



INTERNATIONAL HONEY MARKET

by RON PHIPPS

INTRODUCTION

“From a banana I could carve a stronger backbone than his.” Teddy Roosevelt, the first American to win a Nobel Prize, said of Supreme Court Justice Oliver Wendell Holmes.

It was Teddy Roosevelt’s courage that created the U.S. Food and Drug Administration to assure the authenticity, purity and safety of the food supply and drug supply. It was TR who had the courage to oppose the violation of antitrust statutes by monopolies and cartels, which colluded and conspired to control markets and standards and reduce competition, disrupting the legitimate interests of the American people.

To escape the horrendous heat and humidity of Washington, DC, President Roosevelt spent summers on Long Island. The building which was TR’s “Summer White House” during his Presidency now houses a restaurant named “Wild Honey.” TR’s face is carved on Mount Rushmore in South Dakota with the faces of Washington, Jefferson and Lincoln. South Dakota is the world’s center of production of high quality clover

honey. TR is a hero to all who value authenticity.

We need to understand that adulteration is not just adding extraneous adulterants but includes processes that preclude the complex interaction of botanical and zoological life forms which create honey. All the modes of adulteration and their detection must be understood.

We are on the verge of the finalization of the U.S. Pharmacopeia standard, which was recommended by Professor Michael Roberts to the American beekeeping industry. Legal experts on Food Fraud and Economically Motivated Adulteration (EMA) have recommended new types of contracts and more intrusive and comprehensive traceability regimes.

International governments and organizations are recognizing that the phenomena of Food Fraud and EMA arose through collusion and conspiracy.

A SEA CHANGE

A Sea Change occurs in the year which has been designated as the

“Year of the Bee.” The essential role bees play in food security and ecological sustainability has been recognized.

Demand for authentic honey is increasing and supply is decreasing. Some buyers are now paying over the market price to secure supply because they know prices will rise further. A famous spice buyer once said to me, “We need assurance of supply. We can’t put a nickel in a tin of cinnamon.”

Prices paid to U.S. beekeepers in November of 2020 (\$1.40-2.00/lb. as reported in the National Honey Report) contrast sharply with the rising retail prices of 2020 which reached a 5-year high of \$8.09/lb. in May. During the past six years the general trend has been that selling prices of retailers and packers have increased while the prices to beekeepers and honey exporters were collapsing.

By mid-autumn 2020, authentic honey was sold at over \$2.00/lb. (\$4.40/kg). Canadian honey has gone to some packers at \$2.08/lb. Forward contracts for Argentine honey are already based upon \$1.81-2.09/lb. Argentine exporters have

U.S. Unit Honey Prices by Month per Pound - Retail

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2020	\$8.03	\$7.88	\$7.95	\$7.90	\$8.09	N/A	\$7.93	\$7.83	\$7.95	\$7.61	\$7.76	
2019	\$7.28	\$7.54	\$7.86	\$7.66	\$7.66	\$7.72	\$7.68	\$7.62	\$7.89	\$7.71	\$7.85	\$8.08
2018	\$7.57	\$7.22	\$7.34	\$7.28	\$7.03	\$7.23	\$7.37	\$7.41	\$7.17	\$7.34	\$7.51	\$7.46
2017	\$7.35	\$6.99	\$6.85	\$7.04	\$7.06	\$7.25	\$7.05	\$7.26	\$7.27	\$7.37	\$7.18	\$7.25
2016	\$6.74	\$6.91	\$6.79	\$6.79	\$6.72	\$7.12	\$7.01	\$6.88	\$6.88	\$7.12	\$7.04	\$7.39
2015	\$6.65	\$6.43	\$6.57	\$6.49	\$6.52	\$6.56	\$6.73	\$6.75	\$6.63	\$6.69	\$6.92	\$6.79

Source: NHB/Bee Culture

Chart 1 U.S. Retail Honey Prices by Month

UNIT PRICES OF HONEYS IMPORTED BY THE U.S.

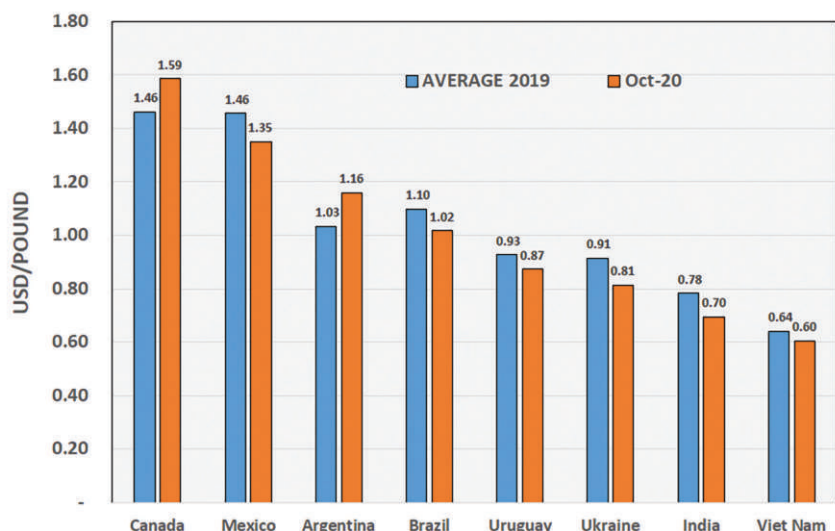


Chart 2 Average Honey Import Price per Pound 2020 and 2019

reported how the beekeepers are demanding increasingly higher prices. Argentine beekeepers are already being paid 40% higher than in 2020. A surge in prices for organic honey had also begun. Organic honey from Brazil has been sold to North America at \$2.05/lb.

Graphs provided by Dr. Stan Daberkow and published in the ABJ (September 2020) showed the increase in retail honey prices and in the packers' prices, whereas the prices paid to beekeepers collapsed over the past 6 years, especially the past 3 years.

In the autumn newsletter of the American Honey Producers Association, Chris Hiatt described how the cost of production of American honey went up for his beekeeping operations by 250% from 2008 to 2019. He also stated:

"Honey prices paid to beekeepers have not kept pace with the rise at the retail level, and two years ago for the first time the National Agricultural Statistics Services [NASS] reported that pollination passed honey for beekeeper income. My family's company keeps our hive numbers up by making nucs after almonds in California and again after apples in Washington. Queens do not live as long as they used to. The varroa/virus complex, mite treatments, nosema, are all very hard on the queens. We replace close to 80% every year. Many beekeepers I know are struggling and work

crazy physical long hours to be able to stay in this worthwhile business they love."

Chris calculates the cost of keeping 7,000-8,000 hives, writing that "the feed increases and cost of labor increases ... [and] the American beekeeper just keeps plodding along with the increases in expenses."

The contradiction between hugely increasing "honey" exports, stable numbers of beehives, and significant declines in productivity per hive, has, in the words of Prof. Michael Roberts, rendered the beekeepers an "Endangered Species." The Apimondia Regional Commission of the Americas and the Apimondia Scientific Commission of Beekeeping Economy calculated that during the past 5 years the cumulative losses to beekeepers are \$1 billion. As the U.S. import statistics illustrate (see Chart 2), the collapse of prices persisted through the first 9 months of 2020. The authors of the Apimondia report estimate that the cumulative losses during the past 6 years have now reached \$1.35 billion. When consideration is given to Hiatt's point regarding increased costs of production, the cumulative losses to beekeepers are approximately \$2 billion over the past 6 years! A Sea Change is imperative.

The magnitude of these losses to beekeepers has spurred persistent and recurrent reports and rumors of the launching of a new antidumping suit against the imported honey which has been flooding the U.S. mar-

ket at low prices.

Concurrent with the increased demand and the short supply of authentic honey, the dangers in trafficking in adulterated honey are dramatically increasing.

A FAVORABLE CONFLUENCE

Governments and judicial systems in Europe and North America are increasingly aware of the emergence during the past decade of the national and international collusions to establish cartels and monopolies which are detrimental to the interests of both producers and consumers. Such cartels seek to police themselves. Such monopolistic behavior is noted by economists as well.

The U.S. Pharmacopeia is finalizing their important and strong standard for honey. It is anticipated that this will be finalized by the end of January 2021. Numerous comments have been submitted by diverse interests within the industry. The statement was strong, and while it may be enhanced, we anticipate that it will remain strong. The document is a fulfillment of Roberts' advocacy in his first White Paper concerning honey fraud (www.apiservices.biz).

Apimondia's Statement on Honey Fraud, which came out in January 2020, will likely remain in place in 2021. These two documents will greatly contribute to the movement to ensure the authenticity of honey products. Dr. Stan Daberkow, emeritus economist of the U.S. Department of Agriculture, has stressed that standards for agricultural products should be independent of their ultimate use. That is correct and it implies these should apply to the retail, manufacturing, food service, cosmetic and pharmaceutical industries.

There are new efforts to define proper modes of production of honey. Dr. Jeff Pettis, formerly of the USDA's research sector, and current President of Apimondia, gave the Keynote speech at the AHPA's annual conference, which was transmitted by video in December 2020. Dr. Pettis' speech was entitled "Bees, Food Fraud and Hope." He pointed out that the production of unripened, immature, high moisture honey represents an illicit mode of production. He described how Chinese beekeepers extract the honey from the frame the day of production and then send it on its journey to factories.

The apiservices website, which is widely read, has a description about a

meeting between French beekeepers and Chinese honey exporters, when the Chinese mocked the French methods of producing authentic honey since they did not produce the huge quantities with a low cost of production which allow the Chinese to receive enormous profits.

At Apimondia, some Chinese honey producers described that 95% of Chinese honey is extracted as immature honey with moisture content of about 45%. In a recent conference, another Chinese expert referenced that 90% is immature honey. The Chinese themselves call this “feng mei shui” or “water honey.” This mode of production has been exported, along with Chinese resin technology, to at least two major honey exporters in Asia. Some of those exporters, as the chart below illustrates, are highly dependent upon the U.S. market and have great difficulties exporting to other markets. The virtue from the point of view of the fraudsters of that mode of production, which is a mode which has been witnessed by many western members of the honey industry, is it can produce huge quantities of honey and do so at a very low cost of production.

Dr. Pettis quoted from an article by Etienne Bruneau, which included the dramatic illustration of the astonishing growth of exports from Asia and the modest increase in the number of beehives (Chart 4).

What is consistent with the description of honey in Codex, Apimondia, and the efforts of the U.S. Pharmacopeia is the principle that honey must be extracted only when it is fully ripened and mature. **The function of bees is not simply to “transport” nectar, but rather to transform nectar into honey.**

Prof. Enrique Bedascarrasbure is a world expert on how authentic honey can, must and should be produced in tropical and semi-tropical regions. Honey exporters in countries in those regions have consistently affirmed “we can produce authentic, mature honey, but it takes longer and we cannot meet the quantity and price demands of the American market if we employ those modes of production.” This mode of production is not a matter of climate but is driven by the economic interests of those engaged in honey fraud in the food sphere.

Prof. Michael Roberts, a pre-eminent legal authority on international food fraud, including food fraud in the honey industry, continues his im-

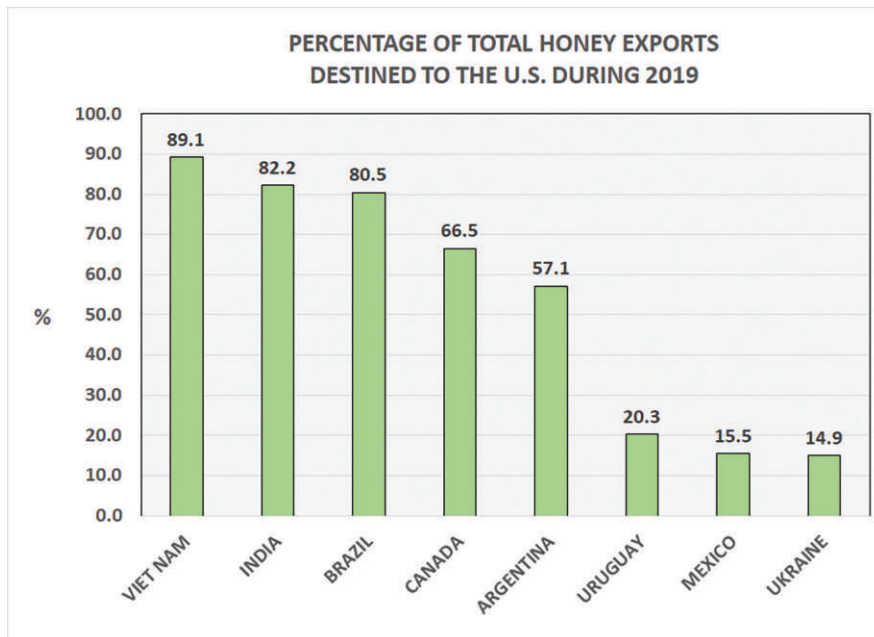


Chart 3 Percentage of Total Honey Exports Destined to the U.S.

portant work with the United Nations Food and Agricultural Organization. Since food fraud is an international problem, involving collusions and conspiracies on an international level, the solutions must be international in nature.

Recently an important and timely book has been published, “Food Fraud: A Global Threat With Public Health and Economic Consequences” (ed. Rosalee S. Hellberg, Elsevier 2020), which includes a chapter on honey fraud by Prof. Norberto Garcia and Dr. Stephan Schwarzinger. The development of international food fraud law is inclusive of analytic detection methods and strategies for detecting food fraud. Furthermore, there is a whole chapter devoted to

food fraud criminology. Various international organizations, not just the judicial system, are integrating adulteration and criminology. In addition to the academic world the issue of food fraud has appeared in the mass media including the BBC, Netflix (“Rotten”), Vice, the Australian press, news reports in the U.K. and India in late 2020. Undoubtedly more revelations await publication. Dr. Peter Awram writes, in his paper “The History of Honey Fraud” (The British Bee Journal, June 2020), “The international traffic of adulterated honey has increased to unsustainable proportions in recent years.”

A series of podcasts on the use of Nuclear Magnetic Resonance for detecting food fraud in numerous

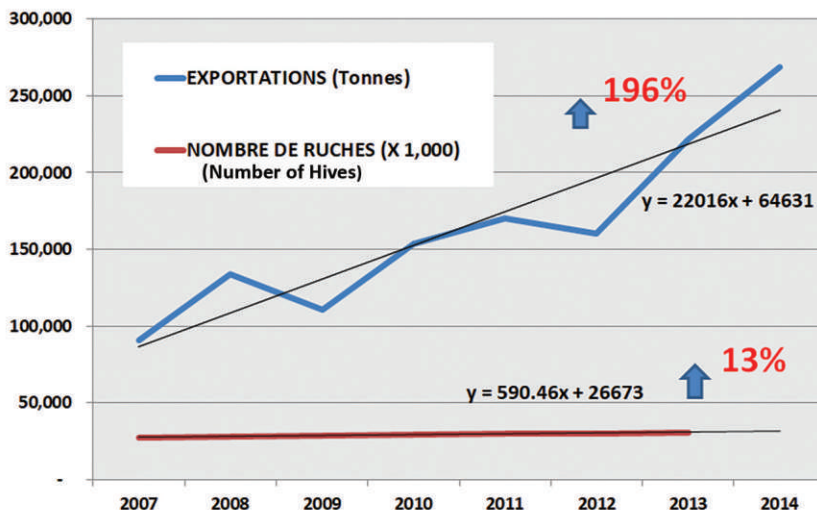


Chart 4 Marche Asiatique (+ Ukraine)

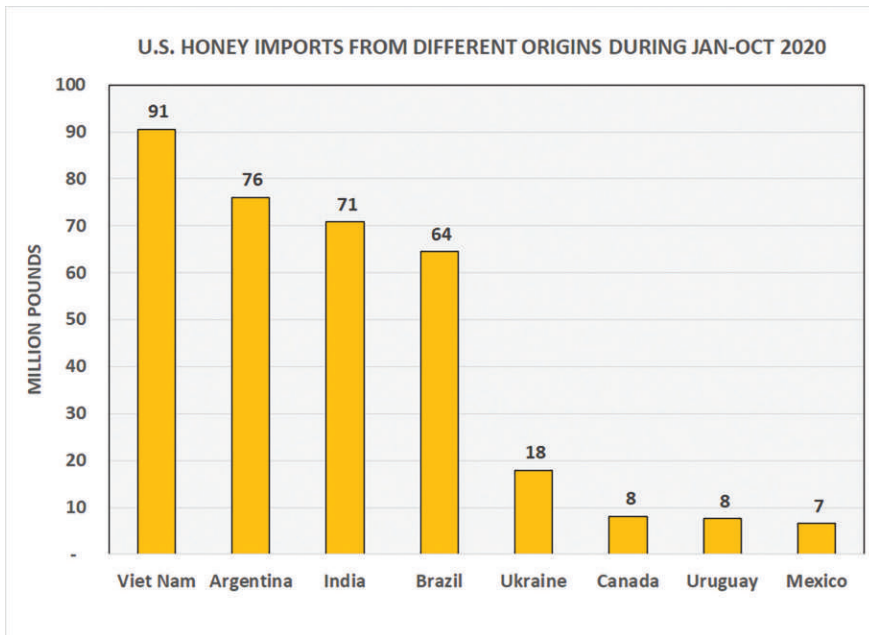


Chart 5 U.S. Honey Imports from Different Origins

products is being released. The first podcast "Honey Fraud" features Prof. Michael Roberts and myself. The second in the series addresses the science of detecting adulteration and the importance of food fraud law. The third will present discussions of geographical and botanical origin in the wine industry, and the law in respect to the proper and accurate marketing of wines.

Another factor is the emergence of consumer movements which include: 1) eco consumers, 2) sustainability consumers, and 3) authenticity consumers. Multinational corporations are aware they must respond to these consumer interests, especially if they are to successfully fulfill their corpo-

rate mandate to create a new generation of consumers. At the same time, the awareness of the social responsibility of retailers and manufacturers to combat food fraud and economically motivated adulteration has grown.

The U.S. Congress has mandated the procurement of NMR technology for honey. As Kelvin Adey said in the Honey Producer Newsletter, "Testing of imported honey is a must. This needs to be done by Customs and Border Protection (CBP) as a regulatory process. Ideally, 100% of the imported honey would be tested." It is anticipated that samples have already been drawn from shipments.

All of these developments are tribu-

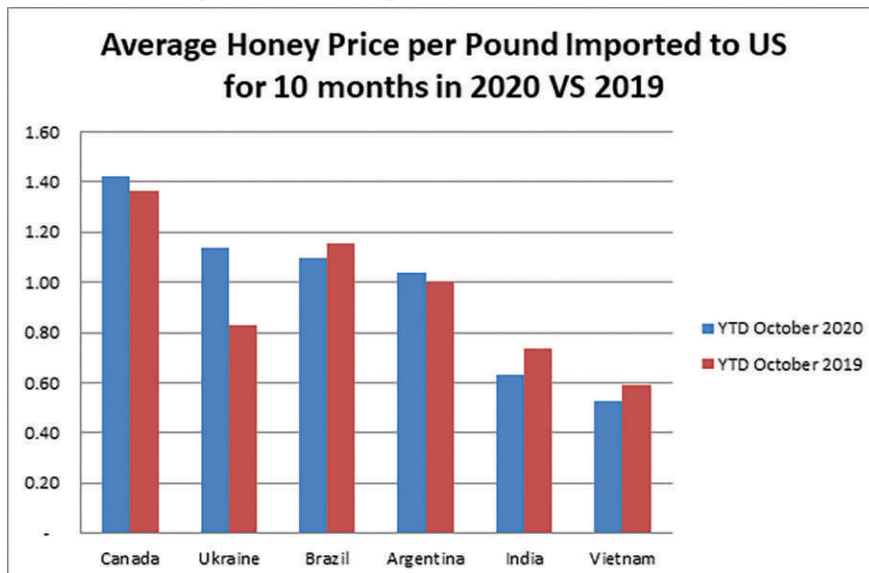


Chart 6 Unit Prices of Honey Imported by the US 2019-2020

taries coalescing in a Great River for Authenticity in Honey.

IMPORTED HONEY PRICES, QUANTITIES AND MARKETS

Argentina

Many contracts from 2020 that were speculatively entered will have difficulty being fulfilled because the price from Argentine beekeepers has increased about 40% from a year ago, and as the demand for authentic honey further increases, that increase will steepen. Argentina shipped to the world about 74,000 metric tons in 2020, one of the highest amounts during the past decade. Given the fact that the Canadian honey crop is essentially sold out, the demand upon and the prices of authentic Argentine honey will continue the wave upward.

Brazil

In 2020 there appeared for the first time the aberration that the significant price differential between conventional and organic honey collapsed. This reflects the terrible state of the market for honey.

Prices for organic honey began moving upward in the second half of 2020 and by October import prices were around \$1.31/lb. As a leader in Brazil's honey trade said about the price increases: First the prices were too low to begin with. Then there was a surge in buying from companies afraid to run out of the product during the pandemic. Problems with the honey crop itself created further pressure on the prices during that period. Prices in December were \$1.64-1.82/lb. in Brazil.

Suppliers in Brazil and Argentina have asked to renegotiate or cancel some old contracts signed before the pandemic. Brazil exported from Jan. until Nov.: 71,000,000 lbs. to the U.S. and 16,530,000 lbs. to the European Union.

Canada

Canadian beekeepers are reporting rising prices reaching USD\$2.08/lb. in December.

Interestingly, now that the market is steeply rising, the manipulators are offering prices above the market in an effort to control the authentic honey which is now in high demand but diminished supply. The masters of market manipulation expect that prices will continue to increase for authentic honey. The reality of a Sea Change is increasingly apparent throughout all levels of the market.

DRAMATIC EVENTS IN THE U.K., INDIA AND CANADA RELATIVE TO HONEY ADULTERATION

United Kingdom: Reports from the U.K. regarding adulteration findings in honey at major retail outlets spread in November, 2020. We excerpt from the Sunday Mail:

U.K. Sunday Mail November 2020

Tests conducted on own-brand honeys from Co-op, Tesco, Sainsbury's and Asda suggest they have been bulked out with cheap syrups made from rice and corn – without the retailers' knowledge ...

Ten of the 13, including Asda Set Pure Honey and Sainsbury's Clear Honey, tested positive for the presence of enzymes indicating that they may be "adulterated with inverted syrup" ...

If the analysis, using a new generation of "nuclear magnetic resonance" tests, is proven, it would represent the U.K.'s biggest food fraud since the horse-meat scandal in 2013.

India: We excerpt below from an in-depth 40-page report by Sunrita Narain, investigating honey adulteration in India. This report was published in *Down to Earth* magazine in December 2020.

After investigating the "golden syrup" and fructose syrup used in bulk honey, the investigators studied 13 Indian retail honey brands. After analysis in India, tests in Germany showed, "Almost all samples failed on Nuclear Magnetic Resonance Spectroscopy (NMR) test. Laboratory said, 'indicates adulteration/addition of sugar syrup.' Of the 13 brands only three brands passed. Of the 22 samples only five samples passed test. Rest were adulterated." ...

On May 20, 2020, FSSAI [Indian government food authority] issued an order on the import of golden syrup, invert sugar syrup and rice syrup. This order says that FSSAI has been informed that "sometimes these syrups are used in the production of honey because it is cheaper in cost and due to similar properties and easy availability." It directed that all importers/food business operators, who are importing

golden syrup, invert sugar syrup, rice syrup into India to submit necessary documents with details of the manufacturer with end use to whom the syrups will be supplied.

The same Chinese companies that advertise this fructose syrup that can beat C3 and C4 tests also export to India ...

Several countries export fructose syrup to India, but "China is driving the trend of fructose syrup quantity imported in India."

A Chinese exporter told the investigator for *Down to Earth*: "most of their clients mix 50-80 per cent syrup in their honey." Investigators found that "Samples with adulteration up to 50 per cent pass Indian tests."

Canada: The 2020 Canadian authenticity study indicated the presence of adulteration even in a relatively sophisticated and high quality market. This is the second report and it reflects a change attributable to strong efforts by Canadian beekeepers and attention from the media to highlighting and overcoming use of adulterated honey. It is worthy to note that Canada imports very modest amounts of honey from origins with a clear history of adulteration.

MACRO CONDITIONS

The macro geopolitical context includes: 1) the COVID-19 pandemic threatening human health, the economy, a hunger crisis, and long term impacts on education and individual psychology; 2) a climate crisis, with expectations of more fires, droughts and floods; 3) a global debt crisis which impacts the currencies of major nations; and 4) unpredictable and rising freight rates.

The impact of these events on global agriculture becomes of increasing concern. The agricultural sector can no longer ignore these events.

In his keynote address, Dr. Pettis reported that "rising atmospheric CO₂ is reducing by 30% the pollen concentration of a floral pollen source essential for North American bees."

As many countries have entered severe recessions, debt and stagnation, it is interesting to note that Chinese venture capitalists have become very aggressive throughout the world in acquiring energy resources, high tech companies, agricultural resources, mines, etc. To what extent that economic acquisitiveness has or will af-

fect the international honey industry remains to be seen. But already, prior to the pandemic, Chinese interests were acquiring honey companies in Europe, South America, North America, Australia, and Asia. China's appetite for strategic resources, including agricultural resources, and its willingness to print money and incur huge national debt loads, have heightened concern about China's international economic activities.

While China lauds its commitment to battling climate change, it is the only major country in the world which in 2020 increased its emissions of CO₂ heat trapping gases.

All these macroeconomic, geopolitical and global climatic concerns manifest the general principle that what happens in a given domain cannot be fully understood without reference to what is happening in other domains with which it inevitably interacts.

THE TOOLBOX AND ITS PROPER USE

The most advanced and comprehensive tool, which also has the most wide global database, is NMR.

But there are also other methodologies, including High Resolution Mass Spectrometry (HRMS). Each of these methods is powerful, if properly and appropriately used.

It must be noted that the Indian analysis for adulteration cited earlier was confined to extraneous sweeteners, including bioengineered sweeteners. The testing methods used were not applied to the analysis of resin technology nor the extraction of immature honey, both of which are known sources of adulteration in India.

In Germany, where many of the laboratories are found, the law for certifiers is such that if and when adulterated and fraudulent products are certified as pure, it is inadequate to say that this company or that organization instructed me to test for A and B when in fact the certifier had, or should have had, sufficient knowledge to know that parameters C, D and E must also be checked. Under international laws regarding certification of authenticity, the certifier is responsible to make sure all the relevant and appropriate parameters indicating modes of adulteration have been investigated.

We have seen attempts to use the wrong tool and also to use the right tool, but in an improper and limited manner. You can use a saw to hammer a nail; you can't use a hammer to cut and shape a piece of wood.

The fundamental fact is that the past decade has revealed multiple sophisticated modes of adulteration of honey. The Apimondia document on food fraud, and other articles, bear witness to adulteration by extraneous sweeteners, some of which have been bioengineered, and the use of resin technology to remove antibiotic residues, unpalatable flavors and to transform dark honey into extra light amber and white honey.

NMR has the potential, if fully and appropriately used, to detect multiple modes. One of the most important modes is to detect immature, unripened honey. NMR can analyze 36 chemical profiles and parameters within the chemical profile of honey. There are so many parameters because mature, authentic honey has multiple constituents. As mentioned earlier, the function of bees is not simply to transport honey from place to place, but rather to gather nectar and transform it to honey through the completed and complex interactions of botanical and zoological life. When NMR was first introduced, Dr. Gudrun Beckh made the point that the NMR profiles of immature, unripened honey resembled the profiles of nectar. Which is to say, nectar is not honey.

Since food fraud in the honey sphere represents the third largest and most prevalent fraud in food, new types of contracts are required. Those contracts must include: 1) a comprehensive traceability system which includes modes of production, botanical sources, geographic regions, extraction procedures, climate conditions, storage conditions; 2) the use of the appropriate test methodologies to detect all relevant modes of adulteration.

TWO SIDES OF THE COIN

The markets must integrate and harmonize the incentives to consume and to produce honey. This "Year of the Bee" will be a year in which to remove beekeepers from the list of endangered species. It is a time to show integrity and respect for those who produce botanical products and protect nature.

It is time to stand up and turn the coin on its other side, for the creative marketing of honey depends upon the authenticity of honey.

Beekeepers, honest packers and honest exporters will inevitably increasingly take initiative in the creative marketing of this beautiful product of nature.

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