



INTERNATIONAL HONEY MARKET

by **RON PHIPPS**

President, CPNA International Ltd.¹

Co-Chairman,

Committee for the Promotion of Honey and Health

“Resin technology applied to honey creates products which cannot be labelled as ‘Honey’”

Introduction

At the end of February, 2016, we received an official letter from U.S. government authorities confirming that the application of resin technology to honey results in creating products which cannot appropriately be labeled or marketed as honey. This is a major development, as it helps to clarify the status of a technology which, it is believed, has been widely used in recent years to disguise honey origin.

The American honey industry is acutely aware of the grave threat imposed upon the market by phenomena associated with the circumvention and adulteration of honey. Prices in the American and international honey markets have been collapsing, to the distress of beekeepers and honest honey exporters, importers and packers throughout America and other countries. During the past 12-14 months honey prices for many important and traditional origins have eroded by 40%-50% of their previous levels.

The balance and integration of the incentives to produce and consume honey have not been reached. Instead a grave imbalance persists, which distresses and threatens the survival of beekeepers throughout America, Canada, Argentina and Europe, putting in jeopardy agriculture, agricultural production, food security, food safety and the sustainability of ecological systems whose fragility and vulnerability are appreciated now more than ever before.

A Point of Inflection in the rise of honey prices was reached in the 4th quarter of 2014. The honey market urgently needs a Point of Stability.

¹ CPNA International, Ltd.
1043 Oyster Bay Road
East Norwich, NY 11732
Tel: (516) 935-3880
Fax: (516) 628-3959
e-mail: info@cpnaglobal.com
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Mr. Phipps is president and founder of CPNA International, Ltd. and is currently on the National Honey Board. He is an importer of honey, natural foods and tea from various international producers. Ron is also the former personal research assistant to the president of the American Philosophy Association. He is a recipient of the National Science Foundation fellowship for philosophy of theoretical physics. Mr. Phipps is a founding member of the Tea & Health Committee, which organized three major scientific symposiums on tea and health and the role of antioxidants in the prevention of disease. He has worked with FDA to develop a research protocol for the global diversity of honey. Currently, Mr. Phipps is president of the Chamber Players International.

Resin technology

Resin technology has been legally and properly applied to different types of foods to remove various contaminants. But its application to honey is novel. The Chinese manufacturers of the technology began to openly and aggressively offer the technology to producers and exporters of honey about 2-3 years ago. Resin technology can 1) disguise country of origin as assessed by usual scientific methodologies; 2) remove not only pollen but also antibiotics and residues, thereby reducing risks to importers, exporters and packers; 3) remove chemical components which give color to honey, therewith allowing tropical and semi-tropical countries to export large amounts of white honey (Remember when Indonesia, prior to the successful work of U.S. Immigration and Customs Enforcement (ICE), exported to the U.S. 100% white honey); and 4) remove chemical components of honey which add flavor and aroma, the components which led to the honey's award in 2015 for Flavor of the Year. By removing or reducing flavor components, such manufactured honey is easy to blend as “hamburger helper” into honey. As an illustration, “sunflower honey” has been reported to have flavor profiles that were not sunflower and which crystallized like rapeseed honey.

The manufacturers, users and sellers of the resin machinery have claimed that resin technology was FDA approved. A letter from the FDA clarified this as follows:

“[The]..resins may be safely used as articles or components of articles intended for repeated use in producing ... food, in accordance with ...Federal Regulations....the regulation does not address the use of the resin for any specific food products or contaminants, including carbendazim in honey, nor is such specific use elsewhere addressed in FDA regulations.”

“...calling the product that has been treated with the resin technology simply “honey” would not accurately identify the food generally understood to be honey. The product should be labeled with a name that sufficiently describes its characterizing properties in a way that distinguishes it from honey which has not been treated with resin technology.”

The FDA issued draft guidance on April 9, 2014, for the proper labelling of honey and honey products. The FDA is working on finalizing this guidance and is accepting comments.

The above clarification on the use of resin technology is of cardinal importance. Those who genuinely want a level playing field which incentivizes producers and consumers need enforcement

of this ruling that requires special labelling for the product that results from the use of resin technology on honey.

New methods of honey analysis and authenticity testing

Currently there are serious discussions regarding cooperative and collaborative international scientific efforts to establish a broad global data base of authentic honey samples reflecting the multiple variables which determine the chemical profiles of honey. American beekeepers are participating in providing authenticated samples.

In an Era of Transparency, as Dr. Daberkow and I described in our Chapter in the new edition of *The Hive and the Honey Bee*, these international collaborative efforts fulfill and further the FDA Research Protocol for Honey issued by Dr. Michael A. McLaughlin, Samuel W. Page, and Jerome A. Schneidman of the USFDA. Concurrent with the effort to establish that data base are efforts to establish more sophisticated scientific methodologies to better assess and determine country of origin, adulteration, the use of resin technology, and whether or not the honey has been ripened by bees (mature honey).

The Nuclear Magnetic Resonance (NMR) Technology applied to honey is one of the most promising and sophisticated scientific techniques being developed and investigated not only by private-for-profit laboratories, but also by independent academic scientists and governmental laboratories concerned with food safety and food authenticity.

Systems of traceability allow the producing industry to trace not only where, when and from which areas honey was produced, but also the floral sources, climatic conditions and other relevant variables which determine the chemical profiles of honey. Similarly profiles of blends of honey can be relatively easily established. To make an analogy, major teaching and research hospitals in the U.S. are working to establish what has been called "Precision Medicine within the Context of Global and Integrated Medicine." By establishing the specific nature of individual genomes and understanding those genomes in relation to a global data base with an integration of many variables, more precise ways to predict, diagnose, treat and cure diseases are being developed.

The assessment of the purity and authenticity of honey, its method of processing (such as ultra-filtration or resin technology), and country of origin may come by means of the collaborative scientific research now underway to mirror the general theme of "Precision Analysis within the context of Global and Integrated Data."

Without underestimating the machinations of honey circumvention, we remain more optimistic that new scientific tools and data bases are emerging which will make circumvention and adulteration more difficult. The industry needs such tools to sustain a vital, vibrant and vigorous beekeeping industry and preserve the health of global ecosystems of which the world's greatest pollinators – the bees – are an essential part.

Statistics and the Situation

Honey consumption in the USA is at least 500 to 600 million pounds per annum. The growth of honey consumption has mirrored the growth of the population with per capita consumption about a half kilo or 1.1 pounds per person. It is important to note that this increasing level of total consumption has been maintained for a decade of substantially rising prices.

Honey is a "small luxury" and a natural, pure, charming and intriguing product. Like many products, when the prices are low consumers perceive a lack of value. Sophisticated marketers are well aware of this marketing fact.

The current collapse of the market price is not due to a decline in consumption because of higher prices. The precipitous collapse in honey prices is a result of other factors. What is occurring is more the Domino Effect or the House of Cards collapsing. Group A surges with low prices and a big quantity of all kinds of honey and steals the market from Group B whose subsequent collapse under the burden of world inventories causes the collapse of Group C whose collapse leads to that of Group D. Group D is the North America Beekeepers.

TOP TEN COUNTRIES

TOTAL HONEY IMPORTS -USA 2015

	metric tons	Av. Price/lb.
World	175,4 06	1.58
Vietnam	37,071	21%
India	36,123	20.50%
Argentina	27,081	15.50%
Brazil	15,459	
Ukraine	11,411	
Thailand	10,752	
Canada	8,233	
Uruguay	7,243	
Mexico	5,364	
Turkey	5,179	

Please note that the prices of imported honey in 2015 reflect prices of shipments entering US Customs in 2015. The prices of such imported honey often reflect prices from 6,8,9 or even 12 months earlier when the market was firm and there was no expectation of either a tremendous surge of honey imports or a precipitous collapse of prices. Market prices by June 2015 had already sharply dropped creating passivity in the marketplace and everyone thought "next week prices will be lower." The declining market prices for honey reflected a general malaise in the international economy. China's economic stagnation and retreat led to a general decline in global commodity prices.

Argentina



Argentina's new President Macri has offered more liberal, market-oriented economic policies. This has allowed the Argentine peso to be devalued, although that is countered by inflation, which has plagued Argentina for years. International agreements to resolve prior sovereign debts are in place. The bizarre requirement of the preceding government that import rights depend on exports is unlikely to be sustained. That will reduce the artificial incentive for speculation in honey by those Argentine firms specializing in importing high profile high technology products.

Unsold inventories from the 2015 crop, the removal of export duties, and a plunge in the value of the peso contributed to downward price pressure on honey by mid 2015. The major factor causing these declines was the competitive pressure which emerged from offers of white and ELA honey which were offered at below market prices from a set of countries that are not known as producers or exporters of the type of honey which flooded the market.

Honey exports from Argentina to the U.S. in 2015 were 27,081 metric tons, a decline of 26.5% from 2014. Prices decreased relative to 2014. The previous crop (2014-2015) is estimated to have been between 60-65,000 metric tons and not as white as its preceding crop. Unsold inventories remain in Argentina and also in the U.S. The current crop is very good and may reach 70,000 to 80,000 metric tons.

Brazil



Crop forecasts are optimistic for the main crop of Light Amber, including eucalyptus, which begins in March. Since the early polyflora crop from southern Brazil failed in the 4th Quarter of 2015 due to heavy rains, many shipments were

US HONEY IMPORTS 2015 by color
WHITE HONEY IMPORTS - USA 2015

	Metric Tons	Av. Price/lb.
Canada	7,534	1.89
Argentina	5,700	1.74
India	3,876	1.59
Mexico	1,805	1.87
Brazil	915	1.84
Taiwan	211	0.99

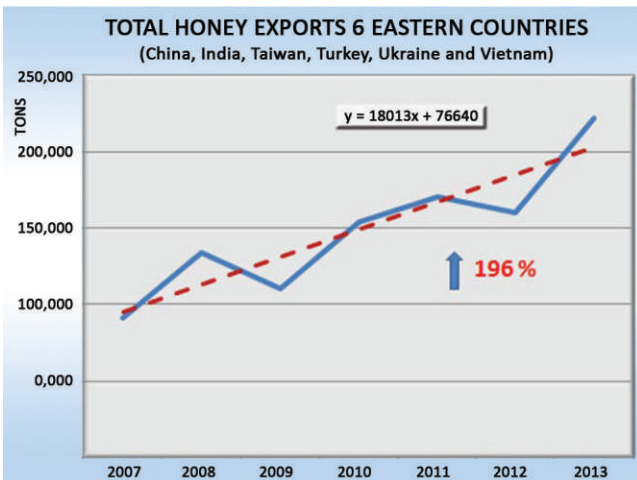
EXTRA LIGHT AMBER HONEY IMPORTS-USA 2015

Argentina	1.74
India	1.52
Ukraine	1.52
Uruguay	1.6
Thailand	1.23
Taiwan	1.12
Mexico	1.78

LIGHT AMBER HONEY IMPORTS - USA 2015

Vietnam	1.31
India	1.43
Ukraine	1.48
Thailand	1.21
Turkey	1.45

delayed and prices for organic honey were firm and rising slightly in February. We heard the comment “Due to El Nino anything can happen” and that concern has led some exporters to be cautious about forward sales. Volumes from the Northeast and Southeast are expected to be good, however. Honey exports from Brazil to the U.S. in 2015 were 15,459 metric tons, a decline of 20% compared to 2014.



Source: Prof. Norberto Garcia, International Honey Exporters Organization

There is growing concern among thoughtful Brazilian exporters that the current large differential between Organic and Conventional honey prices risks reducing demand for Organic honey.

Canada

Production rose by 11.4% to 95.3 million pounds in 2015, and U.S. honey imports from Canada increased by 46.6% to 8,233 metric tons (about 18 million pounds) of primarily white honey. U.S. importers paid an average of US\$1.90/lb., the highest overall average, to Canadian sellers. Canadian production has been generally rising since 2008. Reports of honey imported from Spain at very low prices suspected to be primarily of Chinese origin and/or adulterated with sweeteners are circulating. These reports are causing careful scrutiny in Canada.

Mexico

U.S. imports from Mexico were about 10 million pounds in 2015 for mainly white and ELA colors at prices generally higher than other origins. Volumes declined by about 25% while prices for white colors increased compared to 2014.

Vietnam and India

Inventories of Amber and Dark Amber honey are piling up in Vietnam, mostly from the new floral source *Acacia mangium*. The color of Vietnam honey imports is typically Light Amber, while 57% of imported Indian honey was White or Extra Light Amber in 2015.

Total imports from Vietnam declined from 47,107 metric tons in 2014 to 37,071 metric tons in 2015 (down 21%), while imports from India soared from 20,381 metric tons to 36,123 metric tons in 2015 (up 77%). By value, imports from India reached \$114 million in 2015, making India the top exporter to the U.S. by value. This is a remarkable growth from 2001, when total imports from India were 20 metric tons/year at a price of \$0.60/lb.

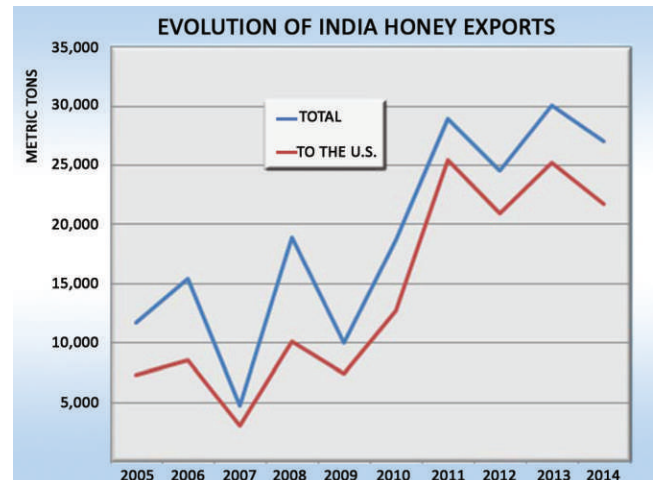
Ukraine



In late 2015 there were reports of rejections in Europe of Ukrainian honey due to widespread contamination with antibiotics, and in early 2016 prices dropped significantly from their average of \$1.52/lb. in 2015.

The Ukraine government stopped some honey exports from Ukraine to the EU. While Ukraine has considerable sunflower production and many beekeepers, the size of beekeeping operations in Ukraine is extraordinarily small, making effective quality control very difficult.

Ukraine emerged as a very significant exporter of honey to the U.S. despite the fact that the Ukrainian economy is in deep economic distress and the economic, political and military tensions between western Ukraine and eastern Ukraine remain tense. The



Chinese are reported to be renting over 10% of the agricultural land in Ukraine, and at least 10 Chinese honey companies and some Polish honey companies, are operating in Ukraine. Ukraine is also importing “imitation honey” according to statistical reports.

The eastern European honey market, along with the EU as a whole, is showing many fissures and conflicts. In 2015 Hungarian beekeepers staged protests at the EU headquarters in Brussels against cheap and possibly adulterated imports which were harming their indigenous honey industry and beekeepers.



China and the U.S. Honey Market

China is the 800 pound gorilla in the room whose presence must be acknowledged. For the American honey industry this presence revolves more than any other single factor upon whether China will receive official recognition in the USA as a

Market Economy which will profoundly influence how anti-dumping petitions against particular industries are handled and how anti-dumping rates, if any, are calculated. This question involves many industries from honey to steel, from tools to solar panels. The same question is before the European Union. The Chinese government undoubtedly hopes if Europe grants market status to China this will put pressure upon the U.S. to do likewise. The issue grows from the 2001 bilateral agreements by which China entered the World Trade Organization (WTO) with the firm expectation (or promise) that in 15 years (2016) China would be granted Market Economy status.

The Chinese government has threatened to bring a law suit before the WTO. Perhaps, if there had not been such an extensive history of circumvention, transshipment and customs fraud, the issue would be easier to resolve and tensions less sharp. But that is water under the bridge and the collusion and circumvention continue to occur and, thus, irritate American industries and the U.S. Congress. The USTR has highlighted China’s large role for state-owned enterprises and the preferences for domestic companies in its evaluation submitted to the World Trade Organization.

Trade tensions are being further intensified by China’s direct and indirect outside investment, resulting in purchases of farm lands, oil fields, factories, buildings, mines and real estate around the world. A recent article in the *New York Times* was titled: “China’s Acquisitive Ambitions Raise Alarm in Washington.” As Chinese companies try to snap up American tech businesses, they are setting off ripples of unease in the Obama administration and in Congress. In the U.S., Chinese interests have purchased computer units from IBM (Lenovo), the Waldorf Astoria, Smithfield, and are attempting to purchase the Chicago stock exchange. As was quoted by the *New York Times*, after a Chinese billionaire paid \$175 million for a European art treasure, “We have bought your businesses and buildings and now we are buying your art.”

China is currently negotiating to purchase for \$44 billion the giant Swiss manufacturer of agricultural chemicals and seeds, including GMO seeds. Either directly or through surrogates China is buying honey companies around the world, including in America.

The fact that China is saddled with enormous redundancies of productive capacities is resulting in huge portfolios of non-performing loans and financial peril. Its economy and stock market are declining and its currency weakening, which is causing a huge movement of money from China to other countries.

Studies of Chinese honey production and consumption have indicated that China is consuming much more honey than it produces, and much more honey than the sum of its production and imports. As reported over the past several years, the Chinese media has indicated in numerous cities over 50% of the honey sampled on the retail level has been found to be adulterated with up to 70-100% of other sweeteners. This has led to consumer complaints and a tendency to buy honey only directly from beekeepers.

In 2015 there was a conference held in China to exchange technical information and discuss analytic technology for honey. China is being invited to participate in the collaborative efforts to establish a global data base of authenticated samples of honey identify-

At the end of February a hearing on China’s shifting economic realities was held in Washington, D.C. to discuss this issue. Seventy-five percent of the participants argued that China’s economic behavior and systems do not justify granting China market economy status. The arguments can be summarized:

China is not a market economy based on laws in the EU, Canada or the US. The US criteria for consideration include convertibility of currency, freedom of labor and management to negotiate wages, and the extent of government control over means of production, allocation of resources and price decisions.

To treat China as a Market Economy would have a significant negative impact on the U.S. economy. Competition on a slanted playing field poses real costs to U.S. businesses. China is described as a “company disguised as a country” by a U.S. steel company CEO who testified. He painted a picture of an American steel industry decimated by an influx of often inferior Chinese steel products. The “crisis” is compounded by the Chinese government’s unchecked intrusion in its steel-making sector where capacity is multiple times what it should be and cheap excess steel is shipped overseas, creating huge losses for U.S. and other producers. Bankruptcies of 14 U.S. steel producers have occurred already.

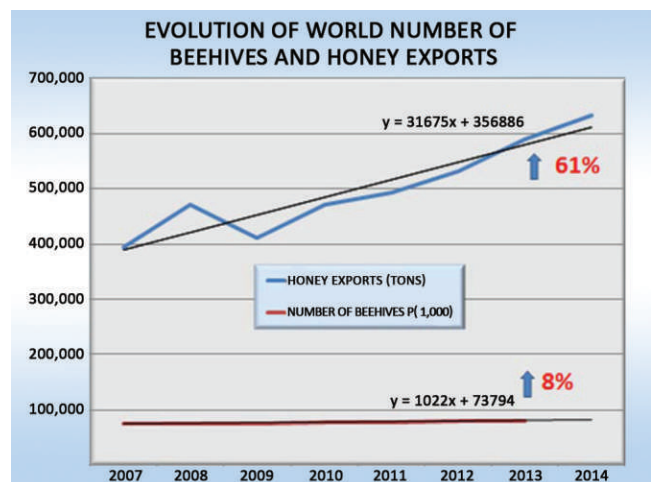
China claims that the US is obligated to treat China as a market economy by the terms of China’s Protocol to the WTO.

ing floral source, region, time, and conditions of production. China has many beekeepers and a wide diversity of floral sources suitable to producing high quality honey. There are efforts within China to improve the testing of honey and to prevent both adulteration and illegal activities in exports of honey.

Global Honey Production and Global Beekeeping

Detailed analysis of total honey production and exports indicates serious and obvious contradictions. As the graph below shows, there has been a huge increase in total global honey exports without a corresponding increase in the number of beehives around the world. This aberration is troubling as the global bee populations are under tremendous stress and declining.

In the most advanced and professional beekeeping operations in the world, such as those in America and Argentina, productivity per hive has substantially declined. Areas where 120 pounds/hive were typical are now yielding 50 – 70 pounds/hive and under adverse weather conditions even less. The bee losses related to neonicotinoids, pesticides, mites, colony collapse disorder, reduction of acreage for forage, monodiets, stress, environmental pollution, and climate change have contributed to this loss of productiv-



Source: Prof. Norberto Garcia, International Honey Exporters Organization

ity per hive. The increase in global honey exports in the context of both a stable number of beehives and declines in productivity per hive in the major producing countries creates an anomaly which suggests widespread honey adulteration.

The fact that Chinese beekeepers extract honey at very high moisture levels of 35-40% and have the moisture reduced in factories may be one factor contributing to this anomaly. The extraction of immature and unripened honey may increase quantities, but decrease qualities and deprive honey of its health benefits and status as a pure and natural product. Fortunately, Nuclear Magnetic Resonance (NMR) technology may provide an effective tool to distinguish immature and inauthentic honey from natural honey. The biochemical interaction of bees and the nectar bees gather, alter the chemical profiles and benefits of honey. Standards for global professional beekeeping practices and effective testing methodologies for honey need to further evolve to preserve the integrity of honey.

Climate Change

Not only is the global economic system in a prolonged state of stagnation and financial stress, but the past decade has seen the highest concentration of hot years. The past 2 years were the hottest years on record. January 2016 was the hottest month on record. Sea rises throughout the globe were the greatest in 28 centuries! South Africa is suffering the severest drought in a century. Syria's human tragedies of sectarian violence occur in the context of severe and protracted drought. Plants and animals are gradually migrating away from the Equator in both the northern and southern hemispheres.

How honey and agricultural production will be affected during the coming years remains to be seen. But we've seen enough to hear a call for concern and change in the mode of preventative medicine!

Creative Marketing

There have been a series of efforts to bring to honey the Creative Marketing which has transformed and invigorated various food industries including almonds, wine, tea, and cranberries. The opportunities for honey are considerable and the leadership of the National Honey Board is working to craft ways to bring modern creative marketing themes to honey. The general concept is how to create a tapestry whose strands will include the intrinsic attributes and charm of honey, which was awarded "Flavor of the Year" in 2015. The challenge is how to creatively weave together the beauty of honey as "The Soul of a Field of Flowers," the functional and flavor attributes, the diversity of modes of consumption, the health benefits and the role of honey in a healthy diet, the importance of bees to agriculture and the health of the globe's interdependent ecological systems. The new Dietary Guideline of the FDA with its analysis of the role of sweeteners creates great opportunities for promoting the numerous health benefits of honey. Interest has been expressed by the American and international honey industries to review scientific studies on honey and health and to bring together these results in a compelling tapestry for honey.

It was very interesting that at the annual convention of the American Honey Producers Association, not only did scientists from the USDA and the EPA attend, but a White House Staff member, Bruce Rodan, assistant director of Environmental Health, Office of Science & Technology, showed pictures of White House beehives, and was very warmly received. He affirmed the importance of bees to agricultural production and the ecological system. At the State of the Union address a member of the honey industry was an invited guest. Interestingly, some premium quality U.S. honey may be served during upcoming state dinners.

The global appreciation of the honey bee has never been more acute, widespread or deeply understood than at present.

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