



INTERNATIONAL HONEY MARKET

by RON PHIPPS

At the time of the release of the Final Determination of Antidumping Duties (ADD) by the U.S. Department of Commerce (DOC) on April 8, 2022, the American honey market had attained an historic apex of honey prices. This was a consequence of a confluence of factors which undoubtedly include: 1) the knowledge which appeared as early as 2019 that an antidumping petition loomed on the horizon; and 2) the concerted national and international efforts to prevent honey adulteration.

The presence of environmental climatic pressures on international agriculture, the emergence of a brutal war in Ukraine — which has implications for two of the world’s crucial breadbaskets, Ukraine and Russia — the significant increase of prices for all inputs needed to produce honey, and the increasing stress on bee populations, have all contributed to the steady price increase. The National Agricultural Statistics Service report of March 2022 stated, “United States honey prices increased 21 percent during 2021 to \$2.54 per pound, compared to \$2.10 per pound in 2020. ... Yield per colony averaged 46.9 pounds, down 14 percent from the 54.5 pounds in 2020.” The total 2021 crop of 126,000,000 pounds was down 14% from 2020.

In April 2022, U.S. domestic white honey prices reached \$3.00/lb. or over \$6,000 per metric ton FOB beekeeper. The prospects for further price increases were clear and packers were bidding prices to higher levels week after week. This occurred within a context of increasing concerns for food inflation, energy inflation, global food shortages and awareness of the vital role which bees play in national and global food security and international ecological sustainability.

HONEY ANTIDUMPING CASE

The Commerce Department announcement indicated changes in antidumping rates from the Preliminary Determination as shown in Chart 1.

Separately, our nation’s International Trade Commission is scheduled by the end of May to make its determination of whether there is sufficient evidence for injury to American beekeepers from alleged dumping. This will also include a decision about critical circumstances for specific countries and companies. Substantial retroactive duties could result from these decisions. The critical circumstances provision is designed to prevent quantitative surges of imports timed to avoid duties. The initial indications have been that large surges indeed occurred since the petition was filed in April 2021.

Chart 2 Volume of Honey Imported into the U.S. 2019-2021

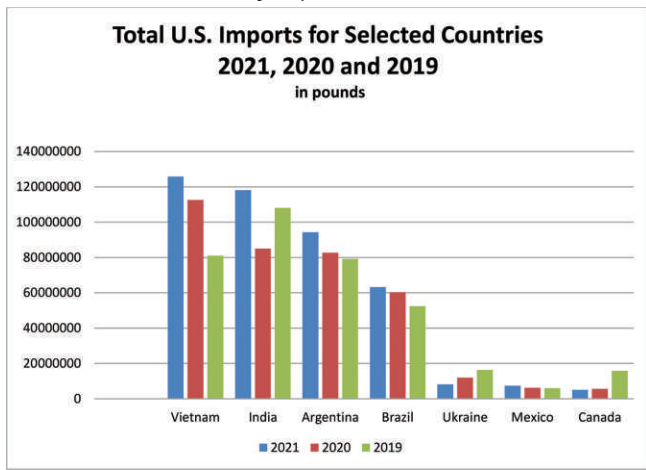


Chart 1 U.S. Honey Antidumping Rates

Prelim Rate/Exporter rates*			Final Rate/Exporter rates*		
Argentina	16%	7.8%, 24%, 49%	16.92%	9.17%, 24.67%, 49.44%	
Brazil	20%	7.8%, 29%	7.89%	7.89%, 83.72%	
India	6.48%	6.24%, 6.72%	5.87%	5.52%, 6.24%	
Ukraine	18%	18%, 32%	0 (petition withdrawn)		
Vietnam	412%	410%, 413%	60%	58.74%, 61.27%	
*assigned to specific exporters					

Vietnam and India both exported about 120,000,000 pounds in 2021. Cash duties began to be collected in November of 2021. The volume from Vietnam surged by 40,000,000 pounds, or 50%, in two years. India's volume was over 100,000,000 pounds in 2019, and increased to 118,000,000 in 2021.

It is reported that many of the beekeepers in the countries being investigated by the DOC did not answer Cost of Production questionnaires because they did not have the required level of records. In the case of Argentina and Brazil, this resulted in considerably higher duty rates for specific exporters.

It is our understanding that the petitioners are requesting review of the Final Determination by the DOC. Throughout the honey world, there is astonishment at the low rates for India in contrast to the high rates for Vietnam. The initial antidumping petition for raw honey alleged dumping by India at a rate of 34-99%, based upon the publicly available customs data. That the Final Determination reduced the rates for India and increased the rates for Argentina is widely viewed as an inexplicable aberration. Leaders in the Vietnamese honey industry said: "The final determination of AD duty set at 60.03% is good news but Vietnamese honey is still at a disadvantaged position to India in the American market."

An Argentine publication, dripping with sarcasm, asserted that "the Preliminary Determination against Indian honey was very benevolent." Astonishingly, the Final Determination — despite strong protests — was even more benevolent! They pointed out that many companies from the U.S. and abroad became fully involved in the investigation since the tariffs imposed put their financial and operational capacity at risk. They vividly described forecasting the market to be as variable as the "vision of the kaleidoscope."

Someone has cited a classic story of three accountants interviewed by the boss. The boss asked the first, how much is 4 plus 7. The second, 7 plus 8, the third 3 plus 2. The first answered 11, the second answered 15, the third responded "whatever you want it to be." The conclusions must be based on objective facts, which can only be obtained through vigorous verification processes.

At the time of this writing, American beekeepers have confirmed that they are seeking a review of the accuracy and the adequacy of the documents and data submitted in the antidumping case, and may protest the DOC's findings. The request for re-evaluation of the final rates may be based upon many factors, including: 1) the documentation submitted by some countries was neither thorough nor persuasive, and 2) because of the pandemic there were no on-site thorough inspections and confirmations of the data and cost basis. The lack of a thorough verification process can be corrected. A fundamental principle of mathematical logic is, when a conclusion is false, no less absurd, the premise to that conclusion must also be false. That principle underlies opposition from American beekeepers and other honey exporting countries who want and need a level playing field based on facts gathered objectively. The efforts to correct these aberrations and expose any fraud continue.

It is clear from Chart 3 that the antidumping petition provoked a sharp increase in prices in 2021.

Astonishingly, the gap between the customs value of Indian white and Argentine white grew from 40% in 2019 to 55% in 2020. The customs value gap for ELA Indian compared to Argentine grew from 45% to 70% in 2020.

Chart 3 Honey Import Price by Country and Color

U.S. Honey Average Import Prices by Color and Country, 2019 to 2021

USD per pound			
	2021	2020	2019
White			
Argentina	1.57	1.06	1.01
Brazil	2.15	1.85	1.85
India	0.95	0.68	0.72
Extra Light Amber			
Argentina	1.61	1.07	1.01
Brazil	2.08	1.05	0.88
India	0.95	0.63	0.69
Vietnam	0.64	0.54	0.82
Light Amber			
Argentina	1.53	0.98	0.86
Brazil	1.61	1.12	1.03
India	0.87	0.62	0.69
Vietnam	0.68	0.54	0.59

Source: National Honey Report, USDA

Yet India's antidumping rate is 5.9% compared to 16.9% for Argentina, a differential of 300%. As Shakespeare said, something is rotten in the state of Denmark. It should be corrected.

The basis of the shock, not only to Vietnamese but to the whole international honey industry, derives from the fact that the differential between India's and Vietnam's custom values was in the range of 15-20% for ELA and Light Amber in 2019 and 2020. This compares to a differential in final duty rates of 54 points, with India at 5.87% and Vietnam at 60%.

After the announcement of the final antidumping duty rates, several international exporters indicated that they are turning their attention to markets other than the U.S., given the barriers created by the ADD. Some exporting countries are inquiring what they must do to alter the quality and change the modes of production in order to meet European standards for authentic, pure honey. The quest for authenticity is international, led by Apimondia and by independent academic scientists. As in all markets, the decisive factor will be comparative advantage. Exporters will seek those markets in which they enjoy comparative advantage.

ADULTERATION AND AUTHENTICITY

The international effort to oppose the adulteration of honey continues, intensifies and scientifically advances. The U.S. Pharmacopeia has completed writing the Honey Identity Standard, under the leadership of Prof. Norberto Garcia, President of the International Honey Exporters Organization, and the supervision of USP Director Gina Clapper. This standard is consistent with the description of honey in Apimondia's Statement on Honey Fraud.

Ongoing and novel research projects involving independent and academic scientists continue with 4 continents and 8 countries. Apimondia and the USP are continuing their efforts regarding detection of adulteration and prohibition of illicit modes of production.

Within some of the major honey exporting countries, including China and India, the concern of consumers and consumer advocates with honey adulteration has increased and entered the mass media.

Dr. Jeff Pettis, former director of the USDA Bee Lab, and current President of Apimondia, said in his keynote address to the American Honey Producers Association in 2020 that honey fraud is driven by greed, and a lot of honey in the market is not honey. Apimondia has worked with Interpol to prevent trade in adulterated honey. It takes a coordinated effort to combat honey fraud.

Prof. Michael Roberts, Executive Director of the Resnick Center of Food Law and Policy, UCLA School of Law, has co-authored, with the legal departments of the UN Food and Agriculture Organization (UNFAO), a fundamental legal analysis of the growing international concern with food fraud and consumers' demand for food authenticity titled, "International and national regulatory strategies to counter food fraud." The report states that, in an increasingly globally integrated economy, "lengthening of supply chains increases the range of fraud risks and vulnerabilities for food."

It is estimated that 40-60% of the international honey market is constituted by "honey" which has been adulterated in one form or combination of forms of adulteration. The linkage of adulteration and dumping is profound. It is why French beekeepers, complaining about low prices for French honey, reported being told by visiting Chinese honey exporters: "We have no trouble producing large volumes of honey and making great profits in our honey trade."

It should be noted that the Bruker database of honey samples has expanded to over 30,000 and at the same time is adding additional parameters and variables regarding the chemical constituents of authentic honey. That includes both what should be in authentic honey and what should not be present. It is also known that the U.S. government, following the mandate of the congressional authorization bill, has acquired NMR technology and is undertaking its own efforts to collect samples of the world's honey.

As Prof. Roberts has pointed out, the scientific detection of adulteration and food fraud must be under continuous development because the modes of adulteration have no limitation except the imagination of the fraudsters. One laboratory scientist advised, "If you import Chinese honey you should use every analytical method you have."

Dr. Enrique Bedascurrabure, who is leading current research projects, has written: "I believe the contribution of Prof. Roberts will be definitive in this task that lies ahead." Prof. Bedascurrabure is encouraged by the collaboration between UCLA and the UNFAO.

THE MACRO CONTEXT

Apimondia 2022 is now going to be held in Turkey, rather than Russia, and will include a virtual option. The 2021 Apimondia conference was rescheduled to be held in 2022 due to COVID concerns. The 2023 Apimondia will be held in Chile, as scheduled.

The turmoil in the world is deeply affecting the macroeconomic conditions. Currency ratios are in a state of great volatility. Global food inflation, global energy inflation, growing national and global debt, and climatic volatility are very high. Forbes reports: "The FAO Food Price Index (FFPI) averaged 140.7 points in February 2022, up 5.3 points (3.9 percent) from January and as much as 24.1 points (20.7 percent) above its level a year ago, the organization wrote. This represents a new all-time high, ex-

ceeding the previous top of February 2011 by 3.1 points (Mar 29, 2022)."

There is also an international shipping crisis. Retailers and manufacturers since 2021 have become more concerned with inventory just in case, rather than inventory just in time.

In Canada in April, there was a severe Canadian Pacific railcar shortage, which resulted in delays of over a month for containers moving from the port of Vancouver. A threat of a resurgence and intensification of the supply chain crisis looms. COVID has already gone through a series of mutations and in China itself draconian lockdowns have become common, spreading from north to south. A result of the Shanghai lockdown is that 500 cargo vessels are waiting in the sea outside Shanghai for permission to discharge essential cargo for Chinese factories. At the height of the 2021 shipping crisis, the port of Los Angeles had less than 100 vessels waiting to dock. Typically the peak season for shipments from Asia to the U.S. is from September to December. Given the chronic 2-5-month delays, the world economy wonders what will happen in 2022.

HONEY MARKETS BY COUNTRY

Argentina

Honey producers are expecting a normal crop this year, which may range from 55,000 to 75,000 metric tons. During 2018-2020, Argentina exported about 23,000 metric tons to Europe yearly. Ukraine was by far the largest exporter to the European Union in 2020 with 55,000 metric tons, providing 30% of Europe's demand. It is logical to expect the demand from the EU for Argentine honey to increase, especially given the fact that Argentina can provide the quality required.

The average customs value for Argentine honey imported into the U.S. in January 2022, was equal to the price of U.S. Dakota honey at \$2.27/lb. after rising throughout 2021. The average value for Argentine honey during 2021 was \$1.59/lb. and the volume increased significantly to 42,760 metric tons.

Brazil

The U.S. market has been cautiously buying so there's a chance the demand can spike very soon. Brazil exported 47% less during the first 3 months of 2022 compared to 2021. The U.S. dollar dropped a lot in March/April, making it difficult for Brazilian exporters.

Brazil Honey Exports 2021 vs. 2022
2021: 13,700 metric tons (Jan-Feb-Mar)
2022: 8,137 metric tons (Jan-Feb-Mar)

Europe has been steady, buying constantly at fair enough prices as usual. Exports to the EU were 6,259 metric tons in 2020, and were in line to increase in 2021. U.S. imports increased to reach 28,698 metric tons in 2021, at an average customs value of \$1.89.

Regarding the crops, in the Southeast/Southern region the crop is much worse than expected, and states of Parana, Minas Gerais and São Paulo are doing very badly. The states of Rio Grande do Sul and Santa Catarina are doing a bit better but also worse than expected. The main crop in these areas is eucalyptus. The melato crop hasn't been that good but the beekeepers are asking high prices for this dark, honeydew honey.

In the Northeast the suppliers are now waiting for the second part to start but it is not looking good, something being

cropped here and there but nothing major. The first part of the crop was normal. But since it is an important source of organic honey, the prices remain firm. Bees in Brazil are usually not a problem, and are normally always healthy.

Canada

Prices for imported Canadian honey reached US\$2.50/lb. in February, and in April prices within Canada were CDN\$3.00-3.58/lb.

A packer expressed that he is worried that they will not have the supply of honey this year they need from their traditional suppliers because of such high winter bee losses. All the beekeepers in the three prairie provinces are crying because of extremely high losses. The national average bee loss is expected to be above 35%, perhaps as high as 45-50%, and losses approaching 95% in the worst operations are expected. This will affect the fall honey crop and is going to be a huge problem for production this summer.

Many beekeepers are expecting to sacrifice honey production this year so that they can rebuild bee numbers. There has been interruption for package bee supply from New Zealand and Australia that has prevented replacement from those areas. The winter was severe and weather this spring has been very poor, resulting in slow growth in hives that did survive. But the main reason for the bees' weakened state appears to be uncontrolled varroa in the fall of 2021. The evidence is that Apivar is losing effectiveness against varroa in most of Canada.

There is a lot of resistance by retail outlets to the higher prices from smaller packers. There also appear to be certain large players that have not increased their prices yet and are squeezing smaller packers. But Canadian beekeepers expect prices to strengthen in response to global changes. Rod Scarlett of the Canadian Honey Council cited Canada's efforts to open up more international markets for Canada's high-quality authentic honey through participation in international exhibitions in numerous nations.

India

Imports of Indian honey into the U.S. increased in volume in 2021 to 53,564 metric tons compared to 38,568 metric tons in 2020. At an average import value of \$0.92/lb. in 2021, compared to \$0.63/lb. in 2020, the total value of the honey imports doubled in 2021, reaching \$108,564,105.

In light of a multi-decade surge of heat in India, it is rather amazing that from a base of zero exports of honey in 2001 there was such an explosive, seemingly inexplicable export volume. In Indian culture, honey is treasured and revered by its 1.3 billion people.

It will be very interesting to observe what will happen to Indian exports of honey since "India experienced its hottest March in 122 years," since the time the Indian meteorological department began maintaining records. "At an average maximum nationwide temperature of 31.3 degrees Celsius, March represented the earliest onset of summer, which is a trend which has repeated itself. Furthermore, India's weather office attributed the high temperatures to the scanty rainfall seen. The rainfall deficiency was as high as 72% over India and reached 89% in the northwest part of the country."

D.S. Pai, director of the Institute for Climate Change Studies states that the other reasons for the extreme departure from normal maximum temperatures include increasing concretization, deforestation and changes in land use.

The negative impact of drought and extreme heat on honey production should be expected.

India's unexpected decrease of its already low anti-dumping rates will accommodate Indian exports of white, extra light amber and light amber, unless the rate is increased. Retroactive duties remain a risk, after the next review by the DOC.

Mexico

Exports are increasing to the U.S., with prices for ELA and Light Amber in the range of \$2.12/lb. in February 2022. Some producers are looking favorably on the U.S. market compared to Europe at this time. A leading beekeeper has indicated that Mexico will increase supply in order to absorb its share of U.S. purchases with the new situation and will concurrently keep its preferential position in key European countries. Yucatan has a good crop, and the rest of the country suffers very dry conditions in 2022.

Mexico exported 17,476 metric tons to the EU and 2,820 metric tons to the U.S. in 2020. The lack of an antidumping duty and the proximity to U.S. destinations gives Mexican exporters a huge advantage in 2022.

USA

From the beginning of spring through May the price of honey has been steadily rising. By April, white clover honey was being sold at around \$3.00/lb. or \$6,600/metric ton. Offers from beekeepers reached as high as \$7,700 FOB by the beginning of May. A typical pattern was that bids were made, which were rejected by the beekeepers. A week later, the beekeeper's price was accepted by the buyers. This occurred week after week. The global macroeconomic and geopolitical climate has undoubtedly contributed to this rising market, whose apex continues to climb. The West and Southwest remain under threat of protracted drought and renewal of forest fires.

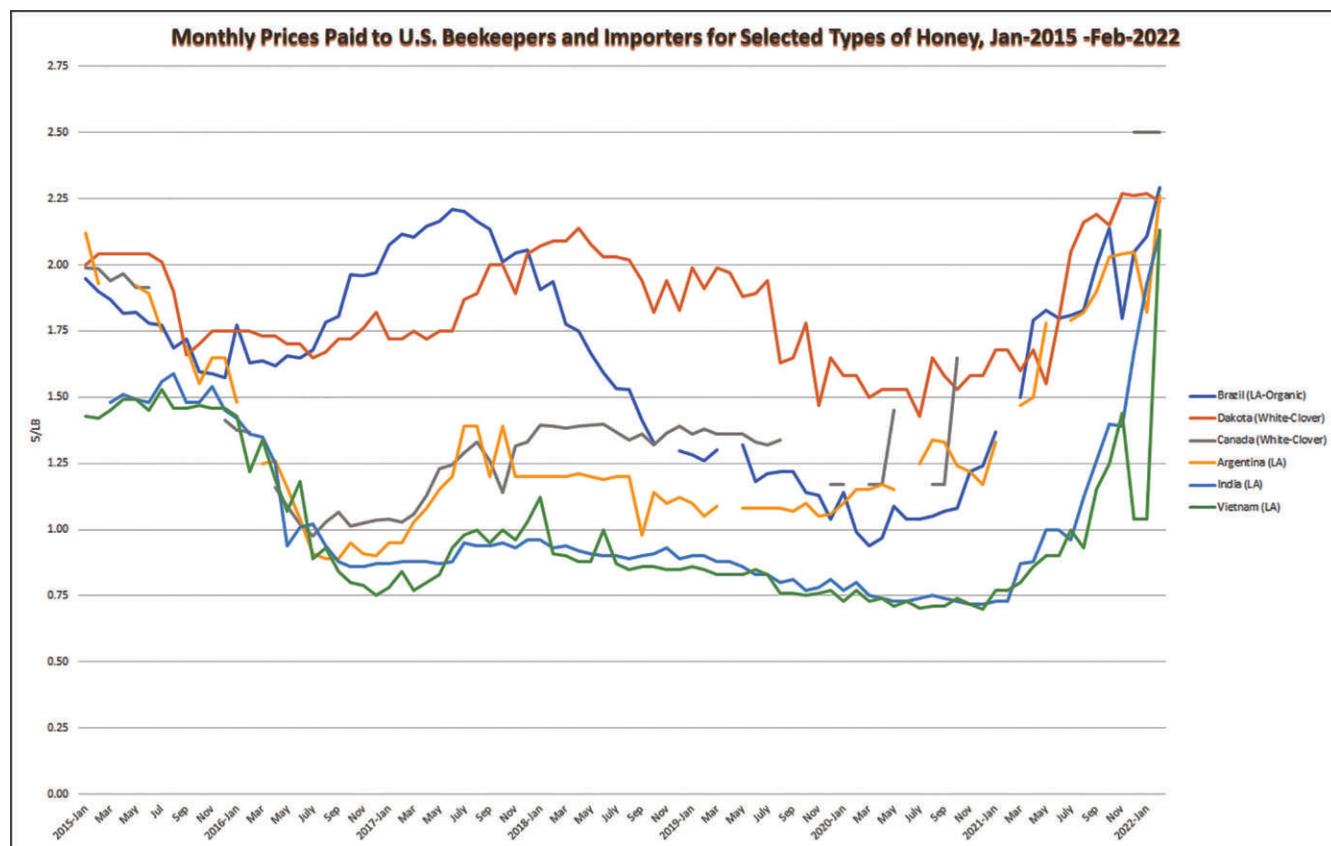
The production of queens and hives in the U.S. started this spring in Mississippi, Louisiana and Texas with great difficulties. There was an early prolific and very long blossoming of yellow jasmine whose nectar is poisonous to bees, birds and other insects. After a very difficult start, things improved. In general, leading beekeepers feel more optimistic, understanding that with the higher prices they will be able to make investments which will restore and sustain production and improve productivity. Competing with systemically adulterated honey thrust honest beekeepers into a position where the more honey they produced and sold, the more they lost. The cost of all inputs to produce authentic, genuine honey has gone up. The U.S. market has been experiencing increasing demand and an upsurge of prices since the reality of the antidumping petition took hold.

Chris Hiatt, current President of the American Honey Producers Association, has pointed out that vast forests provide unutilized sources of bee forage. Bret Adey has cited studies from Oregon State University which demonstrate the benefits of the introduction of beehives into forest regions. Those benefits include increased and more vigorous native bee populations and botanical and biological diversity. The pine trees in Austria and Turkey, like the acacia forests in Hungary and China, and eucalyptus trees in Brazil and Australia, provide some of the highest quality and most delicious honeys in the world. The forest is an underutilized source of U.S. and Canadian production.

Vietnam

Vietnamese honey producers harvested crops in April. The weather was not good for honey production because

Chart 4 Monthly Prices Paid to U.S. Beekeepers and Importers for Selected Types of Honey January 2015-February 2022



rains came early this year. Some honey flows have been cut off by rains. In addition, both the number of honey producers and the beekeeping scale have been reduced over the last year due to the preliminary determination for antidumping duty on Vietnamese honey being too high at 412.49%, and that threatened all honey producers. A considerable part of honey output has been contracted with importers from Europe, Japan and others, while demands have been continuously increasing since February. Some predict that honey production will be reduced about 20-25% compared to 2021 amid fewer beekeepers and unfavorable weather.

China

China's role in both the world economy and the international honey industry is a subject of increasing concern. In the spring, more or less concurrent with Russia's invasion of Ukraine, there was a potentially very significant development with the resurgence of COVID in China. Rather severe lockdowns swept in many major cities of northern China, then to Shanghai and southern China. It has been estimated that 400 million people were in lockdown as of April. Truck drivers were confined for up to a week in their trucks, and people who tested positive were isolated in public centers. Transportation was limited and many factories were closed as raw material could not be transported either to China or within China. This could lead to a slowdown of the Chinese economy and to a second supply chain crisis as congestion at international ports may grow along with soaring costs. Eric Mertz writes about the impact of COVID lockdowns which have reduced China's trucking activity by 87% in April, and may result in food shortages in the country. Because of the draconian lock-

down, farmers have been arrested in their fields according to reports, during the essential planting season in spring. This compounds the agricultural problems generated by Russia's invasion of Ukraine and threatens global food inflation and shortages.

Relative to the honey industry, since the Chinese practice an extraordinary form of "migratory beekeeping," the fact that the lockdown occurred during a major honey production period may reduce the volume of Chinese honey available for the international market. The EU imported about 39,027 metric tons of honey from China in 2020, far more than from any other country but Ukraine (Source: Eurostat Comext). Furthermore, a significant portion of the honey that China exports may not meet the Apimondia standards for purity and authenticity. As the saying goes, what happens in China does not stay in China.

CIRCUMVENTION AND CUSTOMS FRAUD

The concern with a re-emergence of circumvention through third countries is present. But given the significant advances in country-of-origin identification through the use of NMR technology, the risks of engaging in circumvention are much greater and the penalties may be much more severe than during the time that antidumping orders were first effected against Chinese honey. Honeygate, during which Chinese honey was shipped through 30 different countries using fraudulent documents such as country of origin, bills of lading and certificates of quality, should not be replicated

BEE FORAGE LANDS AND LAND USE CHANGES IN THE USA

Advanced technology, including satellite imaging, is tracing and revealing the changes in American agricultural and other land use. Those changes include shrinking

amounts of arable land and also shifts in the geographic regions suitable for pollination. The U.S. Geological Survey (USGS) reported that from 2001-2016 examples of landcover change included shrub loss in the West, mostly from fire, cultivated crop expansion into grasslands in the northern prairies, and urban expansion across the U.S. The greatest change has been in forest lands, caused by forest harvest and regrowth in the Southeast, and fire, pests and harvest in the West.

Prof. Jonathan Coop, professor of Biology and environmental science at Western Colorado University, documented the evolution of forest lands in transition after fires or extreme weather events in a lecture at Gonzaga University in early 2022. Researchers looked at how long they take to either restore themselves or transition into another type of land, such as a savannah. They also documented increased numbers of fire events. Restoration of damaged forest land is not always a natural outcome.

FACTORY DEHYDRATED NECTAR AND RESIN TECHNOLOGY

Federico Berron, one of the leaders of the Mexican honey industry, and champion of authenticity, introduced the concept "factory dehydrated nectar" to summarize the practice. This is a brilliant description of adulteration of honey in the mode of quick extraction of immature honey. That process typical in various major honey exporting countries in Asia involves the extraction of honey prematurely before the bees have been able to complete their complex interactions with nectar which result in the transformation of nectar into honey. It must be pointed out it this not a simple phenomena of degree of moisture. Immature, pseudo honey produced at high elevations and arid climates may have low moisture content but still be nectar, not honey. In tropical and semi-tropical regions, with comparatively low elevations and humid climates, authentic honey may have a higher moisture content but have been fully and completely worked by bees transforming the nectar into authentic honey.

Jodie Goldsworthy, a leader of Apimondia and the Australian honey industry, has pointed out that the extraction of immature honey drives the bees to a frenzied constant search for nectar. This exerts tremendous stress on the health and vigor of bees. The creation of stressed and unhealthy bees has significant and negative consequences on the ecological sustainability of the earth and global food security. Jodie described this as a form of animal cruelty. This has much broader implications to the ecological well-being and the biodiversity of the earth.

The export from China of resin technology applied to honey represents a second mode of adulteration. This pernicious mode of adulteration removes antibiotics and harmful residues, lightens the color, removes offensive aromatic chemicals and allows that product to assume the mask of "organic honey." It is also the case that chemical components like polyphenols, anti-oxidants, attractive aromatic and flavor chemicals are removed, robbing honey of its charm and benefits. There is concern about authentic organic honey competing with pseudo resin-treated "organic" honey. Offers of Chinese "Organic" honey can be found on the website Alibaba.

CLASS ACTION

There are ongoing legal actions aiming to protect beekeepers from the scourge of economically motivated adulteration. Plaintiffs assert that the global honey market is seeing increases in areas where increased honey production is not possible. While the number of hives has

remained relatively stable, their yield has dropped drastically due to a variety of factors, including climate change, natural disasters, pesticides, mites, reduction of acreage for forage, monodiets, stress, and environmental pollution. An ongoing class action suit concerns allegations of food adulteration, antitrust behavior and collusion to harm the class of several thousand beekeepers and deceive retailers and consumers.

The testing laboratories are responsible not only for providing correct documentation but also if they fail to ask and investigate parameters that they know or should have known are relevant to the validity and accuracy of their certifications.

It is clear that the most sophisticated and sustained efforts to bring the question of food fraud in the honey sphere to the judicial systems of the U.S., the U.K., Europe and other governments in honey producing countries continue and expand. These legal efforts are all in and for the long haul. In the U.K., the beekeeper group Honey Authenticity Network has proposed that all countries of origin be listed on honey labels, and that ingredients should be exactly what is stated on the honey jar.

The judicial system is obligated to protect the authenticity of all products. It is not obligated to protect markets that are artificially, quantitatively enlarged by food fraud.

CONCLUSION

The dramatic increase in international honey prices is helping to integrate a balance of incentives for both consumption and production of honey. As was said in the chapter on marketing in *The Hive and the Honey Bee*, composed by myself, Dr. Stan Daberkow, Prof. Norberto Garcia and Prof. Vaughn Bryant, we are entering an Era of the Creative Marketing of Honey, the re-incentivization of producers, and an enhanced appreciation of the marvel and significance of bees, the diversity of the honey they produce and the importance of the biodiversity of the botanical treasures of the earth. Creative marketing of honey depends upon the authenticity of honey.

Ron Phipps is President of CPNA International, Ltd., and Vice President of the Scientific Committee on Beekeeping Economy, Apimondia. He is the recipient of a National Science Foundation Fellowship in theoretical physics, a personal assistant to the President of the American Philosophical Association, and author of "The Philosophy of an Infinite, Open and Integrated Universe" and "Modalities to Develop an Educational System of Discovery, Innovation and Creativity."

Ron is also President of the Board of the Long Island Concert Orchestra/Chamber Players International.

Because of space limitations, there was some information which was not included in the ABJ published version of the report, which we include below:

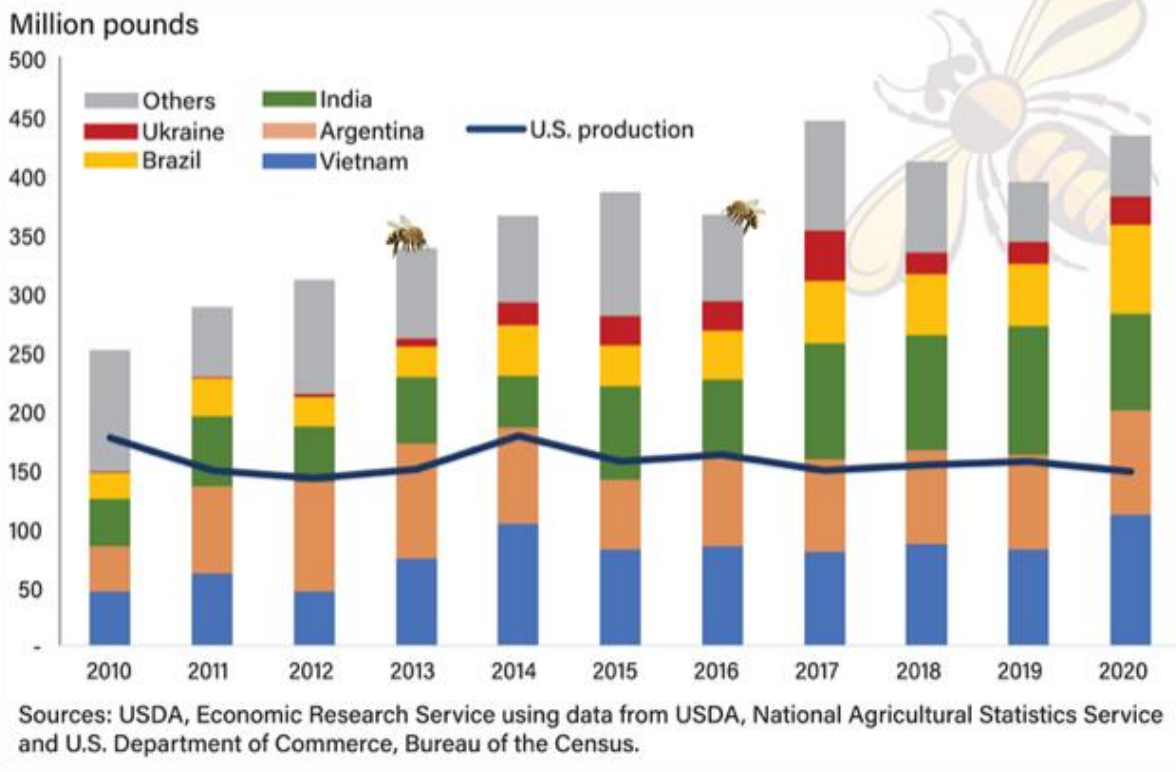
1. A chart showing "Heat Wave Days" in India over recent decades. As is well known, drought conditions seriously affect the nectar of plants. The contrast between the explosion of Indian exports entered in the honey category over the past 2 decades and the increased severity and frequency of high heat conditions creates an anomaly. Increased severe heat waves are associated with increased drought, and heat waves and drought are associated with decline in nectar flow, whose transformation by bees is the basis for the creation of honey.

2. Dr. Stan Daberkow provided an updated graph contrasting U.S. honey production and yearly imports of honey in pounds. The increased domination of imports over domestic production is a direct consequence of low prices which have robbed beekeepers of the incentive to produce honey, increase volumes and expand operations.

U.S. honey imports by country and U.S. honey production, 2010-20



Economic Research Service
U.S. DEPARTMENT OF AGRICULTURE



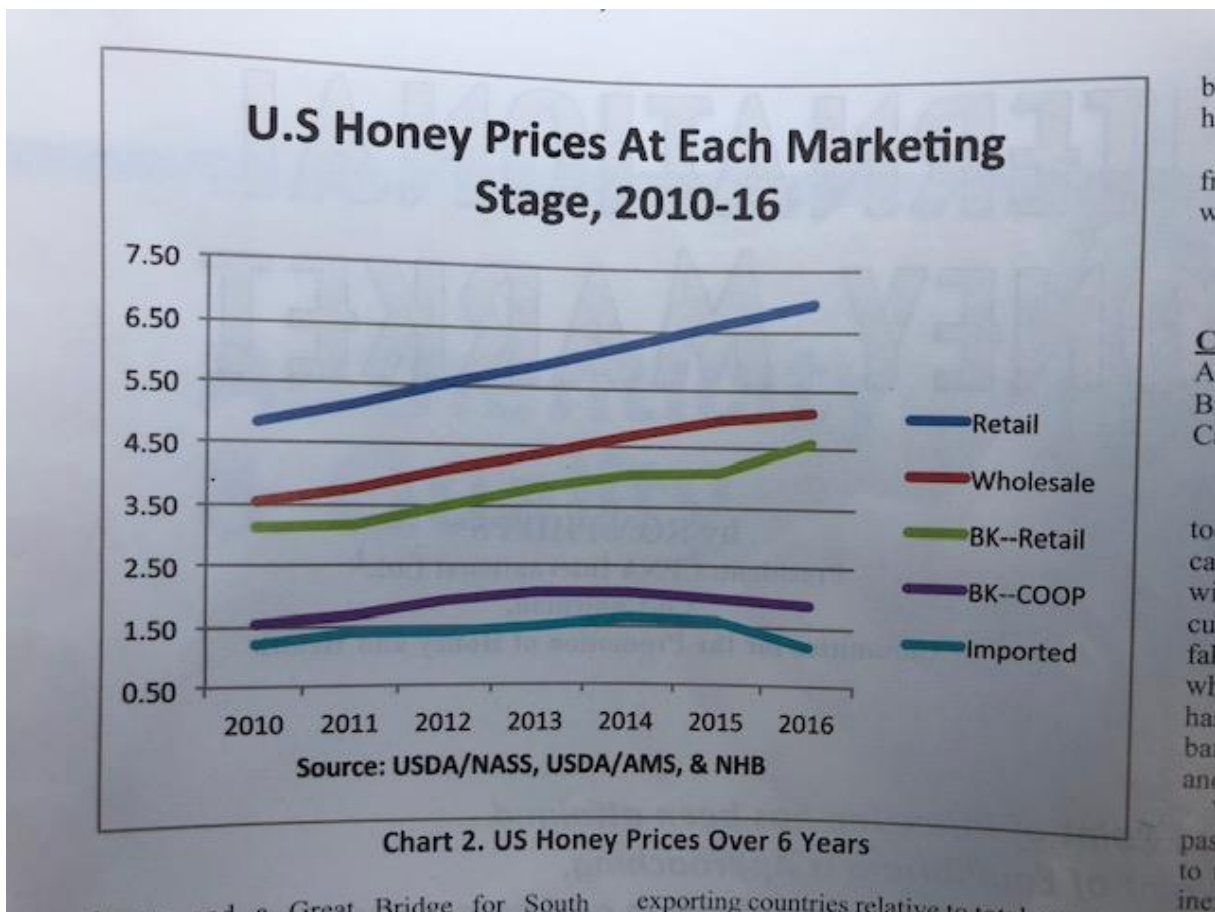
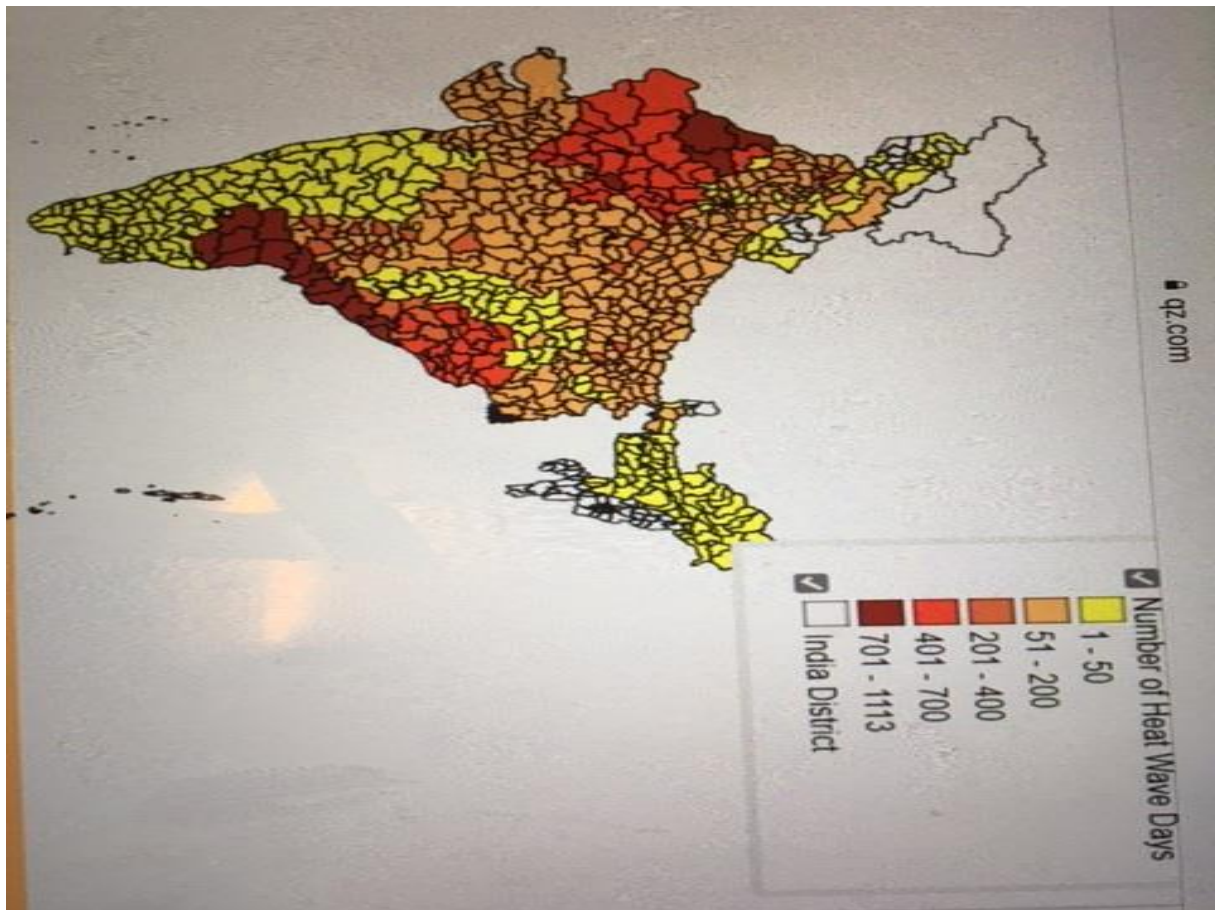
3. A chart which the ABJ published in June, 2017, shows the divergence in prices between wholesale and beekeeper levels. That large and growing gap between prices paid by packers to beekeepers and prices sold to retailers is a classic example of price gouging. Only as Apimondia's statement on adulteration and awareness of an antidumping petition entered the market did these relations begin to change.

4. New research, lead by Park Williams of UCLA appeared in the prestigious Scientific American journal: "Western 'megadrought' Is the Worst in 1,200 Years." The article notes that an "exceptionally dry year in 2021 pushed the 2022 year long drought to the top of the record books. The western drought has lasted longer than the Dust Bowl." The article points out "the searing "megadrought" that has gripped the southwest U.S. for more than 2 decades is the driest 22 year

period in at least 1,200 years. The region hasn't seen a more severe drought since the start of the scientific record around the year 800, according to new research." "Before last year, the previous megadrought occurring in a late 1500s was the only drought known to be worse than today." "Benjamin Cook, a NASA climate scientist said that without broader climatic change the current megadrought "probably wouldn't even be a continuous drought." These conditions have contributed to ongoing water woes across the western states. Lake Mead and Lake Powell, 2 of the country's largest reservoirs, both reached record low levels in 2021, leading to the first declaration of a water shortage in the history of Lake Mead. The megadrought has profound effects upon soil conditions and plant life.

5. As the pandemic, with its Omicron variant, swept through China in the Spring, there was renewed concern that the world is entering a second supply chain crisis. Internal and external transportation systems in China experienced severe bottlenecks. Ports in western North America are under increasing stress in 2022. The war between Russia and Ukraine has intensified. International transportation systems are unable to deliver products, being manufactured in low wage countries, in a timely way.

The contradiction between the massive amount of manufacturing that has been exported and the inadequacy of transportation systems to deliver on a timely basis with reasonable costs has led to soaring prices for international transportation, protracted delays in delivering that massive production, food inflation and general inflation.



6. The salient point to note about the graph "U.S. Honey Prices At Each Marketing Stage, 2010-2016" concerns the gap between imported and Wholesale (honey packer) prices. In a mere 6 years the gap grew by approximately 270%. The growing gap between imported and wholesale prices occurred as overall demand in the American honey market continued to substantially increase. The gap of 270% put increased pressure upon beekeepers in America. It was this phenomena, more than any other factor, which lead to the movements against dumping honey, adulterating honey and allegations of anti-trust behavior within the American honey industry. Those 3 movements, serving as tributaries to the river of authenticity, helped created a point of inflection which resulted in the upsurge in prices which by May, 2022, had attained their historic apex.