



INTERNATIONAL HONEY MARKET

by RON PHIPPS

INTRODUCTION

With a feathered pen the Masters of Market Manipulation of the international honey industry are composing a contemporary Shakespearean tragedy. The tragedy affects the global beekeeping community and their little and valuable friends, the world's bees. It also jeopardizes both global food security and global ecological sustainability.

As one beekeeping family has expressed it, "The competition between adulterated and authentic honey has caused a demand for lower honey prices coming from the retailers and industrial users, creating a downward push on the supply chain from the packers to the honey producers. The buyers know that the producers have to keep bees on the wax to keep the wax from deteriorating so the bees will survive. This means producers will have to accept sacrifice prices for their honey. Carryover inventories from 2022's crop also create pressure on North American beekeepers to sell and move inventory. There is deep concern throughout the beekeeping community about paying bills. Beekeepers are looking for a miracle."

Canadian, Mexican and Argentine honey producers have had to compete more directly with low Indian honey prices than American beekeepers have. But that is changing to the detriment of American beekeepers. Also, how can the honest honey packers buying authentic honey compete with other packers buying honey from those purveying fraudulent products?"

A December 2022 report in the scientific journal *Nature* reviewed the production of honey, honey bee populations and beeswax production over five decades. The report concludes: "The global human population growth outpaced that of managed honey bee colonies. Continuation of this trend raises the possibility of having a shortfall of pollinators to meet the increasing consumer demand for pollinated crops."

THE PENDING PRICE COLLAPSE

After this year's Apimondia held in Santiago, Chile, it became crystal clear that the international honey market was entering a deep and devastating collapse. American beekeepers reported that major honey packers were offering to buy at about \$1.80-1.98/lb. for one load, then for all subsequent loads they would offer \$1.40 or less. Other honey was offered for deliveries to retailers from 4th quarter 2023 to 1st quarter 2024 at about \$1.25/lb. At that price

level the cost of the raw material would have to be \$0.80-.85/lb. delivered to honey packers.

In a post-Apimondia report from *Campo y Abejas*, an Argentine honey report, it was asked, "Is the Beekeepers' Crisis Global?" Beekeepers claimed that the markets are distorted by honey fraud with prices dropping below production costs.

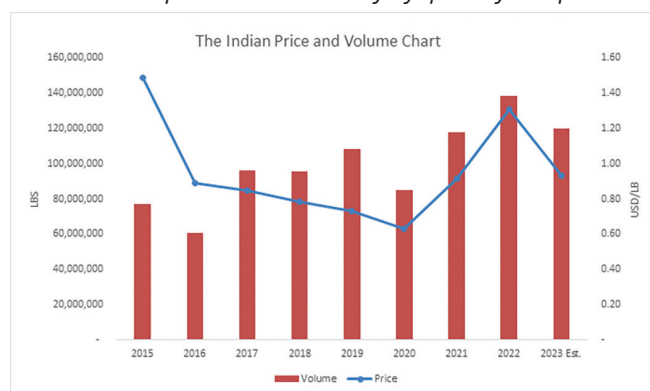
Chris Hiatt, President of the American Honey Producers Association, spoke at Apimondia about the presence of food fraud in honey and how devastating the economically motivated adulteration of honey is to small family-owned enterprises throughout the world. Beekeepers throughout the world were very responsive and confirmed that the low prices offered to beekeepers, due to the need to compete with low prices for honey adulterated by contemporary and sophisticated modes of adulteration, are threatening the survival of beekeeping families. As Hiatt vividly observed, the quest for honey authenticity is not abstract but is a matter of economic survival for an industry which is essential to global food security.

The market during Apimondia was frozen. Some exporters indicated their willingness and ability to provide any quality, conventional or organic, dark or white, at low prices for long-extended periods. This development was influenced by the September decision of the International Trade Commission of the U.S. to reject the effort of the beekeeper petitioners to add a penalty to the antidumping rates on Indian honey from what many perceive as their illogically low levels of 6-7%. "The U.S. Court of International Trade refused domestic trade association's efforts to place penalty antidumping tariffs on Indian honey, ruling the U.S. Department of Commerce had adequately explained why it didn't penalize Indian businesses that submitted their records late" (*Law 360*, Sept. 1, 2023).

People wonder if geopolitical reasons are at play. At the same time, imports of Indian honey into the U.S. increased from an average of 10 million pounds/month to 14.4 million pounds in July 2023. At this rate the volume of Indian honey imports for 12 months would be about 175 million pounds. India's exports of honey are overwhelmingly to the U.S. market.

While the tactical reason for this price collapse is the failure to obtain increased antidumping duty rates on Indian honey, the strategic reason resides in the long-standing failure to effectively and decisively address the widespread adulteration of honey, which occurs in multi-

Chart 1 U.S. imports of Indian honey by quantity and price



ple modes. Those contemporary modes include: 1) factory dehydration of nectar, 2) the use of resin technology that can transform conventional honey into pseudo-organic honey and remove offensive aromas, flavors, dark colors and residues, 3) the use of sophisticated bioengineered sweeteners whose development continues to explode, and 4) artificial feeding apparatuses used on hives during honey production. The forms of bioengineered sweeteners are diverse, and access by the testing laboratories to them has diminished, so that the database for some honey tests is frozen.

Many of these modes of adulteration originated in China, an epicenter of food fraud, which has been suffered by the Chinese people as well as China's export market. Bio-engineered sweeteners and other mechanisms of adulteration have been advertised on Alibaba, the international business website.

During Apimondia examples were shown by Dr. Peter Awram of offers on the Alibaba website for "China Gold silk honey Bee Honey artificial MEL" with a suggested customs description of "Painting pigment set." Another offer was for "Food Grade Fructose Syrup for Honey" from a Chinese company. These are modes of customs fraud.

When Chinese honey was given antidumping rates based upon weight of \$2.63 per kilogram, export by Chinese companies of these modes and instruments of adulteration began. Acquisition of honey-packing facilities in countries including Australia, Brazil, Uruguay and Italy were made by Chinese interests. The acquisition of global strategic resources, including farmland and factories, has intensified, allowing Chinese companies to achieve horizontal and vertical integration within the agricultural sphere.

Even in countries with a long-term reputation for integrity, when the price collapses and the access to markets shrinks, the temptation for adulteration increases. Maintaining the incentive to produce authentic honey is essential. It is poetically appropriate that this year's Apimondia was held in Chile with its magnificent Andes mountains and Patagonia with its spectacular glaciers. International honey prices are collapsing like the world's glaciers are melting.

HONEY PRICE AND VOLUME STATISTICS

The initial impact of the announcement of the U.S. beekeepers' antidumping petition in 2021 was a rise in all honey prices. But as the data show, prices eroded in 2023, led by India. The finding of the ITC allowing the low antidumping rates on India to persist also caused a collapse in honey prices both imported and domestic. Also in September, the Indian government rolled back import duties

on almonds exported from the U.S. to India. Geopolitical interests and relations may be at play here.

India has flooded the U.S. market with low-priced honey, huge quantities of exports (which could have triggered a surge under antidumping rules and provoked punishing retroactive duties), and offered huge forward contracts at extremely low prices. The fact that India has adopted the Chinese model of adulteration of honey in its several modes allows India — like China — to produce huge quantities and offer low prices irrespective of climatic disasters. The anomalies between climate disasters in China and India and their huge volumes of global exports can be explained by the pervasiveness of adulteration which has been observed by beekeepers and detected by scientific tests. We note this economically motivated adulteration has hurt Indian beekeepers themselves, as well as beekeepers and exporters from all over the world.

Chart 2 Indian CF import prices 2015-2022 (yearly average)

2015	2016	2017	2018	2019	2020	2021	2022	2023
1.49	0.89	0.85	0.79	0.73	0.63	0.92	1.31	0.92
USD/LB.								

For six consecutive years average prices were under \$1.00. In the first half of 2023, they fell back under \$1.00. The use of resin technology has been reported, which allows some exporters in India to transform their characteristically light amber honey into mild, white honey (flavorless). This allows it to be utilized in retail bottles. Some North American packers have said, "There is no difference between American and Indian honey except the price."

Two decades ago, India exported no honey to the world. Their honey exports to the U.S. mushroomed as China's diminished due to prohibitively high antidumping duties. These exports occur in a context in which India's population has exceeded China's as the world's largest, reaching over 1.5 billion. Culturally the Indian people revere honey as a natural and sacred product. As with China, the phenomenon of adulteration is harmful to the people.

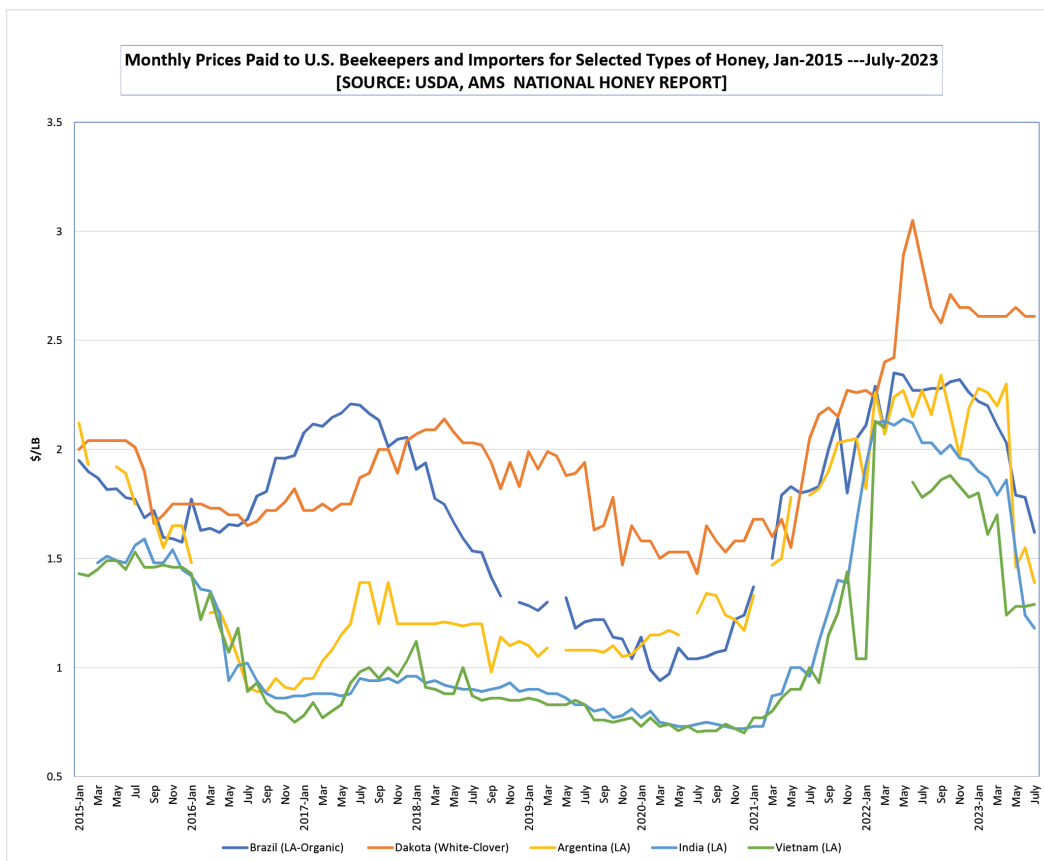
It is interesting to note that traditional sources of information reporting wholesale prices have disappeared. Past reports reflected extraordinarily high profit margins for some sectors at the expense of beekeepers.

While imports from India are increasing, Vietnamese imports have slowed dramatically since 2021 due to the high 60% duties, and those who imported the 30 million pounds which came in during the critical circumstances period remain at risk to be assessed millions of dollars in retroactive duties, as of this writing.

Canada reports that in July 2023, average export prices for honey dropped to CDN\$2.79 (USD2.06) per pound, lowering the YTD average to CDN\$3.10 (USD2.29) per pound. Prices of Canadian honey for export to the U.S. averaged USD\$2.49/lb. for 7 months in 2023. Canada's top sources of imports in 2022 were Brazil, the U.S., India and Vietnam. Indian import average prices were CDN\$1.74 (USD1.29/lb.). Concerns have been expressed by Canadian beekeepers that imports of honey from India and Vietnam could be increasing in Canada's domestic market and that total imports of honey may exceed Canada's exports. Canada has traditionally been a net exporter of honey.

As Dr. Stan Daberkow, Economist Emeritus of the U.S. Department of Agriculture, expressed it, "Sadly, given that much of the international honey traded is suspect, international consumption of authentic honey can only be conjectured."

Chart 3 U.S. beekeeper and imported honey prices Jan. 2015 to May 2023
(prepared by Dr. Stan Daberkow)



FOOD FRAUD

The International Honey Exporters Organization conducted a survey which found almost 80% of member countries oppose the production, export and marketing of “Factory Dehydrated Nectar” (FDN) as “honey.” The countries not opposing these activities predictably have adopted these practices. Federico Berron introduced the acronym “FDN.” It could have been factory dehydrated honey rather than factory dehydrated nectar. The brilliance of the acronym FDN is that it points out the fact that the product is not honey but nectar. When NMR was being used to expose adulteration in honey, Dr. Gudrun Beckh noted that the NMR profiles of immature honey are like the NMR profiles of nectar!

The most pernicious and consequential form of adulteration is the extraction of immature, unripe honey. It is the most prevalent, and the most inconsistent with the universally recognized Codex definition of honey, which requires

the completed interaction of pollinators with nectar, or other secretions in the case of honeydew honey. It is not a matter of an absolute percentage of moisture. It is, as Prof. Enrique Beddascuraburre pointed out, a matter of whether the honey has been created through the completed interaction of botanical and zoological life forms. Moisture levels vary depending upon the environment, which means some products with low moisture, which have been subject to factory dehydration, are in fact adulterated and not honey. In other circumstances, the moisture levels may be moderately higher but the honey is authentic because it has not been subject to resin technology, addition of sweeteners or factory dehydration. It is the same phenomenon that Walter Haefeker described in his brilliant contrast between “fast” and “slow” honey.

Honey producers in China have said that 95% of China’s honey production is based on the extraction of immature (“water”) honey, where the interaction of bees and nectar is incomplete. Indian honey exporters said in a meeting, after a discussion of honey adulteration, if we use that defi-

Chart 4 Price U.S. Honey Imports (conventional)

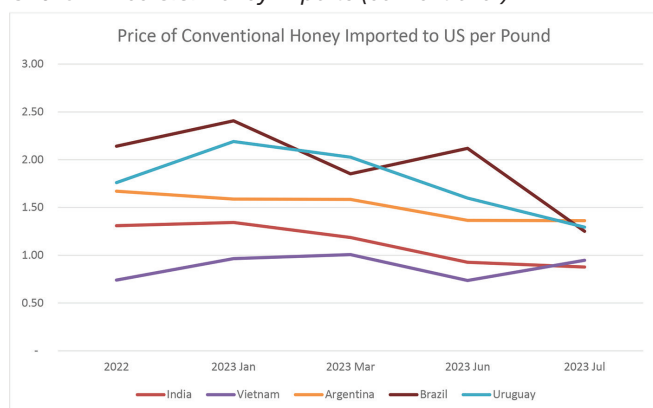
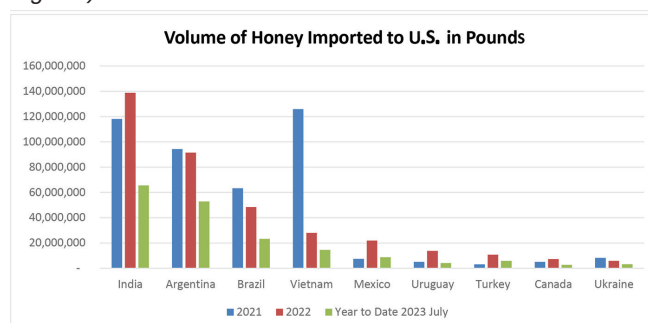


Chart 5 U.S. Imported Honey Volumes by Country (including organic)



nition then 100 percent of Indian honey is adulterated because it is all extracted immaturely. Similarly, Vietnamese honey exporters have said, yes we could produce mature honey but if we did that we couldn't produce the large quantities and low prices packers demand.

Over the past two decades the press in China has reported on the plethora of adulterated honey found in Chinese retail stores. In India, several investigations found that Indian retail honey failed analytical tests for adulteration. India's beekeepers producing authentic honey have vigorously and openly complained to the Indian press and the Indian government that they have to compete with adulterated honey.

GLOBAL DEVELOPMENTS IN FIGHTING FOOD FRAUD

Food fraud has gained national and international attention, including from regulatory and judicial bodies, in many countries in the EU and at the UN FAO. Professor Michael Roberts of the UCLA School of Law is a leading figure in international and U.S. efforts to combat food fraud.

Efforts by the UN FAO and the German government have been spurred by the EU Commission's coordinated action in 18 countries in 2022, resulting in the Joint Research Center report which found 47% of samples to be suspicious. Some people estimate that if additional analytical parameters, variables and profiles were included in the testing done on those samples, the amount of suspicious samples could be 80%.

The results were startling enough to provoke greater regulatory scrutiny in Europe, including by the German government: "In order to be able to detect adulterations of honey on the global market, [official control] laboratories in Freiburg and Karlsruhe [Germany] have developed and validated an analytical method for the screening of honey samples using nuclear magnetic resonance spectrometry."

NMR remains the most sophisticated analytical technique, but it is an evolving technique as is the case with all legitimate science. It is evolving to detect all contemporary modes of adulteration of honey, and of many other products including olive oil, wine, fresh fish, medicines, cosmetics and others. It is through this evolution of databases and the exploration of multiple variables, diverse profiles and multiple modes of adulteration that NMR is most important.

If physicians do not have the most sophisticated diagnostic tools nor do not look in the right places and for the correct variables, the detection of disease will be eluded. This is why criminal cartels are not allowed to police themselves nor patients encouraged to diagnose themselves. As some beekeepers put it, the cartels and cabals want to become their own policemen and paid judges.

As Professor Norberto Garcia has calmly said regarding adulteration: "It is fraud and it is a crime." Judicial foundations for prosecuting food fraud are developing.

Other forms of fraud include 1) false statements of country of origin and 2) false descriptions of the product. Dr. Peter Awram of Authentic Food Solutions in British Columbia, Canada, showed in a presentation on "Honey Authenticity" that honey fraud involves schemes by Chinese companies that use non-food customs classifications for the import of syrups which would be sold as honey. The Canadian Food Inspection Agency, the government authority, uses NMR and C13 tests to screen honey imports. The Apimondia Statement on Honey Fraud, the U.S. Pharmacopeia Standard of Identity for Honey, the European Commission's "From the Hives" report, the Canadian gov-

ernment, and the Indian government have all referenced the importance of honey analysis using C13 carbon isotope, NMR, HRMS and other analyses. The toolbox needs multiple tools, improved tools and tools skillfully used to detect adulteration of honey in all its forms.

As reported in the past, the U.S. FDA has stated that the use of resin technology is not permitted for any product marketed or sold as honey.

These modes of adulteration do not, as Dr. Stan Daberkow put it, "turn water into wine."

GLOBAL MACROECONOMIC GEOPOLITICAL SITUATION AND ECOLOGICAL CONDITIONS

The global economy has been profoundly stressed. There is geopolitical tension in Ukraine, which serves as a metaphor for the geopolitical strains between the western capitals and Russia/China. The enormous debt crisis found in many developing countries of Africa, South America and Asia is of historic proportions. Of particular note are the "debt for equity" swaps that are occurring among African, Asian and South American countries with China, which owns so much of global debt as a consequence of their New Silk Road program. Debt in China, Argentina, Zambia, Venezuela and Kenya is also worrisome.

Such debt is lowering the value and strength of many currencies, including that of China which has a huge real estate bubble based upon the creation of many ultra-modern "ghost" cities with empty luxury apartments. The Argentine peso is another example; a report from Reuters stated on July 25, 2023: "The International Monetary Fund said it is now projecting Argentina's economy will contract 2.5% in 2023, with a year-end inflation rate of about 120%, largely due to a crippling drought that has curtailed agricultural production."

Unemployment, especially youth unemployment, has become a huge problem, especially in light of the projection that the number of elderly people in the world will exceed the number of younger people. This concern is acute in China where the government is setting up centers for the in vitro fertilization of young women who prefer to have children but remain unmarried. This is startling not only to western conservatives but to those within China with a traditional reverence to the family.

This has been a year of extreme volatility, severity, intensity and frequency of weather disasters. Concern for global food security has increased. Concern for "environmental refugees" has increased. The summer broke consecutive records for both the hottest three-month period and the hottest month in recorded history. This has deep relevance to the international honey industry. Frequent protracted and severe droughts, floods, typhoons, heat waves, and water scarcity are not conducive to good agricultural productivity levels. Researchers found that the depletion of groundwater led to plummeting corn yields in Kansas, drinking-water shortages on Long Island, and concerns about water-intensive crops such as corn, almonds, alfalfa, cotton and potatoes. Some of these, like alfalfa, almonds and cotton, are pollination sources for bees.

A New York Times investigation (8-29-2023) has found that America is depleting its invaluable reserves of groundwater at a dangerous rate. "The practice of overpumping water from vast aquifers is already having consequences nationwide. The majority of U.S. drinking-water systems rely on groundwater, as does farming, one of the nation's most important industries. ... Some 45 percent of the wells the Times examined showed a statistically significant de-

Chart 6 Poster for the International Alliance for Honey Authenticity



ties of products such as honey and increase prices, not the obverse.

THE INTERNATIONAL ALLIANCE FOR HONEY AUTHENTICITY

During Apimondia there was an announcement of the creation of an International Alliance for Honey Authenticity. There is a clear and growing national and international need to bring together many diverse parties including commercial interests, regulatory bodies, and academic researchers, who have concern, responsibility and expertise to ensure the authenticity of honey.

This imperative has become increasingly clear during the past half century, as the negative consequences of honey adulteration extend far beyond the beekeeping industry and its urgent and legitimate needs for a level and fair playing field. Numerous witnesses, reports and analyses have shown that there is a crisis which did not end with the Chinese "Honey Gate" case of a decade ago, which was the greatest food fraud prosecuted in U.S. history.

The Alliance recognizes that there are numerous stakeholders who will benefit from collaboration to ensure authenticity. The Alliance is bringing together domestic and international beekeepers, exporters, importers and packers, as well as retailers and manufacturers who want to exercise their corporate social responsibility, consumer advocacy groups, trade associations of retailers, manufacturers and food service companies, environmental groups, legal experts in food fraud, agricultural economists and those many agricultural interests that depend upon and benefit from pollination.

The surge of adulterated honey in the global marketplace has created deep vulnerability for beekeepers and the many agricultural industries their pollination efforts support. Ecological sustainability is also at stake. The fundamental problem is that honey adulteration creates a situation where there is no ceiling to the quantities and no floor to the prices of adulterated honey. Fake honey denies consumers the charm and the health benefits of honey as a historic natural sweetener. It also jeopardizes global food security and reduces the incentive of beekeepers to produce honey.

This August I visited CERN, which is the world's largest scientific laboratory investigating particle physics, the smallest domains of the universe. Scientists from 100 countries are participating in the research. The analysis of the data generated by the extraordinary controlled collisions of matter often requires 150 supercomputers scattered throughout the world. A similar collaboration led by Cold Spring Harbor Laboratory occurred in the mapping of the human genome. International collaboration of dispassionate and independent participants involving many countries has become fundamental to scientific discoveries.

The arena of honey analysis needs multiple updated and sophisticated scientific tools applied with impartiality, insights and relevance to the contemporary situation. We should remember that the original database for carbon SIRA testing was provincial and flawed. It failed to take into account known variables that affect the botanical fixation of isotopes. Science must stay ahead of the fraudsters.

It must also be emphasized that there is no creative marketing of authentic honey that is convincing and persuasive if the product is adulterated honey. The positive virtues of honey are not present in fake honey. Consumers seek those benefits and science has an obligation to investigate those health benefits. All segments of the international

cline in water levels since 1980. Four in 10 sites reached record-low water levels during the past decade, and last year was the worst yet."

Pulling water out of the ground made it possible for America to become an agricultural superpower and one of the world's largest exporters of corn, soybean, sorghum and cotton. Groundwater depletion is threatening that status.

In the summer torrential rains inundated parts of Japan, China, South Korea, India, and Libya, upending the lives of millions and causing flash floods, landslides and power cuts.

More than five weather stations in China exceeded highs of 50 degrees Celsius (122 Fahrenheit) — among the hottest in history. This follows a record hot summer in the capital Beijing, which saw temperatures in early July soar past 40 degrees Celsius (104 Fahrenheit) — prompting officials to issue heat red alerts for two weeks (CNN report, July 17, 2023).

The inconsistency between high volumes of honey exports and serious adverse climatic conditions in China and India has provoked the attention of global agricultural experts. These would be expected to reduce quanti-

honey market have the legal and moral obligation to market pure honey.

The systemic and collaborative adulteration of honey in its modern modes must be ended in order to remove the impediments which are destroying the incentives and viability of producing authentic honey and therewith threatening the global food supply, the rights of consumers for authentic and healthy products, and ecological sustainability which is under threat from numerous causes.

As aptly expressed by Federico Berron, "We need many lighthouses in the fiery ocean which is the current International Honey Market."

Ron Phipps is Vice President of the Beekeeping Economy Commission of Apimondia, Founder and President of CPNA International, Ltd., Organizer of Vivaldi Festival, Summer 2023 at Planting Fields Arboretum, and presented "The Cosmology of an Infinite, Open and Integrated Universe" in July 2023, at the Institute of Philosophy in Munich, Germany.