New Year. I wish you all the best.

British Columbia

Stan Reist

Another year has come and is about to go. There were reports of record high losses in the spring, problems getting packages and cold wet spring. Most of the hives struggled to find food so there was continuous feeding and the crop not really flowing until the end of August. Just a different year. We hope the New Year will greatly improve.

One topic that is taking more prominence is Sustainability. However, the definition and the results of what it means on paper are two vastly different things. In reading some of the proposed or in some cases the wording already planned out are quite staggering. If you were to sign on to some of them you're going to have to employ a couple of lawyers just to interpret what you have to do to comply. The next problem is, what happens if you either accidentally violate some of the (I don't' know) conditions of the statement? Or just get frustrated and say the hell with them, then what happens? Pretty hard to see how this added expense would make you more sustainable! Just finished reading another one from the Government, Wow, It's not hard to figure it's not been written by farmers but by individuals with a wish list that really doesn't reflect farming life at all or the actual challenges

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already faced by farmers. If this comes to fruition you will probably call it Unsustainable.

You're a hard working farmer, you're doing the best to keep your operation afloat and profitable, trying to compete within the confines of what you can control and all of a sudden in order to sell your crop someone pokes a paper in front of you, saying, well sign on to our sustainability statement and we will buy your honey! If you say no, then what happens? Is this where you have a statement of your own and say how about signing on to mine and I will sell you my crop! The road ahead has just become harder to navigate.

There has been flurry of Drafts put out recently, Industry-government Honey Bee Sustainability working Group, on actions to improve sustainability of our industry. Seven pages double sided on proposals to implement and there are some really good proposals, if they actually get done. In reading through the document one thing missing is a time table to do this. Not to be a detractor of the proposals but it looks to me this is going to take some time to get rolling, like two years at the earliest.

They have a priority list of things to do, support and coordinate the activities of the provincial tech transfer teams

To accelerate development of new varroa control products

Maintain and increase domestic bee supplies

Actions to address current and long term challenges to import bee supplies (Bees not hive parts)

Actions to enhance the sustainability of the beekeeping industry

Actions to improve support to the pollination industry

Obviously there is a lot of work to be done, and it can't happen quickly enough.

The one action to me is reduce the winter hive morality as a number one issue. Surely we have enough evidence and businesses who have lost hives. In order to do better we have to get a handle on this issue. Why can't the Tech transfer teams apply their skills and support the individuals having the problems and work on reducing the losses.

Working on this one problem alone, what was it 52% winter loss last year? The replacement stock wasn't there to replace most of the losses. Imports were again hampered because of flights and problems with transport, hence the open the border calls that have been around since 1987 and are still not going away. Doesn't look like there is any attempt to put away stock for next year's losses either.

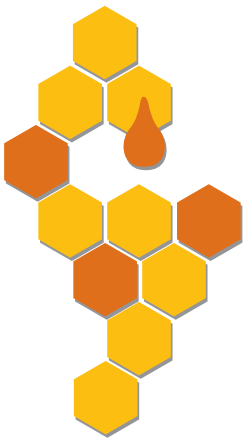
Reduce the hive mortality is the #1 issue. The #2 issue, to me is to put away 10% of your numbers for next year's losses. We are importing 60,000 packages a year approximately. We're supposed to have 810,000 hives in Canada at the 10% figure that's 81,000 replacement hives and yes, not all of the stock put away is going to survive, so why not 20%? If Saskatchewan can put 30,000 Nucs away for the following year, why can't we all do that? 8 X 30,000 = 240,000 replacement hives, so who would need to import anything? I have been told that we are still going to have imports due to pollination requirements not sure I agree with that statement. Who would care if Air Canada ever flew again? Just think what the monetary value of that would mean to our beekeepers! Ah, if only.

These two actions would have our industry as self-sustaining and the chances of getting something you really don't want, even further reduced. Pie in the sky.

Next year's losses are already in the making nothing we can do about that except have a lottery as to what the numbers will be. For years I and a lot of others have attended winter IPM sessions where we here the results of research and the best ways to treat your colonies to have them survive, and there have been really great presenters. But regardless we are still having huge winter losses. So were we listing to the speakers were we taking anything useful away to put into practice or just attending a conference? What would the stats look like? Should we instead be presenting stock replacement seminars in the winter? We can't do anything about this springs mortality but we can do something about next year's mortality if we get or rear in gear this spring. Stock Replacement seminars.

I really don't think sending our northern winterized stock off shore to rebreed and returned is the answer to another problem. We have had the opportunity to experiment with some norther Sask Queens, out of 100 hives we lost 4 to drone layers and 3 just failed so I would call that fantastic. We were able to start 22 hives following the Nuking process for the following year. There were 22 survivors in the spring and we are looking at another 22 going into this winter. They didn't eat much they don't fly and die on the snow because the sun was out the way the normal stock does. They stay inside and look out the opening but don't venture out.

If we are going to save ourselves then we have to start this spring pushing next year's stock replacement, next year's Queens and really sitting on varroa counts. Also your Nosema levels and not at the last Minuit. Gerry Rosema has an interactive program that shows when you treat and when you don't. You can view the results before it happens, so if you don't treat in time or don't control in time, you will have a date when your hives will fail. So it's your choice folks, it's doable we just have to do it.



BeeMaid HONEY LIMITED

CALL FOR PROPOSALS

Bee Maid Honey Limited is pleased to announce the continuation of apicultural research funding. Bee Maid Honey Limited will consider project proposals in any area of apiculture, hive health or honey production. Preference will be given to the area of honey quality and good practices of producing pure quality Canadian honey in the Canadian beekeeping industry. Proposals for projects must be submitted to the Bee Maid Honey Research Committee by February 28, 2023. Projects are expected to be completed within one year of funding, although renewal applications will be considered. For further information and to receive the complete call for research document, please visit www.beemaid.com/about-us/in-the-community/research or contact: Shannon Bowden, Senior Brand and Communications Manager (204) 786-8977 ext. 252 sbowden@beemaid.com

Our Experiences Setting Up and Running Layens and Long Langstroth Horizontal Hives in 2021

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There is a growing trend, especially among hobbyists, toward finding alternatives to the familiar "vertically modular" hive styles (e.g., Langstroth hives). Ease of access and the desire to manipulate colonies less frequently feature prominently among the many reasons for the transition. Considering this, we decided to try our hands at running two of the most popular horizontal hive styles: the Layens and the Long Langstroth. What follows is the story of what we learned and what we have yet to learn during our first year using horizontal hives.

A Brief History of Horizontal Hives

Keeping bees in horizontal colonies is far from a new practice. The first definitive evidence of true beekeeping comes from a 4470-year-old depiction of clay tubular horizontal hives from the Sun Temple of the Fifth Dynasty pharaoh Newossere in Egypt [1]. The introduction of moveable frames in the mid 19th century means that today's horizontal hive designs bear little resemblance to their ancient predecessors.

The Layens Hive

Invented by botanist and apiculturist Georges de Layens in the 19th century, Layens hives were developed in Europe, where they remain very popular. The Layens hive is a variation on the vertically modular Langstroth moveable frame hive, patented by L. L. Langstroth in 1852. De Layens first described his ideas for horizontal modifications in his book, *Cours Complet d'Apiculture et Conduite d'un Rucher Isolé (Complete Course in Apiculture and Management of an Isolated Apiary)* [2]. One of the original purposes of the changes was to create a hive type that required little management, making it suitable for remote bee yards.

The Long Langstroth Hive

The inspiration for the Long Langstroth design can also be traced to de Layens' book [2]. Over the years, a multitude of enterprising beekeepers have sought to create horizontal hives that, unlike Layens hives, can be used with standard Langstroth equipment. One recent iteration of the design is the Valhalla Long Hive, created by Oregonian beekeeper, Naomi Price [3]. Price, a paraplegic, wanted something that she could work with on her own from a sitting position.

Part 1: The Layens Hives

Our goal for 2021 was to become familiar with Layens hives. We installed each of our two hives in a different yard, and populated each by different means. The fact that essentially every aspect of these two colonies differed -- from the boxes themselves, to how we filled them and where we kept them -- means that we shouldn't use the following data to make broad statements about Layens hives in general. It's worth keeping in mind that we are not saying everyone's experiences will be the same as ours.

Preparing The Layens Hives

In early spring we ordered two Layens hive kits from horizontalhive.com, out of Cabool, Missouri, USA. We chose a double-walled insulated 20-frame hive with four entrances, and a single-walled solid wood 19-frame version with three entrances. Set-up proved to be mostly straightforward, apart from the installation of plastic foundation (more on that below).

We painted both boxes with white paint formulated for use on metal. Such paint is more durable than standard exterior paint, and we have had good luck with it in the past. It was short work to install the round metal four-way entrance covers that came with the kits. Note that these entrance covers can be rotated to provide different access options, in accordance with one's needs.

The Layens hives each came with a full complement of assembled pre-wired foundationless frames. We decided to add foundation, and used drawn plastic foundation from Langstroth deep frames by cutting them down with a table saw, which was a messy business. We wove the plastic foundation pieces through the wires in the frames to hold them in place. Two sheets were required per frame. Sliding our drawn frames through the saw, with their wax and propolis residues, didn't always go smoothly. We advise extreme caution should you choose this approach for your own build.

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FIGURE 1: TOP LEFT: old frames ready to be cut down. TOP RIGHT: New Layens frames with wires next to a stack of cut foundation. Layens hive in the background. MIDDLE LEFT: cut foundation and frames ready to be assembled in front of the two painted colony boxes. MIDDLE RIGHT: Assembled frame in a Layens hive. BOTTOM: Layens hives in the workshop.

Two Different Locations

The Frankford Yard Colony

The Frankford Apiary is a tidy carpet of manicured lawn dotted with several deciduous and coniferous trees. A thickly forested barrier surrounds the yard at a distance, offering minimal protection from the wind or sun. Twelve Langstroth colonies were housed in this yard along with one Layens during the 2021 season.

The primary purpose of the Frankford Yard, situated behind NOD's manufacturing facility in Frankford, Ontario, is to conduct varroa research. We typically maintain a higher varroa level here so that we have sufficient varroa numbers for our studies. Unfortunately, the elevated varroa levels do occasionally lead to colony losses.

On June 1, 2021, we established our first Layens colony in the 19-frame solid wood box, using a small swarm we had caught on the premises. The swarm originated from one of the resident Langstroth colonies.

We placed the Layens approximately 10 m to the west of the other colonies, facing east. Aside from the drawn frames we'd manufactured, we initially did not provide the colony with additional resources. We opened a single entrance at the south end of the colony and left the other two closed. When we checked on the bees one week later, they had established themselves on frames by the entrance, and drawn out some frames with new wax, and had begun to store pollen and nectar. We saw eggs, too – a great sign that all was going well, at least at that point!

FIGURE 2: TOP LEFT: Frankford Yard. TOP RIGHT: Numbered frames in the Frankford Yard Layens colony. BOTTOM: Frankford Yard Layens colony.

Howes Yard Colony

Howes Yard, 20 km north of Frankford, is a secret place nestled in a protective wrapping of deciduous trees and wild plants. The lush vegetation and exotic animal life found there (such as the Gray Treefrog) could lead one to believe they'd somehow been transported from southern Ontario to the temperate rainforest. However, just metres beyond the electric fence that protects the yard from bears, the for-

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FIGURE 3: TOP LEFT: Gray treefrog. TOP RIGHT: Honey frame with bees in the Howes Yard Layens colony. BOTTOM: Howes Yard Layens colony.

est opens into fields of corn, soybeans, and clover. The yard typically houses around 25 colonies and is used mainly to produce honey. We installed our second Layens colony at Howes on June 2 in the 20-frame double-walled insulated box.

We placed the Layens hive onto the stand of an existing strong colony, about 1 m from its nearest neighbour. Then, we shook out the bees and queen from that colony in front of the new Layens hive (a "shook swarm"). The bees marched in, readily taking to their new home. In keeping with the theme of the yard, we faced the colony south and opened only the entrance on the west end of the box. The frames of bees and brood left over from the parent hive were used to make nucleus colonies to be used elsewhere.

Feeding

At the end of June, prior to the honey flow, and while the colonies were still getting established, we tested the feasibility of using plastic 1 l quail waterers as in-hive feeders. We removed a few of the unpopulated frames at the end opposite the entrance and placed one waterer filled with 2:1 sugar syrup on the bottom board. The technique worked well, and we observed no bee death. The Frankford Yard colony consumed the contents of the feeders, while the waterer in the Howes colony still contained syrup when we checked both colonies two weeks later. The Howes colony was larger than the Frankford colony, and Howes has historically been a more productive yard. When nectar became available, the Howes yard colony ceased taking up the syrup from the feeder.

We did not attempt further feeding of either colony again until after we'd removed our honey frames on October 1. On October 13, we initiated open barrel feeding at both the Frankford and Howes yards.

Fall Colony Parameters at Two Timepoints

We performed detailed assessments of our Layens colonies. Our first was on September 17, prior to treatment with Formic Pro, and a second was conducted on October 29, after the treatment period was

FIGURE 4: Field data collection setup. TOP: Frankford Yard. BOTTOM LEFT: Howes Yard. BOTTOM RIGHT: Howes Yard colony pollen stores.

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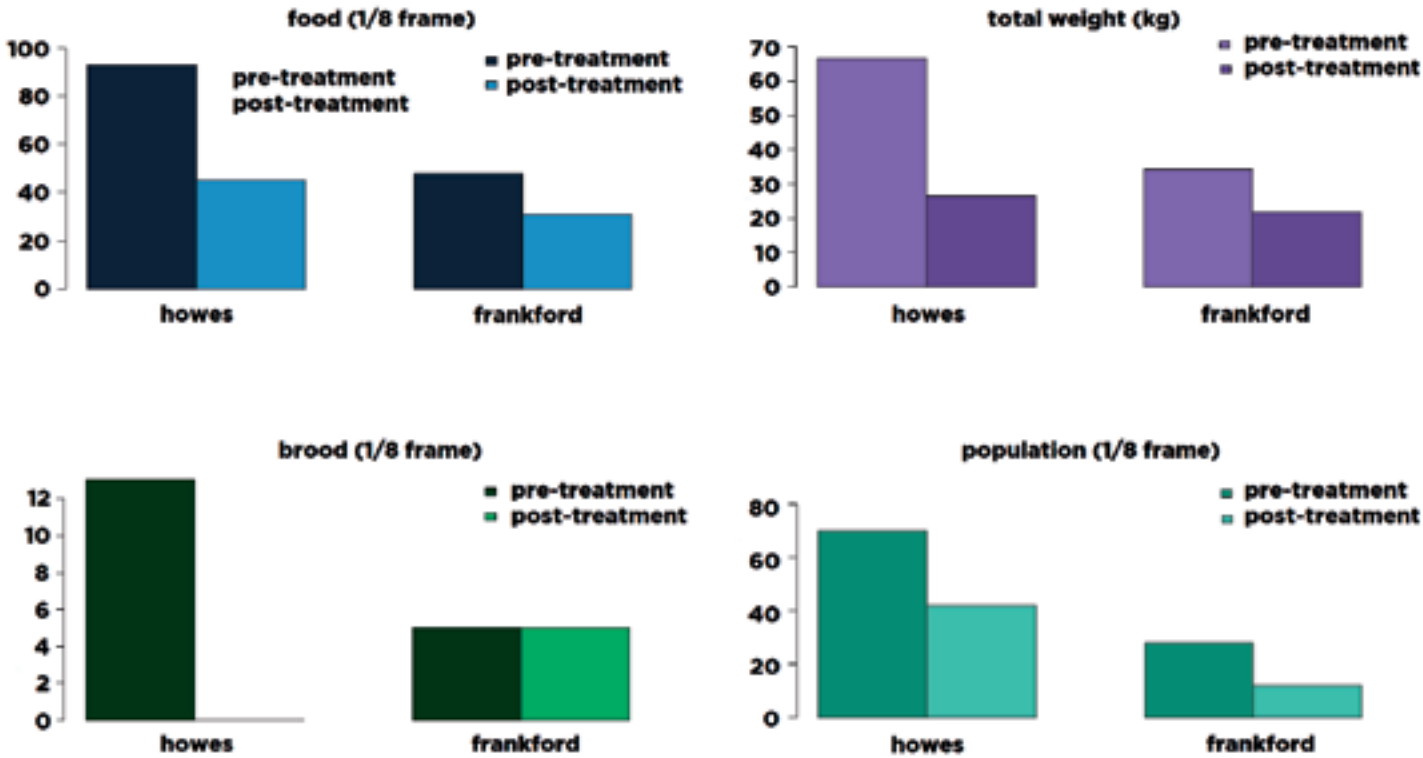

FIGURE 5. Food, brood, and population were all measured in terms of how many 1/8 frames (front and back) each covered. Top left: nectar, pollen, and capped honey were all counted as food. Honey was harvested between the timepoints then the bees were fed, so the food measure should be taken with a grain of salt. Top right: total colony weight was measured by adding up the individual weights of the frames, and therefore does not include the weight of the box. Bottom left: eggs, uncapped larvae, and capped brood were all included in our measure of brood. Bottom right: population was estimated on each frame as it was removed from the colony. Because bees move around, especially toward the end of the exam, this number is a rough estimate, and may not reflect the absolute population of the colony.

over. We used a modified version of the Liebefeld Method [4]. Each frame was removed, and each side was divided into 8 equal parts. The number of sections filled by bees, brood, and stored food was counted on each side of the frame and averaged to the nearest whole number. Therefore, for each of our measures (food stores, brood, and bees), we recorded one number with a maximum value of 8 for each frame. Each frame was also weighed by balancing the frame on its top bar on a postage scale. The bees were not removed from the frame prior to weighing.

Mite Treatment

Fortunately for us, when it came to protecting our Layens hives against varroa, we didn't have to completely start from scratch. In 2019, we funded a study in Spain testing the efficacy of Formic Pro, NOD's extended-release formic acid varroacide, in Layens hives using different methods of presentation [5]. The most effective method involved securing two strips of Formic Pro using nails to the frame following the last frame occupied by bees in the colony. A significant drop in varroa counts, as assessed using the alcohol wash method, was reported.

We took the favourable results from the Spanish study and set about developing a better method for suspending the strips. Instead of nailing the product to the frames, we elected to simply hang the strips. We slid two paperclips fully onto one of the short ends of each strip. Then we unbent two more paperclips and threaded each one through each of the clips on the strips. We were able to suspend each strip from the unfolded paperclips between the frames. We positioned two strips of Formic Pro on the opposite side of the last frame containing bees in each of our colonies and left them in place until performing the colony assessments.

The paperclip method was quick and easy, and not nailing the strips to the frames meant that all we had to do for treatment was slide the frames slightly apart. In terms of durability, the paperclips held up well, neither slipping nor showing signs of degradation. Although this method worked, we are continuing to refine our protocols.

FIGURE 6: The paperclip method for hanging Formic Pro strips between the frames. We hung 2 strips in the space between the last frame containing bees, and the empty frame next to it.

Efficacy

We used the alcohol wash method to determine the efficacy of our treatment. To do so, we took samples of about 200 nurse bees from frames with open brood before and after the treatment with Formic Pro [6]. The bees were placed in jar containing windshield washer fluid, and

FIGURE 7: Piles of dead mites were readily seen upon opening the colonies a few days after Formic Pro application.

the samples were transported back to the lab. To quantify bees and mites, the contents of each jar was agitated to separate the varroa from the bees, and then each was counted. We calculated the infestation rate as:

(Number of varroa in the sample / Number of bees in the sample) x 100

Formic Pro performed well at Howes. Before the treatment, we had a 5% infestation rate, above the 3% economic treatment threshold. One month after treatment, we detected only a single mite in our alcohol wash).

The story at Frankford was a bit different. The initial mite load was quite a bit higher (around 14%), and after treatment, that had dropped to 10%. Unlike the Howes yard, where all colonies were treated on the same day that we treated the Layens, the other colonies in the Frankford yard were not treated at the same time as the Layens. The remainder of the Frankford Yard colonies were treated 2 weeks later. Since we conduct varroa research, we intentionally maintain higher than normal varroa levels at the Frankford yard, so the overall varroa load in the yard was high compared to our other yards. As a result, it is quite likely that the Frankford Yard Layens colony was re-infested with varroa from its neighbours prior to the second alcohol wash.

We need to be cautious about drawing sweeping conclusions based on these limited data; however, the fact that we saw significant decreases in mite loads in all our other horizontal hives (including the Long Langstroths, discussed below) does add weight to the "re-invasion" hypothesis. Hence, what happened in the Frankford Yard should serve as a valuable reminder that yards should be treated as single entities when it comes to varroa. Unfortunately, temperatures were too cold in Ontario to re-treat the Frankford Yard colony after the second alcohol wash.

FIGURE 8: Collecting field data at Howes Yard.

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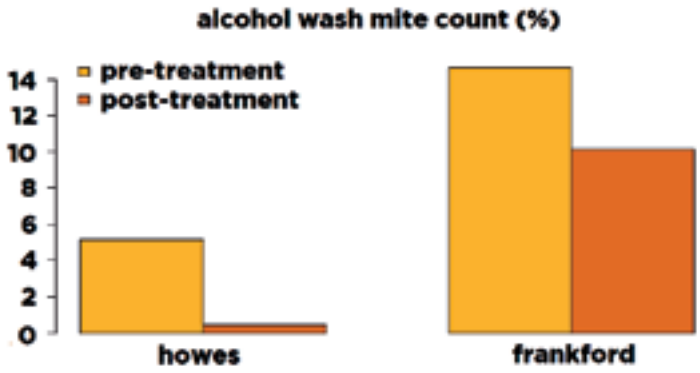

FIGURE 9: Pre- and post-treatment alcohol wash mite counts. Note that there are no "error bars" showing variability on this graph because there was only one colony measured at each location.

Winter Preparation

The Frankford Yard colony did not make it into winter. On December 11, a wind storm blew off the lid, but it is likely that they had actually died due to weakness prior to that. The Frankford colony originated from a swarm we caught, and had been consistently smaller, with higher mite numbers throughout the season. Still, it is always sad to lose a colony.

The Howes Yard colony was strong going into winter. On December 14, we placed bats of insulation above the top bars, and reduced the entrances to prevent rodent invasion. We returned on December 20 to place an insulated foam board follower board after the last frame containing stored food.

Honey Harvest

One thing we were very curious about was how we were going to harvest honey from the Layens hives. Since this was our first foray into horizontal hives, we also did not know to what extent the bees would segregate honey, brood, and pollen. We were happy to discover that in both the Layens and Long Langstroths, honey was well-segregated, and harvesting was a simple matter of pulling the full honey frames from each box.

Extracting the honey from the Layens frames, which did not fit easily into our Langstroth extracting equipment, proved to be a slightly more daunting task. In the end, we manually scraped off the wax and honey from the plastic foundation of the Layens frames and ran it through the screw press of our commercial extractor. Of course, not everyone has access to such a device. Tangential extractors do exist in North America with baskets large enough to accommodate Layens frames.

FIGURE10 : Honey frame from the Howes Yard Layens colony.

Part II: The Long Langstroth Hives

The Build

Rather than ordering pre-made boxes, we chose to create our own Long Langstroth ("Long Lang") design, and to construct six boxes ourselves. As such, the build began with several planning sessions, during which we mulled over details, dimensions, and features. Once we had settled on at least the broad strokes, we ordered our raw materials. We built the Long Langs out of ¾" marine-grade plywood.

Once the build was complete, we loaded up the boxes in the trailer and transported them to our River Valley Apiaries yard, in Stirling, Ontario. The apiary is located on a sheltered and picturesque flood plain next to a creek, and is used for honey production. There were no hives on site other than the Long Langs during the 2021 season.

The Set-Up

In early May we assembled nucleus ("nuc") colonies using queen cells that we had grafted from our onsite stock. By June 25, the queens had emerged and mated, and capped worker brood was present. We installed one nuc into each of our Long Lang hives. Initially, we set up each colony on the right-hand side of the box (facing the entrance side of the colony) with only the four frames from the nucs and six empty drawn frames. Entrance reducers spanning the entire entrance, except 8", were slid into position. An empty frame feeder was installed to the left of the last frame in each colony to serve as a follower board.

On July 6, we inspected the colonies and removed the frame feeders. We added an additional 17 drawn frames to each hive, bringing the total number of frames to 27, and completely filling the cavity. Evidence of brood production was noted in all colonies, and we allowed ourselves to bask briefly in the glow of success.

FIGURE 10(b): The six Long Langstroth colonies at the River Valley yard.

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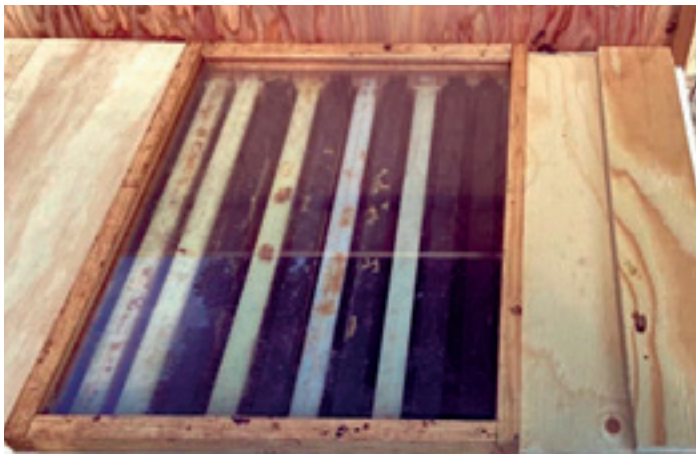

FIGURE 10(c): The six Long Langstroth colonies at the River Valley yard.

Fall Colony Parameters at Two Timepoints

As with the Layens, we performed detailed assessments of our Long Langstroth colonies. Our first was on September 17, prior to treatment with Formic Pro, and a second conducted on October 29, after the treatment period was over. Again, we used a modified version of the Liebefeld Method [4]. Each frame was removed, and each side was divided into 4 quadrants. The sum of the total quadrants (8 total per frame) filled by bees, brood, and stored food (nectar, pollen, or honey) was tallied. We also weighed each frame, without shaking off the bees.

FIGURE 11: Taking weights by removing frames individually and placing them in a box on top of a postage scale.

Mite Treatment

We treated the Long Langs for varroa with Formic Pro on October 1, 2021. Given that most of the colonies were occupying approximately 10 frames, we observed the existing label protocol for treating regular 10-frame Langstroth colonies. We placed 2 strips across the top bars, above the brood rearing zone, such that the strips extended to the end of the populated frames. We then replaced the inner covers, and closed the colonies. We left our entrances open 8".

FIGURE 13: Formic Pro treatment of a Long Langstroth hive.

Efficacy

Alcohol washes were taken from the brood zone to assess the efficacy of our Formic Pro treatments. We followed the same sampling procedure and calculation methods described earlier for the Layens hives. Prior to treatment, all colonies except colony 157 were at or

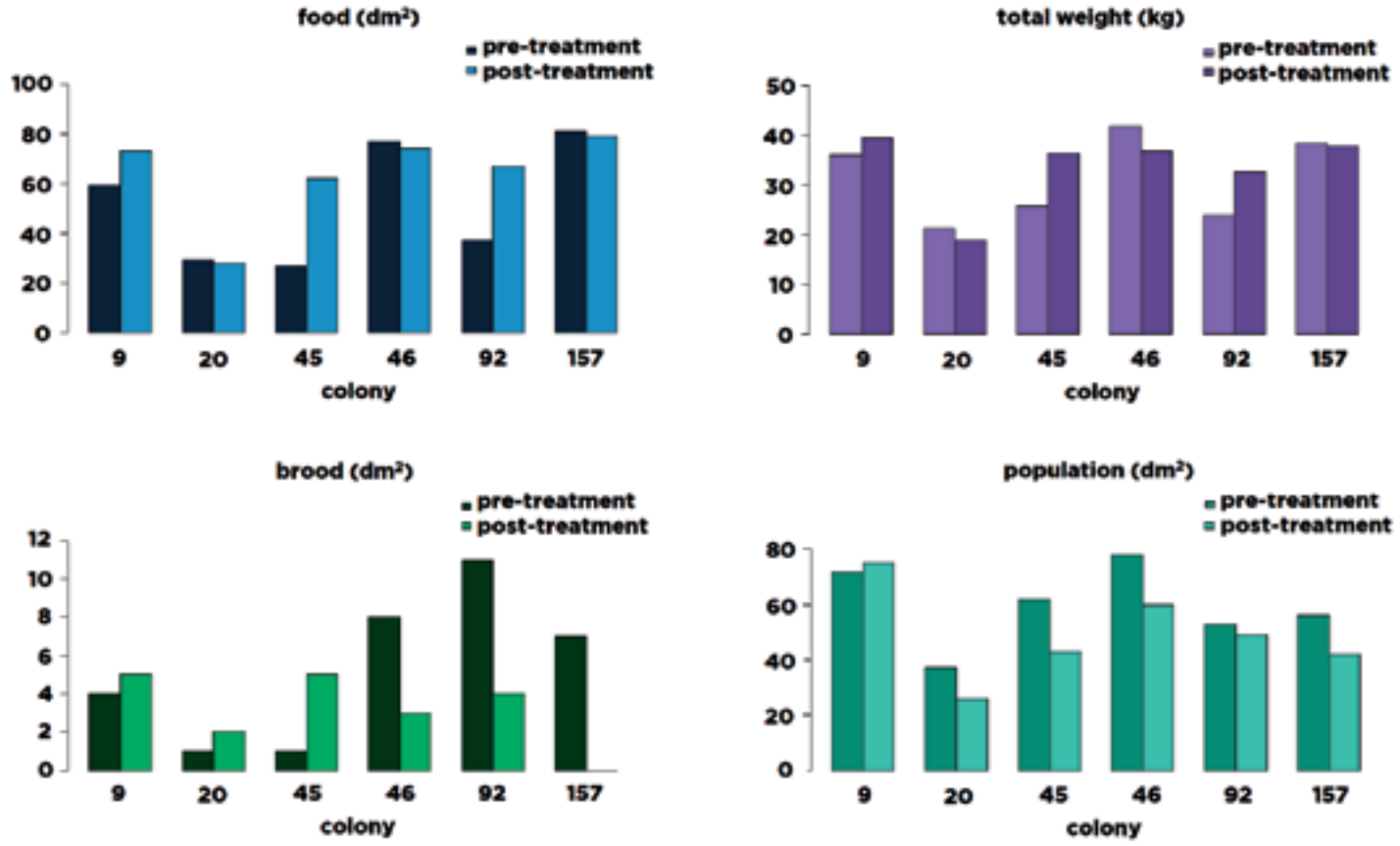

FIGURE 12. Food, brood, and population were all measured in terms of how many dm2 (front and back) each covered (NOTE: 1 dm2 = 10 cm x 10 cm, or about 3.9" x 3.9"). A standard deep Langstroth frame is approximately 8 dm2. Top left: nectar, pollen, and capped honey were all counted as food. Honey was harvested between the timepoints and then the bees were fed, so the food measure should be taken with a grain of salt. Top right: total colony weight was measured by adding up the individual weights of the frames, and therefore does not include the weight of the box. Bottom left: eggs, uncapped larvae, and capped brood were all included in our measure of brood. Bottom right: population was estimated on each frame as it was removed from the colony. Because bees move around, especially toward the end of the exam, this number is a rough estimate, and may not reflect the absolute population of the colony.

above the economic treatment threshold of 3%. One month following treatment, we detected only a single mite in colony 45.

Treatment of the River Valley hives was extremely effective, likely owing to the lack of competing colonies nearby that could be sources of re-invasions.

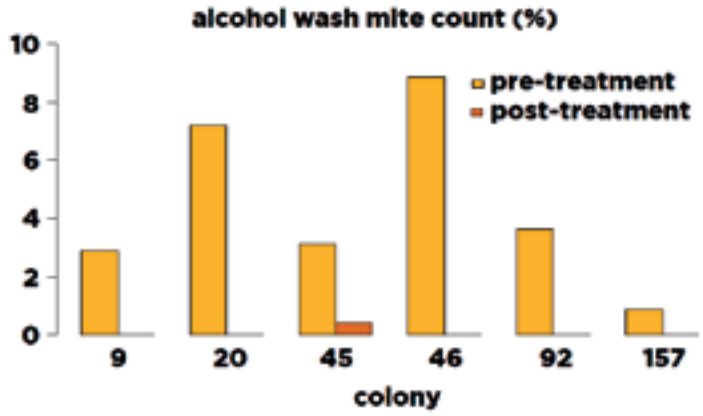

Figure 14: Alcohol wash mite counts before and after treatment for each colony.

Winter Preparation

On December 14, we prepared the Long Langs for winter. We cut 2" rigid foam insulation to fit inside each colony as a follower board. We placed the insulation after the last frame containing feed. None of the colonies extended beyond 14 frames, with most being limited to about 10. We placed bats of insulation on top of the inner covers and closed the lid. We also installed entrance reducers that diminished the size of the entrances to 3" from the original 8" span. Finally, we drilled an upper entrance, approximately 6" above the lower entrance to guard against the possibility of dead bees blocking the lower entrance, and to allow for adequate ventilation.

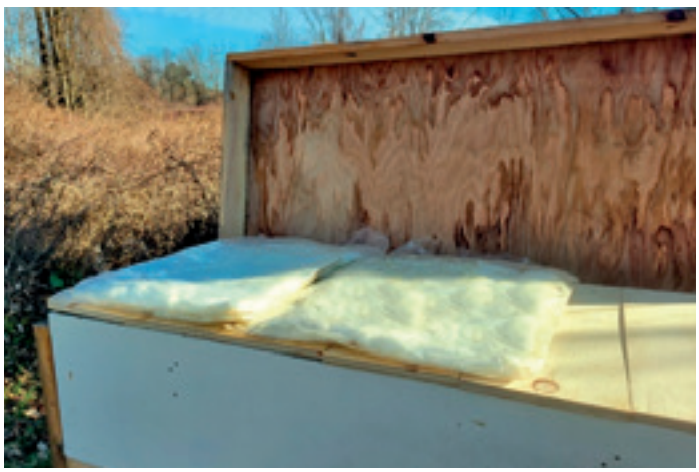

FIGURE 15: Top insulation bats.

FIGURE 16 cont'd: Foam follower board insulation inside the hive cavity.

Overall Impression of the Layens and Long Langstroth Hives

We liked the Long Langstroths because the equipment was more familiar than that of the Layens boxes; however, we did find that the Long Lang bees were more reactive. This is likely the result of the shallower cavity and spaces between the frames causing more disturbance to the bees once the inner cover was removed. In contrast, since the top bars of the Layens frames fit tightly together, and because the cavity is so much deeper, the bees hardly seemed to notice we were there when we opened the colony.

Honey was readily segregated and easy to harvest from both designs, but extracting from the Layens frames took a little extra work.

We found working both types of long hives to be straightforward and comfortable.

We successfully overwintered all six Long Langstroth colonies, but dismantled them into nucleus colonies in the spring of 2022 to populate a new research apiary. Unfortunately, the Howes yard Layens hive did not survive the winter, although since it had adequate food reserves and low mite levels, the reason for their demise was not immediately obvious.

2022 and Beyond

NOD spent much of 2022 occupied with moving to a new facility, hence we did not set up our horizontal hives this year. However, Heather looks forward to populating these unique hives once again at the new Education apiary that will be established at our site in Trenton, Ontario!

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Canada, COVID-19, News, Provincial

Industry Engagement Division, Agriculture and Agri-Food Canada, Government of Canada

Information sharing for agriculture and agri-food sector representatives – December 16, 2022

Hello,

Agriculture and Agri-Food Canada's (AAFC) Industry Engagement Division is pleased to share with you updates of general interest to the agriculture and agri-food sector including Covid-19. We ask you to share this information in your networks and please continue to consult the AAFC website regularly for updates.

- 2022 Fall Economic Statement
- Immigration, Refugees and Citizenship Canada Consultations webpage: Express Entry
- Cyber Security: How to Protect Canadian Agriculture from a Growing Challenge
- Industry SURVEY for Recycled Content and Labelling of Plastic Products
- Newsletter – COVID-19 and your business: Issue 19
- Information on Coronavirus disease (COVID-19) from the Public Health Agency of Canada

We encourage you to share your comments and questions in writing through the AAFC Roundtable account (aafc.roundtable-tableronde.aac@agr.gc.ca).

Storing and overwintering honeybee queens in banks (*Apis mellifera* L.)

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Access to quality queens for spring beekeeping is essential in the Canadian beekeeping industry to replace winter losses and ensure sufficient livestock for honey production and pollination services on fruit farms. Unfortunately, cold spring weather delays queen breeding and compels beekeepers to import queens from countries with warmer climates. This creates a precarious dependence on imported bees. The context of the Covid-19 pandemic disrupted the transportation of imported bees and queens, highlighting this weakness. Furthermore, importing honeybee stock carries a number of sanitary risks, such as the spread of treatment-resistant strains of pathogens and parasites, as well as the dissemination of undesirable genetic lines that are not adapted to our northern beekeeping practices.

The objective of this work was to develop a method for successfully storing and overwintering many queens, referred to as queen banks, that can be used in early spring, thus decreasing our reliance on imports.

Maintaining many queens over several weeks in a single colony presents challenges that have been raised by many researchers and professional beekeepers, such as the positioning of the queen bank in the winter cluster of bees and the lack of worker bee population turnover during this period. The basic technique of overwintering queen banks used during the three years of our project was inspired by the work of Margret Wyborn and collaborators in the early 1990s in British Columbia Canada. Their research identified key fundamental factors related to the success of overwintering queen banks:

1- In each bank, queens must be isolated individually in small cages with a mesh screen that allows the bees to feed the queens but prevents them from pulling their legs;

2- Each queen bank must be comprised of queenless colonies;

3- Each queen bank must contain many young worker bees. This is achieved by merging strong colonies with abundant brood.

Wyborn (1990) obtained a 60% survival rate of queens overwintered in banks for 6 months by preventing the cluster from moving away from the queens. Inspired by this work, we have conducted several research projects that have yielded promising results described below.

2018-2019: Impact of temperature on overwintering queen banks' survival

The objective of this phase was to test the following hypothesis: increasing the ambient temperature above that of cluster formation during overwintering will improve queen survival in banks. At the end of August 2018, 600 queens were placed in 15 banks (40 queens per bank). The queen banks were kept in an outdoor apiary until early November. On November 9, 5 banks were overwintered at 6 ± 1 °C,

Variable	Treatment Groups (N = 5 Banks/Treatment, 40 Queens/Bank)		
	6 °C	11 °C	16 °C
Live queens November 2018	34.6 ± 1.6	34.4 ± 1.4	33.6 ± 0.5
Live queens April 2019	19.8 ± 2.2 [a]	18.6 ± 4.8 [a]	29.0 ± 1.3 [b]

Table 1. Average number of live queens per bank in each experimental group at the beginning of the overwintering period (November 2018) and the following spring (April 2019).

5 banks at 11 ± 1 °C (just above the limit of honeybee cluster formation) and 5 banks at 16 ± 1 °C (above honeybee cluster formation). The queen banks were placed in three overwintering environmental rooms from November to April and queen survival was assessed in September, November, and April 2019, the latter at the end of overwintering. The results showed the highest survival of queens in banks overwintered above cluster formation temperature. We measured an 86% survival rate of queens maintained at 16°C, compared to banks at 6 and 11°C, which had 57% and 56% survival rates respectively (Table 1).

2019-2020: Impact of queen density on overwintering queen bank survival

During this phase, our objective was to validate the results obtained the previous year and to test the impact of increasing the number of queens in a bank on their winter survival. In August 2019, we created 10 banks: 5 banks containing 40 queens, and 5 banks containing 80 queens (Figure 2). In mid-October, the queen banks were overwintered in an environmental room at 16°C, the temperature that achieved the highest survival rate the previous year. In April 2020, queen survival in each bank was assessed.

The average survival rate of queens in 40-queen banks was 74.2%, significantly higher than 80-queen banks, which had a 42.1% survival rate. We believe that when queen density is higher, more queens are located on the periphery of the holding frame and are less well fed and less adequately warmed by the nursing workers. This was also observed by Abd Al-Fattah et al. (2016). For now, 40-bank queens is our reference density but further investigation is required to determine the optimal density.

Effect of Overwintering Queen Banks on Queen Reproduction

During the wintering trials, we measured various traits that are linked to queen reproductive quality. Banked queens were sampled before and after wintering and the following traits assessed: abdomen size, body weight, ovary weight and fertility (sperm viability and spermatheca sperm count). Our results show that the fertility of banked queens is maintained during overwintering. The follow-

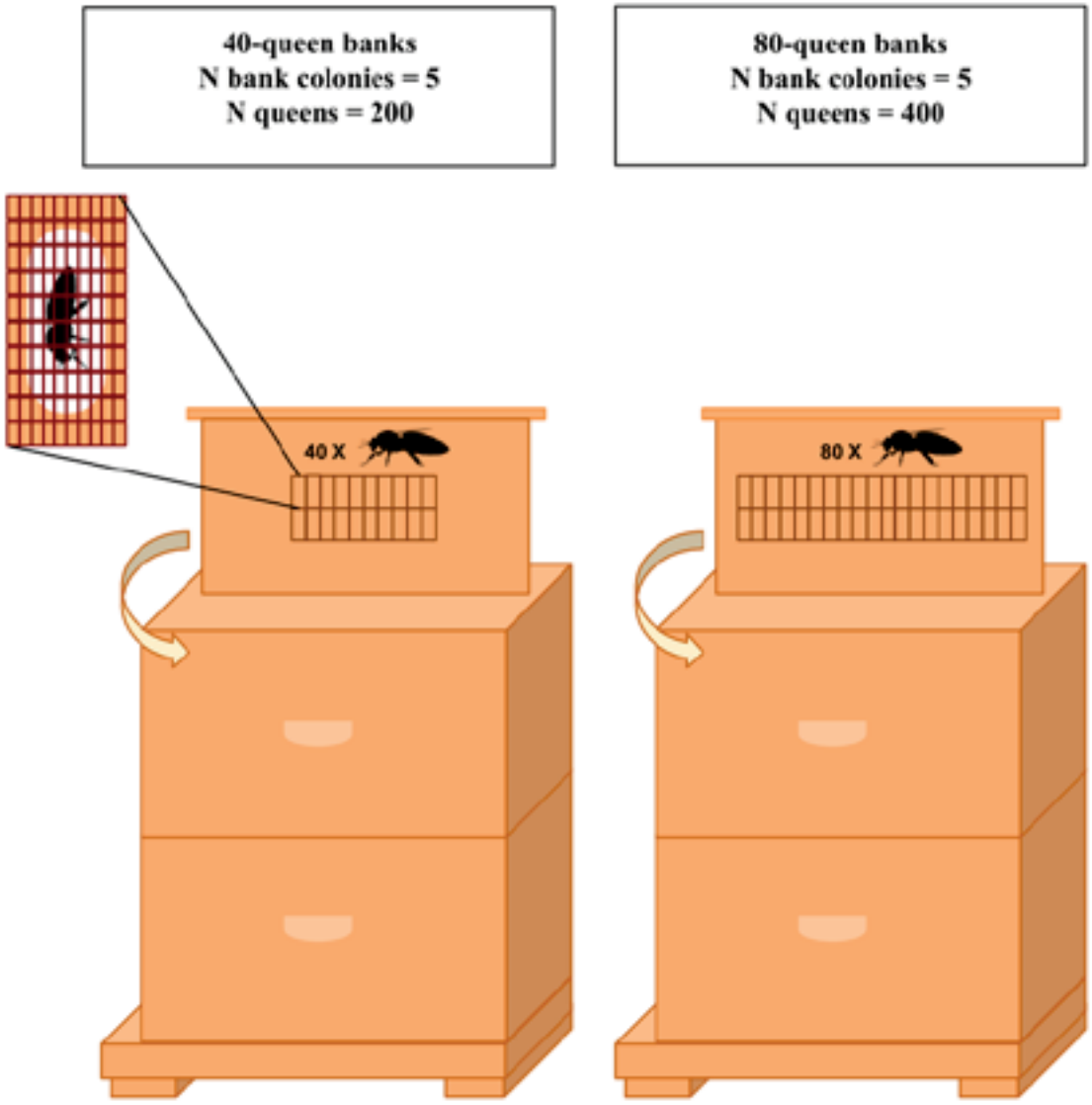

Figure 2. Schematic representation of the distribution of queens in queen banks at two different densities.

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ing spring, sperm viability was above 80% and total sperm count was above 8 million for control and banked queens. However, the banked queens were smaller (abdomen dimensions and body weight) compared to the control queens (Table 2). Indeed, when queens stop laying eggs during winter, the ovaries regress and they have less fat-body protein (Shehata et al. 1981). In contrast to control queens that were overwintered in their respective colonies, banked queens were confined in cages and were unable to resume egg laying before the end of winter.

Effect of overwintering queen banks on queen laying

Early in the spring of 2019, we prepared 24 nucs in which we introduced 8 queens from each group (control, 40-queen banks, and 80-queen banks). Two weeks later, we assessed queen acceptance and measured the area of the brood in each colony. The acceptance rate of queens was equivalent between the three groups. The control queens generated more brood than the banked queens after the first two weeks in the colony. However, after the first two weeks in the colony, the banked queens had regained their normal size and weight, indicating a performance similar to that of the control queens in the long-term. We repeated this test the following year and measured the brood area, number of bee frames, and colony weight monthly. At the beginning of the beekeeping season, the performance of the control queens was superior to that of the queens overwintered in banks. However, the difference quickly disappeared in July. These results show little impact of overwintering queens in banks when introduced in a new colony.

Conclusion

Over the past few years, our research has resulted in a better understanding of the various factors that contribute to the success of queen banking. We can now propose a method of overwintering queen banks in an environmental room from September to April (8 months). This 5-step method is summarized in Figure 1.

Our lab is pursuing its work on overwintering queen banks to further refine this method. Over the next few years, we will be studying the impact of long-term banking on queen and worker physiology.

Successful queen bank overwintering will allow Canadian beekeepers to have access to locally sourced queens in early spring, thus reducing queen imports and the associated sanitary risks. Furthermore, the use of overwintered Canadian bred queens will contribute in promoting existing Canadian selection programs that engage in local production of stock adapted to our climate and beekeeping industry.

Acknowledgements

This project was funded by the Innov'Action agroalimentaire volet 1 program of the Ministère de l'agriculture, des pêcheries et de l'alimentation (#IA119078), the Canadian Bee Research Fund of the Canadian Honey Council and the Natural Sciences and Engineering Research Council of Canada (NSERC, #2019-05843). We thank the beekeeping team of the Centre de recherche en sciences animales de Deschambault for their contribution to the project. Special thanks to Émile Houle who participated in the data collection and experimental design, and to queen breeders Anicet Desrochers (https://mielsdanicet.com/en-ca/) and Maggie Lamothe-Boudreau (https://www.facebook.com/rayonsdemiel/) .

For more details, please refer to the following publications

Rousseau, A. & Giovenazzo, P. (2021). Successful Indoor Mass Storage of Honeybee Queens (*Apis mellifera*) during Winter. *Agriculture*, *11*, 402. https://doi.org/10.3390/agriculture11050402.

Levesque, M., Rousseau, A. & Giovenazzo, P. (2022). Impacts of indoor mass storage of two densities of honeybee queens (*Apis mellifera*) during winter on queen survival, reproductive quality and colony performance, Journal of Apicultural Research. https://doi.org/10.1080/00218839.2022.2126613

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	Abdominal width (mm)	Abdominal length (mm)	Body weight (mg)	Ovary weight (mg)	Sperm viability (%)	Sperm count (million)
Control	4.73 ± 0.1	11.9 ± 0.3	233 ± 8.7	59.5 ± 3.8	82.6 ± 1.9	8.3 ± 0.4
40-queen banks	4.51 ± 0.1	10.5 ± 0.5	191 ± 12.4	30.1 ± 5.6	87.4 ± 2.7	8.7 ± 0.7
80-queen banks	4.71 ± 0.1	10.5 ± 0.5	188 ± 12.4	28.6 ± 5.6	84.7 ± 2.7	8.7 ± 0.7

Table 2. Average values of each quality criterion assessed in spring 2020, after overwintering, for the three groups of queens.

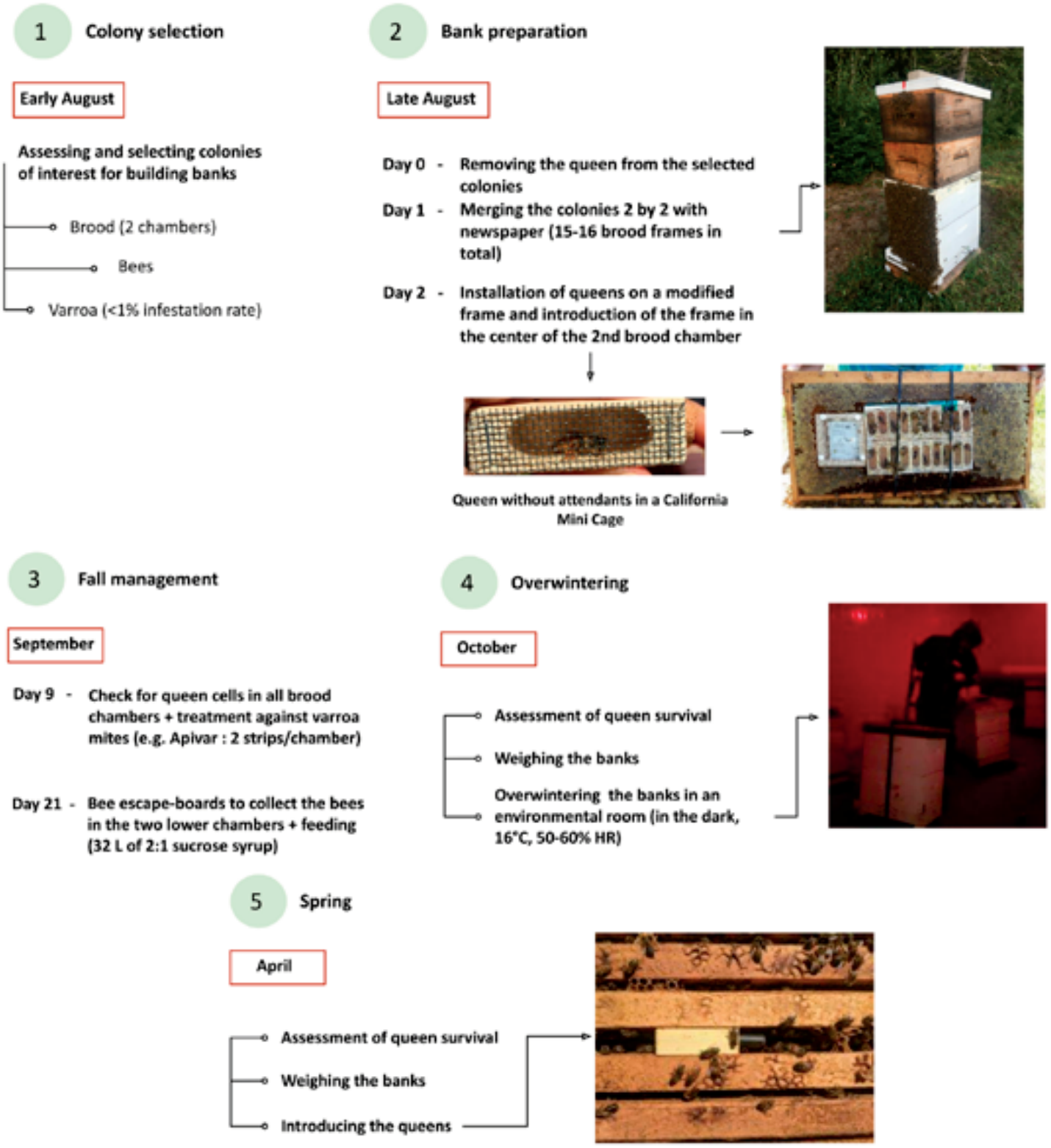

Figure 1. Five steps summarizing the queen bank overwintering method.

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Breeding for Low *Varroa* Growth (LVG) in Ontario Honey Bee Colonies

Research team: Ernesto Guzman, Alvaro De la Mora, Brock Harpur, Berna Emsen, Les Eccles, Paul G. Kelly, Daniel Borges, Paul H. Goodwin, Nuria Morfin.

Summary

The external parasitic mite *Varroa destructor* is considered the main threat to honey bees (*Apis mellifera*) worldwide (Rosenkranz et al., 2010). This mite has been responsible for most of overwinter colony losses in Canada (Currie et al., 2010; Guzman-Novoa et al., 2010), which exceeded 45% during the winter 2021-2022 (CAPA, 2022). The mite feeds upon the fat body tissue and haemolymph of honey bees (Ramsey et al., 2019). The fat body is involved in physiological processes related to immunity, detoxification, and overwintering survival (Roma et al., 2010). Additionally, the mite vectors and transmits different pathogenic viruses such as *deformed wing virus* (DWV) and reduces the lifespan of infested bees by about 50% (Yang & Cox-Foster, 2005; Reyes-Quintana et al., 2019).

One way that may reduce the impact of varroa mites on honey bee populations is establishing selective breeding programs to develop *Varroa*-resistant bee strains (Bhler et al., 2010; Rinderer et al., 2010; Hunt et al., 2016). Therefore, we implemented a breeding program to select for Low and High *Varroa* population Growth (LVG and HVG, respectively) for the first time in Canada.

The breeding methodologies followed in the present project seems to be an effective

alternative for beekeepers to control mite infestations and reduce the application of synthetic miticides, which lose effectiveness over time because the mites develop resistance against them (Wallner, 1999).

Two genotypes of bees (LVG and HVG) were produced after three generations of selection. The selected bee colonies were evaluated for mite population growth and health parameters such as grooming behaviour, related with natural *Varroa*-resistance (Morfin et al., 2019), haemocyte (insect blood cells) concentration, related with cellular immunity (Koleoglu et al., 2018), and DWV levels, correlated with the *V. destructor* parasitism levels in honey bee colonies (Emsen et al., 2015). This breeding program was conducted in collaboration with the Ontario Queen Breeders Association, the Ontario Beekeepers Association, and Purdue University. The methodology used for this breeding program has been adapted to be practical and replicable for queen breeders and it can be found at the Honey Bee Research Centre's website (https://hbrc.ca/). In addition to selective breeding practices, transcriptome markers were analyzed from samples of the third generation of both genotypes.

The results showed that LVG colonies had significantly lower rates of varroa mite population growth compared with HVG colonies. LVG bees started performing grooming instances faster and with intense occurrences than HVG bees. LVG bees had higher haemocyte concentration in the haemolymph and lower levels of DWV compared to HVG bees. Also, LVG bees that performed intense grooming instances showed differentially expressed genes (DEGs), which are associated with olfaction and gustation. The difference in expression of odorant protein genes and a gustatory receptors between bee genotypes suggests a possible link between them and the perception of irritants (such as *V. destructor*) to trigger rapid self-grooming instances that require the activation of energy metabolic pathways. Overall, these results indicate that LVG bees are healthier and have a better immune state than HVG bees, and advance the understanding of using field and genomic selection tools to improve honey bee breeding programs.

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Japan: Notification of new proposed MRLs

Dear Industry Stakeholders and Provincial Partners,

On December 2, 2022, Japan's Ministry of Health, Labour and Welfare (MHLW) notified the World Trade Organization (WTO) of a number of changes to Japan's maximum residue limits (MRLs) for the following agricultural chemical pesticides:

- Pyraziflumid
- Fludioxonil
- Trinexapac-ethyl
- Pyridalyl
- Isopyrazam
- Flutriafol
- Zoxamide

Upon an initial review, some exports may be impacted by the proposed changes to the MRLs, specifically meat and meat products, fish and fish products, honey and some vegetables.

Please see the attached document which incorporates the links for the notifications.

Please review the document and contact the Market Access Secretariat if you have any questions or concerns. Comments should be submitted by December 23, 2022 to aafc.mas-sam.aac@agr.gc.ca.

Sincerely, Market Access Secretariat

HiveLights

HelpWanted

Interlake Honey Producers Ltd. PO Box 328, Fisher Branch, MB R0C 0Z0 has the following positions:
Apiary Technician 5 Positions Available. Required for the 2023 honey season.
Seasonal, full time, days, evenings and some Saturdays. Work is mostly outdoors, so must be able to work under hot conditions. The job starts April 1st – July 1st. End Date: Sept 10th – October 31st. Wages: $14.00-$17.00/hour. Minimum 2 years experience preferred. Performance and/or production bonus may be available. Duties include but not limited to, feed and care for honey bees, replacement of hives and production of nucs, moving hives, supering hives, detect and report hive health and apply correct disease cures and/or controls, keep field and/or production records, harvest honey, working on extracting line, cleaning extracting equipment and honey house, raise queens, assemble and maintenance of bee equipment, drive and maintain vehicles, other duties as assigned. Work is very physically demanding, with long days and heavy lifting. The job is located 2 hours north of Winnipeg in the RM of Fisher NE 33-23-1W in Fisher Branch, MB. Send resume by mail to Box 328 Fisher Branch, MB R0C 0Z0 or email anita@ifsltd.ca

Help Wanted: Aylsham (SK)

Valleau Apiaries Ltd @ Aylsham, Sk requires Apiary Workers for 2023
7 Apiary Technicians (at least one year beekeeping experience) April to October
Duties to include preparing bees for honey production, harvesting and extracting honey, preparing bees for winter and any related duties. Wages starting at $13.00 based on experience.
2 Apiary Labourers (no experience) May to September. Duties to include preparing bees for honey production, harvesting and extracting honey, preparing bees for winter and any related duties. Wages starting at $12.00
8 Apiary Labourers (no experience) July to September. Duties to include harvesting and extracting honey, preparing bees for winter and any related duties. Wages starting at $12.00
On the job training provided. Manual labour, heavy lifting. Some evenings and weekends required.Located in a rural area @ NW33-48-12-W2. Please do not apply if you have an allergy to bee stings.
Mail resumes to Valleau Apiaries Ltd @ Box 7, Aylsham, Sk S0E 0C0 or email to valleau.apiaries@sasktel.net

Help Wanted: Falkland (BC)

Honey Onyx Apiary Inc., Main Job Location 3265 97 Highway, Falkland, British Columbia
V0E 1W1 Canada. With beehives in Falkland, Kamloops, Westwood, Lake Country areas and Dawson Creek.
General Farm Worker, Salary: $15.65/Hourly (CURRENT MINIMUM FOR BC)
Job Type: Full-Time with 45 hours/week- Seasonal/temporary (50 hours/week In May-June and August)
Worker starts: March 5, 2023 until October 20, 2023, Vacation: 4% in lieu of paid vacation days
Language: English or Spanish, Minimum Education: None, Positions Available: 3
Other benefits: Housing is provided by employer
JOB DUTIES. The following duties will be performed in this position:
- Frames and beehives assembly
- Cleaning and maintenance of the working areas (including the bee yard)
- Nucs reception and insertion in brood boxes
- Queens reception and introduction to nucs
- Nucs/Beehives feeding
- Add suppers on crop season
- Suppers loading and downloading
- Beehives movement
- Honey Crop
- Honey Extraction
- Frames cleaning/melting
- Wax melting
- Beehives Sanitary Treatments
- Winter preparation

REQUIREMENTS. The successful applicant will possess, at a minimum, the following skills and experience: Proven beehives and honey extraction experience (from 7 months to less than 1 year on apiary type of farm, letter of experience must be provided) Driving license, Criminal record check will be administered

Help Wanted: Shellbrook (SK)

Hannigan Honey Inc. requires the following helpers for the 2023 season:
3 Apiary Supervisors (NOC 8252) for full time (40+ Hrs/wk) seasonal employment ($17.00 - $18.00/ hr) experience pending, March through October 2023.
Applicants must have a minimum of 10 years experience in Canadian commercial beekeeping and have worked at least 3 years as an apiary technician. Duties will include supervising and training workers to care for bee colonies, recognizing, reporting, monitoring and controlling hive health issues, including assessing feed requirements. Harvesting and packaging honey. They must be able to drive (incl. Standard transmission and medium duty trucks, and maintain vehicles daily). Operate and maintain other apiary equipment such as forklifts, chainsaws and pumps. Keep field and production records. Must be able to interact with local farmers and land owners.
12 Apiary technicians (NOC 8431) for full time (40+ Hrs/wk) seasonal employment ($13.50 - $17.00 /hr experience pending), March through October 2023.
Must have a minimum of 1yr (season) working full time on a Canadian style commercial apiary. Duties will include unpacking and repacking winterized hives; caring for the colonies; recognizing, reporting and monitoring hive health issues and applying appropriate treatment/ prevention methods; harvesting honey; build and repair bee equipment; must have valid driver's license; conduct bee yard maintenance; fill out record keeping sheets, must be physically fit and able to reach, bend, crouch, kneel and withstand heavy lifting.
5 Apiary labourers (NOC 8431) for full time (40+ Hrs/wk) seasonal employment ($13.00 - $13.50 $/hr) from March through October 2023.
Applicants must be able to work in the presence of Honey bees; be mentally and physically fit; work well with others; able to follow instructions. Duties include unpacking and repacking winterized colonies; caring for honey colonies; assisting with harvest; assisting with bee yard maintenance; assist in building and repair of bee equipment; it is preferred if you have a valid drivers license. Must be physically fit and able to reach, bend, crouch, kneel and withstand heavy lifting.
Location: Hannigan Honey #9 Shell River Road, Shellbrook, SK – 1 km N. of Shellbrook
Contact: Murray Hannigan by email: Hanniganhoney@sasktel.net or
send resume to Box 367 Shellbrook, Sask. S0J 2E0

Help Wanted: East of Saskatoon (SK)

Meadow Ridge Enterprises Ltd requires help for the 2023 beekeeping season. The contract term is from April 15th to October 31st 2023. Meadow Ridge Ent Ltd is a commercial beekeeping and queen-rearing operation located 10 miles east of Saskatoon, NW 33 TP 36 RG 3 W 3rd in the RM of Blucher.
Apiary Technicians (NOC 8431): Minimum 1-2 years of beekeeping experience required.
Wage $13.00 - $16.00 depending on experience. Potential to earn bonuses. 3 positions to fill. Seasonal full-time(40 hr+/wk).
Duties include spring/fall feeding, unwrapping/wrapping hives, monitoring hive health, assisting in all aspects of queen rearing, and commercial honey harvesting. Fixing and building bee equipment, upkeep of bee sites, and maintenance of work vehicles.
Apiary Supervisors (NOC 8252): Minimum 3-4 years of beekeeping experience. Wage $17.00 - $21.00 depending on experience. Potential to earn bonuses. 2 positions to fill. Seasonal full-time (40 hr+/wk).
Duties include spring/fall feeding, unwrapping/wrapping hives, moving hives, monitoring hive health, assisting in all aspects of queen rearing, and commercial honey harvesting/extraction. Keeping daily records, supervising other employees, fixing and building bee equipment, upkeep of bee sites, and maintenance of work vehicles. A valid Driver's license is required.
All applicants must be able to work with honeybees and not be allergic to bee stings. Will work in all kinds of weather, a repetitive and physical job that will require heavy lifting, reaching, crouching, and standing. Being in good physical condition is required. Contact Albert J Robertson Phone: 3063739140
Please apply by email to a.j.robertson@sasktel.net

Help Wanted: Niagara on the Lake/Noelville (ON)

Required: 18 hardworking employees for the following positions:
Apiary Worker (Lower Skilled Worker): 12 required with a minimum of 1-2 years
experience, wage starting at $15.50/hr or new rate as per NOC code for 2023.
Apiary Technician (Skilled Worker): 5 required with a minimum of 2-3 years experience,
wage starting at $17.00/hr. or new rate as per NOC code for 2023.
Apiary Manager: 1 required. 3-5 years experience required. $22.00/hr. Must be able to manage up to 10 people and work under pressure and tight deadlines. Must have experience in all aspects of commercial beekeeping. Only those who can legally work in Canada should apply. All positions to be filled for the 2023 Season. (March-December) All wages are negotiable,

and are based experience and productivity. A valid driver's license is a benefit. Ability to speak English is an asset; must be physically fit. Must be willing and able to work 60+ hours a week. Excellent staff housing available. Contact BRIAN ROWAAN 905-328-6066. Please send resumes to brian@honeyfields.org

Help Wanted: MacGregor (MB)

14 SEASONAL BEEKEEPERS (applications open to permanent residents or citizens of Canada only) 1 APIARY SUPERVISOR ($16.50-$18.50 hr), 7 APIARY TECHNICIANS ($14.50-$16.50/hr), 6 APIARY WORKERS ($13.50-$15.00). Expected employment duration is March 15/23 to Nov 15/23. Start/end dates are flexible due to the nature of the business. Valid drivers license an asset, previous work experience is necessary, supervisor min. 5 years, technician min. 3 years, and work exp. is highly recommended for apiary worker. Candidates must be willing to work flexible hours in a fast paced, repetitive, and physically demanding environment. Duties include: assess/feed/medicate honeybee colonies, remove/extract honey, split/balance/move colonies, clean/collect pollen, build/repair hive equipment, and perform routine/light maintenance on machinery/vehicles. TO APPLY, Nichol Honey Farm Ltd., Box 461, MacGregor, Mb., R0H0R0, phone 204-252-2770, or email: nicholhoney@yahoo.ca

Help Wanted: Falum (AB)

PLEASANT VALLEY HONEY PRODUCERS LTD. (SW 15-46-27-W4 near Falun, AB) requires: Ten APIARY TECHNICIANS (NOC 8431) with a minimum of 2 years (seasons) experience working on a Canadian style commercial apiary with employment March thru December 2023 ($15.65-$18/hr to start depending on experience (40+ hrs/wk); Duties include: caring for honeybee colonies in the appropriate manner; coordinating the production of replacement bees and equipment; recognising, reporting, monitoring hive health issues and applying appropriate treatment/ controls; harvest and fill honey barrels and containers; supervise small teams of workers; driving and daily maintenance of vehicles; operate and maintain other apiary equipment; conduct bee yard maintenance; keep some field production records. A motor vehicle operator's licence with no serious infractions, recognised by the Province of Alberta and major insurance companies is an asset. . All wages are negotiable based on experience and productivity. Applicants must be able to work in the presence of honey bees. All positions may require some evening, night & weekend work. All applicants must be in good physical condition and able to work in a team environment. Ability to speak English is an asset. Contact Ryan Olthof in person at the farm to apply.
Contact Ryan Olthof. Phone: 780-352-2266

Help Wanted: Parkland County, AB

TPLR Honey Farms Ltd. requires four Apiary Technicians $16.50-$18.50/hr, five Apiary Workers $16.00-$17.50/hr needed full time (45+ hours/week) April-October 2023. Four Apiary Workers, $15.50-$16.50/hr needed full time, 45+ hours/week July-September 2023 in Parkland County, Alberta at TPLR Honey Farms Ltd. Accommodations provided. Some evening, night and weekend work. All applicants must be in good physical condition and able to work in a team environment. The Apiary Technicians must have a minimum of 2+ years (seasons) full time in a Canadian style commercial apiary with a minimum of 1 year (season) working as an Apiary Worker or Apiary Technician. The Apiary Workers must be able to work in the presence of honey bees and will assist with honey bee colony management and honey extraction/processing. The Apiary Workers must have a minimum of 1+ years (seasons) of working in a Canadian style commercial apiary as an Apiary Harvester or Apiary Worker. TPLR Honey Farms Ltd., Tim Townsend, Parkland County, Alberta. Tim@tplrhoneyfarms.com

Help Wanted: Austin, (MB)

Full time seasonal Apiary/Farm foreman (NOC 8252) and Apiary Laborers or Workers (NOC 8431) positions available at Busy Bee Apiaries Ltd. honey farm near rural Austin, MB., Lane #63074 on RD. 64N for the 2023 season.
Supervisor Apiarist/Farm Foremen (1 position) and Apiary Laborers or Technician/Workers (4 positions).
Apiarist /Farm Foreman: April 1 - Oct.31/2023.
Duties: supervisory duties, all apiary management like checking, medicating, feeding bee hives, queen and nuc production, harvesting/extracting honey, maintenance of all kinds, transporting bee colonies, woodworking, organizing, clean-up, other duties as assigned. Must have valid driver's license and English writing and speaking skills. Wages: $15-$20.00/hour based on qualifications. Looking for a minimum of 5 years beekeeping experience.
Apiary Laborers or Technician/Workers: 2 position, approximately April 1-Oct.31/2023, 2 positions, approximately. June 1-Oct.15/2023. Duties: all supervised hive management like checking, medicating , feeding bee hives, queen and nuc production, harvesting/extracting honey, woodworking, clean-up, other duties as assigned. Wages: $13.50-$15.00/hour based on position title, experience/ability. Drivers licence an asset, No education requirements. On site accommodation available. Hours and times of work for all positions are generally Monday-Friday and Saturdays as required and 08:00-18:00 but longer if required.
Send resume to Busy Bee Apiaries Ltd. Box 358, Austin MB., ROH 0C0, or email: pilotman1977@gmail.com

Help Wanted: Rocanville, (SK)

APIARY TECHNICIAN (7 months)
5 seasonal positions available from March 21 - October 21 (2023).
Reporting to work at B. Strong Apiaries Ltd. 1 mile southwest of Rocanville, Sk. (NE 17-16-31 W1)
Wages dependent on experience ($17.00 - $21.50) Possible production bonus at end of the season.
Duties include but are not limited to; Unwrapping/wrapping hives, colony manipulation, application of honeybee treatments, making nucs, supering, maintaining equipment and a clean shop, pulling and extraction of honey, moving and feeding hives, keeping accurate and up to date yard records, etc.
Requirements;
-Minimum of 2 years beekeeping experience.
-Must not be allergic to honeybee stings.
-The work is physically demanding, applicants must be in strong and active physical condition to maintain the safe work environment.
-Required long hours and occasional weekend/holiday work (minimum 40hours a week).
-Must work well with others, and able to work long hours in the heat.
-Ability to speak English is an asset but not a requirement.
APIARY WORKER (6 months)
6 seasonal positions available from April 21 - October 21 (2023).
Reporting to work at B. Strong Apiaries Ltd. 1 mile southwest of Rocanville, Sk. (NE 17-16-31 W1)
Wages dependent on experience ($16.00 - $18.50) Possible production bonus at end of the season.
Duties include but are not limited to; Assisting apiary technicians in the unwrapping/wrapping of hives, colony manipulation, application of honey bee treatments, making nucs, supering, maintaining equipment and a clean shop, pulling and extraction of honey, moving and feeding hives, safely securing truckloads of honey/equipment, etc.
Requirements;
- Must not be allergic to honeybee stings.
- The work is physically demanding, applicants must be in strong and active physical condition to maintain the safe work environment.
- Required long hours and occasional weekend/holiday work (minimum 40hours a week).
- Must work well with others, and able to work long hours in the heat.
- Ability to speak English is an asset but not a requirement.

APIARY WORKER (3 months)
6 seasonal positions available from July 3rd - September 15 (2023).
Reporting to work at B. Strong Apiaries Ltd. 1 mile southwest of Rocanville, Sk. (NE 17-16-31 W1)
Wages dependent on experience ($16.00 - $18.50) Possible production bonus at end of the season.
Duties include but are not limited to; Cleaning warehouse at start of season. Daily upkeep and maintenance of extracting area/honey house, extraction of honey, cleanup after extraction season, painting of honey supers,painting and other general upkeep the honeyhouse. etc.
Requirements;
- Must not be allergic to honeybee stings.
- Required long hours and occasional weekend/holiday work (minimum 40 hours a week).
- Must work well with others, and able to work long hours in the heat.
- Ability to speak English is an asset but not a require ment.

Contact Lance Strong@ bdstrong@sasktel.net

Help Wanted: Kinistino (SK)

Apiary Harvest Labourer. Baconian Bee Farm Ltd., located at 102 Ruttle Avenue in Kinistino, Sk., is seeking up to two full-time employees to fill the seasonal positions of Apiary Labourer for the 2023 crop year. The position consists of work with honeybees. Duties primarily include, but are not limited to assisting with, moving colonies out of and into the wintering facility, feeding and medicating colonies, evaluation and development of colony strength, building and repairing of equipment, harvesting of honey supers, extracting and storing honey, and colony location maintenance.
The successful applicants must be able to work outdoors, work well with other employees, work in a fast paced and physically demanding environment, and be able to work evenings and weekends when it is deemed necessary. The average work day is 6-12 hours or roughly 30-60 hours per week. Wages shall begin at $13.00 and up depending on experience in the industry. Housing is available. The position is for a term of approximately 7 to 8 months beginning no earlier than March 15, 2023 and ending no later than November 15, 2023. No experience required to fill these positions.
To apply for this position, e-mail resume to dionebacon13@sasktel.net
Apiary Harvest Worker. Baconian Bee Farm Ltd., located at 102 Ruttle Avenue in Kinistino, Sk., is seek-

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ing up to two full-time employees to fill the seasonal positions of Apiary Worker for the 2023 crop year. The position consists of work with honeybees. Duties primarily include, but are not limited to assisting with, moving colonies out of and into the wintering facility, feeding and medicating colonies, evaluation and development of colony strength, building and repairing of equipment, harvesting of honey supers, extracting and storing honey, and colony location maintenance.
The successful applicants must have a minimum of two years' experience in the industry, be able to work outdoors, work well with other employees, work in a fast paced and physically demanding environment, and be able to work evenings and weekends when it is deemed necessary. The average work day is 6-12 hours or roughly 30-60 hours per week. Wages shall begin at $14.00 to $18.00 depending on experience in the industry. Housing is available. The position is for a term of approximately 7 to 8 months beginning no earlier than March 15, 2023 and ending no later than November 15, 2023. To apply for this position, e-mail resume

Help Wanted: Kinistino (SK)

Apiary Harvest Labourer - Position 1
Bacon Apiaries Ltd, located at 102 Ruttle Avenue in Kinistino, Sk., is looking for six honey harvest labourers for the upcoming 2023 crop season for extracting honey. Job duties include using an automatic lift to place full honey supers on a conveyor, running honey frames through an uncapper, moving frames into an extractor, removing empty frames and putting them into supers, stacking them away, making new honey equipment and repairing existing honey equipment.
The average work day is 6-12 hours or roughly 30-60 hours per week with wages starting at 13.00/hr to $16.00/hr depending on experience. The employment term is from July 4, 2023 to September 25th 2023. Send resume by email to rbacon@sasktel.net
Apiary Harvest Labourer - Position 2
Bacon Apiaries Ltd., located at 102 Ruttle Avenue in Kinistino, Sk., is seeking up to two full-time employees to fill the seasonal positions of Apiary Labourer for the 2023 crop year. The position consists of work with honeybees. Duties primarily include, but are not limited to assisting with, moving colonies out of and into the wintering facility, feeding and medicating colonies, evaluation and development of colony strength, building and repairing of equipment, harvesting of honey supers, extracting and storing honey, and colony location maintenance.
The successful applicant must be able to work outdoors, work well with other employees, work in a fast paced and physically demanding environment, and be able to work evenings and weekends when it is deemed necessary. The average work day is 6-12 hours or roughly 30-60 hours per week. Wages starting at 13.00/hr to $16.00/hr depending on experience in the industry. Housing is available. The position is for a term of approximately 7 to 8 months beginning no earlier than March 15, 2023 and ending no later than November 15, 2023. Send resume by email to rbacon@sasktel.net

Help Wanted: Kinistino (SK)

Apiary Harvest Labourers and Apiary Harvest Workers
Apiary Harvest Labourer
B's Bee Ranch Inc., located at 102 Ruttle Avenue in Kinistino, Sk., is seeking up to two full-time employees to fill the seasonal positions of Apiary Labourer for the 2023 crop year. The position consists of work with honeybees. Duties primarily include, but are not limited to assisting with, moving colonies out of and into the wintering facility, feeding and medicating colonies, evaluation and development of colony strength, building and repairing of equipment, harvesting of honey supers, extracting and storing honey, and colony location maintenance.
The successful applicants must be able to work outdoors, work well with other employees, work in a fast paced and physically demanding environment, and be able to work evenings and weekends when it is deemed necessary. The average work day is 6-12 hours or roughly 30-60 hours per week. Wages shall begin at $13.00 and up depending on experience in the industry. Housing is available. The position is for a term of approximately 7 to 8 months beginning no earlier than March 15, 2023 and ending no later than November 15, 2023. No experience required to fill these positions.
To apply for this position, e-mail resume to beeranch@sasktel.net
Apiary Harvest Worker
B's Bee Ranch Inc., located at 102 Ruttle Avenue in Kinistino, Sk., is seeking up to two full-time employees to fill the seasonal positions of Apiary Worker for the 2023 crop year. The position consists of work with honeybees. Duties primarily include, but are not limited to assisting with, moving colonies out of and into the wintering facility, feeding and medicating colonies, evaluation and development of colony strength, building and repairing of equipment, harvesting of honey supers, extracting and storing honey, and colony location maintenance.
The successful applicants must have a minimum of two years' experience in the industry, be able to work outdoors, work well with other employees, work in a fast paced and physically demanding environment, and be able to work evenings and weekends when it is deemed necessary. The average work day is 6-12 hours or roughly 30-60 hours per week. Wages shall begin at $14.00 to $18.00 depending on experience in the industry. Housing is available. The position is for a term of approximately 7 to 8 months beginning no earlier than March 15, 2023 and ending no later than November 15, 2023. To apply for this position, e-mail resume to beeranch@sasktel.net

Help Wanted: Prince (SK) (RM of Meota)

2023 Seasonal Help Wanted - Farmer Brown's Honey
3 - Apiary Technicians/Workers - Minimum of 1-2 full seasons of apiary experience required.
Wage: $13.00 - $15.40 per hour depending upon experience. Job includes: wrapping/unwrapping hives; spring and fall maintenance, feeding hives, creating nucs, queen-rearing, supering hives, pulling honeys supers (80+lbs) and carry and stack on the truck deck; extracting honey; moving hives; maintain bee yards and any other assorted apiary jobs that are required.
2 – Farm labourers: Wages: $13.50 – 14.50 per hour. (Employment period - July 15th – August 30th)
Job Incudes: harvesting (supering hives, pulling honeys supers (80+lbs) and carry and stack on the truck deck) and extracting honey. Successful candidates may be required to assist in other apiary/farm tasks.
Requirements: No formal education required but with at least a Grade 12 education would be an asset. Have valid driver's licence; have a vehicle to get back and forth to work. Experience driving a standard truck is an asset; to be in good physical condition and to be able to work in a team environment.
Please do not apply if you are allergic to bees!
Employment Details: Seasonal and full-time – Minimum of 40+ hours per week.
Training is provided on a ongoing basis. Most tasks are performed outdoors in all kinds of weather, work is repetitive and physically demanding. Work location are: SW 14-46-17 W3, Hamlet of Prince; our bee yards are located in the RM's of Meota, North Battleford, Turtle River, Round Hill, and Douglas. Mail or deliver your resume with references to: Farmer Brown's Honey Site 4 Box 54 RR#3. North Battleford, SK S9A 2X4 or email to: farmerbrownshoney@gmail.com

Help Wanted: Big River (SK)

West Cowan Apiaries is hiring for the 2023 Apiary Season
Start dates: April 3- October 28, 2023
3 - Apiary Supervisors - Minimum of 3-4 full seasons of apiary experience required.
Wage: $15.46- $22.00 per hour depending upon experience.
Job Includes: to work in the presence of honeybees and will assist with colony management; honey extraction and processing; and queen-rearing. Recognize and report beehive health issues and to apply appropriate disease cures or controls. Supervise and give direction to other employees. Keep field and production records and any other apiary jobs that are required.
4 - Apiary Technicians/Workers - Minimum of 1-2 full seasons of apiary experience required.
Wage: $12.81- $15.40 per hour depending upon experience.
Job includes: wrapping/unwrapping hives; spring and fall maintenance, feeding hives, creating nucs, queen-rearing, supering hives, pulling honeys supers (80+lbs) and carry and stack on the truck deck; extracting honey; moving hives; maintain bee yards and any other assorted apiary jobs that are required.
Requirements for both jobs: No formal education required but with at least a Grade 12 education would be an asset. Have valid driver's licence; have a vehicle to get back and forth to work. Experience driving a standard truck is an asset; to be in good physical condition and to be able to work in a team environment. Please do not apply if you are allergic to bees!
Employment Details: Seasonal and full-time – Minimum of 40+ hours per week.
Training is provided on a ongoing basis. Most tasks are performed outdoors in all kinds of weather, work is repetitive and physically demanding. Work locations are: SE 14-56-8 W3; our bee yards are located in the RM's of Big River, Shellbrook and Canwood. Mail or deliver your resume with references to: West Cowan Apiaries- PO Box 425, Big River, SK. S0J 0E0 Fax to: 306-469-5779 or email to: c.warriner@sasktel.net

Help Wanted: Roblin (MB)

Positions available for 2023 season
3012352 Manitoba Ltd. o/a Wendell Honey Box 1439, Roblin, MB R0L 1P0
Reporting to work at Wendell Honey, one-mile East of MacNutt, Saskatchewan.
Transportation provided from there to various bee yards.
18 Full Time Positions available at Wendell Honey in 2023
• APIARIST TECHNICIAN (NOC 8252)
- help with Spring check, hive assessment and manipulation.
- help with pest and disease control.
- help with grafting, making nucs, and raising queens.
- assemble equipment.
- help super hives.
- help harvest honey.
- help keep field production records.
- help maintain bee yards.
- help with Fall feeding, assessment and treatments.
- help to wrap bees.

- team lead/supervise as required
- other duties as assigned
• Positions available from April 3, 2023 to mid-October 2023
• Min. 2 years of experience working with bees necessary.
• Work is physically demanding.
• Wages $17.00 -$28.00 per hour depending on experience
• Possible production bonus.

Email Isabel Wendell at info@wendellestate.ca or fax 204-564-2568 or phone 204-937-7767.

15 Full Time Positions available at Wendell Honey 2023

• Apiary Worker (NOC 8431) to
- assemble equipment.
- help super hives.
- help harvest honey.
- help maintain bee yards.
- help with Fall feeding.
- help to wrap bees.

• Positions available from May 1, 2023 to mid-October 2023
• No experience required.
• Work is physically demanding.
• Wages $15.00 - $20.00 per hour depending on experience
• Possible production bonus.

Email Isabel Wendell at info@wendellestate.ca or fax 204-564-2568 or phone 204-937-7767

Help Wanted: Austin (MB)

Apiary Workers/Technicians. New Rutherford Apiaries (4647204 Manitoba Ltd)

R.R.1, Austin, MB R0H0C0

Apiary Technician/Worker 4 Positions

Located northwest of Austin, MB in the RM of North Norfolk (69033), New Rutherford Apiaries Ltd requires four, full time, seasonal, Apiary Technicians/Workers for the 2023 season. The positions start: March 05 - June 05, 2023. End date: September 15 - November 05, 2023.

Duties include helping with: honey harvest and extracting, feeding and medicating hives, moving hives, making hive increases, queen rearing, building hive equipment, beeyard maintenance and clean-up. Must have at least one season of commercial beekeeping experience. Work is physically demanding, often in a very hot environment with weekend and evening hours required. Wage rate of $12.61 - $15.00/ hour depending on experience.

Apply to Mike Lewis at: mike-beehive@hotmail.com Ph: (204)466-2551 or mail to the above address.

Help Wanted: Langenburg (SK)

Glory Bee Honey Farms Seeks employees for the 2023 Season

Located in Langenburg and Esterhazy, SK Glory Bee Honey has job openings for Apiary Technicians, Apiary Technician Assistants These positions are available for full time (35+hrs/week) from April-October for the 2023 season. Also available is Honey Harvest labourer/General farm worker positions which is 2-3 months starting July-Sept for 2023.

8 Apiary Technicians (March/April-October)

2-3 yrs experience necessary to apply.

Jobs include:

Help with spring check, do hive assessment and manipulation. Help with pest and disease control. Help with grafting, building and looking after nucs. Help queens raise. Help with harvest. Help to apply medication and treatments. Driving vehicles

*Lifting is required. Wages- $20.00-$24.00/hr depending on experience

14 Apiary Technician Assistants (6 month position)

Jobs Include: Help apiary technicians. Assemble equipment

Help super hives. Help harvest honey. Help keep field production records. Help maintain bee yards. Help with fall feeding, assessment and treatments.. Help to wrap bees. *Lifting is required. Wages $15.00-$19.00 depending on experience

10 Honey Harvest Labourers (2-3 month position)

To help with harvest and extraction of honey. Work in the bee yards pulling honey. Work in the extraction plant. Clean honey harvest equipment, other General Labour jobs. No experience necessary will train on the job *Lifting is required. Wages starting at $15.00-19.00/hr depending on experience

Positions available from April 15, 2023 to October 31st 2023. Applicants must be physically and mentally fit to work outdoors and with bees.. To apply please email resume and references to: glorybeehoneyfarms@gmail.com for more information.

Help Wanted: Tees (AB)

TEES BEES INC. (Alberta) requires for the 2023 season.

Three APIARY TECHNICIANS (NOC 8431) with a minimum of 2-3 years (seasons) experience working on a Canadian style commercial apiary in the min. capacity of Apiary Worker or General Farm Worker with employment March thru October 2023 ($15.65-$19/hr depending on exp. with possible bonus) (40+ hrs/wk); Duties include: caring for honeybee colonies in the appropriate manner; coordinating the production of replacement bees and equipment; recognizing, reporting, monitoring hive health issues and applying appropriate treatment/controls; harvest and fill honey barrels and containers; supervise small teams of workers; driving and daily maintenance of vehicles; operate and maintain other apiary equipment; conduct bee yard maintenance; keep some field production records. A motor vehicle operator's licence with no serious infractions, recognized by the Province of Alberta and major insurance companies is required.

Nine APIARY WORKERS (NOC 8431) with a minimum of 1 year (season) experience and with employment March thru October 2023 ($15.65-$17/hr depending on exp. with possible bonus) (40+ hrs/wk); Duties include caring for honeybee colonies in the appropriate manner; assisting Technicians with bees and equipment; assisting with harvesting honey; assisting with the bee yard and equipment maintenance.

All wages are negotiable based on experience and productivity. Applicants must be able to work in the presence of honey bees. All positions may require some evening, night & weekend work. All applicants must be in good physical condition and able to work in a team environment. Ability to speak English is an asset.

Contact Jeremy Olthof at 23318-Hwy 50, Tees, AB; mail to RR1, Tees, AB T0C 2N0; or email at teesbeesinc@gmail.com.

Help Wanted: Nipawin, (SK)

Yves Garez Honey Inc, P.O Box 2016, Nipawin, SK, S0E 1E0 seeks employees for the March 2023 to October 2023 season at facilities located 10 km North-East of Nipawin, Saskatchewan.

Good work ethics, health and stamina essential, for hard work, heavy lifting, long days including some weekends. Those allergic to bee stings and work need not apply.

- 3 Apiary Supervisors (NOC 8252) with 5 years experience in handling bee hives including unpacking and packing, checking, feeding, medicating, cleaning, moving, splitting, supering, raising queens, as well as harvesting and extracting honey. Wages $ 18.00 to $ 22.00 per hour, depending on experience.
- 8 Apiary Technicians (NOC 8431) with 2 years experience working with bees. Wages $ 15.00 to $ 18.00 per hour.
- 4 Apiary Workers (NOC 8431) No experience required. We will train successful applicants in Honeybees and Hive manipulation. Wage start at $ 13.00 per hour.

email: y.garez@sasktel.net

Help Wanted: Spiritwood (SK)

Jewitt Honey Farm

Apiary Labourers

2 Full-Time Seasonal Positions for 2023 May 1st – September 15th

Responsibilities will include but not limited to; assemble equipment, unwrapping hives, bee yard maintenance, moving hives, cleaning deadouts, cleaning extracting facility, painting, making nucs, supering hives, harvesting honey, extracting honey, feeding bees. Will be required to work some evenings and weekends, work is physically demanding with heavy lifting, cannot be allergic to bees, a valid SK driver's license would be an asset. $12.00-$15.50/hr. depending on experience, willing to train, potential to earn bonuses.

Apiary Labourers

2 Full-Time Seasonal Positions for 2023 July 1st – September 15th

Responsibilities will include but not limited to; bee yard maintenance, moving hives, cleaning extracting facility, painting, supering hives, harvesting honey, extracting honey, feeding bees. Will be required to work some evenings and weekends, work is physically demanding with heavy lifting, cannot be allergic to bees, a valid SK driver's license would be an asset. $12.00-$15.50/hr. depending on experience, willing to train, potential to earn bonuses. To apply, email resume to jewitthoneyfarm@gmail.com or mail resume to Box 969 Spiritwood, SK S0J 2M0

Help Wanted: Argyle (MB)

Grysiuk Apiary Inc. requires 7 full time seasonal apiarists in Argyle,MB. wages are $14.00 - $16.50 per hour depending on experience(possible bonus) Job is physically demanding, must help with wrapping, feeding, making nucs, supering, pulling honey, honey extraction, medicating hives and winter preparation. Start date is February 1, 2023 - November 15, 2023. Please apply by email: acgrysiuk@shaw.ca Ph.204-831-7838, or mail: 83 Acheson Dr., Winnipeg,MB. R2Y 2E8.

Help Wanted: Grunthal (MB)

Hawthorn Ridge Ltd Box 623, Grunthal, Manitoba R0A 0R0 has the following seasonal employment opportunities for the 2023 honey season. Contact Allen Martens

Apiary Technician: 4 positions available

Duties include but not limited to, feed and care for honey bee colonies, assist in the production of nucs and replacement hives, detect and report hive health issues and apply appropriate cures/controls, moving hives, supering hives, drive and maintain vehicles, harvest honey and work on extracting line, operate and maintain apiary equipment, assembly and maintenance of bee equipment, bee yard maintenance, keep field and/or production records, and other duties as assigned.

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Seasonal, full time, with some weekend and evening hours required. Work is physically demanding and often in very hot conditions. Start Date: April 1 – July 1. End Date: September 1 – November 1.. Wages: $14.00-$17.00/hour.
Minimum 2 years commercial beekeeping experience preferred.
The job is located 1 hour south of Winnipeg in the RM of DeSalaberry NW 27-4-5E in Grunthal, MB.
Apply by sending resume to Hawthorn Ridge Ltd, Box 623, Grunthal, MB R0A 0R0 or email hawthornridgeltd@gmail.com.

Help Wanted: Fort Macleod (AB)

POELMAN APIARIES LTD. located near Fort Macleod, AB (102007A Range Rd 254) has the following positions available for the 2023 season:
7 FARM SUPERVISORS (SKILLED WORKER, NOC 8252) with a minimum of 5 years(seasons) experience working at a Canadian apiary. Employment needed from March through October 2023; wage starting at $17.50 (depending on exp. with possible bonus) (40 + hrs/week). Duties will include: caring for honeybee colonies in the appropriate manner; coordinating the production of replacement bees and equipment; recognizing, reporting, monitoring hive health issues and applying appropriate treatment/controls; harvest and fill honey barrels and containers; supervise small teams of workers; driving of vehicles; operate and maintain other apiary equipment; conduct bee yard maintenance.
16 APIARY TECHNICIANS(LOW SKILL WORKER, NOC 8431) with a minimum of 1-2 years experience. Employment needed from April through November 2023; wage starting at $15.65- $17.50(depending on exp. with a possible bonus) (40 + hrs/week). Duties will include: caring for honeybee colonies in the appropriate manner; assisting Technicians with bees and equipment; assisting with harvesting honey; assisting with the bee yard and equipment maintenance.
6 GENERAL FARM LABOURERS (LOW SKILL WORKER, NOC 8431) experience is an asset but will be trained. Employment needed for April through November 2023; wage starting at $15.65 per/hour (with possible bonus) (40 + hrs/week). Duties will include: Supering and harvesting honey, cleaning honey extraction and storage equipment, barrel moving prep, filling and storage, manufacture and assemble and maintain hive equipment, and bee yard maintenance.
All wages are negotiable based on experience and productivity. Housing is available. Applicants must be able to work in the presence of honey bees. All positions may require some evening, night & weekend work. All applicants must be in good physical condition and able to work in a team environment. Ability to speak English is an asset.. Email resumes to pollenpal@gmail.com attention Poelman Apiaries or fax to 403-687-2410 or mail to Box 1887 Fort Macleod, AB T0L 0Z0.

Help wanted: Reimer Honey Farm (MB)

Reimer Honey Farm is looking for apiary technicians: DUTIES; Spring work including hive checks and medication; Feed and care for honeybee colonies; Assist in the production of nucs and replacement beehives and Queens; Supering beehives; Harvesting honey; Cleaning honey extraction and storage equipment; Honey extraction; Preparation, filling and storage of all honey and wax containers; Move beehives; Collect and package honey, pollen and/or beeswax; Manufacture, assemble and maintain beehive equipment; Operate and maintain other apiary related equipment. Minimum 1 year experience. Full time From April to October. Phone: 204-381-6401

Help Wanted: Pitt Meadows (BC)

Contact Richard. Phone: 604-460-8889
We are looking for a Beekeeper (NOC 8431 – Apiary Technician) to join our Dr. Bee Beekeeping team at our Pitt Meadows, British Columbia farm. This full-time seasonal position works from March 1st to October 15th. We are looking to hire for the 2023 season with work starting on March 1st, 2023.
Responsibilities
- Transporting bee hives
- Bee colony observation and maintenance
- Harvesting and extracting honey
- Assist in queen rearing
- Assist in royal jelly production
- Clean, maintain, and assemble beekeeping equipment
- Miscellaneous general farming work

Requirements
- Minimum 3 years of commercial beekeeping experience
- Familiar with brood nest management, livestock production, honey production, and disease and pest control
- Any experience with queen rearing and/or royal jelly production is highly preferred
- Be able to operate small engine equipment
- In good physical condition
- Be able to work well with others and be able to understand instructions in English
- Valid Class 5 Driver's Licence or equivalent

Compensation/Benefits
- Starting wage $18-20 based on experience
- Eligible for comprehensive benefit program following 3 months of work
- Accommodations available, you are responsible for your own food and luxuries

If you are interested in this opportunity, you can apply by emailing your resume to careers@drbee.ca with the subject line "Beekeeper".

Help Wanted: Ardmore (AB)

T'N'T Apiaries require:
An Apiary Foreperson (NOC 82030) for full time (40+ hrs/wk) year round employment ($20.00-$25/hr depending on experience. Bonus possible). Position commences April 2023. Applicant must have a minimum of 5 years (seasons) full time in a Canadian style commercial apiary environment with a minimum of 3 years (seasons) working as an Apiary Technician.
Duties include:
- Caring for honeybee colonies in the appropriate manner
- Coordinating the production of replacement bees & equipment.
- Recognizing, reporting, monitoring and controlling hive health issues.
- Harvest & package honey, pollen & beeswax.
- Supervise & train workers.
- Drive (including std transmission & medium duty trucks) & daily maintenance of vehicles.
- Operate & maintain other apiary equipment (including forklifts, chainsaws & pumps)
- Conduct bee yard maintenance.
- Keep field and/or production records.
- Interact with external farm personnel.

5 APIARY TECHNICIANS (NOC 84120) for full time (40+ hrs/wk) employment ($17.00-$22/hr depending on experience. Bonuses possible). February thru November 2023. 1-2 Positions may become year round. Must have a minimum of 2 years (seasons) working full time on a Canadian style commercial apiary in the min. capacity of Apiary Assistant or General Farm Worker.
Duties include:
- Caring for honeybee colonies in the appropriate manner.
- Co-ordinating the production of replacement bees and equipment.
- Recognizing, reporting, monitoring hive health issues and applying appropriate treatment/controls.
- Harvest and package honey, pollen and beeswax.
- Supervise small teams of workers.
- Drive (including std transmission and medium duty trucks) and daily maintain vehicles.
- Operate and maintain other apiary equipment (including forklifts, chainsaws and pumps).
- Conduct bee yard maintenance.
- Keep some field and/or production records.

6 APIARY WORKERS (NOC 85100) for full time (40+ hrs/wk) employment ($16.55-$19.00/hr. depending on experience. Bonuses Possible) February thru November 2023. Applicants must be able to work in the presence of honey bees.
Duties include:
- Caring for honeybee colonies in the appropriate manner
- Assisting Technicians with bees and equipment.
- Assisting with harvesting honey, pollen and beeswax.
- Assisting with the bee yard and equipment maintenance.

Some evening, night and weekend work is required of all positions. All applicants must be in good physical condition and able to work in a team environment. Preference will be given to those Technicians and Worker applicants holding a motor vehicle Operator's license with no serious infractions, recognized by the Province of Alberta and major insurance companies.
Contact Dave Tharle, 44116 - Hwy 659, Ardmore, AB or Box 80, Ardmore, AB. (Fax 780-826-6013) Email: tntapi@mcsnet.ca

Help Wanted: Flying Dutchman Apiaries (BC)

We are looking for 2 experienced apiary workers for the 2023 season (NOC 8431-Apiary –Technician) to join our operation on our Vancouver Island B.C. farm. These full time seasonal positions from March 1st to October 31st, 2023 (40+hrs/ wk.)
Responsibilities:
- Hive maintenance, feeding, monitoring hive health and applying appropriate treatments. Clean, maintain and assemble beekeeping equipment. Conduct bee yard maintenance. Assist in making Nucs and rearing Queens.
- Moving hives for pollination and into summer mountain pasture. Night and evening work will be required. Harvesting and extracting honey.
- Being able to operate small engine equipment. Assist in miscellaneous general farm work. Have a valid class five license or equivalent. Starting wage $17 - $19 per hour depending on experience.

Must be in good physical condition, able to lift 35+ kg honey boxes, be comfortable working around bees and have no bee allergies. Must be able to work with others and have the ability to communicate in English.
Email flydutch@telus.net with a copy of your resume or send Flying Dutchmen Ventures, 1958 Alberni Hwy. PO 160, Coombs, BC V0R 1M0.

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Publication Agreement # 43070512

The Canadian Honey Council is the national association of beekeepers representing apiculturists across Canada. The CHC provides a forum where producers, packers, professionals, provincial associations and officials from different levels of government can talk and recommend action in the best interests of the Canadian honey bee industry. Currently, the CHC membership consists of representatives of provincial associations with the total number of beekeepers at approximately 10,000 managing over 750,000 colonies.