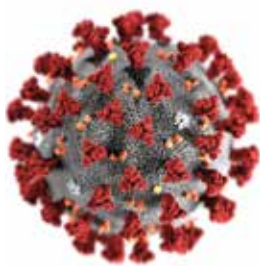




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Covid - 19 and the CHC



APIMONDIA Report



Provincial Bee Association Releases Plan to Stop Devastating Varroa Parasite

Best Management Practices

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The Robbing Event

see
page 11



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Canadian Honey Council Report



Rod Scarlett, Executive Director, CHC

The Canadian Honey Council Highlights from the past year

The year was certainly unlike any other in recent memory. For the Canadian Honey Council (CHC), we welcomed six new members to our nine member Board and sights were set for significant promotion of Canadian honey internationally. However, a poor fall resulted in overwintering losses that neared record levels, and just as we were beginning to get ready for the spring season, Covid 19 struck and put a lot of business activities in turmoil. Commercial air travel was severely limited meaning packaged bees were difficult, if not impossible to get in a timely fashion. Queen bee imports were impacted as alternate delivery mechanisms had to be enacted. Further complicating matters was a quarantine breach in northern California. The arrival of temporary foreign workers was jeopardized and the CHC had to arrange charters to facilitate the arrival of well over 200 Nicaragua workers. Fortunately, at the same time we were able to repatriate nearly 100 Canadian who were stranded in Nicaragua. More recently, with commercial flights still not flying to Managua, in October the CHC arranged a charter returning workers to Nicaragua (with plans for another flight in November if necessary).

Aside from the Covid related issues, the CHC was busy in the area of bee health. Working with Vita Bee Health, the CHC facilitated the re-introduction of Fumagilin-B.

We have also registered Formic 65 and Oxytet 25 with the production of those products are expected to begin in the new year. Plans are also under way to expand the registration of oxalic to include an oxalic-glycerin application.

Due to growing international pressure, steps are underway to get a maximum residue level set for glyphosate in honey. The Canadian Food Inspection Agency continued with its honey monitoring and testing and we continue to urge for expanding testing of all imported honey.

Based on the excellent example set by the Alberta Beekeepers Commission, the CHC developed a national Honey Exporters' Catalogue which we will update regularly, post on our website, and use at the many trade shows we will be participating in when things get back to normal. Additionally, in conjunction with the Canadian Agricultural Human Resource Council (CARHC), the CHC is developing a series of training videos for apiary workers. The videos will touch on topics such as seasonal management, biosecurity, moving bees for pollination and worker health and safety. It is expected that these videos will provide employers additional tools in the training of new and experienced employees alike.

The fall and winter look to be extremely busy as contingency plans will need to be developed in the event that the pandemic continues to disrupt beekeepers' business operations. ■



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Best Management Practises

Contributed by the Honey Committee of the Canadian Honey Council

Canadian beekeepers are proud to produce some of the best honey in the world. The long Canadian summers, intense honey flow and production of mostly light honey is a testament to the health of our beekeeping industry and the work ethic of all Canadian beekeepers. Canadian honey can be shipped anywhere in the world with limited analysis because of the reputation we have worked hard to gain among countries who look to Canada as a leader in honey production per hive and quality of honey.

That being said, there are some periods during our beekeeping season where the bees experience a dearth and require some supplemental feeding. It is the beekeepers responsibility to ensure any supplemental feeding provided to bees is utilized by the bees during their build-up, or stored in the brood chambers. Feeding syrup should not take place when honey supers are on the hive.

Different feeding methods and access of neighbouring bees must also be considered. Recent research conducted on distances bees will forage to alternate feed sources indicates that bees will easily travel 2-3 km (or more) to an alternate food source, especially in times of dearth. Please remember that although you may be open feeding when you have no honey supers, your neighbour may have honey supers on their hives near your beeyard. It will not take long for a strong hive to harvest a quantity of syrup and store it in honey supers in good weather.

Below are some Best Management Practises outlining proper practices for beekeepers. Please be considerate to other beekeepers in your area and help maintain the Canadian honey industry's integrity.

Nutritional Management

Honey bees require carbohydrates, proteins, lipids (fats), vitamins and minerals for proper growth and development. They acquire these by foraging for nectar and pollen. Nectar is produced by flowers to attract pollinators. It is mainly composed of water and different sugars (though trace amounts of vitamins and minerals are also present) and is the main source of carbohydrates for honey bees. Nectar is collected by bees and ripened into honey, which is stored in the hive. Pollen grains are the main source of protein for honey bees (including all 10 essential amino acids), as well as lipids, vitamins and minerals. In addition to nectar and pollen, honey bees also forage for water. Besides its physiological uses, water is used by bees to maintain a constant temperature and humidity within the hive and to liquefy crystallized honey.

While honey bees forage for nectar and pollen from flowers, beekeepers are often required to feed colonies throughout the year for a number of reasons. Early in the spring, feeding can help tide colonies over until natural sources of nectar and pollen are readily available. Spring feeding can also be used to stimulate brood production and colony growth. In the fall, feeding is necessary to provide bees with enough stores to last through the winter. During times of nectar or pollen dearth, feeding is also necessary. Colonies that run out of pollen will slow or cease brood production and the population can begin to decline. Colonies that run out of honey stores and do not have access to nectar will starve. Starvation is a very common cause of colony death.

Sugar Syrup

The best option for feeding bees is sugar syrup. Sugar syrup should only be made with white, refined sugar. Brown sugar, raw sugar and molasses should not be used as they contain indigestible components that can cause dysentery when fed to bees. Liquid invert sugar should also not be used as it is produced through acid hydrolysis and contains acids that are toxic to bees. While high-fructose corn syrup (HFCS) is an option, it is generally regarded as being unsuitable for bees, and sugar syrup is preferable. If HFCS is used, a higher fructose content is recommended and the beekeeper must be able to store large quantities of it and at an elevated temperature to prevent crystallization. Frames of honey from the brood box cannot be extracted and can be given to colonies as food. However, only frames from disease-free colonies should be used as many honey bee pests and diseases can be spread this way. Dry sugar and fondant are other options for feeding bees. These are generally not recommended and only used in emergency situations when feeding sugar syrup is not an option. Dry sugar is often ignored by bees and may even be thrown out the hive entrance. Both require that the bees use water to dissolve them in order to be consumed. As a result, dry sugar and fondant may not be accessible to the bees, even if placed directly in the hive. With both dry sugar and fondant, bees do not store any of the feed – they only eat it. This makes these feeds only temporary solutions for colonies with low stores.

Sugar syrup can be made at a concentration of 2:1 (2 parts sugar to 1 part water, by weight) or 1:1 (equal parts sugar and water, by weight). The thinner, 1:1 sugar syrup is generally used in early spring to feed colonies that are low on reserves and are in danger of starving. Spring feeding can also be used to stimulate brood production, pollen foraging and colony growth. The thicker, 2:1 sugar syrup is used in the fall to provide bees with enough stores to survive the winter. Since bees will need to process and ripen syrup before it can be stored, feeding them 2:1 syrup means they have less work to do. Each colony should be fed 15 L of 2:1 sugar syrup in the fall to prepare them for winter. Feeding should begin as soon as supers are removed and should be completed before the temperature gets below 10°C as bees will stop taking down sugar syrup once it gets too cold.

Feeders

Sugar syrup can be fed to bees in a number of different ways:

- Hive-top feeders & inverted pails – ideal for spring or fall feeding as they hold large amounts of syrup, do not require the bees to leave the hive (helpful when the weather outside is cold or rainy), can be changed/re-filled without exposing the colony and do not encourage robbing.
- Division board or frame feeders – do not require the bees to leave the hive and are useful for spring feeding and for queen rearing.
- Resealable plastic bag – a more economical option, though it requires changing/re-filling quite often.
- Boardman feeders – not recommended as they do not hold very much syrup, bees will not break cluster to feed from them if it is cold, they encourage robbing and they are exposed to the sun, which can make the syrup runny and damage any treatments mixed in the syrup.
- Open feeding – often through barrels of sugar syrup. While this method of feeding is an easy option for beekeepers with many colonies, it is generally not recommended. Open feeding encourages robbing behaviour, can spread disease and generally favours strong colonies taking most of the syrup. It will also feed any colonies in the general area. ■



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Regional Reports



Maritimes



Chris Lockhart

As I sit here and search for words to describe this summer, I look at the Department of Agriculture and Agri-Food Canada drought monitor and it confirms what I already know. All of NB, PEI and half of Nova Scotia have been struck by drought. My area in particular on the map colored a beautiful dark shade of red indicating “extreme drought”. A notification pops up on my phone from the National

Hurricane Center letting me know there are seven disturbances forming in the Atlantic Ocean with four named storms lining up to come up the east coast. I sigh and try to plan my next steps moving forward. I look out the window as I ponder my thoughts and see a mother black bear and her three cubs casually playing with some barrels out in my yard. All I can do is laugh. It’s at these moments I wonder if I would be better off offering black bear sight seeing tours. I swear they reproduce faster than honey bees.

Drought, small honey crop, low fruit yields, COVID-19. 2020 has been a year to forget for most. The blueberry industry is reporting a low crop in many regions. Most of NB is reporting fairly low honey crops, NS seems to be in a little better shape. The Dpt. of Natural Resources has told me the bear population is completely out of control. We’ve been extra diligent on watching our bear fences this season. Many bear strikes have been reported.

The bees seem to look decent considering the conditions. A small late fall surge has brought them around and we are hoping to have better luck than we did in 2017 when we had a similar drought conditions and had heavy losses in the spring of 2018. Usually mid/late summer severe drought leads to inadequate colony build up and can cause heavy spring losses.

It seems that 2020 has brought struggles of all sorts to the entire industry. Lower than average honey crops seem to be a national problem, constant issues with valuable temporary foreign workers, high spring losses and hardships replenishing stock due to flight restrictions. It is safe to say that beekeepers are some of the most resilient, hardworking, stubborn people to ever walk this earth. I think a trait of beekeepers is we like to do everything the hard way. I often find myself telling my crew to lift their spirits, “if it was easy, everyone would do it!”. We have a good laugh and keep pushing forward.

We have all struggled through this season together. So just remember the good thing about farming, “There is always next year”.

Québec



Maggie Lamothe Boudreau

Que se passe-t-il avec 2020? Tant d’événements en un si court laps de temps. Qu’on le veuille ou pas, nous approchons déjà de la fin de saison. Les apiculteurs sont tous en mode de préparation de leurs ruches pour la saison hivernale. Nous observons baisse considérable de la production de miel fort probablement occasionnée par une sécheresse accablante survenue en juillet et août. Plusieurs nous ont mentionné avoir récolté moins de la moitié de la production ordinaire de miel. Nous ne sommes pas le seul secteur agricole à avoir souffert, car il y a aussi un manque criant de fourrage pour les animaux de ferme. Plusieurs apiculteurs ont subi des pertes hivernales considérables, une l’arrivée incomplète de leurs travailleurs étrangers, des paquets d’abeilles et des reines ce printemps que qui les a empêchés de remonter leurs cheptels à son nombre courant

Les discussions de la possibilité de remettre sur pieds une unité de désinfection du matériel à l’oxyde d’éthylène se font au sein des AADQ. Cette unité de désinfection du matériel sera mise à la disposition des apiculteurs du Québec.

Notre assemblée générale annuelle était prévue le 3 octobre en personne, mais les derniers développements concernant le coronavirus sont venus détruire les plans originaux. Elle aura lieu en ligne et nous sommes à travailler sur les possibilités s’offrant à nous pour les élections qui y étaient prévues. Finalement, le PCR continue d’être suivi de près. Malheureusement, force est de constater que certains apiculteurs ont retrouvé quelques individus dans un individu dans leurs pièges. Suivez notre page Facebook pour plus d’information.

What's going on with 2020? So many events in such a short period of time. Whether we want it or not, we are already nearing the end of the season. Beekeepers are all in preparation of their hives for winter. We saw a considerable decline in honey production that is most likely caused by the severe drought in July and August. Several beekeepers told us that they had harvested less than half of their regular honey production. It seems we are not the only agricultural sector that has suffered because there is also a glaring lack of fodder for farm animals. Partly from the lack of arrival of foreign workers and large winter losses, many beekeepers have not been able to recover their numbers of hive their regular numbers.

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On another subject, discussions on the possibility of re-starting a disinfection unit for ethylene oxide equipment are being held within the AADQ. This unit would be available for rental to Quebec beekeepers in order to help eliminate many diseases.

Our annual general meeting was scheduled for October 3rd in person, but the latest developments about the coronavirus have destroyed the original plans. As of today, we have modified to completely online and working on the possibilities to hold the elections that were scheduled. Finally, the PCR continued to be closely monitored. Unfortunately, it seems the small hive beetle has stated migration between hives as a few beekeepers have found one individual in their herd. Follow our Facebook page for more information.

Ontario



Albert Devries

Looking at the past summer in Ontario, some beekeepers have a near average crop while most are above average. Many beekeepers are still extracting the last boxes as I write this report. Much of the province has had slightly below average rain resulting in good honey yields.

Ontario beekeepers received good news when the Ontario Ministry of Agriculture asked how they could improve the honeybee registration process. The OBA is currently working with OMAFRA to make improvements.

Finally, the OBA is having its fall meeting and AGM online near the end of November. I will miss the impromptu meetings in the hallways and at coffee break.

Manitoba



Osee Podolsky

The honey flow has come and gone, and the fall season is on its way out with what seems to be a less than appealing rapid approach of winter. Summer honey production reports across the province range from average to a bit below average. Although overall production seems to be down due to operations running some lower hive numbers going into honey flow, mostly due to poor spring buildup of their

hives, uncertainties of TFW availabilities, or difficulties finding replacement hives. On a positive note honey prices have been on a continuous upward trend since the beginning of honey production which I am sure we all can agree is relieving to finally see. Reports indicate that hive health is very good going into winter and many beekeepers are optimistic of how their colonies are looking this fall heading into winter. A huge thanks goes out to everyone who was a part of getting TFW's here is spring and working to ensure that they can return home safely to their families this fall. Not all Heroes wear capes.

Saskatchewan



Due to the fact that international flights are unavailable to Nicaragua at this time, the CHC charted another flight this fall to get



Jake Berg

160 TFW home. Ninety-four of the TFW came from Saskatchewan and the remainder from Alberta and Manitoba. There are still about 100 TFW in Canada that will need to go back to Nicaragua.

The flight flew out on October 2 with some very happy passengers. But the weeks leading up to the flight were trying as we were working through the Covid-19 restrictions. All the passengers had to be Covid-19 tested within 72 hours of the flight and the documentation had to be presented to the Nicaraguan Government 24 hours before the flight. This made for a very steep learning curve.

Once again, Rod Scarlet and the CHC Labor Committee did an excellent job of coordinating and navigating through lack of consistency from each of the three provinces health care systems.

If a second charter is required, it would most likely happen the last week of October or first week of November. This is, of course, if International flights are still not going at that time. This one should be easier to plan and coordinate.

Being one of the producers with employees on the flight, this flight was essential for our farm as our employees were otherwise stranded in Canada with work permits and visas expired or expiring. It was great that CHC has the financial ability, at this point, to make it possible to bank roll such an endeavour. Without CHC support, a flight like this would be virtually impossible to get off the ground. CHC will be billing each beekeeper their share of the flight. I believe it is important for the CHC to keep a healthy bank account to help facilitate projects such as this. Especially since, we don't know what the next year or two many bring.

Alberta



Curtis Miedema

I would like to start my report by introducing myself to anyone that doesn't know me. My name is Curtis Miedema, I am a second-generation beekeeper from North western Alberta. We focus entirely on honey production. I know it's strange to have an introduction half way through the year and I do apologize as this is my first report I have submitted.

As we are nearing the end of another busy season we look back and it's amazing how fast it went. Many challenges have been faced this year in our area. It started with a cold late spring, most beekeepers experiencing higher than average winter loss. Then when the pandemic hit we dealt with the panic of not knowing if or when our workforce would arrive. We had another cool wet spring and start to our summer. High mite loads and EFB were reported in many parts of the province. All these things together created a below average crop for many of us across Alberta. Late July and August did bring some nice summer weather but it was a little to late for the canola that we primarily rely on in our area. Now we are nearing the end of our fall work, we have most of the bees fed and medicated. It's always nice to have the last bees wrapped and tucked away for the season. Despite the challenges faced we still have allot to be thankful for. Now we can reflect on this season and anticipate the bumper crop that is coming "Next year."

British Columbia



Stan Reist

There isn't a lot to report at this time. The AGM is proceeding as per last reports by Video conference. There is an election flue bug going around right now and the BC. NDP have decided to join in and called an early election, (were riding high in the polls lets go for a majority) so here we are in election mode.

In all the years I have been in beekeeping this is the first time that I have seen an agriculture minister actually take an interest in the agriculture community. Our current Minister has promoted agriculture and we as beekeepers have greatly benefited from her leadership and programs. Our participation in Apimondia was greatly enhanced because of the Ministry's support, along with Cranberries and Blueberries.

In BC we have issues with land for bees and through the Ministers office, there is a land matching program. It matches people looking for land for agriculture purposes with farmers looking to retain their farm status, due to a variety of situations. It works very well to help curtail the scenario that I will put hives on your land and then you can claim farm status, thus, reducing municipal taxes. This is and has been an ongoing challenge to resolve. This usually winds up going to court, costing everyone and is an ongoing yearly happening.

We did all right on our crop this year not quite where we wanted it but considering how much we raped our hives to make Nucs for the Prairies this year, we consider we did well. The Peace River finally dried out somewhat and the word is they produced about 200 lbs. a hive. There were reports of 4,000 hives going to the Peace this year and there were concerns they would all wind up in one area. The usual that guy did good there, so let's put our hives there hoping to cash in on past performances and time will tell what happens.

There are going to be some presentations this year by video for the AGM and it's to do with the promotion of suppling stock for replace in other provinces. The Covid 19 has exposed a lot of gaps that we have in our supply systems and just how venerable we are to loss of goods during global crises. We need to look for better techniques for wintering queens. This year we seen the effects of an encroachment of Africanized hives in the Queen Production

area in California, while it was resolved quite quickly it still pointed to a gap in the supply system that has to be fixed. The loss of packages from down under was a major loss as well and exemplifies the need for more stock production in Canada. There are some producers in Saskatchewan and in other Provinces that put stock away for early production.

So much for a short report!



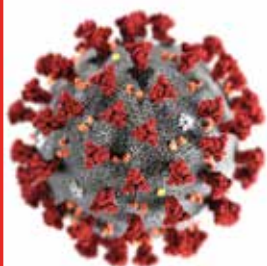
Like many food manufacturers, Bee Maid Honey experienced unprecedented sales during the onslaught of the COVID-19 pandemic with retailers ordering far above forecast. We expected sales to drop significantly in the summer months as restrictions eased and we figured consumers had enough honey in their pantries. Instead, we found sales were steady in summer. With an eye to the rest of 2020 and into 2021, we've been doing some research to see what others are saying about changes in consumer behaviour that can be expected to persist in the coming months.

According to Sylvain Charlebois, Dean of the Faculty of Management at Dalhousie University, perishables are more in fashion as consumers are spending more time in the kitchen. He proposes that staying at home will get consumers to process their own food more often. Dr. Charlebois stated in an article for Retail Insider that non-perishables that were highly popular at the start of the pandemic will start to wane because consumers became more acquainted with ingredients they can cook while they were staying at home. That might affect companies making packaged cookies for example, but for honey packers, it probably spells good news because consumers are spending more time baking and cooking at home.

Euromonitor, in their recent report "How Will Consumer Markets Evolve After Coronavirus?" purports that healthy eating will become an even more important topic for consumers as the fundamental balance of exercise vs. nutrition becomes disrupted by even more sedentary lifestyles. They state that this will accelerate the shift towards more holistic wellness and eating.

So what do all these predications mean for Bee Maid? Well, we feel that honey will remain a sought after ingredient as consumers continue cooking at home. Furthermore, with an eye on becoming more health conscious, honey is well poised as an ideal sweetener to substitute for sugar in baking, cooking and beverages.

CORONAVIRUS DISEASE (COVID-19) – UPDATES



Maintaining and supporting our beekeeping industry is crucial during this time.

The Canadian Honey Council is monitoring developments as they impact our industry. We are working in close liaison with the Canadian Government, provincial/territorial governments, and provincial bee associations to gather and share information and develop strategies for dealing with the emergent issues in our industry.

This site will be updated with the most recent information, developments and direction being provided as quickly as they are formalized.

Quick Links

Temporary Foreign Workers – <http://honeycouncil.ca/covid-19-temporary-foreign-workers/>

Packages and Queens – <http://honeycouncil.ca/covid-19-packages-and-queens/>

Labour and Human Resources information – <http://honeycouncil.ca/covid-19-labour-and-human-resource-related/>

The Robbing Event

by Freddy Proni, Vêto-pharma North America Area Manager

"It is like an Ocean's Eleven plan, where a curious member of the honey bee social team discovers a protected vault of liquid gold in the area. This brave forager girl ultimately enters an unfamiliar hive facility, perhaps passing by an occupied guard, or by just being persuasive, and inspects and pockets a small sample of the treasure held within. Upon escape, she returns home and spins the story to her sisters of the payoff. Interest builds as the naggie message is communicated and an event is being planned. Excitement fiercely moves the air as a war is about to ensue. Confrontation will prevail, lives will be lost and wax capped vaults will be torn open with quick nervous strength. When the job is done, little evidence, if any of who perpetrated this crime, will exist. Mission accomplished... for now."

We all have heard, and many of us have witnessed, either robbing in action or performed a forensic inspection and determined that robbing occurred. It happens to the best beekeepers and is an action based on the environment. Sometimes, weak colonies subject to disease or pathogens succumb to this pilfering or it may be a colony that is small in numbers who cannot defend

itself. Perhaps, it is us, as the beekeeper, during a long inspection that incites this behavior. Robbing can be stimulated when opportunity exists and if natural resources are slim. During the year, we usually witness a higher potential for robbing after surplus honey has been collected and dearth sets in. Great populations of bees exist in summer, and with an unemployment line forming, bees may be persuaded to change their foraging habit(s).

It's Foraging

Robbing is nothing more than **another form of foraging** where the rewards are great. It is an act that can be devastating for a beekeeper as cared for and nurtured colonies fall quickly and are defeated. Hives are lost, **diseases and varroa mites may be transferred**, and the bee yard may carry an aggressive nature with defensive bees, easily provoked. As a beekeeper, we may question the morality of our girls, but perhaps it is a form of Darwinism, where either it is the survival of the fittest or the ability to adapt to change. Either way, robbing is something we must minimize to decrease summer mortality and **promote hive health**.



Wear proper attire as robbing may cause aggressive behavior

Summer Yard Management Tips Reducing Robbing Potential

Once robbing has begun, the challenge to stop it can be a frustrating, sometimes devastating, adventure. Yard management is paramount in the summer post honey harvest as inequalities in hive robustness and size can lead to a robbing event. Having colonies in the same yard that are similar in size, stature, and population may reduce the propensity of robbing. The art of equalization and moving smaller colonies such as nucs is advised. Keep nucs for their protection exclusively in a different yard away from full-sized colonies. Yards with fewer colonies allow beekeepers to be more efficient and quicker in their actions hopefully reducing the onset of robbing.

Summer flow

- Remove honey right before the flow ends and not after the honey season has finished

- Colonies should have slightly additional resources
- Feed, (if needed), while the tail end of the flow is closing after honey supers, are removed



Robbing behavior in front of a hive

Reduce Entrances but give adequate ventilation.

Some methods are:

- Screened bottom boards (if you use them)
- A slightly lifted inner-cover (a penny works well in the corner)

Dead Outs

- Remove, clean and properly store, or use the equipment asap
- Check and scrape bottom boards
- Use a bucket or box and remove bottom board scapings from the bee yard for good hygiene
 - Look for evidence of small hive beetle larvae (if in your region or country)
- Inspect combs for wax moth presence (silk, larvae, trails near the foundation rib)

Robbing Screens are a hardware device that alters the path bees usually take to enter the hive. The new entry point is located about half a foot (~15cm) above the former main entrance and is placed so that it is located on a solid surface that reduces the scents of the hive that are situated at the once, main entrance. Robbing screens are effective and should be placed on hives before the robbing season begins. They are commonly used as a beekeeper's tool when robbing has already started and can reduce or delay robbing activity. It is common to see many bees flying in the air as hive residents are unfamiliar with the new entrance. Robbers are usually deterred, and many robbing screens have multiple entrance choices. Select a new entrance should robbing engage in the near future again.

I think am being robbed! Robbing is an interesting phenomenon in that our bees usually act differently than what we accustomed to. Sometimes large unexpected activity around a hive may be the result of drones returning from their daily late afternoon excursion from the local Drone Congregating Area (DCA), or the weather may be changing, and large numbers of foragers are returning home. In any event, observe at the colonies with veil and safety equipment. Examine the activity in the bee yard and identify the hive or hives of concern. A careful look at the actions in the front of the hive, especially on the ground is telling. Robbing bees may not direct themselves in a line straight for the entrance, instead, they may fly around looking for a breach or opportunity to enter the hive. If the robbing is just beginning, the bees have just begun the battle, if robbing has been prolonged, dead bees and scattered wax cappings will be present in front of the hive. Inspect the entrance of the bottom board for wax capping remnants. Remember, the hive that is being robbed is defending its family and resources which may cause aggressive bee behavior in the bee yard, not to mention the hive that is being robbed. Some methods to deter robbing are:

- Install an entrance reducer
- Mount a **robbing screen** immediately (protect yourself as the colony may be highly agitated)
 - *Don't have one?* Form and staple wire mesh or screening over the front entrance guaranteeing a new entrance exists well above the main entrance.
- **Drench a sheet, light towel, or large piece of fabric** with water and place over the hive
 - This confuses robbing bees from finding the entrance
 - In hot weather re-wet as necessary
 - Remove the covering 1-2 days after the robbing event
- Water Sprinkler –NOPE, from the author's experience this may just reduce a few robbers and will just delay the event
- When Safe, and if manageable, move the colony to a different yard
 - Works well with nucs and singles

Depending on the environment and opportunity, all strains of honey bees are prone to a robbing instinct but certain strains, such as *apis mellifera ligustica* (the Italian honey bee), often find themselves easily

tempted to rob weaker neighboring colonies.

Feeding Tips

Often our post-summer harvest hives will need additional resources such as carbohydrates and water. Hot temperature, the lack of natural forage, and large populations can dwindle down reserves quickly.

Feeding during dearth is challenging since the smallest amount of spilled syrup or the scent of fresh syrup can encourage a change in behavior. Use direct contact feeders such as in-hive frame, hive top, or a top jar/bucket style apparatus.

- Avoid using any essential oil attractant or stabilizer/enhancer
- **Try not to spill** or leave feeder supply containers open (cover your syrup containers)
- Consider feeding in the very **late afternoon to early evening**
- **Feed-in small amounts** such as a quart or a liter at a time
 - Feeding a small amount late in the day allows the bees to consume what you give them at night with little or none left for the next day to encourage neighboring forager curiosity
- Use a front entrance or **Boardman feeder for a water supply only**
- **Work quickly** and consider placing your feeders all in the same location within the hives.
- If a colony appears weak or appears to have a non-devastating issue, visit and inspect this colony on another day when you are not feeding
- Repeat every 7-10 days your feeding regiment
- Check the hive weight by lifting the hive using the lowest most box handle and compare
- And please, **do not open feed**



Close up view of robbed cells. Notice the ragged edges.



Consider performing a quick whole box check instead of pulling individual frames. Viewing up through the bottom bars gives a quick reference on hive conditions.

Quick Postmortem Evidence of Robbing

Outside Hive Inspection

- Scattered beeswax cappings
- Honey bee bodies located in front of the hive
- Minimal to no activity of foraging bees at the entrance

Inside the Hive

- Large number of pierced and removed wax cappings on the combs
- Bottom board covered in beeswax cappings along with dead bees en masse
- Little to no nectar/ honey reserves

Extracted Comb Clean-up

During extraction we often have the dilemma of freshly extracted combs. There are two trains of thought. The first is to store honey supers wet and the second is to give the “wet” supers back to the bees for clean-up, prior to storage. Many of us prefer the second option as boxes are cleaned up from sticky honey and any residual resources left in the combs may be of benefit to the bees. Allowing bees to remove any resources from wet combs can incite robbing. Different methods are used by beekeepers. The first is placing a honey super back on an active hive and the second is placing wet supers outside, forager bees to clean up.



Stacked wet medium honey supers with covered top entrances ready for clean-up placed far away from the apiary.

Hive Top Clean-Up

Offers the advantage of direct comb access for the bees and eliminates the need for bees to travel as they can perform clean up at home. Labor and time are a disadvantage as the colony needs to be opened, the wet super placed on top of the hive, and eventually (quickly) the cleaned-up super must be removed. Upon removal, the beekeeper must also shake the bees from the empty combs prior to storage. As the cliché goes “beekeepers are the movers of boxes.” The advantage of this

method is that high hive populations may keep scavengers such as wax moth and small hive beetles from attacking the comb.

Open Field Clean-Up

Is a simple method where wet honey supers are placed in a field, a long distance away from the apiary, where foraging bees will discover and clean the combs. This process takes a bit longer but once found; supers may be ready for long term storage in a matter of hours to days. There are many advantages since hives do not need to be opened, minimal bees will be present after the process is complete, and all boxes are in one area. This minimizes any robbing potential as these boxes will be placed away from the apiary. Beekeepers must watch as supers placed in this method are prone to small hive beetle and wax moth infestations if left out too long.



Robbed out nuc. A large number of dead bees exist with little evidence of wax capping. This nuc had adequate uncapped stores prior to being robbed.

As Summer Fades the preparation of winter readiness begins. A turbulent and challenging summer from heat, robbing events, and an increase in varroa mite populations all takes its toll on colonies. Like us, our bees experience stress and together we must prepare for the winter months ahead. It is paramount to prepare for the next bee season by monitoring mite populations, selecting the best treatment for your region and conditions, and by preparing your bees well ahead of time through feeding. Time usually gets away from us especially after the exhausting but rewarding task of honey extraction. As beekeepers, we are here to assist our bees, and early detection and resource management will pay off with the first flights on next year's first warm post-winter day. ■

Evaluation Of The Direct Economic Impact Of Decreasing Prices Of Honey On The Main Honey Export Countries Of The Americas

The greatest damage to beekeepers in human history

Prepared by the Apimondia Regional Commission of the Americas and the Apimondia Scientific Commission of Beekeeping Economy.

Introduction

Any variation of honey prices in the international market has a direct effect on the beekeeping sector since honey prices directly power the activity in countries with a significant participation in the international market, and indirectly in countries with a lower participation. As clearly described in the APIMONDIA Statement on Honey Fraud (Apimondia, 2020), the preservation of honey quality and purity becomes absolutely essential for the sustainability of the honey chain whose foundation begins with beekeepers.

The American continent shows quite different realities in terms of participation in the international honey market. On the one hand, there is a group of important honey exporting countries, such as Argentina, Mexico, Brazil, Chile, Cuba, Uruguay, etc. On the other hand, we have a group of importing countries, some with small volumes in order to balance their domestic consumption and others such as the world's largest importer of honey, the United States of America, which demands about 30% of the product that is marketed worldwide. Canada, a major global exporter of honey is also an importer of significant quantities with a developed domestic market.

In the world's biggest honey market, the U.S., the problem of honey fraud has involved circumvention through third countries in which a false country of origin was designed to avoid the high antidumping duties which prevail in the U.S. As in the case of many commodities which are tinged with fraud, the prices of such products are always well below what a normal market would demand. The pernicious consequences of adulteration of honey derive from the fact that modern modes of adulteration create a situation in which there are no limits to the quantities nor floors to the prices of adulterated honey.

The problem of adulteration involves both the export of adulterated honey and the export of the methods for adulterating honey. This underlies the collapse of honey prices and threatens beekeepers with an existential crisis.

During the last APIMONDIA International Congress in Montreal, Canada, major concerns of different members of the beekeeping sector were related to falling prices of honey and the prevalence of adulteration in the international honey market.

The international phenomenon of the adulteration of honey in this modern era has resulted in the largest economic losses that have been suffered by the beekeepers of the world, including in the Americas,



in human history. Furthermore, this adulteration has put in jeopardy hundreds of billions of dollars of annual agricultural production, threatening global food security and global ecological sustainability. In order to have an idea of the magnitude of the importance of bees on agricultural production, Karasinski (2018) demonstrated that the economic value of pollination services that bees provide in Australia is about 140 times greater than the value of honey.

Based on that concern, we decided to start this collaborative work between the Regional Commission of the Americas and the Scientific Commission on Beekeeping Economy of APIMONDIA. An exhaustive economic assessment of all the effects caused by adulteration on the different beekeeping industries of the Americas is a quite a complex task which requires the collaboration of different types of experts. For instance, in countries that do not produce enough honey to meet local demand, the importation of cheap and low-quality honeys slows down the development of new beekeeping operations and the potential growth and professionalization of existing ones. Unfair and unsustainable prices do not generate the necessary incentives to produce.

The objective of this work is to focus on the estimation of the direct economic loss suffered by the honey exporting countries of the Americas due to the fall of the international prices of the product, which has a direct impact on beekeepers and the entire beekeeping sector, but also on public incomes since governments do not receive at least part of the corresponding taxes for the exported honey.

Trade data used in this report were sourced from International Trade Centre (ITC) – UNCOMTRADE – Argentine Chamber of Exporters (CERA)'s High Performance Platform.

Similar studies of the economic losses throughout the international community of beekeepers should also commence. Demonstrating and illustrating the economic losses created in a marketplace by several modes of adulteration show gains to a few and strategic harm to the many.

Offer and Demand

Global demand for honey has been steadily growing in recent years. Over the past ten years, global honey imports increased by approximately 34%, from 497,270 tonnes in 2010 to 665,306 tonnes in 2019 (Figure 1). It should be noted, however, that this growth may be somewhat overestimated because some countries have been recently incentivized to import honey and then re-export it as locally produced (García, 2018). This overestimation could reflect "Honeygate", the action of the U.S. judicial system which uncovered fraudulent country of

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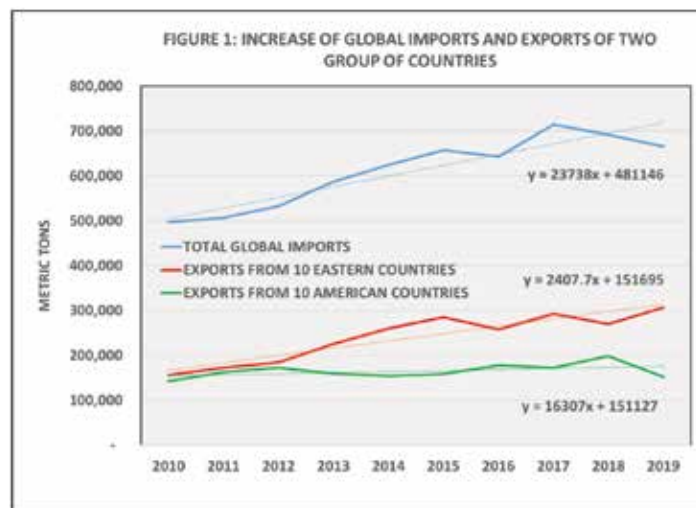
origin designations, during which there was transshipment of Chinese honey through about 30 different countries.

During the last ten years, the main ten honey exporting countries in the Americas (Argentina, Brazil, Canada, Mexico, Chile, Uruguay, Cuba, El Salvador, Guatemala and Nicaragua) have increased their exports by only 6.5 %, at an average increase rate of 2,407 tonnes per year. This differs from and is interrelated to the startling increases in exports from the ten major honey exporting countries in the Eastern Hemisphere (China, India, Ukraine, Vietnam, Thailand, Turkey, Pakistan, the Russian Federation, Taiwan and Myanmar), which increased their total honey exports a 95.8 % during the last ten years at a rate of increase of 16,307 tonnes per year (Figure 1).

Honey production is more inelastic than other agricultural productions, and does not grow rapidly even under a significant increase of the demand. In contrast, the production of adulterated honey is very elastic, sophisticated, pernicious and economically rewarding. The increase in the number of hives, through the generation of new beekeepers or the growth of existing operations, is a time-consuming process. In addition, more hives do not necessarily mean more honey under the current agro-ecological conditions of constant increase of land dedicated to agriculture. Increasing amounts of land are being dedicated to crops such as soybeans, replacing more desirable clover and wildflower fields. The growing use of agrochemicals affects biodiversity and also the life of bees, making it increasingly difficult and costly to maintain bee colonies alive and productive. Colony Collapse Disorder is in some way a denomination to these types of problems for the bees.

In a context of increasing difficulties for honey production, the growth of the ten major honey exporting countries in the Eastern Hemisphere looks very astonishing. Have at least some of these Eastern countries discovered new techniques for producing honey, or some new way of evading quality controls? We are sure that whatever the answer, beekeepers

from the Eastern hemisphere are not primarily responsible for the phenomenon but, in many cases, also victims of an unscrupulous system.



Data source: ITC - UNCOMTRADE

The evolution of honey prices

A sustained increase of prices would be the logical and expectable result in a market showing increasing demand and quite inelastic ability to increase supply. When we observe the evolution of export honey prices of the major exporting countries of the Americas over the past years, we can see a clear increasing trend of the average price of honey during the period 2005 - 2014 (Figure 2).

► pag. 18



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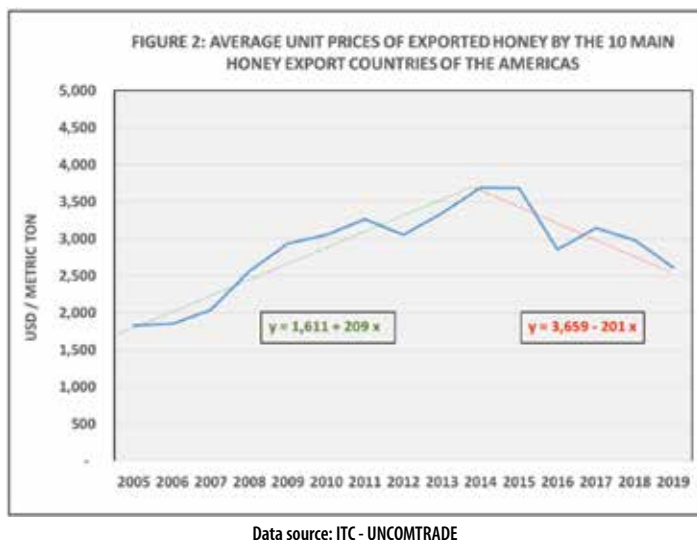




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The price grew at an average rate of USD 209/tonne/year (from USD 1,611 per tonne in 2005 to USD 3,659 per tonne in 2014), a 127% increase. Clearly the price increase observed between 2005 and 2014 can be explained by an increase in global demand for honey and a supply also growing, but at a much slower pace. The international honey price in 2014-2015 could be assumed to reflect an equilibrium level for those years based on negotiations between honey buyers and sellers. It presumably represented a fair or desirable price for all actors in the international market, especially for beekeepers.

However, since 2015, prices unexpectedly started to fall at an average rate of USD 201/tonne/year (Figure 2). This fall of honey prices in the international market can mainly be explained by the flooding of low-priced and low-quality products exported under the name of honey from some Eastern countries (García, 2016). This adulterated honey disrupts and distorts the normal supply/demand relationship.

The observed steady and dramatic collapse of honey prices defies the laws of economics in that, in a context where the demand for honey has increased, the cost of production of authentic honey has increased and the productivity per hive has decreased, the prices of honey to beekeepers should have steadily and significantly risen. This did not happen, even though the prices at the retail level in the U.S. increased from ca. USD 14.60/KG in January 2015 to USD 17.15/KG in January 2019 (Phipps, 2020).

Estimation of the direct economic loss

A first and necessary step to estimate the economic loss suffered by the honey exporting countries of the Americas is to approximate/project the price that honey should have had if adulteration had not reached the observed levels of prevalence in the market. In order to make such an appraisal, two hypothetical scenarios were conceived:

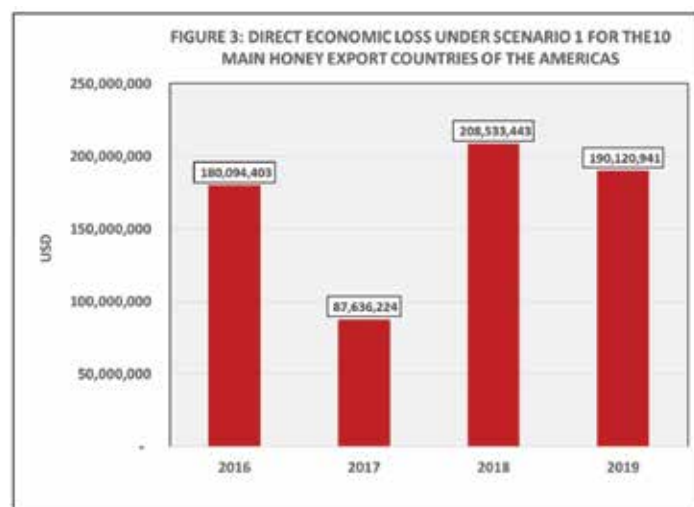
- Scenario 1: We worked on the assumption that the export of adulterated honey would have significantly stopped after 2014/2015 and, with steady and even increasing consumption, prices should have at least remained at values similar to 2014-2015. The economic loss for each year was calculated by multiplying the volume exported that year by the price difference compared to 2015. This is a minimal hypothesis indeed, since 2014-2015 price was already affected by the prevalence of adulterated honey in the market.
- Scenario 2: We assumed that the injection of adulterated product had significantly ceased in the international market after 2014 and, as consumption continued to increase, the prices would have maintained the same upward trend observed until 2014. For the calculation of the economic loss for each year, the 2005-2014

regression line was first calculated to estimate the trend of price increase due to a rising demand and a quite inelastic offer. The regression analysis showed an average annual price increase of USD 209 per tonne (Figure 4). To calculate the economic loss under Scenario 2 (Figure 5) the volume exported each year was multiplied by the price estimated by regression, (dotted line in Figure 4). This hypothetical scenario neither totally excludes the damage of adulterated honey since, as already mentioned, prices for 2014-2015 and for previous years were already affected by a significant volume of adulterated honey traded around the world. This second hypothesis is not as conservative as that of Scenario 1, and assumes sustained honey consumption even under increasing prices.

Results under Scenario 1

The calculated economic loss under Scenario 1 was immense given the large volumes exported by the main honey export countries of the Americas (Figure 3).

Each column in Figure 3 represents the money that the sector did not receive each year due to falling prices, mainly explained by the massive prevalence of adulterated honey. For example, for 2016 the estimated loss was USD 180,094,403. The total estimated direct economic loss under this Scenario for the beekeeping sectors of Argentina, Brazil, Canada, Mexico, Chile, Uruguay, Cuba, El Salvador, Guatemala and Nicaragua during the period 2016-2019 was USD 666,385,011.



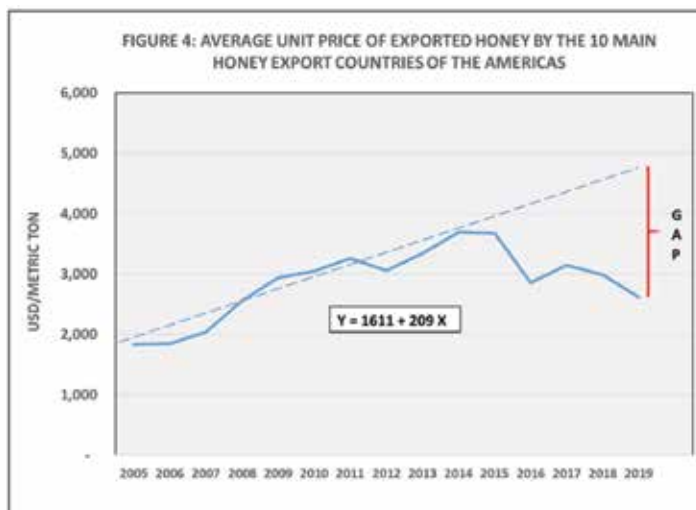
Argentina, the main honey export country in the region, suffered the major economic loss mainly due to the magnitude of its exported volume: about 65,000 tonnes of honey per year or, to be exact, 287,546 tonnes of honey during the period 2016-2019. The average FOB price per kilo of Argentine honey in 2015 was USD 3,588/tonne, while in 2019 the price was USD 2,245/tonne. The estimated total loss for Argentina during the period 2016-2019 under Scenario 1 was USD 357,935,220. That enormous volume of resources, not received by the beekeeping sector of the country, occurred without any logical cause like overproduction or decreased demand.

In parallel, and during the same period, Mexico lost about USD 123,212,000; Canada, USD 79,952,000; Uruguay, USD 30,751,000; Brazil, USD 26,678,398; Chile, USD 20,966,706; Cuba, USD 14,878,131; Guatemala, USD 6,142,854; El Salvador, USD 5,679,529; and Nicaragua, USD 188,205.

Results under Scenario 2

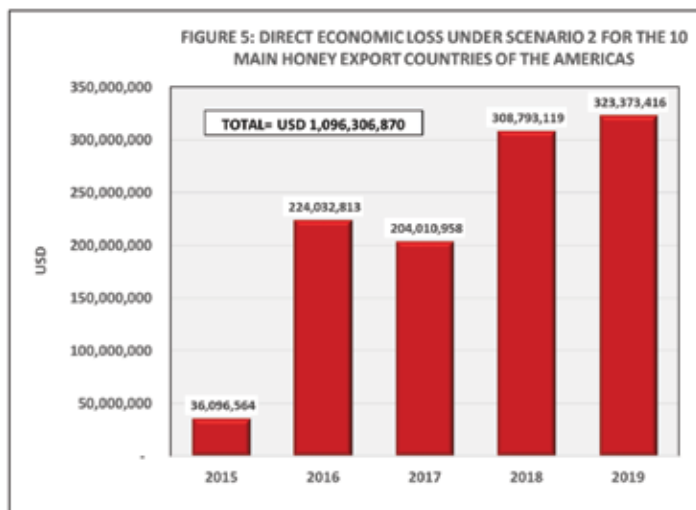
If the price trend observed during the period 2005-2014 had

continued (which could have been expected under increasing demand and inelastic offer), the price for honey would have reached USD 4,700 per tonne by 2019, a difference of more than USD 2,000 per tonne with the observed price (Figure 4).



Data source: ITC - UNCOMTRADE

The estimated total loss under Scenario 2 for the 10 main honey export countries of the Americas was USD 1,096,306,870 during the period 2015-2019 (Figure 5). As mentioned above, the only factor that could have stopped that increase of prices would have been a drop in consumption but, in such a case, a new reasonable equilibrium price for honey would have been reached.



In either scenario the losses to the beekeeping community stand in contrast to the fact that the price of honey achieved by retailers and packers steadily increased.

Conclusions

According to the two hypothetical scenarios developed in this article, the direct economic loss for the major honey exporting countries of the Americas was between USD 666 million and USD 1.09 Billion during the period 2015-2019. The exact economic damage is obviously impossible to estimate, however, the results of either of these two hypothetical scenarios show results of an almost unimaginable magnitude, reflecting the greatest economic damage ever inflicted on the beekeeping sector of this part of the world.

It is widely agreed that when the prices of a primary product fall,

the whole chain is affected. However, the biggest impact is usually suffered by the primary producers, who are economically less elastic than other links of the chain, since they do not have the opportunity to easily change their activities or run out their businesses and wait for a change in trend. In other words, the money that did not happen to enter through honey exports to the countries of the Americas, is money that, in a good part, did not reach the pocket of beekeepers. When the beekeepers' incomes increase, they normally reinvest them in their operations either by increasing the number of hives, or making improvements in their facilities, or buying better trucks, i.e. increasing or improving their production capacities. It is quite infrequent to find a beekeeper investing in bonds or financially speculating; in the best of cases, if incomes increase, they may take a nice vacation, improve their homes or change their trucks. The current trend towards bankruptcy in larger beekeeping operations and the detriment of local and smaller beekeepers is becoming each day more transparent.

The steep increase of exports of dubious quality honey from some Eastern countries caused multimillion-dollar losses to the honey exporting countries of the Americas. This is even more serious when we consider that consumers never enjoyed lower prices since retail prices in the major honey-consuming countries never fell (Phipps, 2020).

Official regulations of countries, blocs or regions are usually responsible for ensuring the quality and safety of imported products. These regulations sometimes fail to protect those who produce genuine food, so if there is no threat to a population's food safety, official agencies do not act or do so quite slowly.

It is well known that the main strategic value of beekeeping is not honey but pollination of both commercial and wild plant species. However, it is the price of honey that mainly powers the existence of beekeeping operations. Falling prices reduce the incentive to produce. Without economically sustainable beekeeping operations, bee populations would decrease, thus endangering crop pollination and plant biodiversity. Though the appreciation of the importance of bees to agriculture and global food security was great 3-4 years ago, now it is much stronger and more comprehensive. The economic losses caused by honey adulteration have put into jeopardy hundreds of billions of dollars of global agricultural production. Governments should urgently formulate and implement plans for the allocation of more land for bees and to ensure the authenticity of honey.

Members of all beekeeping entities around the world should understand that honey adulteration endangers all beekeepers, not just those located in honey exporting countries. It is our duty as beekeepers to be the guardians of the purity and authenticity of bee products, not only for the benefit of our own industry but also to protect consumers, food security, and the biodiversity of the planet. Consumers are robbed of the natural health benefits and charm of authentic honey.

The purity and authenticity of much of the honey currently available in the market is under suspicion. However, unfortunately, much of the evidence confirming this problem has mainly come to us from private laboratories and companies. Many official laboratories do not use the most advanced and available tests yet.

In contrast, the European Union's efforts over the past few years (European Commission, 2016) and the recent news about the decision of U.S. Customs to acquire a Nuclear Magnetic Resonance equipment for the detection of imported adulterated honey (American Bee Journal Extra-April 21, 2020) constitute a breeze of promising clean air for producers of honey.

People have never been so conscious of either the vulnerability or value of bees as they are today. The international media is helping build a positive agenda, providing a good foundation for the future. ■



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Provincial Bee Association Releases Plan to Stop Devastating Varroa Parasite



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BISHOP FALLS, Newfoundland and Labrador. The Newfoundland and Labrador Beekeeping Association (NLBKA) today released a plan to deal with the arrival of a parasitic mite, *Varroa destructor*, that has devastated honey bees around the world. Newfoundland and Labrador (NL) remains one of the last places that remains free of the parasite.

A *Varroa Action Plan for Newfoundland and Labrador* (VAP) assesses the risk of a *Varroa* incursion by various pathways and concludes that illegal importation is the most serious biosecurity risk for the province's honey bee stock. The northeast Avalon Peninsula has the highest risk of a first incursion because of the Port of St. John's and St. John's International Airport, and because the region has the highest density of beekeepers in the province. Without an effective crisis action plan in place, the parasite would spread rapidly from its initial incursion point.

The VAP recommends a number of measures to prevent the arrival of the mite, and to deal with it quickly should an incursion take place. These include an ongoing "saturation advertising campaign" to educate beekeepers and the public about the dangers of *Varroa* and illegal importation, a volunteer sentinel apiary network with monitoring hives at strategic locations, a "passive" surveillance program whereby as many beekeepers as possible are trained to monitor for the parasite, testing of swarms and feral colonies, mandatory testing of bees sold around the province, "bee districts" whereby beekeepers test for *Varroa* before transporting bees across district boundaries, and enhanced government capacity to respond to a *Varroa* incursion.

"Getting *Varroa* would be a disaster for beekeepers and our industry," said Association president, Rodney Reid. "Unless we're well prepared for it, the parasite could wipe out 90% or more of our stock. The management of our bees would become much more complex and expensive in terms of time and money. It would discourage new beekeepers and possibly bankrupt our established and new commercial operators. These are some of the consequences we've seen elsewhere in the world."

Reid continued, "Our honey and other bee products are healthy, and relatively pesticide-free because our bees are not exposed to miticides. This allows us to compete successfully in the future in international niche markets for our apicultural products. However, this op-

portunity cannot be realized if the province loses its current 'freedom from *Varroa*' status."

"It takes only a single varroa mite to start an infestation. Without a good early detection strategy, we wouldn't likely notice it until it has spread far and wide around the province," said Reid. "It's like the COVID-19 virus. It spreads very easily with the help of us humans."

"Given its severe impact on honey bee health, beekeepers in this province should be well motivated to prevent *Varroa* incursions, implement the most sensitive early detection methods available, and also prepare for the arrival of the parasite so as to reduce honey bee colony losses to the greatest extent possible should it become established," said Reid.

Reid concluded, "the success of our efforts to stop *Varroa* will depend upon cooperation among a large number of our beekeepers in partnership with the provincial government. We're looking at a long-term commitment from all parties, coordinated action, and discipline. The sooner we get prepared the better! For a start, we are organizing free workshops immediately to train our beekeepers in how to monitor for and treat *Varroa*."

The *Varroa* training workshops are scheduled for St. John's, Port Blandford, Grand Falls- Windsor, and Cormack between October 3 and 11, with training provided by experienced beekeepers from New Brunswick where *Varroa* has been established since the early 1980s.

Beekeepers can register for the workshops in the area closest to them by contacting Peter Armitage, at armitage_peter@bellaliant.net. He will ensure that they are put on the list for the most convenient workshop and receive relevant details.

A copy of the VAP report can be obtained on the NLBKA's website.

The development of the VAP has been assisted by funds from the **Canadian Agricultural Partnership – Newfoundland and Labrador**.

Backgrounder – key recommendations of the Varroa Action Plan report

The *Varroa destructor* mite causes significant honey bee colony losses throughout much of the world with associated economic costs and management challenges for beekeepers. The Newfoundland and Labrador (NL) honey bee stock is currently free of this parasite. In addition to feeding on honey bees, it is also vectors and amplifies a number of viruses that are not currently found in the province's stock or wild bee populations.

Other jurisdictions such as New Zealand and Nova Scotia had

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Varroa for 3-5 years before they knew it. By the time the parasite was discovered in their stock, it was too late to eradicate; it was too widely distributed and established. NL can learn from the Varroa experience elsewhere, and adopt measures that prevent it from becoming established in the province. However, maintaining our Varroa-free status requires rigorous preventative and detection measures that have not yet been developed locally. The Varroa Action Plan (VAP) report presents a clear plan to respond to a Varroa incursion should it occur. Key features of the plan include:

- A “saturation advertising” approach to communicate the Varroa threat to the beekeeping community and the public at large; Measures to intercept Varroa-infested bees before they have contact with NL honey bee stock, e.g., monitoring social media for talk of illegal importation, Canada Post and courier companies monitoring for illegal imports;
- A volunteer, sentinel apiary program to facilitate monitoring of honey bee stocks across the province at strategic locations particularly at high risk locations such as locations with significant concentrations of beekeepers (e.g., northeast Avalon peninsula); A “passive surveillance” approach whereby commercial operators, small-scale, and hobby beekeepers are trained in Varroa monitoring and treatment methods, and encouraged to test for the parasite; Testing according to best practices recognized by the scientific community and governments internationally, namely, alcohol wash, sugar shake, and sticky board methods;
- Mandatory testing of any apiary from which bees are “sold” (nucs, queens, full colonies) prior to distribution;
- Creation of “Bee districts” with boundaries based on the distribution of apiaries and provincial geography, and taking into consideration the location of small fruit crop operations (namely cranberry), so that beekeepers can freely move colonies within districts without having to test constantly for Varroa. Transport of bees and used beekeeping equipment between districts would require testing for Varroa no more than 10 days prior to transport;
- Test swarms and feral colonies for Varroa prior to transporting them to another apiary;
- Conduct frequent and sensitive Varroa testing of swarm catcher home apiaries particularly if they are located near other apiaries, and they distribute bees to other apiaries (e.g., selling nucleus colonies, rent-a-hive arrangements, etc.). These apiaries are high risk potential Varroa-infestation locations;
- Enhanced provincial government support for honey bee biosecurity measures including regulatory reform to provide better bee health management tools, the allocation of resources

for beekeeper education and training, and a commitment of resources to manage a Varroa incursion;

- A Varroa crisis management plan developed by the provincial government as soon as possible that details how it would respond to a Varroa incursion, identify the resources available for delimiting surveys and eradication, the funding available for stock replacement, and training for the provincial apiarist and other staff to undertake delimiting surveys (inspections) and eradication.
- Commence training of government emergency response personnel immediately. If resources are limited, alternatives should be considered including recruiting and training volunteer beekeepers in advance for Varroa inspection work; Limit Varroa’s devastation of NL honey bee stocks should it become established by training beekeepers in effective mite monitoring and treatment methods according to international best practices, and by establishing a mite resistance breeding program.



Photo 1. A *Varroa destructor* mite climbing upwards on a toothpick (photo courtesy David T. Peck)

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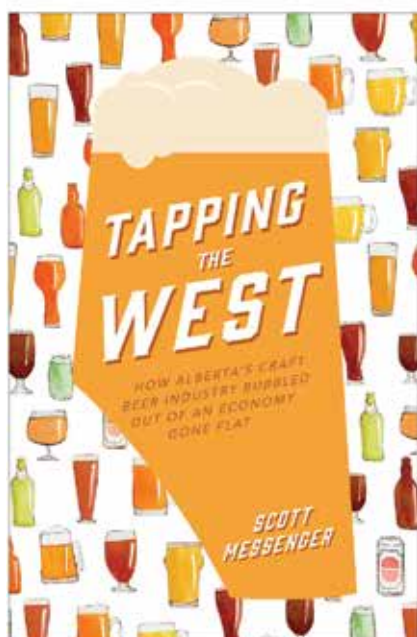
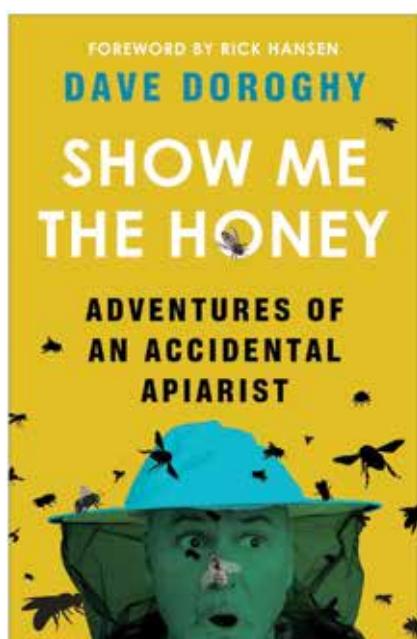
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Show Me The Honey, Tapping The West

Win Gourmand World Cookbook Awards



TouchWood Editions is thrilled to announce that both *Show Me the Honey* by Dave Doroghy and *Tapping the West* by Scott Messenger have won Gourmand World Cookbook Awards in the Canadian competition.

Show Me the Honey: Adventures of an Accidental Apiarist by Dave Doroghy, the winner of the Best Book on Honey in Canada, is a lighthearted, self-deprecating account of one fledgling beekeeper's misadventures. Through highly entertaining anecdotes, Doroghy recounts his often tension-filled foray into beekeeping. In addition to the joy and surprises he experiences, he also covers the less-acknowledged financial sting of keeping bees. Above all, he relishes in the details of keeping a hive and getting to know the fascinating little creatures that inhabit those mysterious wooden boxes.

"If you think beekeeping is a quick and easy shortcut to wealth, this book will set you straight. . . honest and often witty . . . this is a light read on the pleasures and pains of a beekeeper that will give you new respect for all the work . . . that goes into producing the spoonful of honey you stir into your tea." —New York Times

When Alberta eliminated its laws around mandatory minimum brewing capacity in 2013, the industry suddenly opened to the possibility of small-batch craft breweries. From roughly a dozen in operation before deregulation, there are now more than a hundred. *Tapping the West: How Alberta's Craft Beer Industry Bubbled out of an Economy Gone Flat* by Scott Messenger, the winner of the Best Book on Beer in Canada, shares the story behind Alberta's craft beer boom via tasting notes, social history, politics, and science. Messenger introduces readers to key players in the industry, and hops into the brewhouses and backstories of some of Canada's best new beer makers.

"Tapping the West is not a regional beer guide . . . Messenger utilizes a more personable style of journalism . . . [to] describe the unique personality of those he interviews and the experiences he had while researching . . . It's refreshing to see a writer take a wider view of beer, including regional politics, culture, and economics." —What's Brewing Magazine

Founded in 1995, the prestigious Gourmand World Cookbook Awards receive submissions from more than 200 countries each year and award prizes in more than 100 categories. In the first leg of the competition, food, wine and drink books compete against titles within their country. Having won in Canada, *Show Me the Honey* and *Tapping the West* will now continue to compete in their categories against winners from other countries in the Gourmand Best in World competition. Results from that competition will be announced in May 2021.

For more information, please visit cookbookfair.com, and touchwoodeditions.com.



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INTERNATIONAL HONEY MARKET

September 2019 was the largest assemblage of scientists, beekeepers and members of the international honey industry for a forum on the reality, nature and solutions to the plague of adulterated honey, and helped set the stage for these new developments.

by Ron Phipps

A Sea Change

For the first time in a long time we can realistically talk of the honey market reaching an inflection point. This period calls for the wisdom of patience and resisting the siren calls from Masters of Market Manipulation which beekeepers in North and South America are now hearing.

After the releases of:

1. the U.S. Pharmacopeia, Food Chemicals Codex (FCC) Honey Identity Standard,
2. the honey testing provisions in the U.S. Congress' 2020 Omnibus Appropriations Act,
3. the proposal from the Honey Integrity Task Force, chaired by Darren Cox, urging aggressive sampling and the use of advanced scientific tests by government agencies, and
4. Apimondia's "Evaluation of the Direct Economic Impact of Decreasing Prices of Honey," estimating over \$1 billion of economic losses to North and South American beekeepers during the past 5 years, resulting from honey fraud and honey adulteration,

the entire chorus is singing in unison a new song.

When considering the problem of adulteration, it is important, indeed crucial, to realize that according to Codex Alimentarius standards, to which the U.S. is committed, the addition of any adulterated product to a composite with other constituents makes that composite adulterated. Therefore, if a product contains 100% adulterated products, 90%, 60%, 40%, or even 10%, the composite is adulterated.

The monumental Apimondia meeting in

The Current Market

The current situation includes: a) a huge flood of incredibly cheap honey imported into the U.S. from India and Vietnam; b) U.S. honey industry preparations underway for 2021, by which time strict testing regimes from the U.S. government and the market are anticipated; c) fear in exporting countries of a new antidumping petition in the U.S.; and d) concern about impending shortages in the supply of authentic honey in a market, transformed by the compelling fight against food fraud.

As early as the beginning of June 2020, some players were trying to secure authentic honey for considerably higher prices. Others anticipate the demand for authenticity in honey will move the prices in forthcoming periods of high-quality honey to \$2.00-3.50/lb. and in later phases \$3.50-4.00/lb. That means there is anticipation that the price of honey in the first stage of a market freed of the decade-long onslaught of adulterated honey may rise to \$4,200 to \$4,500 per metric ton and in the second stage to \$6,000 per metric ton.

An inflection point of rising prices reflects fear of both 1) the power of a potential antidumping case, and 2) the demands for authenticity and the end of food fraud in the honey sphere.

There have been reports in many exporting countries that an antidumping petition is being prepared. As we write this, we cannot confirm or deny that this is the case. But the widespread reports are already contributing to price increases in some countries.

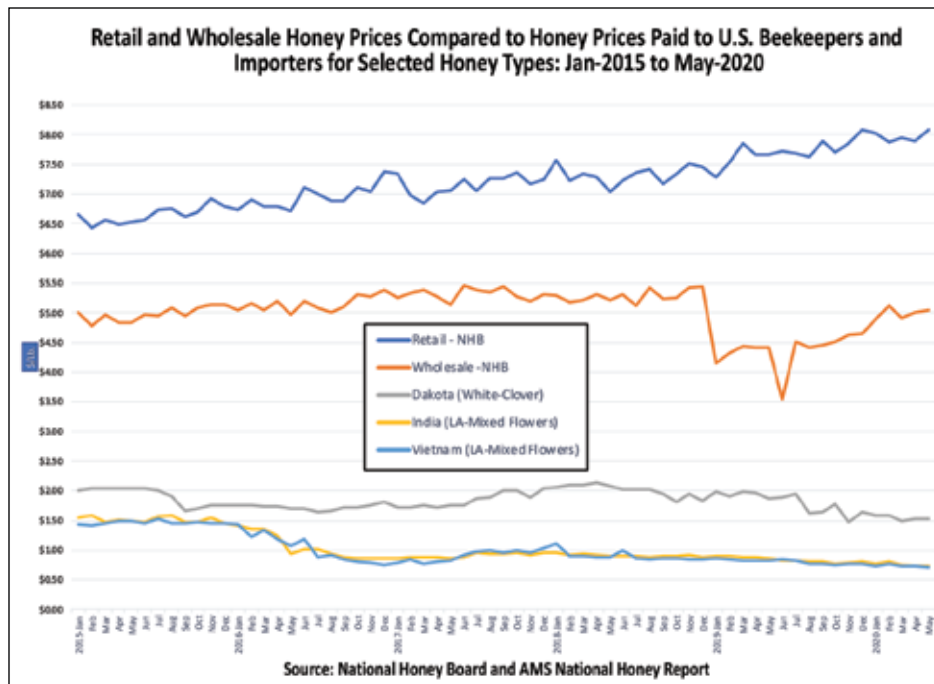
Dr. Daberkow's economic analysis (see chart on next page) reveals that the price gap between retail and wholesale prices has been at a modest and normal level. In contrast, the gap

between wholesale prices and the cost of honey inputs has been abnormally large. Prices for imported Indian and Vietnamese honey have been declining since 2016, for U.S. Dakota honey since 2018. That means there have been high profits for a few and huge losses for beekeepers. The Apimondia report "Evaluation of the Direct Economic Impact of Decreasing Prices of Honey ..." regarding economic losses to North and South American beekeepers, which was released by the American Honey Producers Association in June 2020, estimates what would be expected of prices in a context in which consumption of honey is growing. Those selling to retailers have ample room to increase their prices for honey and, on the other hand, beekeepers have a compelling opportunity to recover losses which have resulted from food fraud and economically motivated adulteration of honey.

Because of the international exposure of the multiple modes of adulteration that have plagued the past decade, we can anticipate that the negative manipulation of the honey market is coming to its conclusion. This implies that a serious shortage of authentic, high-quality honey is impending.

Prices of honey have already significantly increased, and efforts to buy forward have surged. Beekeepers and exporters anticipate that from the nadir of non-remunerative prices, prices of authentic honey will double in the intermediary, and in the not too distant future, triple. If advanced scientific technology, which can detect multiple forms of adulteration prevalent in the marketplace, is correctly and fully utilized, very significant quantities of adulterated honey will be removed. A chart (Garcia, Phipps, Adee) showing the great disparity between the number of global beehives (stable) and the rapidly increasing volumes of global honey exports was shown by numerous scientists at Apimondia and recently in Japan, as one of many important indicators of the magnitude of adulteration. The U.S. Pharmacopeia's Food Fraud Database concluded that honey was the third most adulterated food

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within the food supply. This conclusion was reached without the use of advanced technology, which would have surely increased the magnitude of adulteration present.

The Confluence of Positive Developments

On June 30, 2020, the U.S. Pharmacopeia (USP), chaired by Prof. Norberto Garcia, released a proposed Food Chemicals Codex (FCC) Identity Standard. This document is an outcome of the recommendation of Prof. Michael Roberts, world expert on food fraud, which first appeared in his important White Paper. Prof. Roberts' first and second White Papers should be mandatory reading for all members of the American honey industry, and indeed the international honey industry.

The USP's cardinal description is: "Honey is the natural sweet substance produced by species within the *Apis* genus from the nectar of plants or from secretions of living parts of plants or excretions of plant-sucking insects on the living parts of plants which the bees collect, transform by combining with specific substances of their own, deposit, dehydrate, store, and leave in the honeycomb to ripen."

This reconfirms the formal Statement on Honey Fraud approved in January of this year by Apimondia. There is now growing awareness that the authenticity of honey cannot be defined without reference to its modes of production.

Both documents represent the work of prestigious scientific, academic and beekeeping experts in the international honey community who have collaborated to form these important documents and guidelines. They were formed as a result of 1) growing and compre-

hensive awareness of the modern modes of adulteration of honey, which singularly and/or in combination, have caused the erosion of authenticity and purity in the international honey industry and a collapse of the honey prices, and 2) the development of powerful scientific techniques which are helpful to expose food fraud and economically motivated adulteration not only in the spheres of honey but in fruit juices, wines, olive oil, coffee, fresh and frozen fish, and pharmaceuticals.

Concurrent with these cardinal documents, is the plan that U.S. Customs intends to begin testing imported honey for country of origin using advanced techniques, including Nuclear Magnetic Resonance, and a proposal in a Congressional Appropriations Bill for the FDA to examine honey for economically motivated adulteration, using advanced techniques.

The Honey Integrity Task Force proposal requests "consideration of more robust regulation and enforcement to counter the threat of Economically Motivated Adulteration in the honey industry ... options including increased surveillance at entry ... [and] use of the most advanced available analytical techniques."

A recent BBC article by Pamela Parker

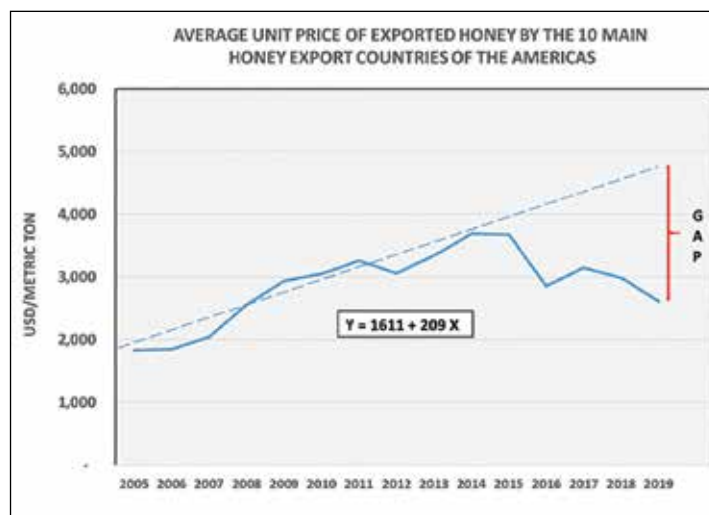
(June 26, 2020) described the challenges to honey producers. It stated, "Chris Hiatt, vice president of the American Honey Producers Association, says that something has to be done. 'We need a decent price to keep our businesses going,' he says. 'It is a serious problem.'" I was also quoted in the article: "The reality is not that American beekeepers are non-competitive," he says. "The problem is other countries are using means of production, which have been observed and documented, that allow production of huge quantities of adulterated honey whose production costs are extremely low."

These are all powerful tributaries to a great river leading to justice and integrity in the honey industry. More media attention is on the horizon.

Quantifying Losses Caused by Economically Motivated Adulteration of Honey

In June 2020, the Apimondia Regional Commission of the Americas and the Apimondia Scientific Commission of Beekeeping Economy jointly issued an analysis documenting the magnitude of the economic losses suffered by beekeepers in South and North America over the past five years, described as "the greatest damage to beekeepers in human history."

If the honey industry had begun rigorous testing, using powerful scientific technology to detect the modern modes of adulteration, the losses of over \$1 billion dollars to beekeepers would most likely not have occurred. Those losses can be laid at the feet of those who chose illicit profits over economic fairness,



bad science over good science, fantasies over facts. The consequences were devastating to U.S. beekeepers.

"If the price trend observed during the period 2005-2014 had continued (which could have been expected under increasing demand

and inelastic offer), the price for honey would have reached \$4,700 per tonne by 2019, a difference of more than \$2,000 per tonne with the observed price.”

We note that in the June 2020 Honey Market Report a similar analysis for the U.S. market was presented.

Recent U.S. Market Statistics and Trends

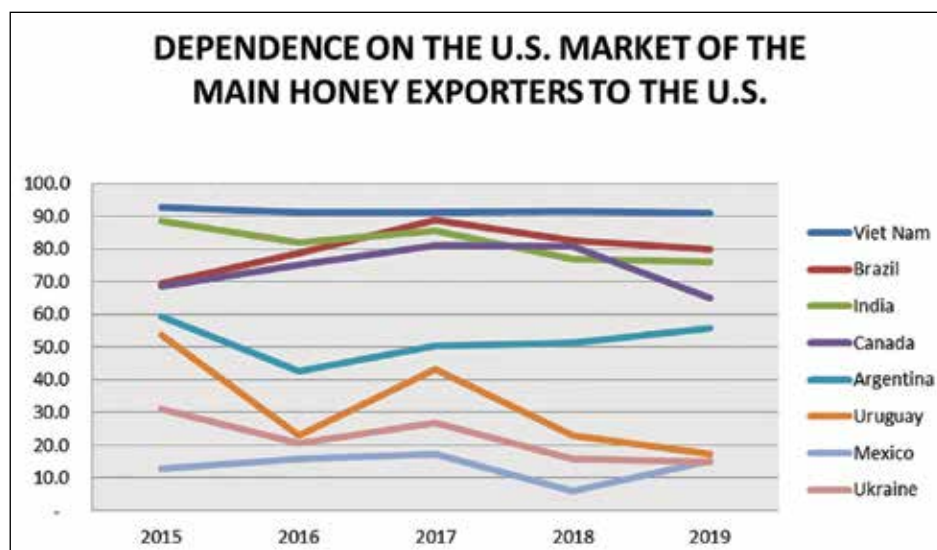
A terrible trend toward even lower prices from the exporting countries India and Viet Nam can be seen in the 2020 import statistics for the first 5 months. This represents an alarming effort to flood the market with cheap honey before new standards are vigorously implemented. In May, import prices for Indian Extra Light Amber and Light Amber respectively sank to \$0.63-0.64/lb., a 17% decline relative to May 2019. In the same period, Vietnamese Light Amber prices declined 16%, from \$0.63/lb. to \$0.53/ lb. Indian and Vietnamese honey import volumes went from a combined 41% in 2019 to almost half of the total honey import volumes in the first five months of 2020. The price collapse left the combined value at less than 30% of the total import market.

These statistics create a Perfect Storm providing the foundation for a powerful and effective antidumping suit against the lowest priced exporting countries.

Dr. Daberkow has observed that based on the 2020 Honey report from NASS/USDA and the ERS/USDA honey export/import data, U.S. honey consumption has declined two straight years from the record of 596 million pounds in 2017 to 550 million pounds in 2019 (down 46 million lbs. or 7.7%). The Nielsen Sales Report has indicated that honey volume fell 2.7% in 2019 compared to the previous year. Raw and Organic honey are growing in market share. Imported honey volumes peaked in 2017 at 448 million pounds, and fell to 417 million pounds in 2019.

During the three months when the Department of Commerce evaluates whether to accept or deny a petition claiming dumping, restrictions are placed limiting any increase of quantity of imports to under 15%. The purpose is to prohibit a surge of dumped honey into the market. At the onset of the persisting China honey dumping case, there was a surge of imports. There is concern about the volumes in the recent period.

The analysis of some experts is that the collapse of pricing is not due to dumping, which is selling under cost, but to adulteration using rapid extraction of unripened honey, blending of cheap bioengineered rice sugars (syrops have been exported at \$0.15-0.39/lb.),



use of resin technology, and other methods. If that was not the case, the huge volumes of honey exports from low-priced exporters could not be sustained over such a long period. The fundamental problem is not dumping, but adulteration. That adulteration is the foundation of the collapse of honey prices and the endangerment of beekeepers producing authentic honey.

It is astonishing to think that in two decades India went from having zero exports of honey to the world to become a main source of U.S. imported honey. Of course, people have witnessed and there is abundant evidence that India’s adoption of the China model of honey production is part of this achievement.

A beekeeper has succinctly summarized the situation as follows: “The dreadful collapse of honey prices is a classic example of the manipulation of markets benefitting a small cartel and threatening the survival of beekeepers in North America.”

“Local Honey”

On the one hand, the emergence of local honey marketing is an example of the creative marketing of honey in its diversity, authenticity and charm. Sales at farmers markets, roadside stands, and online are serving as a godsend to many beekeepers and also are harbingers of a new era for marketing honey as a whole. The marketing of wine by region of production has achieved such growth and provokes such intrigue, that the wine industry has blossomed both quantitatively and qualitatively, while prices have dramatically increased over past decades. The modes of producing authentic high-quality wines have become part of the attractive story of wine, eliciting tours of the vineyards. Unfortunately most Americans are unaware of the beauty of the botanical regions which produce honey. Chris Hiatt commented that standing in the orange

groves at blossom time in northern California is to experience the most beautiful aroma in the world.

The farmers markets, as beekeepers consistently report, achieve price levels such as \$8/lb. and in fact much higher. We should remember that honey is a marvelous product of nature, but in the U.S. the per capita honey consumption is only a little more than 1.1 lb. per year. Since there is such a huge gap between input costs and retail costs, the retailers can keep prices relatively stable. Adulteration has created huge profits, but generally not for the retailers. As beekeepers have warned, flooding the market with low-quality adulterated honey will turn off consumers. Evidence of consumption declines have already emerged, which some correlate with the flood of cheap honey of questionable authenticity. This follows years of increasing total consumption, but steady per capita consumption. Such declines are exactly what beekeepers producing authentic honey have feared whenever they have contrasted the lovely honey they produce with the honey being sold on the mass market with fraudulent country of origin, botanical source and quality designations.

A new and serious form of food fraud has emerged which involves mislabeling of products as local which are not local, and in some cases as American, when the majority of the honey is not produced in the U.S. New scientific databases have been established and are being enhanced to allow correct and detailed identification in respect to both geographic and botanical sources.

The proposed USP FCC Honey Identity Standard states, “If a regional, territorial or topographical origin of honey is listed on the label, the product must come entirely from the indicated place.”

We note that some state agricultural organi-

zations are encouraging beekeepers to use state designations on their retail honey products, whether sold in their own state or other states. Integrity is integral to marketing. In Europe, the marketing of honey by geographic and botanical origin has created a romantic appeal.

In July 2018, ABJ published an article which stated that the proper definition of authentic honey cannot be separated from the modes of production of honey. In November I wrote that the creative marketing of honey depends upon the elimination of adulterated honey and the prevalence of authentic, pure honey, to reflect honey's diversity and charm. The creative marketing of varieties, geographic origin and authentically local honey is comparable to the marketing of wines, coffees, teas, etc. Consumers' interest in the details of production of many agricultural products, including honey, is unprecedented. Furthermore, when honey is seen in its indirect role of contributing to global food security and ecological sustainability, the value of bees and beekeepers is seen more clearly.

U.S./ARGENTINA/BRAZIL/ CANADA

United States

It was reported that in July the clover bloom in the Dakotas was weak. Bismarck, North Dakota, set records for heat and the region suffered heavy winds. In 2019, the crop of North and South Dakota was 53 million lbs., representing 34% of total U.S. production. In terms of quantity, as of the latter part of July, the overall crop looks to be lower than average, and less than last year's crop. The total U.S. crop in 2019 was 157 million lbs.

Argentina

During the period January to June 2020, Argentina shipped about 92.5 million pounds (42,000 metric tons) of honey to the world out of a total crop of about 65,000 metric tons. Most of the remaining 23,000 tons are already sold. U.S. imports Jan-May were 32.5 million pounds, slightly more than the same period in 2019.

Prices have continued to rise from January to now, to levels over \$1.36/ lb., without significant quantities to be sold till next crop, normally available in February 2021. There is no white honey available in Argentina.

Brazil

U.S. imports from Brazil reached 3.9 million pounds for Jan-May, a significant increase compared to the same period in 2019. The prices dropped to astonishingly low levels of about \$1.05/lb. Reports indicate that only limited supplies of organic honey remain unsold as of July.

Canada

Canada's honey production is expected to be only 40,000 MT, down from their normal crop of 45,000 MT. Prices in May were reported at \$1.47/ lb. for Extra Light Amber and in July were moving up, with demand increasing. Imports in the U.S. for Jan- May 2020 totaled 3.2 million pounds, down from 8 million over the same period in 2019. Total U.S. imports from Canada in 2019 were 15.9 million pounds.

Alberta is down over 50,000 hives from its normal of 300,000 to 320,000 hives and its production will be below normal. Beekeepers had to use flotation tires to get into the bee yards, which were extremely wet. Alberta had a long, extensive series of rains which washed away seeds and fertilizer and inhibited honey production. The extraordinary productivity of honey in Alberta has been subject to environmental pressures.

Manitoba had sweet clover setting seed already in July, earlier than normal, and some reports indicate 120 lbs. to 160 lbs. per hive. In western Canada beekeepers expect lower than normal crops and say that their bees do not have vigor this year. Canola in southern Canada started an earlier downward swing due to weather patterns.

The only sources of authentic honey with comparable flavor profiles to U.S. honey are Argentina and Canada. That is one reason honey prices rose in mid-July. There is a well-founded fear of a growing and long-term shortage of authentic honey. By mid-July higher prices were being offered and forward contracts being sought because of the growing fear that 1) prices will become much higher than current offers and 2) a real shortage of authentic honey is on the horizon. The experience of rising prices is like passing through the long tunnels running through the Austrian Alps.

Scientific Tools

It has become entirely impossible to keep NMR, HRMS and other methods of analysis out of the scientific toolbox. However, a concern remains to ensure that the tools are fully and properly used. Already, there have been statements which point to using the wrong tool for a given mode of adulteration and not fully, comprehensively using a given tool. Scientists are preparing an article which will address this issue in a technical but readable manner.

It is like a carpenter's toolbox; no one would ask a carpenter to build a house and expect him to use a saw to nail together the various wooden components, no less to use a hammer to size and shape those wooden constituents. Nor would anyone want a surgeon to use anything less than the most precise,

advanced diagnostic and surgical instruments.

NMR can reveal country of origin, botanical source, region of origin, extraction of unripened honey, and the use of resin technology. Blatant arrogance has surrounded the introduction and promotion of resin technology (ion-exchange resins) for use in some Eastern countries. The FDA does not allow its use for products labeled "honey" and the USP Honey Identity Standard states "use of ionexchange resins ... is not allowed." HRMS can reveal the blending of bio-engineered extraneous sweeteners.

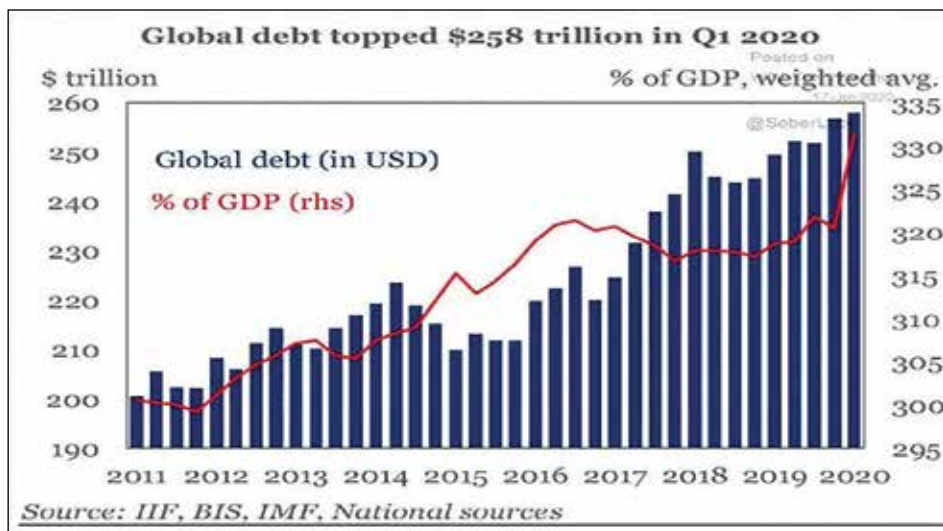
In July 2020, the QSI laboratory in Germany offered to the international industry a protocol on how to use these advanced technologies advocated by both Apimondia and the USP for the confirmation of the authenticity of honey. Other laboratories in the U.S. and Canada will surely follow suit. The goal will be to see who can most faithfully, effectively and thoroughly implement these methodologies to protect consumers and beekeepers, and thereby broader agricultural and ecological interests.

Of course, we must note that the USP FCC document is a proposal and is open for comments prior to its finalization. This author, with the support of others, is advocating that the document should promote the authenticity of all honey, irrespective of the use to which the honey is put, whether for retail, manufacturing, food service, cosmetic or pharmaceutical purposes. Authentic honey must be authentic. If we leave a loophole, the flood of adulterated honey will be unabated and the negative consequences upon authentic honey will persist. It is a matter of principle. The back door should not be let open because the front door has been locked. This is vital for the health of the U.S. market.

All modes of adulteration relevant to the prevailing situation must be scientifically and independently investigated. Otherwise analysis serves merely as an exercise which provides a smokescreen or a mask.

We are happy to see that some of the laboratories are recognizing this. In a newsletter sent in July 2020, QSI asserted: "High Resolution Mass Spectrometry is increasingly being used to investigate the authenticity of food. The great advantage of this technique is the ability to detect even novel adulterations. This is necessary because adulterators are constantly learning and adapting their adulterations to the analytics currently available." Different laboratories are collaborating to cross verify the power and application of these multiple tools and their respective databases. The results of these collaborations are very promising.

The adoption of these new standards represents considerable scientific progress. Science



does not stop. As we look to the future, the creative marketing of authentic honey, its romance, history, charm, diversity and health benefits, requires a much more vigorous and comprehensive traceability system. That means the advancement of the science of the chemistry and physics of honey will require the understanding of variables which influence that chemistry and physics. In work that was done some years ago with Dr. McLaughlin and Dr. Page of the FDA, and with discussions with Dr. Joseph Bowden, it was suggested that if we develop a database more robust and comprehensive than has been collected so far for honey, it will be possible to see whether the specific product named honey fits the specific, detailed, profile. One size does not fit all. This is not only relevant to issues of authenticity and purity but it also is relevant to assessing both the high quality and/or the health benefits of particular honeys. Such a scientific scheme will serve an emerging era of the creative marketing of honey.

Science continues and is not relevant only to identifying adulteration but to demonstrating honey's quality and benefits. That is, the further development of the science of honey will serve a positive agenda. For example, Dr. Daberkow has pointed out that a study by the University of Queensland (Profs. M. Fletcher, N. Hungerford, and T. Smith) indicates that the meliponini bee produces honey which, as indigenous people have known, has important health benefits. Specifically the honeys contain up to 85% of the sugar trehalulose, which is important because it can inhibit diabetic processes. Understanding this health benefit was dependent upon scientific analysis.

The Pandemic

The current situation is deeply affected by the pandemic which emerged in the latter part of 2019 from Wuhan, China. While

China had a severe lockdown internally, a million Chinese travelled to five continents. In a 3-4-month period, the coronavirus provoked a pandemic throughout the entire world. The epicenters within and among the nations were shifting. As of mid-July, the total number of cases in the world was 15 million, the number of deaths 700,000, and the countries with the highest number of cases were the U.S., Brazil, India, Russia, and Peru. The fear of a second and third wave remains.

This is a crisis that integrates health, economics, education and national and global debt. For example, U.S. debt has grown so that the total debt is \$79 trillion, including federal, corporate, consumer, muni and local. This means that there are increasing risks for companies around the world, including exporters and U.S. beekeepers, who need secure terms of sale in a climate of increasing economic fragility.

Given the high rate of unemployment and high rate of bankruptcies, the settlement of global debt creates a daunting economic challenge to the nation and the world. The magnitude of international debt, given the impact of the pandemic on the global economy, has reached a point where international monetary authorities are talking about the necessity to "forgive" debt, which could include the enormous debt which many third world countries owe China for their new Silk Road projects.

Limited shipping availability and routes, delays in internal transportation in honey producing and consuming countries, the threat of recurring lockdowns, and diminishing hospital capacity, create great uncertainty for the world.

Climate

Aberrational weather patterns which have been reported this summer include temperatures over 100°F in the Arctic, melting permafrost in Siberia, extreme flooding in cen-

tral and southern China, and protracted heat waves in 90% of North America.

Conclusion

The foxes are running away from the hen-houses, the wolves are wearing Grandma's garb. There is the appearance that many Sauls suddenly became Pauls converted by the light on the road to Damascus.

Though the events described in the introductory sections have isolated those who for so long had dismissed, disparaged and denied the importance of NMR and other advanced scientific technologies, some continue to try to delay implementation of the protocols advocated by Apimondia, the Authorization Bill and the USP. The media, the government and the judicial system, along with the retailers and manufacturers who are becoming more acutely aware of their Social Responsibilities to consumers, agriculture and the environment, are causing the Sea Change and the Inflection of Prices.

A series of podcasts is being organized to address the new challenges and opportunities during this period when economically motivated adulteration and food fraud are being confronted head on nationally and internationally, in both producing and consuming countries. The first podcast will involve Professor Michael Roberts and myself. Subsequent podcasts will engage scientists, representatives of other industries such as the wine industry, retail associations, consumer advocate associations, business leaders with expertise in exercising Corporate Social Responsibility, major media, and eminent legal experts in food fraud. The series is planned to run from August 2020 through 2021.

A new report by the Capgemini Research Foundation, "Consumer Products and Retail: How sustainability is fundamentally changing consumer preferences," finds that "sustainability has risen up the customer's agenda: 79% of consumers are changing their purchase preferences based on social responsibility, inclusiveness, or environmental impact." There is growing appreciation for beekeepers from people of all walks of life.

Honey cannot be defined without reference to its modes of production. Honey is not the product of blending rice and beet sugars and other bioengineered sugars, nor is it the product of "laundering" honey through resin technology. Neither is honey the product of the extraction of immature, unripened nectars.

Honey is a product of nature which involves the complete interaction of pollinators and nectar, which transforms honey into The Soul of a Field of Flowers. ■

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Hive Lights

Help Wanted

Interlake Honey Producers Ltd. P.O. Box 328, Fisher Branch, MB R0C 0Z0 has the following positions: Apiary Technician 5 Positions Available Required for the 2021 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: \$13.00 - \$16.00/hour. Minimum 2 years experience preferred. No education required. Performance and /or production bonus may be available.

Duties: Include but not limited to, feed and care for 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; work 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@interlakeforageseeds.com

Help Wanted: Granum, Alberta

SUPERNUC APIARIES located near Granum, AB (251032 TWP RD 104) has the following positions for the 2021 season. **APIARY WORKERS** (Technician/worker NOC 8431) 4 positions; wage starting at \$15.20 - \$18.00/hr, needed full time (45+ hrs/wk) from Mar 1, 2021 through October 31, 2021. Some evening, night and weekend work will be required. Accommodations are available. 1 year experience required. No educational requirements. Duties include assisting with beehive maintenance and treatments, building and repairing bee equipment, moving hives, harvesting and extracting honey, and winter preparation. All wages are negotiable based on experience and productivity. A valid driver's license and the ability to speak English is an asset. Must be physically fit and accustomed to working with honeybees. Email resumes to aoivinge@gmail.com or fax to 403-687-2154.

Help Wanted: Ardmore, Alberta

TNT Apiaries require:

An **APIARY FOREPERSON** (NOC 8252) for fulltime (40+ hrs/wk) year round employment (\$19.00-\$25/hr depending on experience. Bonuses possible). Applicant must have a minimum of 5 years (seasons) fulltime 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.
- Co-ordinating 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, chain-saws & pumps).
- Conduct bee yard maintenance.
- Keep field and/or production records.
- Interact with external farm personnel.

5 **APIARY TECHNICIANS** (NOC 8431) for full time (40+ hrs/wk) employment (\$17.00-\$22/hr depending on experience. Bonuses possible) Two (2) positions year-round. Three (3) positions March 1st - October 31st. Must have a minimum of 2 years (seasons) working fulltime 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 & equipment.
- Recognizing, reporting, monitoring hive health issues and applying appropriate treatment/controls.
- Harvest & package honey, pollen & beeswax.
- Supervise small teams of workers.
- Drive (including std transmission & medium duty trucks) & daily maintenance of vehicles.
- Operate & maintain other apiary equipment (including forklifts, chain-saws & pumps).
- Conduct bee yard maintenance.
- Keep some field and/or production records.

6 **APIARY WORKERS** (NOC 8431) for full time (40+ hrs/wk) employment (\$15.00-\$19.00/hr. depending on experience. Bonuses Possible) January thru November 2021. 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 & equipment.
- Assisting with harvesting honey, pollen & beeswax.
- Assisting with the bee yard and equipment maintenance.

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. A motor vehicle Operator's license with no serious infractions, recognized by the Province of Alberta & major insurance compa-

nies, is required for the Foreperson position and preference will be given to those Technician & Worker applicants holding one.

Contact Dave Tharle, 44116 - Hwy 659, Ardmore, AB or Box 80, Ardmore, AB. (Fax 780-826-6013) Email: tnapi@mcsmc.net

Help Wanted: East Selkirk (MB)

Apiary Supervisor 1 position (NOC 8252) Minimum 3 years beekeeping experience preferred. Wage range \$14.00-\$17.00 per hour. Employment from November 2/2020 to November 30/2022

Apiary Technician / Workers 3 positions (NOC 8431) \$12.00 - \$13.50 per hour. Employment from March 30/2021 to October 31/2021. Minimum 1 year experience required.

Seasonal full time, days, evenings, Saturdays. Language is English.

Duties would be to handle, feed and care for bees; help in replacement of hives and production of nucs; move hives; collect honey; maintain and drive vehicles; maintain bee yard; manufacture, assemble and maintain beehive equipment; maintain and operate other apiary related equipment; Must be able to handle heavy loads, and work is physically demanding. Must work well with others, as well as the ability to maintain basic production records. Report to Supervisor. Would require steel toed safety boots.

Send resume by email to philip@waldbee.com. Address: Waldbee Honey Farms Inc. Box 9 Group 19 RRI, East Selkirk, MB. ROE OMO

Help Wanted East of Saskatoon (SK).

Meadow Ridge Enterprises Ltd requires 5 Seasonal Apiary Harvest Labourers for the 2021 beekeeping season. Meadow Ridge Enterprises Ltd is a commercial beekeeping and queen rearing operation Full-time seasonal positions are needed commencing in April and ending in October. Minimum one-year beekeeping experience with wage starting at \$12.30 to \$15.00 per hour for laborers depending on experience. Potential to earn bonuses. Duties include spring feeding, hive maintenance, grafting, raising new queens, and building nucs. Supering hives, harvesting honey, extraction of honey, fall feeding, wrapping of colonies, equipment cleaning, repairing, and yard maintenance. Must be able to work long hours, weekends, and holidays in all weather environments. Job requires heavy lifting, a valid driver's license, a reliable vehicle to arrive at the worksite is an asset. Meadow Ridge Enterprises is located 10 minutes east of Saskatoon, NW 33 TP 36 RG3 W3rd. Please email resumes to aj.robertson@sasktel.net

Help Wanted: Austin, Manitoba

New Rutherford Apiaries (4647204 Manitoba Ltd)

RR#1, Austin, MB R0H0C0

Apiary Technician/Worker 4 Positions

Located north-west of Austin, MB in the RM of North Norfolk (69033), New Rutherford Apiaries requires four full time, seasonal, Apiary Technician/Workers for the 2021 season.

The positions start: March 05 - June 05, 2021.

End date: September 15 - November 05, 2021.

Duties include helping with: honey harvesting and extracting, feeding and medicating hives, moving hives, making hive increases, queen rearing, building hive equipment, bee yard maintenance and clean-up. Must have at least one season of beekeeping experience. Work is physically demanding, often in a very hot environment with weekend and evening hours required. Wage rate of \$11.85 - \$15.00/hour depending on experience.

Apply to Mike Lewis at: mike-beehive@hotmail.com

ph: (204)466-2551 or by mail to above address.

Help Wanted: Roblin (MB) - positions available for 2021

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.

12 full-time positions available at Wendell Honey in 2021

• **Apiarist Technician** (NOC 8252)

o help with Spring check, hive assessment and manipulation

o help with pest and disease control

o help with grafting, making nucs and raising queens

o assemble equipment

o help super hives

o help harvest honey

o help keep field production records

o help maintain beeyards

o help with Fall feeding, assessment and treatments

o help to wrap bees

o team lead/supervise as required

o other duties as assigned

• Positions available from April 6, 2021 to mid-October 2021

• Min. 2 years of experience working with bees necessary

• Work is physically demanding

• Wages \$15.00 - \$25.00 per hour depending on experience with Wendell Honey

• Possible production bonus

Email Isabel Wendell at isy@wendell.ca for fax 204-564-2568 or phone 204-564-2599

12 full-time seasonal positions available at Wendell Honey in 2021

• **Apiary Worker** (NOC 8431) to

o assemble equipment

o help super hives

o help harvest honey

o help maintain beeyards

o help with Fall feeding

o help to wrap bees

• Positions available from May 10, 2021 to mid October 2021

• No experience necessary

• Work is physically demanding

• Wages \$12.50 - \$17.00 per hour depending on experience with Wendell Honey

• Possible production bonus

Email Isabel Wendell at isy@wendell.ca for fax 204-564-2568 or phone 204-564-2599

Help Wanted: Tees (AB)

TEES BEES INC. requires: 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 2021 (\$15.20-\$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.

Five **APIARY WORKERS** (NOC 8431) with a minimum of 1 year (season) experience and with employment March thru October 2021 (\$15.20-\$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 RRI, Tees, AB T0C 2N0; or email at teesbeesinc@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 2021 season: 6 **SUPERVISORS** (SKILLED WORKER, NOC 8253) with a minimum of 5 years(seasons) experience working at a Canadian apiary. Employment needed from March through October 2021; wage starting at \$15.20 - \$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. 18 **TECHNICIAN/WORKERS** (LOW SKILL WORKER, NOC 8431) with a minimum of 1-2 years experience. Employment needed from April through November 2021; wage starting at \$15.20- \$16.50(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.

3 **GENERAL FARM LABOURERS** (LOW SKILL WORKER, NOC 8431) experience is an asset but will be trained. Employment needed for April through November 2021; wage starting at \$15.20 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. Contact Breanne Poelman. 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: Kinistino, (SK)

Position 1

Bacon Apiaries Ltd., located in Kinistino, Saskatchewan, is looking for an Apiary worker for the 2021 honey crop season. The job will commence approximately on March 15, 2021 to Oct 31, 2021. Primary duties (but may not be limited to) includes moving hives, feeding and medicating colonies, evaluating colonies, supering hives and harvesting honey, extracting and storing of honey and repairing bee equipment. Availability to work long hours, including week-ends and evenings is required. Salary starting from \$12.30/hr to \$14.00/hr depending on experience.

Position 2

Bacon Apiaries Ltd., located in Kinistino, Saskatchewan, is looking for 5 Honey harvester labourers for the upcoming 2021 honey season. 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. Employees hours will be 40-60 hours/week (5-6 days) with wages starting at 12.30/hr to \$14.00/hr depending on experience. Employment from July to September 24th 2021. Send resume to rbacon@sasktel.net

For a complete list of Help Wanted go to:

www.honeycouncil.ca/honey-council-classified-ads

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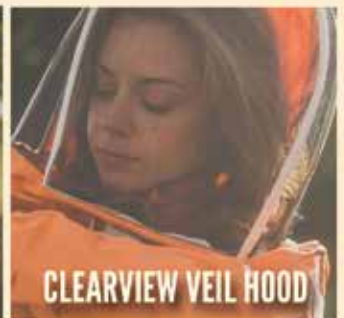
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