Honey Trade in the 21st Century
• I’m happy to make a presentation at the request of my good friend President Tam. I have tried to outline the trends that will affect the international honey market in the 21st century.

• We have observed significant changes in the global honey production over the past few decades. New honey producing areas such as Vietnam and Brazil are making contributions to providing honey for the world population. Concurrently, changes in Argentina, America and Europe have created difficulties to sustain the levels of production which were achieved only a few decades ago.
Honey Production and Consumption

- In the speech I will try to outline some of the major trends that are likely to occur in the 21st century in the international honey trade. First we should note global production trends from 2000 to 2008, according to the Food and Agriculture Organization (FAO) report.

- Total world production of honey has increased by 32% in this period to reach 1,517,747 metric tons, probably due to the increase in beekeepers and honey production in various countries.
# World Honey Production 2000-2008

FAO Statistics

## America, Africa, Asia & World Honey Production Totals 2001 - 2008

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Americas + (Total)</strong></td>
<td>340,033</td>
<td>320,372</td>
<td>326,446</td>
<td>322,603</td>
<td>332,119</td>
<td>344,737</td>
<td>363,343</td>
<td>373,640</td>
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<tr>
<td><strong>Africa + (Total)</strong></td>
<td>144,159</td>
<td>146,717</td>
<td>154,826</td>
<td>152,501</td>
<td>156,381</td>
<td>155,342</td>
<td>157,720</td>
<td>167,707</td>
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<tr>
<td><strong>Asia + (Total)</strong></td>
<td>448,979</td>
<td>458,511</td>
<td>451,354</td>
<td>513,331</td>
<td>519,477</td>
<td>541,117</td>
<td>591,367</td>
<td>609,059</td>
</tr>
<tr>
<td><strong>World + (Total)</strong></td>
<td>1,250,106</td>
<td>1,264,706</td>
<td>1,294,304</td>
<td>1,305,103</td>
<td>1,308,101</td>
<td>1,419,440</td>
<td>1,611,709</td>
<td>1,463,848</td>
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</tbody>
</table>
Honey Production in Europe Declines Marginally

<table>
<thead>
<tr>
<th>EUORPE</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
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<tbody>
<tr>
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<td>360207 MT</td>
<td>338548</td>
<td>354857</td>
</tr>
</tbody>
</table>
Production declines in North America

- Total production declined in North America over the period, due to declines in honey yields per hive in Canada and the USA.
- The causes may be related to Colony Collapse Disorder (CCD) and reduction of land areas suitable for honey production, which decrease is correlated to the increase in land used for the production of biofuels.
- Also there are concerns regarding migratory beekeeping practices and the resulting stress on the bees.
US Honey Production declines 23% from 2000 to 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>MT</th>
<th>lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>74,293</td>
<td>163,786</td>
</tr>
<tr>
<td>2005</td>
<td>95,454</td>
<td>210,437</td>
</tr>
<tr>
<td>2000</td>
<td>99,454</td>
<td>219,256</td>
</tr>
</tbody>
</table>
Asian Production Increases

• Chinese production increased about 46% to 367,200 metric tons in 2008, Vietnamese production increased significantly to 16,000 metric tons, and Indian production was flat during the period.

• Production in Japan was modest. Japan imports 93% of its honey consumption.
# Honey Production in Asia 2000-2008

FAO Statistics

## Honey Production in Asia (Metric Tons)

<table>
<thead>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>257.830</td>
<td>254.300</td>
<td>254.200</td>
<td>194.210</td>
<td>139.589</td>
<td>130.527</td>
<td>137.281</td>
<td>307.208</td>
<td>357.253</td>
</tr>
<tr>
<td>India</td>
<td>61.001</td>
<td>60.190</td>
<td>71.558</td>
<td>65.510</td>
<td>73.620</td>
<td>82.236</td>
<td>82.942</td>
<td>73.928</td>
<td>81.304</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>8.000</td>
<td>6.000</td>
<td>6.000</td>
<td>6.000</td>
<td>6.000</td>
<td>6.000</td>
<td>6.000</td>
<td>6.000</td>
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</tr>
<tr>
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<td>3.500</td>
<td>3.700</td>
<td>3.700</td>
<td>3.800</td>
<td>3.700</td>
<td>4.000</td>
<td>7.800</td>
<td>7.800</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>

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**Eastern Asia**: 275.924, 275.961, 281.640, 318.050, 318.543, 330.257, 351.825, 357.008, 357.918

**Southern Asia**: 51.760, 51.120, 54.543, 65.009, 85.877, 86.300, 58.156, 54.956, 55.100


**Western Asia**: 71.805, 71.314, 86.568, 81.859, 87.545, 90.560, 86.265, 88.387, 54.809
Top Production by Country in 2008

FAO Statistics

[Bar chart showing top honey production by country in 2008]
• China, Turkey, Argentina, the Ukraine and the USA were the top 5 honey producing countries in 2008. Since that time, production has declined in Argentina and the USA.

• In the past decade, honey import patterns into the USA have become inverted, and this pattern may not be justified based on the data on honey production.
Consumption of Honey

• Similarly there have been significant changes in consumption patterns. We can anticipate further changes as the popularity of honey, the appreciation of its qualities as a healthy and natural sweetener, scientific research on its health and functional benefits, and the creative marketing of honey, all develop and mature.
World Consumption

- As we look at present levels, we find high consumption in Europe, such as:
  - Greece 3.5 lbs/person/year
  - Austria 3.1
  - Germany 2.5

Consumption in the US and Canada is:
- Canada 1.9
- USA 1.2
Consumption in Asia and South America

- Consumption in Asia and South America is significantly lower, for example:

<table>
<thead>
<tr>
<th>Country</th>
<th>Consumption (lbs/person/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>0.7</td>
</tr>
<tr>
<td>China</td>
<td>0.3</td>
</tr>
<tr>
<td>India</td>
<td>0.1</td>
</tr>
<tr>
<td>Argentina</td>
<td>0.3</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.2</td>
</tr>
</tbody>
</table>
Honey Consumption

• “Record honey consumption occurred in 2006, when an estimated 425 million pounds [192,778 metric tons] were consumed as table honey or as an ingredient of food or non-food products. With per capita consumption within a range of 0.8 to 1.1 lbs. since the 1980’s, most of the growth in honey use can simply be attributed to population growth”

• “Europe, Japan and the U.S. accounted for 80-85% of global imports between 1995 and 2007.”

We must also understand the different variables that are influencing and will likely continue to increase both production and prices. These factors include:

- Increased global industrialization
- Reduction in arable land
- A shift to more profitable enterprises as societies become more industrialized and urban populations increase
- Increased cost of production
- Increased vulnerability of bees
- Climatic volatility, more severe droughts
- Volatility in relative currency values, which affect the comparative advantages and disadvantages for different countries in purchasing honey.
- Antidumping laws, as various countries adopt policies to protect domestic industries
• Beekeepers and honey packers around the world are concerned that if the circumvention of cheap honey is not stopped in a comprehensive and timely way, there will be an unfair price advantage between legal and illegal honey, and a march to monopoly by those engaged in circumvention.
Honey Production Changes

- Factors affecting the production of honey, including drought, reduction in the amount of arable land due to urbanization and industrialization, climate volatility, and bee diseases.
- From 2000 to 2008 total world production increased by 20% but there was a decline of 5% in North and South America.
Honey Science

• The development of international honey trade requires increased understanding of the science of honey. A global data base of primary honey samples that take into account climate, elevation, methods of blending, floral sources is essential for both scientific and legal credibility. This data base cannot be established with legal and scientific credibility only by commercial laboratories. Such a study should involve academic and government entities. It should be rooted in objective science, not commercial interests. The FDA protocol was designed over 10 years ago and called for the collection of certified samples for honey, which has a wide diversity of chemical profiles within and among nations.
• The international industry should support such a study that by its nature would involve cooperation from all major honey producing countries. Such a study must take into account all the relevant variables, including floral source, climatic conditions, elevation, that affect the metabolic and photosynthetic processes and production of honey through the interaction of botanic and zoological life.

• As the FDA protocol asserts, you cannot accurately extrapolate from a narrow data base onto a broader one.
International Investigation into the Chemical Composition of Honey
Preliminary Estimate of Values

Michael A. MacCulloch and Samuel H. Day, Office of Research, Dairy and Beverages,
Division of Home Products, Agricultural Extension Office of Scientific Analysis and Support,
Division of Agronomy, U.S. Food and Drug Administration, Washington, D.C. 20503

INTRODUCTION

Honey is a commodity that is recognized worldwide as a valuable food and beverage. This commodity makes a strong contribution to the internationally used honey diet. As such, methods have been developed to characterize the quality of honey, the use of various chemical methods, such as stable isotope analysis (SIA), has proved to be useful in the analysis of honey and other food products. However, these methods require the analysis of a sample of the honey before it can be used in the analysis of the honey. In practice, both methods that show differences in geographic origin, chemical source, and processing techniques. If the database is not representative of the particular commodity, then the method will be valid only for samples covered by the database. At the present time the database contains the chemical composition of honey sugars, proteins, and lipids is insufficient for U.S. honey, and studying with honey samples from other countries. This is not intended with this study to provide a more accurate database of values for the chemical composition of honey.
• In 2008, the Vietnamese honey industry held a conference to discuss honey quality issues, and have been working hard to develop their production and develop a system of honey traceability.
Vietnamese Honey Industry Discusses Honey Science 2008
• The Vietnamese met in Hanoi with the representatives of the U.S. government to discuss ways to prevent circumvention of honey by establishing a mature and thorough traceability system to trace honey production from beekeepers to point of export. This effort includes establishing a detailed data base of authentic Vietnamese honey types, which effort has been underway since January 2010. These samples are drawn from the main producing areas, during the main collection period, from floral sources used to produce commercial quantities of honey. This provides a model for all major honey producing nations.
International Honey Standards

• Because of the fact that bees are vulnerable to diseases and must be protected, honey does not exist in a realm of ultra purity. Bees are essential for the production of honey, for the pollination of crops that are needed to feed humanity. In America, one third of the crops are dependent upon bee pollination. We need to establish tolerance levels and testing levels, international standards and internationally accepted good beekeeping practices.

• We can anticipate safety and testing standards for honey as all kinds of foods, such as seafood, fruits, vegetables inevitably come under scrutiny.
Traceability

• Honey traceability has become increasingly important for honey consuming countries as part of the trend towards monitoring all food imports for quality and safety.

• Country of origin labels are required on retail honey products in the USA.
• Because of the increase in the global trade in honey, and the fact that the major consuming countries do not produce enough honey to satisfy their needs, honey trade is necessary. Issues of legality and safety are leading to demands for traceability of honey from all origins. Traceability from individual beekeepers, to honey exporters or dealers, and to honey packers, is critical for compliance with good manufacturing practices and for strong quality control to ensure purity and origin. Countries like Brazil and Vietnam have made great progress in working to establish traceability systems. This trend is inevitable in the 21st century.
U.S. Antidumping Law

• The US has been under the influence of strong antidumping orders. These orders have resulted in prohibitively high duties on Chinese honey. China is by far the largest honey producer and the current estimate is 367,000 metric tons/year. New floral sources have been introduced in China which will likely increase both the quantity and variety.
11 Execs, 6 Foreign Firms Caught in Honey Sting

(Sept. 2) — U.S. consumers stand a better chance of buying honey free of drugs, chemicals and other illegal contaminants because investigators from several federal agencies have scooped up some of the biggest players in the sticky, international honey-laundering maze.

A 70-page indictment, released in Chicago by U.S. Attorney Patrick Fitzgerald, reads like Cliffs Notes for a spy novel: smuggling, bogus shipping papers, phony lab tests, shipments to Chicago warehouses and small honey-packing plants in Washington’s Cascade Mountains. All that’s missing is the sex.

Eleven Chinese and German executives and six of their food supply and honey export companies were charged Wednesday with 44 counts of conspiring to illegally import Chinese-origin honey, including honey tainted with antibiotics, into the U.S. by mislabeling it as originating in other countries to avoid paying anti-dumping fees, Fitzgerald said.

Why the foreign intrigue with something as benign and universally loved as honey?

The one-word answer is money. Tens of millions of dollars, and that’s just what the field agents and federal prosecutors can prove at this point.

These are not nickel-and-dime scams.

“They are charged with conspiring to import more than $40 million of Chinese honey to avoid paying anti-dumping duties of approximately $90 million,” said Leigh Winchell, special agent in charge of Homeland Security Investigations in the Pacific Northwest. (HSI was formally known as ICE, or Immigration and Customs Enforcement.)

Illegal Additives Create Health Problems

Fitzgerald said the defendants were distributing “adulterated honey that never should have reached the U.S. marketplace.”

The adulterants — illegal additives that the U.S. Food and Drug Administration says cannot be permitted in any food product — included mostly small amounts of the antibiotics and antibacterial drugs Ciprofloxacin, Norfloxacin, Chloramphenicol and Furazolidone.

Health officials say these chemicals can create health problems for just a small percentage of the population with specific chemical sensitivities. Public health experts say the public should never be exposed to unneeded antibiotics.
O faith. Schumer, the senior New York Democrat, is leading the charge against China’s honey producers.

In recent weeks, the Department of Justice has charged two Chinese citizens with fraudulently selling honey in the U.S. The Department of Agriculture has also launched an investigation into possible price-fixing among Chinese honey producers.

The TPA is a key piece of legislation that allows the U.S. to negotiate trade agreements with other countries. The TPA includes provisions that ensure that honey produced in China is reclassified as honey produced in the U.S., which allows importers to pay lower duties.

Schumer has been critical of the TPA, saying that it is a “national security threat.” He has called for a moratorium on the TPA until the investigation into Chinese honey production is completed.

The Chinese government has responded to the allegations by saying that they are false and unfounded. They have also threatened to retaliate against the U.S. if the TPA is not amended to address their concerns.

In a letter to the U.S. Trade Representative, Schumer said that the TPA is “fundamentally flawed” and that it is “hurting American farmers.” He called for a moratorium on the TPA until the investigation into Chinese honey production is completed.

The Chinese government has threatened to retaliate against the U.S. if the TPA is not amended to address their concerns. They have also called for the TPA to be renegotiated to include provisions that protect Chinese farmers.

August 2018 755
Marketing Trends

- Honey is marketed to consumers using geographic locations, floral sources, flavor profiles, color, health benefits of honey as a natural sweetener, etc. Honey is associated with a “halo of health.”

- The opportunity to use good science as a marketing tool has good promise. This is happening to other foods such as fruits, tea, wine, and chocolate. In 2008 we held the First International Symposium on Honey and Human Health in the United States. Scientists from Sweden, Switzerland, New Zealand, Australia, Canada, Scotland, the USA and other countries participated.
Health Benefits of Honey

• One of the potential health benefits which was discussed was honey’s association with suppression of stress hormones and the encouragement of healing hormones in the body.
Honey may enhance sleep
(Fessenden, *Honey Revolution*)

**The Wellness Hormone**

- **Melatonin**
  - The antioxidant role of melatonin may be of potential use for conditions in which oxidative stress is involved in the pathophysiological processes.
  - Melatonin has been shown to modify immunity, the stress response, and certain aspects of the aging process, to bring improvements in sleep disturbances and Alzheimer's disease and Parkinsonism.
  - Melatonin may be effective in breast cancer, Benign breast diseases, and colon.
  - Improved mental health, creativity, problem solving, memory recall, dreams.
  - Associated with the release of recovery hormones during rest.
  - Normal or enhanced MELATONIN levels.
  - Promotes fat burning, recovery metabolism (weight loss).

**Quality or RECOVERY / RESTORATIVE Sleep**

- Ensures
- Pre-bedtime Liver pooling with HONEY
- RECOVERY / RESTORATION begins at bedtime

MELATONIN has been shown to reduce weight gain, and has been linked to weight loss, reduction in visceral fat, prevention and treatment of AU and other neurodegenerative disorders.
• Marketing food products on the diversity of flavor and the beauty of the producing area, is a trend that can benefit the honey industry. Wine, coffee and teas are marketed by regions of production and people have come to appreciate products of diverse origins and the beauty of their production. Marketing efforts that add to the romance and intrigue of a given category of food have created consumers who are willing to pay more for special qualities and varieties of wines, coffees and teas.

• Organic and “green” or environmentally friendly products, of which honey is one, are especially attractive to today’s consumers, and we anticipate increased sales for organic honey.

• There is a good potential for export of American honey to Asia, for example, due to its special floral sources and flavors.

• Industrial utilization of honey for foods such as baked goods, salad dressings, beverages, and snacks in consuming countries is increasing.
• As the 21st century proceeds, there will be an inevitable trend towards consolidation of both beekeeping operations and honey packing operations. There will also be more direct competition and collaboration between consolidated beekeeping operations and a consolidated honey packing industry. This is possible because of advanced communications, modern transportation and the power of concentrated marketing.
Industry Consolidation

• That is to say there will be an increase in both horizontal and vertical integration of the honey industry as a whole. This consolidation will better help stabilize supply and demand relations, prices and marketing.

• Argentine, Brazilian, Canadian and American honey producers are moving in this direction, the former in relation to European packers and the latter in respect to Canadian and American honey packers.
• The sustainability and value of consolidation will depend upon a honey industry based upon integrity and conformity to both domestic and international law.
• The International Honey and Health Committee uses a saying as follows:

“Honey is the soul of a field of flowers.”