

The background of the slide is a close-up, warm-toned image of a honeycomb. The cells are hexagonal and filled with a golden-yellow substance, likely honey. The lighting is soft, creating a gradient from a bright white center to a darker orange at the top and bottom edges.

**A**  
**Canadian Perspective**  
**Honey Fraud – The Impact of**  
**a Global Problem**

**NSBA presentation**

A close-up photograph of a honeybee is positioned in the bottom-left corner of the slide. The bee is dark brown and black, with its wings partially spread. It is standing on a section of the honeycomb, which is visible in the foreground. The background behind the bee is a soft, out-of-focus white and yellow.

# Setting the stage

“Honey is amongst the select group of nine foods with most reported cases of economically motivated adulteration, often considered the second or third most fraudulent product along with olive oil and fish.”



# What is Adulteration?

“Economically motivated adulteration of honey includes cases of intentional dilution with syrups (corn, rice, beet, etc.), feeding hives during a nectar flow, use of antibiotics and other chemicals in honey bee populations in a way that results in residues in honey, and masking the true country of origin of honey to avoid tariffs and testing (Strayer, 2014). Adulteration could also include the widespread practice of extracting immature honey and then dehumidifying it by mechanical means.”



# Recent Canadian Experience

In 2018-19 the CFIA undertook a targeted surveillance strategy.

- Strategy began in June 2018 and was carried out over a 14 week period ending in September 2018.
- 240 samples were collected across Canada
- Samples included bulk honey intended for further processing and retail packaged honey intended for sale to consumers.
- Samples were taken from a variety of establishment types, including importers, brokers, distributors, blenders, graders, domestic processing facilities and retailers.



# Testing

- CFIA conducted analyses using Stable Isotope Ratio Analysis (SIRA) to detect adulteration with sugar cane and corn syrups (C4 sugars). Nuclear Magnetic Resonance (NMR) analyses were conducted by a contract laboratory (Bruker) to detect added foreign sugars from these as well as other sources such as C3 sugars.



# Results

- 188 samples were satisfactory by both methods: 78.3% (188/240)
- 52 samples were unsatisfactory by one or both methods: 21.7% (52/240)
  - 16 samples were unsatisfactory for SIRA testing: 6.3% (16/240)
  - 44 samples were unsatisfactory for NMR testing: 18.3% (44/240)
  - **SIRA testing found 8 (out of 15) samples unsatisfactory that were not found by NMR**
  - **NMR testing found 34 (out of 44) samples unsatisfactory that were not found by SIRA.**



# Results

- <https://www.inspection.gc.ca/about-the-cfia/science-and-research/our-research-and-publications/report/eng/1557531883418/1557531883647>
- -The more detailed data has also been posted on the Open Data Portal at:
  - <https://open.canada.ca/data/en/dataset/7ecfee4c-b6f5-45f8-9fd4-16976f55f8d9>



# Ramifications – What's Next

- Canada became the first country to have it's government use NMR to identify adulterated honey.
- It also set an expectation that it will continue to do testing, especially since such a high percentage of the honey was found to be fraudulent.
- It raised the bar for Canadian beekeepers.
- Last budget had money set aside for food fraud.



## More activity

- For 2019-20 CFIA planned numbers similar to 2018-19. Monitoring sampling is a combination of contract sampling at retail and CFIA inspector sampling that is mainly bulk/for further processing. The ratio is about 40% bulk/for further processing to 60% retail packaged. Planned sampling numbers are higher for imports based on risk. In addition to monitoring sampling, CFIA may take additional targeted samples to follow up on non-compliances.



# Next up in Canada – Apimondia – Honey Contest

*...This year entrants in the honey categories have been subjected to external laboratory analysis using ISO 17025 accredited laboratories to test for honey purity, contamination with residues, and some traditional quality parameters.*

*The results of laboratory testing indicate to us that there is much work to do and many areas that we, as a global beekeeping community, can focus on for improvement. They also reflect an increasing pressure on beekeepers to maintain the health of their bees, which may in turn increase the risk of unintentional contamination of their products....*

*Beekeepers need good knowledge, education and support globally. The World Beekeeping Awards, the Apimondia Statement on Honey Adulteration, and this Congress are part of this ongoing process to improve beekeeping and bee products.*



# What happened?

## RESULTS OF LABORATORY TESTS WBA 2019

		%
NUMBER OF SAMPLES OK	52	33.1
NUMBER OF SAMPLES OK?	34	21.6
NUMBER OF SAMPLES FAILED ANTIBIOTICS ONLY	10	6.4
NUMBER OF SAMPLES FAILED PHYSICOCHEM. ONLY	17	10.8
NUMBER OF SAMPLES FAILED PURITY ONLY	23	14.6
NUMBER OF SAMPLES FAILED PURITY + ANTIBIOTICS	14	8.9
NUMBER OF SAMPLES FAILED ANTIBIOTICS AND PHYSICOCHEM.	3	1.9
NUMBER OF SAMPLES FAILED PURITY AND PHYSICOCHEM	4	2.5
TOTAL NUMBER OF SAMPLES FAILED	71	45.2
TOTAL NUMBER OF SAMPLES	157	100.0



# Evaluating the results

- Cloramphenicol – showed up as a major contaminant
- Tylosin and tetracycline also prevalent
- Low diastase and high moisture
- Added sugars and not from country of origin
- Many multiple infractions



# Apimondia/Canada – What's next

- Revamp Apimondia Statement on Honey Fraud
- Improve the database in North America for NMR and use the technology
- Invest in new science opportunities like mass spectrometry
- Continue to engage the public
- Why is this important to North America?



Questions??

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**Thank You!**

