



INTERNATIONAL HONEY MARKET

by RON PHIPPS

A pandemic of the COVID-19 virus sweeps from Wuhan, China to five continents; A pandemic of honey adulteration sweeps across the International Honey Market

THE NEW DEVELOPING SITUATION

The first pandemic presents a terrible threat to humanity, and that threat took only a few months to reach every nook and cranny of the world. The second pandemic has evolved with relentlessness and sophistication using multiple modes of adulteration which have coalesced and overlapped over the past decade. The second pandemic of honey fraud has rendered beekeepers an endangered species, as Dr. Michael Roberts has aptly said.

Defeating both pandemics requires careful, diligent and advanced scientific efforts and extensive scientific and multi-disciplined collaboration. Such research and collaboration is already very mature and ongoing, moving from lower to higher stages.

The scourge of honey adulteration has provoked enormous, intensified, international responses, including the following developments:

- 1) The World Honey Congress, Apimondia, convened in Montreal in September 2019, bringing together the most powerful collection of scientists analyzing the multiple modes of honey adulteration using advanced scientific tools. The toolbox is much bigger and more powerful than ever before.
- 2) Increased attention to the problem of food fraud and honey fraud by the mass media. This has resulted in numerous and impressively comprehensive studies.
- 3) The involvement of social media in communicating to younger consumers, environmentally sensitive consumers, and consumers concerned with global food security, the broad implications of food fraud in its many modes and moods.
- 4) The powerful Apimondia Statement concerning honey fraud issued in early 2020 and published in full by American Bee Journal in April.
- 5) Strong letters of support from the German Association of Beekeepers and the American Honey Producers Association sent to Apimondia. (The AHPA's statement is included in this issue of ABJ.)
- 6) The anticipated release in June of the U.S. Pharmacopeia's description of authentic honey.
- 7) The increasing scrutiny of food fraud, not only by the governments of the world, but also by the judicial system, including leading national law firms expert in Food Fraud.
- 8) The Memorandum on Food Fraud signed in 2019 by the Resnick Center for Food Law and Policy, UCLA School of Law, and the United Nations Food and Agricultural Organization.
- 9) Growing awareness by retailers, manufacturers, food service companies, and cosmetic and pharmaceutical companies, of their social responsibility to oppose food fraud in each and all of its manifestations.
- 10) The Netflix documentary "Rotten," released in 2018 and translated into 22 languages. The series began with the Honey Fraud segment, and played an important role in internationalizing awareness of honey fraud. It opens with a quiet and powerful statement about honey fraud: "It is fraud. And it is a crime."
- 11) The early stages of the implementation of a U.S. government Authorization Bill. In March of this year, senior U.S. Customs and Border Protection (CBP) officials provided details regarding the new program for honey authenticity testing to the Senate Appropriations Committee, AHPA President Kelvin Adee and AHPA Legislative Committee Co-chair Mark Jensen. Senators Jon Tester (D-MT) and John Hoeven (R-ND) offered a bipartisan effort to Congress that included funding for the CBP's 2020 budget. CBP is purchasing a Nuclear Magnetic Resonance machine especially designed for testing honey from different origins. The machinery will be used in conjunction with well-established testing protocols.. The CBP will use NMR and advanced technology to test for fraudulent country of origin claims. It is anticipated that the CBP will coordinate with the Food and Drug Administration (FDA) to investigate testing for economically motivated adulteration.
- Other international enforcement agencies of a growing number of governments, as well as Interpol experts, are aware of the pernicious consequences of economically motivated adulteration of honey (EMA). International collaboration and sharing of information and evidence is increasing.
- 12) In March 2020, Prof. Stephan Schwarzingger, one of the world's experts on the chemistry of honey and honey adulteration

testing methodology, published a paper titled "The Technical Drying of Unripe Harvested Honey" with Alexander Lang, acting Managing Director at the research center for German and European Food Law at the University of Bayreuth, an expert on the legal implications of the adulteration of honey.

- 13) On Earth Day, April 22, Google put out a charming video on their main search website in which they declared bees as one of the most important animals on the whole earth, being responsible for one third of the food we eat daily and the pollination of 85% of the world's flowers, which lend beauty to our natural world. The appreciative attention to the world's bees is a positive omen in a difficult time.

UNRIPE IMMATURE HONEY

In their important paper, "The Technical Drying of Unripened Honey," Prof. Schwarzingger and Lang point out that:

- 1) "Unripe honey is a product that has been taken from the

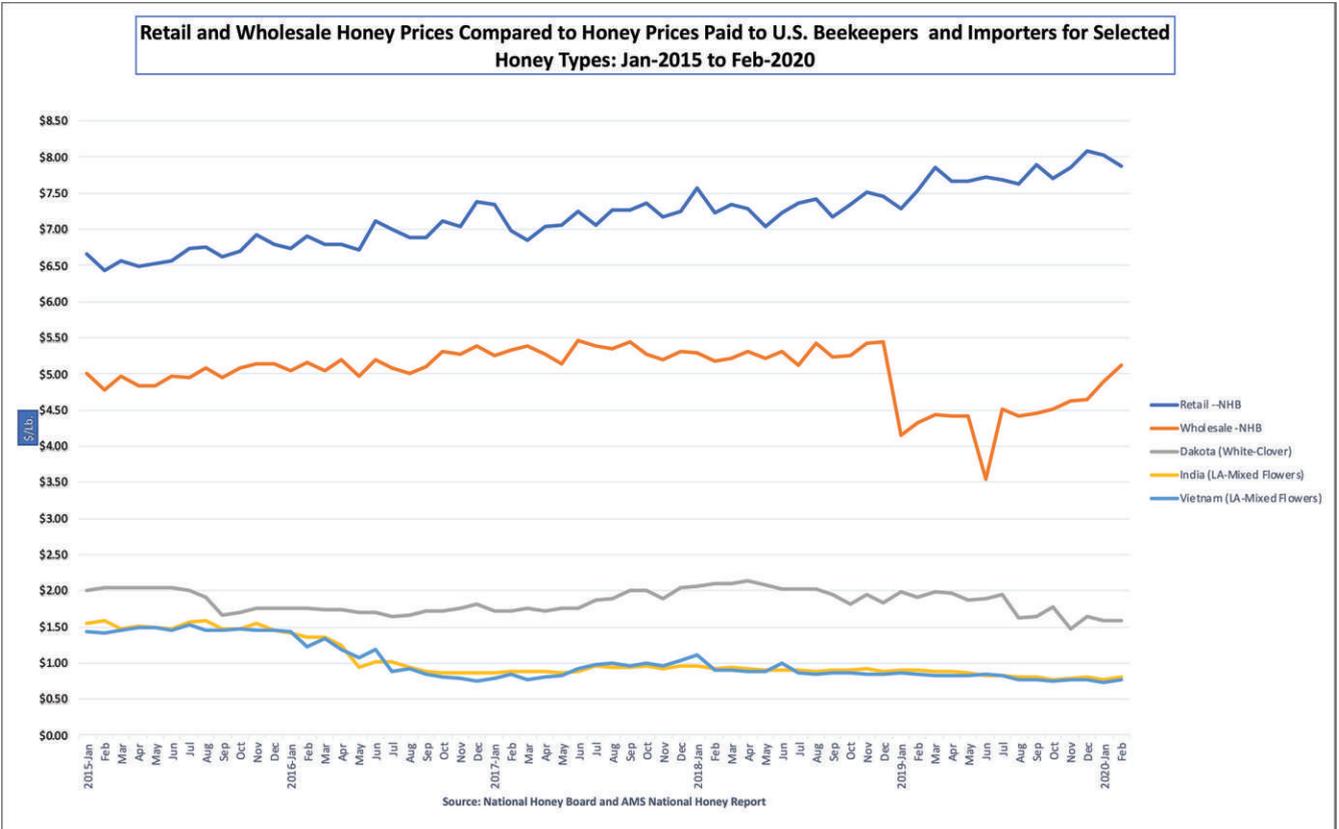
beehive that has not yet been naturally mixed with the bees' substances ..."

- 2) "The extraction of ethanol (a by-product of excessive fermentation) could thus hypothetically serve as a pretext for vacuum treatment ... (which serves as a technical treatment to reduce the ethanol content, e.g., with a vacuum) can also be considered inadmissible as water is inevitably also removed and the entire procedure is suitable for deceiving consumers."
- 3) "A product extracted from the hive ... which has subsequently been dehydrated by vacuum ... may not be marketed under the name honey."

The magnitude of this problem is not fully realized. Often spring crop honey is extracted at 40-50% moisture, stored outside through summers, allowed to ferment during the hot months of summer and then, but only then, processed through large vacuum chambers which reduce moisture to <18% for blending with later crops from other regions. This removes both ethanol and water, contrary to Codex requirements.

Some exporters have acknowledged that "100% of our honey is extracted immaturely." The importance of Prof. Schwarzingger's paper must be seen in this light. It is a matter neither of bee species nor warm tropical climates. Prof. Enrique Bedascarrabure, a world expert on the production of authentic honey in tropical and semi-tropical regions, has made this point in several forums.

Additional scientific studies contrasting proper vs. improper extraction and moisture reduction processes must be conducted. A scientific study can contrast and quantify the chemical constituents found when 1) honey is extracted immaturely, when it is extracted highly unripened, 2) when the extraction occurs with moderate interaction with bees and 3) when the honey is fully ripened and fully mature. Such a study should involve multiple regions, different floral sources, and samples drawn over at least 2-3 years. Such a study is essential and until such evidence can be offered, accumulated and evaluated, the extraction of immature honey and its subsequent moisture reduction through mechanical means should be precluded.



This graph illustrates the economic motivation for the adulteration of honey. It is that economic motivation, which benefits some, which drives all the attempts to weaken efforts to combat the adulteration of honey in its many modern forms.

BBC NEWS WROTE: "CAN WE SAVE THE BEES THAT FEED THE WORLD?"

The article from the BBC raised the cardinal question before the beekeeping industry and global agriculture, namely, can we overcome all the stresses on the bees and the distortion on the honey market in such a way that beekeepers can continue to function as an essential part of the creation of the global food supply and preserving ecological health?

An article in the *Financial Times* (April 20, 2020) quotes Kelvin Adee on the consequences of COVID-19 quarantines: "We're behind schedule and it's going to be a real challenge." Prof. Norberto Garcia is quoted: "A third of our food depends on the pollination by bees. The production of [fruits, vegetables and nuts] crops could be affected." Agriculturists have warned that the lockdowns and quarantine requirements introduced to slow the coronavirus pandemic are threatening to hit food production by limiting the movement of bees (*Financial Times*, April 17). This affects bees which normally are moved across state and national boundaries.

Part of the bee crisis involves the difficulty in producing queens and moving them.

ECONOMIC CONSEQUENCES OF ADULTERATED HONEY

Dr. Daberkow's updated analysis, covering 5 years including February, 2020, dramatically illustrates the general rise in retail and packer prices for honey, which sharply contrasts with the collapse of raw material honey inputs. These large and growing gaps have constituted the "economic motivation" in the adulteration of honey.

From an economist's point of view, analysis of selling prices and underlying costs of production can reveal not only "dumping" but adulteration. Unscrupulous businesses, engaged in collusion of adulteration, manipulate markets as a means of increasing their market shares and dominance, earning huge profits. To obscure such illicit activities they often don white robes and mount white stallions. Industries where adulteration is rampant often create elaborate schemes and forms of deception, in anti-trust forms of economic behavior. Food fraud experts are aware of such patterns of illegal behavior, designed to create monopolies and cartels.

An international perspective has been provided by Lucas Daniel Martinez, Apimondia Regional President

for the Americas. The charts below estimate losses suffered by the 10 main exporting countries of North and South America (Argentina, Brazil, Canada, Cuba, Chile, El Salvador, Guatemala, Mexico, Nicaragua and Uruguay) due to competition from extremely low priced product.

The cost of honey production has substantially increased and is directly related to the extra cost in preserving and protecting bees and overcoming colony losses. The graph on the next page contrasts the normative price increases that would be expected by the laws of economics with the actual prices achieved. The stark contrast between normative and actual prices reflects the prevalence of adulterated honey.

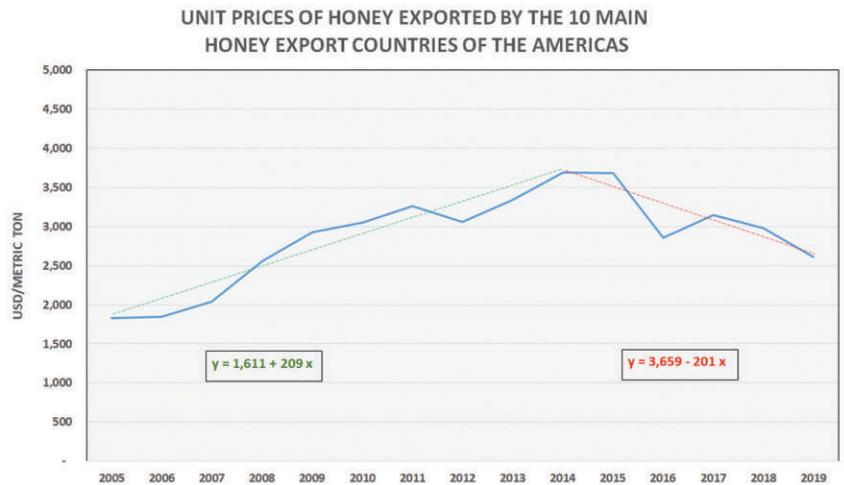
Furthermore, the prevalence of adulterated honey, which is estimated by some observers to be as much as 50% of globally traded honey, prevents the creative marketing of honey based upon its status as a natural,

pure, historic, diverse and charming product which bears important health benefits.

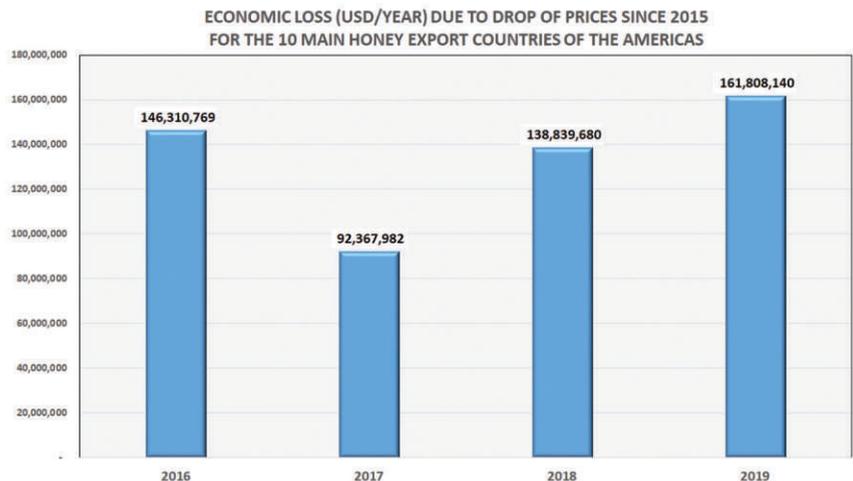
MACRO TRENDS

The world has entered a dangerous period due to the COVID-19 pandemic, which exacerbates other underlying economic and environmental problems, including debt at governmental, corporate and consumer levels, and super droughts in agricultural producing areas.

No entity exists in isolation from its broader context. The macro environment in which the international honey industry exists in this period is profoundly unique. Local, state, national and international debt levels are unprecedentedly high. Already the projected U.S. deficit for 2020 is 3.5-4 Trillion dollars. Cumulative national debt represents 18% of U.S. GDP, the highest since WWII, when it represented about 24%. International global debt has reached \$245 trillion

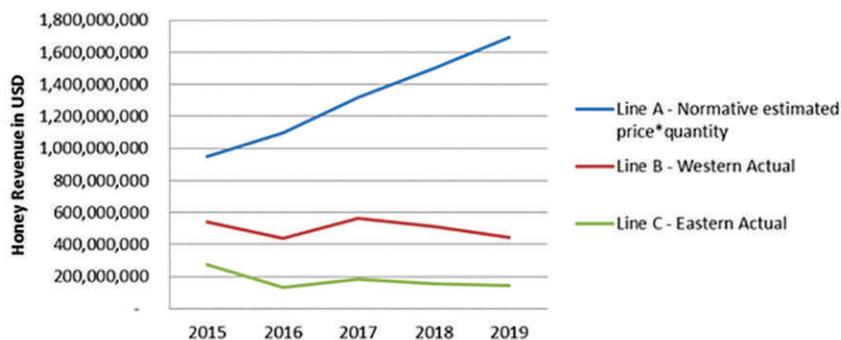


Unit prices of honey exported by 10 Major Producing Countries Prepared by Lucas Daniel Martinez



Economic Loss estimated over 4 years Prepared by Lucas Daniel Martinez

Annual Estimated Honey Revenue Losses based upon Normative Prices vs. Actual Honey Prices 2015-2019



Prepared by Lindsay Lee, CPA

in 2019. China's national debt is over 300% of its GDP. Japanese debt is 200% of GDP. Some U.S. Senators have proposed letting states go bankrupt to escape their debt burdens. These debts have a significant effect on the volatility of currency valuations. The magnitude of non-performing loans is undoubtedly huge. Sovereign debt defaults are also likely.

The impact of lockdowns on agriculture and on the rest of the economy is hard to estimate. We know Italy, Spain, France, Germany, the U.K., Argentina, China and the U.S. have all had extended lockdowns due to the virulent and pernicious COVID-19 virus.

The pandemic has impacted both global health and the global economy, including GDP quarterly declines, increases in unemployment, non-

performing loans, etc. But even in recessionary environments when many luxuries and norms are abandoned, one thing people cannot give up is food, with preference for healthy foods. Within a global environment filled with great stress, this fundamental fact is a positive for the honey market and beekeepers.

Global temperatures for the first quarter of 2020 were unprecedented. Temperatures in Europe were 6.1 degrees F above normal (*Bloomberg News*, March 10). The Copernicus seasonal weather models accurately predicted higher-than-normal temperatures in Europe. There are predictions that a superdrought is developing in the western parts of the U.S., comparable to the dust bowl of the 1930s.

How these macro developments will influence the international hon-

ey market remains to be seen. These macro factors imply that beekeepers are more important to society, bringing into clear focus the fact that the beekeepers of our country and our world have great significance to the overall health of the international community and therefore warrant society's respect.

Argentina

Argentina entered a period of lockdown due to the Coronavirus on March 20, an action which was praised for saving lives. After that time, the domestic honey market slowed down, and there were difficulties in picking honey up from some beekeepers since trucks were unable to pass through certain areas.

Prior to this period, most of the crop, considered to be a normal one of about 60-65,000 metric tons, was harvested. Honey yields were irregular, however, due to cold temperatures and droughts. Beekeepers pressed for better prices, and achieved in some cases a growth of 20%, partly as a result of Argentine inflation over the last year. Some exporters expect summer 2020 prices to be up about 25% relative to late 2019.

Carryover from the 2019 crop was smaller than normal. Estimates are that over 50% of the current 2019-2020 crop was sold by March.

U.S. honey imports from Argentina exceeded 79,000,000 pounds in 2019.

Brazil

Demand for Brazilian Organic honey from the EU and the U.S. has been increasing, and prices are recovering from recent low levels. The recent crop in the central regions was poor, and there was a problem with eucalyptus, which is usually a very good floral source for the organic honey crop. Rains in the Northeast have also delayed that crop, which is expected to include a variety of floral sources.

Isolation orders due to the coronavirus have caused delays in transportation, roadblocks, and generally slowed things down. Beekeepers, however, continue to work.

U.S. imports from Brazil in 2019 were about 52,000,000 pounds, little changed from 2018. However, the average import price fell by about 30% compared to 2018. Brazil's organic honey prices suffered a decline which brought prices lower than some conventional honey prices. There are numerous reports of large, purely speculative contracts at low prices,

Big jump in global debt as financial conditions ease



Source: IIF, BIS, IMF

made in 2019, which beekeepers are refusing to help fulfill.

Canada

Current prices for Canadian honey are U.S. \$1.40/lb. (about CD \$1.96), which is very close to the import prices in 2019 and 2018. Demand for Canadian honey increased sharply in early March.

U.S. imports from Canada fell to about 16,000,000 pounds in 2019, down by 49% from 2018.

Winter 2020 bee losses in some areas have been reported at 50%, and demand for replacement hives is strong. Restrictions resulting from COVID-19 have prevented import of bee packages from South America and regions of the Pacific.

The finding of honey adulteration by the Canadian government in 2019 has awakened other countries.

India

India maintains its dominant position relative to quantities imported into the U.S. The import volume in 2019 increased by 12% to over 108,000,000 pounds (White 14%, ELA 40%, LA 46%). Packers reported that purchases of Light Amber Indian honey were delivered with colors in the White range. Prices astonishingly declined to an average of \$0.73/lb., (White at \$0.72/lb.). The U.S. imported over 86% of India's honey exports in 2019.

Last year the Indian press exposed studies of Indian honey at retail which revealed 100% adulteration. This food fraud within the Indian domestic market was accompanied by strong protests by Indian consumers and beekeepers, and provoked the attention of the Indian government. European scientists and manufacturers of NMR testing technology explained that it was necessary for India to adopt and apply NMR testing for their honey exports. The need to attack the plague of adulterated honey had powerful impetus from both domestic and foreign buyers.

The impact of the pandemic within India remains to be seen. In early spring, India imposed one of the most extensive lockdowns in the world. Some migrant farmers walked a thousand kilometers to their native villages, leaving the season's harvest in the fields. We will have to wait and see the effect on India's honey exports, prices and quantities. It is hard to imagine that the pandemic, which began to intensify in March and April, will be without significant

effect, especially on export quantities and prices of authentic Indian honey.

As reported previously, NMR authenticity screening will be officially implemented in the second half of 2020 for exports of Indian honey. The American honey market will be keenly observing the results of the authenticity testing.

Vietnam

The coronavirus impacted Vietnam later than China, Europe and the U.S., but a lockdown was in place by April. Beekeepers were not able to move to the acacia producing areas. Extensive rains have resulted in the darkening of some rubber honey from Light Amber to Amber. Export prices were generally unchanged in early 2020, but were increasing for shipments arriving in the 3rd quarter.

U.S. imports from Vietnam declined about 6% in volume in 2019, but still exceeded 80,000,000 pounds for that year. Prices also declined by about 10% compared to 2018.

Conclusion

A clear transition point has been achieved. Those who have consistently disparaged and dismissed the value of NMR testing of honey have been compelled to sing a different song, as governments have begun to adopt the tests. The process of defying reality and rationality has involved "bribes and boycotts." And there are those who have moved away from the struggle holding their 30 pieces of silver. But the overwhelming majority in the industry recognize the rational and science-based arguments which have been presented.

The world faces a complex of existential problems. There has rarely been such a coalescence of global health concerns, economic concerns, climate change concerns and concerns for global food security. The media are increasingly focused on the challenges of producing high quality, safe, authentic food in sufficient supply. Some economists have said that the number of families in our country and indeed in the world who could potentially face problems of hunger is now greater than during the Great Depression.

Prof. Michael Roberts' ingenious description of the world's beekeepers as an endangered species rings truer with each passing month. The exploitation of the world's beekeepers is both morally wrong and imperils humanity as a whole. It is a sad commentary to observe how some seem to

suffer a mutation from the era of European empires. That mutation seems to give a high to those who possess it whenever they can manipulate markets and/or exploit the people who produce the products they sell. Mutations which survive evolutionary processes do so if they are compatible with changing environments. If the environment changes, those characteristics may change. After extensive and sophisticated discussions on adulteration of honey were completed, it was said, "Have you noticed, there is an international shortage of white robes." Those exporters, importers, manufacturers of the modern means of adulteration and the packers, colluding to gain enormous illicit profits, are becoming isolated and changing their tune.

The most recent edition of "The Hive and the Honey Bee," edited by Joe Graham, talks of an emergence of an Era of Authenticity and an Era of Creative Marketing of Honey. That positive agenda requires the establishment of the authenticity of honey and the re-incidentivization of the world's beekeepers.

A leading expert scientist who has devoted his life's work to protecting the bees wrote: "We could not agree more that honey fraud is trying to kill our industry. We need to do all we can, collectively, to curb this menace of food fraud and provide the public with the wonderful, natural product they deserve and expect, honey!"

Mr. Phipps is President and founder of CPNA International, Ltd. He is a former member of the National Honey Board and Co-Chairman of the Committee for the Promotion of Honey and Health. He was a recipient of a National Science Foundation Fellowship in the Philosophy of Theoretical Physics. He was an Organizer of the 2020 Beethoven Festival by the CPI at the magnificent Planting Fields Arboretum. In 2017 he was appointed Vice President of the Apimondia Scientific Commission on Beekeeping Economy. He has worked with FDA to develop a research protocol for the global diversity of honey. e-mail: info@cpnaglobal.com