

Honey Testing Starts With Identity

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For Canadian beekeepers, better lab methods matter. But testing will keep falling short unless honey standards define what a product claims to be, where it comes from, and what has been done to it.

The honey industry does not only have a testing problem. It has an identity problem. We still can't define what is "authentic" and that means the laws can't cope with the issues.

Beekeepers have been told for years that better testing will solve honey fraud. Testing is essential, but no test can protect a product that the market and the rules define too loosely. If anything from a single-origin Canadian clover honey to a multi-country industrial blend is treated as the same generic commodity, fraudsters are handed the space they need to operate.

That is why standards of identity have to move to the centre of the honey fraud discussion. A laboratory can measure sugars, markers, residues, pollen, moisture, HMF, and chemical fingerprints. But enforcement still depends on a basic question: what exactly was this product supposed to be? Without a clear answer, even strong testing becomes weaker than it should be.



A test needs a target

Honey is not a manufactured sweetener with one fixed formula. It is a biological product shaped by bees, plants, soil, weather, geography, season, harvest timing, and handling. Clover, canola, blueberry, buckwheat, fireweed, alfalfa, wildflower, and honeydew honeys are not expected to look identical in the lab. That natural variation is part of honey's value.

But that same variation creates a regulatory problem. If the standard of identity is too broad, the normal range becomes so wide that it can hide abnormal products. Fraudsters exploit the fact that honey is naturally diverse. They blend origins, dilute signatures, adjust syrup mixtures, and use weak definitions to make fake or manipulated product look legally defensible.

A test is only as strong as the identity standard behind it. If a label

claims Canadian honey, the test should be able to compare the product with verified Canadian honey. If a label claims a floral source, the test should be able to compare it with that floral identity. If a product is a blend of imported honeys, the label and the enforcement system should treat it as such. Generic honey testing cannot do all of that by itself.

The dog example: why one generic standard is not enough

Think of trying to write one precise standard of identity for "dog." A Chihuahua and a Saint Bernard are both dogs. So are a greyhound, a border collie, a husky, and a Newfoundland. If the standard says only "four legs, tail, fur, barks," it is so broad that it does not tell you much. If it sets one exact height, weight, coat length, skull shape, and colour, it wrongly excludes legitimate dogs.

The solution is not to pretend all dogs are the same. The solution is to recognize classes, breeds, and verified identities. A breed standard does not deny that all dogs belong to the same species. It gives evaluators a more precise identity to test against.

Honey needs the same logic. A single, one-size-fits-all chemical profile for all honey is not realistic. Canadian canola honey, Argentine eucalyptus honey, Chinese multifloral honey, New Zealand manuka honey, and a dark honeydew honey will not share one narrow fingerprint. But that does not mean standards are impossible. It means standards have to be tied to the identity being claimed: origin, floral source, production method, and processing history. These standards can be defined by obtaining authentic honey and using the data gathered with MS or NMR to define the standards. Make it defined in by real

A generic honey standard is like a generic dog standard: broad enough to include everything, and therefore too weak to catch what does not belong.

Identity standards should narrow the playing field

The purpose of a stronger standard of identity is not to punish natural variation. It is to stop fraudsters from hiding behind it. A proper honey identity system would define honey at several levels.

- Base identity: honey must be the natural sweet substance produced by bees from nectar, plant secretions, or excretions of plant-sucking insects, transformed and stored by bees, with

no added syrups, sugars, sweeteners, or masking agents.

- Origin identity: products claiming to be Canadian, provincial, regional, imported, or blended must be labelled and tested against that claim.
- Floral identity: products claiming a floral source should be supported by appropriate evidence, including chemical fingerprinting, pollen analysis where useful, and verified reference samples.
- Processing identity: terms such as raw, unheated, natural, pure, filtered, unfiltered, organic, and local must have enforceable meanings, not marketing meanings.
- Stop Blending different honeys: Blending is only to obscure and mask identity. Choosing to blend different geographical honey makes fraud near impossible to detect and prosecute.

This is the missing link in many honey fraud discussions. The industry often jumps straight to the newest lab method. But before asking whether a test passed, we need to ask what identity the product was tested against.

Modern fraud is built to exploit broad definitions

Older honey fraud enforcement focused heavily on syrups made from C4 plants such as corn and cane. Stable isotope testing was useful because those plants leave a different carbon isotope signature than most nectar sources. That made corn and cane syrup easier to detect.

Fraudsters adapted. Modern adulteration increasingly relies on syrups from C3 plants such as rice, beet, wheat, and barley. These syrups are harder to separate from honey using older carbon isotope methods alone because their isotopic signatures are the same as naturally found in nectar.

That is why identity standards and reference databases matter so much. NMR, mass spectrometry, isotope testing, and other tools can reveal a great deal. But their power increases when they can compare a sample to a well-built database of verified honeys by region, floral source, season, and handling history.

The European Union's "From the Hives" action showed the scale of the problem. In a coordinated investigation of 320 imported honey consignments, 147 samples were considered suspicious for non-compliance. The work also showed that carbon isotope methods useful for maize and cane syrup were not enough for the fraud patterns being seen. Reported practices included adapting honey-syrup blends to evade testing, masking botanical origin, and manipulating traceability.

Fraudsters are not simply adding sugar and hoping nobody notices. They are designing products to pass weak specifications and take advantage of vague identity claims.

Quality standards are necessary, but they are not identity standards

Beekeepers should keep defending quality standards. Moisture, HMF, diastase, colour, flavour, clarity, texture, and insoluble solids all matter. They help show whether honey was harvested too wet, overheated, aged, poorly handled, or improperly graded.

But those are not enough to prove authenticity. A product can look acceptable on basic grade factors and still be adulterated or misrepresented. Likewise, a quality defect is not automatically proof of syrup fraud. HMF can indicate heating or age. Moisture can indicate handling problems. These are important signals, but they are not a complete answer to origin washing or syrup substitution.

The industry should not confuse "meets grade" with "is what it claims to be." A standard of identity answers the second question. That is the question fraudsters most want to keep vague.

Blending widens the loophole

Blending is not always wrong. Beekeepers and packers may blend for moisture control. But blending also creates one of the easiest routes for origin washing and fraud dilution.

When honey from multiple countries and floral sources is blended into a single industrial product, the normal range becomes artificially wide. That makes it harder to interpret test results and easier for questionable product to hide inside the blend. If imported honey is mixed with domestic honey and the package lets the Canadian identity dominate, the label becomes part of the problem.

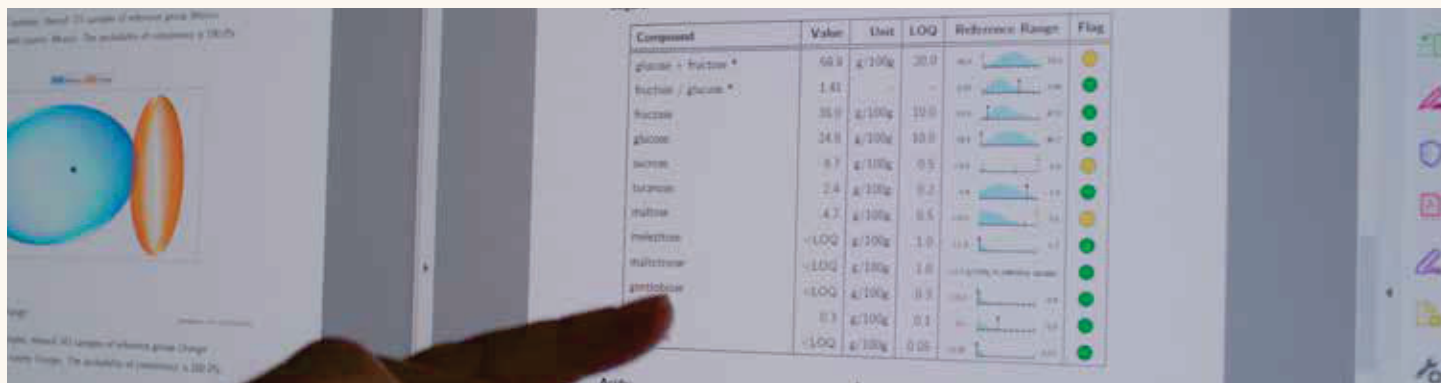


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For Canadian beekeepers, this is not just a consumer transparency issue. It is a market displacement issue. Domestic honey carries real production costs: wintering, feed, labour, equipment, disease management, land access, transport, compliance, and colony losses. When lower-cost imported blends capture shelf space under vague labels, Canadian honey is forced to compete against a product that may not carry the same traceability, cost structure, or authenticity risk.

A coordinated System of Standards and Testing with Labelling is needed

We need:

- A modern Canadian standard of identity for honey that clearly separates base honey identity, origin identity, floral identity, processing claims, and blend claims.
- A national reference database built from verified Canadian honey samples, organized by region, floral source, season, harvest timing, and handling history.
- Layered authenticity testing using tools such as NMR and Mass Spectrometry methods and targeted marker analysis where appropriate. We don't need more tests with different machines. These methods test the actual components in honey at the molecular level at the sensitivities necessary
- Routine import sampling at the importer's expense before product is released into commerce.
- Clear country-of-origin and blend labelling so consumers and bulk buyers can distinguish Canadian honey, imported honey, and blended honey at a glance.
- Enforceable definitions for raw, pure, natural, unfiltered, local, Canadian, and similar claims.
- Traceability and chain-of-custody rules strong enough to support enforcement, not just market surveillance.
- Penalties that change the economics of cheating: detention, disposal, return, licence consequences, and no quiet reclassification of adulterated honey into another food stream.

The key is economic incentive. Fraud exists because it pays.

If the profit from cheating is greater than the cost of being caught, fraudulent honey will keep moving. Standards, testing, labelling, and penalties all have to work together to change that calculation.

Beekeepers have to help define Canadian honey

There is one responsibility the industry should not avoid. If Canadian beekeepers want tests that can verify Canadian honey, we need Canadian reference data. Laboratories cannot reliably defend origin claims if the reference database is thin, outdated, or built mostly from samples somewhere else.

That means verified samples, lot records, harvest dates, yard locations, floral observations, moisture readings, extraction records, heating records, and chain-of-custody documentation. This does not mean turning every beekeeper into a full-time paperwork clerk. It means recognizing that proof of authenticity depends on proof of origin.

A Canadian honey standard should not be imposed only from the outside. Beekeepers should be part of building it, because beekeepers know the real variation in Canadian honey better than anyone.

The real goal

Every product sold as honey should meet the identity it claims, and the burden should fall on the party placing that product into the Canadian market.

Canadian beekeepers are not asking for protection from fair competition. They are asking for protection from mislabelled, adulterated, or origin-washed product that uses the name "honey" while avoiding the cost of producing real honey.

Modern testing matters. But modern testing will only reach its full value when it is backed by enforceable standards of identity, origin-specific reference databases, clear blend labelling, importer accountability, and penalties that make fraud expensive.

Beekeepers know what real honey costs. The standard of identity should finally reflect what real honey is.