

Labelling our Newfoundland and Labrador honey for provincial sales

By Peter Armitage¹

I started selling honey for the first time last fall, and this meant having to think about honey labelling requirements. Talking with other beekeepers who had already created labels for their products, and having seen the Power Point presentation about labelling by Karen Kennedy, our provincial apiarist, at the NLBKA's November 2016 conference, I decided that what I had to put on a label is pretty minimal as long as I don't sell out-of-province.

I settled for the brand name *Four Cousins Honey* which is front and centre on our new labels. In addition to that, I included the approximate location of the apiaries where the honey was made, a contact address and phone number, the weight of the contents in grams, and a description of the honey that is both accurate and appealing to my honey-loving demographic. It's "raw, unpasteurized, wildflower honey."

However, I'm interested in "melissopalynology," the study of pollen in honey, in order to figure out the floral sources of our honey. This took me down another path, related to melissopalynological methods. I discovered, for a start, that the British Beekeepers Association encourages beekeepers to learn microscopy not only so they can diagnose *Nosema* infections or monitor for tracheal mites, but also to identify the floral sources of their honey.² I also discovered that Europeans take their melissopalynology very seriously because it's used to detect fraudulent honey and substantiate claims to varietal (monofloral) honey.

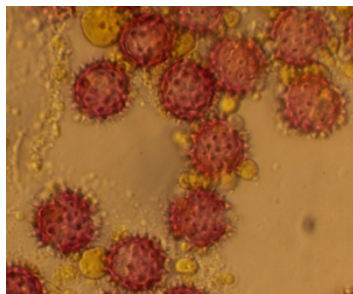


Photo 1. NL goldenrod pollen grains observed under a compound microscope

For example, a French beekeeper by the name of Georges Prigent told me that honeys are analyzed in France to verify the accuracy of labelling, and if it's incorrect, retailers are fined by the French Department of Agriculture and Food.³ There are different types of fraud including labelling fraud (e.g., erroneous botanical or geographical origin) or honey that does not comply with regulations related to sugar content, HMF, etc.⁴ Also, honey entered into agricultural competitions is analyzed, and the analysis plays an important role in determining who gets a gold medal. Moreover, it's important for beekeepers to get their

, and representatives of the Canadian Food Inspection Agency, Bee Maid, Chinook Honey, and Royal Bee. I am responsible for the accuracy of the information responding to my honey labelling inquiries. All errors of fact and omission are entirely my responsibility.

² See https://archive.bbka.org.uk/learn/examinations_assessments/microscopy Texts referenced in the U.K. related to beekeeper microscopy include Bob Maurer's *Practical Microscopy for Beekeepers* (2012) and Rex Sawyer's *Pollen Identification for Beekeepers* (2006) and *Honey Identification* (1988). See also Yates and Yates, *Beekeeping Study Notes for the BBKA Microscopy Examination* (1995).

³ Georges Prigent emails to Peter Armitage 18 Feb. 2019, and 31 Mar. 2019.

⁴ HMF refers to hydroxyl-methyl-furfural. "Honeys are considered adulterated in Europe if they do not meet the requirements of the continental honey regulations regarding diastase activity and hydroxyl-methyl-furfural (HMF) content. A very low diastase activity allegedly indicates that the honey has been subjected to unfavourable temperature conditions, since diastase activity of natural honey is rapidly reduced when honey is heated or stored at unfavourable temperatures. Similarly, the presence of an appreciable amount of HMF has been interpreted as evidence of alteration of honey by heat" (Schade, et al. 1958: 446; see also Pasiadis, et al. 2017).

honey analyzed when selling to wholesalers (packers), because without such testing, they may fall prey to an unscrupulous wholesaler who claims, based allegedly on his own pollen analysis, that the beekeeper's honey is not the higher priced acacia honey (locust), but rather the far cheaper rapeseed (canola) honey.

Georges gets his honey tested at the Laboratoire d'analyse du CETAM-Lorraine.⁵ A portion of a testing report for one of his honeys is provided in Figure 1. In this case the electrical conductivity of the sample was too high to class it as a monofloral chestnut honey. In addition to pollen grains, various fungus spores were found that pointed to a chestnut and oak tree honeydew component. When all analyses were taken into consideration, the honey was labelled as a "forest" honey.

You can see that, at least in France, honey testing for authenticity and honest labelling is driven by government regulation and prudent business practice. The testing has to be independent and rigorous in order for it to be credible and legal. The rigour depends on sound methods and here a major reference text for pollen analysis is "Methods of Melissoppalynology," by Louveaux and colleagues (1978). However, as noted with the testing of George Prigent's honey, chemical and other types of analyses must also be conducted, and there are methods standards in place for these as well.

The German-based Quality Services International laboratory is another important player in European honey testing. Like its French counterparts, it specializes in testing honey for adulteration and authenticity related to origin according to the European Community's (now European Union [EU]) Honey Directive. In addition to pollen analysis, the lab analyses sugar content, water content, water-insoluble substances, electrical conductivity, acidity, Hydroxymethylfurfural (HMF), and diastase-activity.⁶ Such testing is required by a clause in the Honey Directive which says the EU "may adopt methods of analysis to ensure compliance with the compositional characteristics and additional specific statements for all honey marketed in the Community."⁷

⁵ See <http://cetam.fr/site/2010/08/01/analyses-des-miels/>

⁶ See <https://www.qsi-q3.com/products/honey-bee-products-2/>

⁷ See <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32001L0110> The Honey Directive requires updating to account for innovations in adulteration techniques involving corn and rice syrup. Moreover, certain monofloral honeys (e.g., lavender, acacia, citrus, orange, tilia) have been rejected in the past because of defects in Directive methods (George Prigent email to Peter Armitage 31 Mar. 2019).

Guénange, le 25/08/2017

| | |
|---|---|
| Rapport d'analyses n° M 171081 | Monsieur Georges PRIGENT Colin-Thamas 72000 LE MANS |
| Analyse pollinique - Les pourcentages sont des <u>données corrigées</u> ne prenant pas en compte les pollens des espèces anémophiles ou non nectarifères | |
| Pollens dominants: $\geq 45\%$ Castanea sativa 80% | |
| Pollens d'accompagnements: $\geq 16\%$ et $< 45\%$ Ø | |
| Pollens minoritaires: $\geq 3\%$ et $< 16\%$ Brassicaceae 4%, rubus sp 4%, alanthus altissima 3% | |
| Pollens très minoritaires ou isolés: $< 3\%$ Vicia faba, tilia sp, cornus sanguinea, salix sp, trifolium repens, centaurea sp, alliaceae, oenothera sp, asteraceae liguliflore, robinia pseudacacia, prunus/pyrus, X... | |
| Pollens anémophiles ou de plantes réputées non nectarifères (% en pollens totaux) Poaceae, plantago sp, cistus sp, quercus sp... | |

Figure 1. An excerpt from Georges Prigent's honey analysis. The pollen analysis shows that >45% of the pollen in the sample is sweet chestnut (*Castanea sativa*). However, as a result of other analyzes, his honey was classified as “forest”

All of the above begged several questions related to our honey labelling and testing practices in Canada. For example, what are the labelling requirements for claims about organic or varietal honeys? Can I say on my *Four Cousins Honey* labels that the honey is “fireweed” or “white clover” or “organic” without having to prove it? And if proof is required, how do I can go about getting such proof? Are there laboratories in Canada that test honey for monofloral source?

Honey labelling regulations in Canada

The labelling requirements for our honey are set by the federal government; our provincial government has no such requirements unlike Ontario which has a regulation 119/11, *Produce, Honey and Maple Products*, under their *Food Safety and Quality Act, 2001*.⁸ In general, labelling requirements

⁸ Among other requirements, Section VI.25 of these regulations states, “No person shall include any false or misleading information on any label, package, container or master container of produce, honey or maple product, or in any advertisement for the produce, honey or maple product or retail display sign for produce...” Re. the United States, “Honey is one of the top ten adulterated products in the United States that you can get at the grocery store. So unfortunately a lot of times, what you’re buying is not what you’re actually paying to get. There’s no truth in labelling for honey in the United States, so people can put whatever they want on the label. They can say that their honey is raw, local, organic, unfiltered, any buzz word to increase the marketability of honey” (Pierre Lau, Ph.D. candidate at Texas A&M University, podcast interview with Andony Melathopoulos, 25 Mar. 2019, <http://blogs.oregonstate.edu/pollinationpodcast/2019/03/25/pierre-lau/>). Note that Canadian labelling standards are guided by the international Codex Alimentarius, or “Food Code,” which is a “collection of standards, guidelines and codes of practice adopted by the Codex Alimentarius Commission” in 1981, revised in 1987 and 2001. Canada is a Codex member. The Codex standards are intended to ensure food safety and facilitate international trade but they are voluntary. See <http://www.fao.org/fao-who-codexalimentarius/en/> See the Codex Standard for Honey

depend on whether the honey is sold only within the province or sold outside the province, nationally or internationally. My focus here is on provincial sales, and to provide guidance through the labyrinth of federal legislation and regulations, I communicated with two Canadian Food Inspection Agency (CFIA) representatives. They pointed me to the [Food and Drugs Act](#) (FDA), the [Food and Drug Regulations](#) (FDR), the [Safe Food for Canadians Act](#) (SFCA) and the [Safe Food for Canadians Regulations](#) (SFCR). “Among other purposes, these acts and regulations are intended to enable consumers to make informed food choices based on information that is truthful and not misleading.”⁹ Here’s key points relevant to how we should label our honey.



According to the CFIA, “Most prepackaged foods sold in Canada require that a label be applied or attached to it....[and only] once a label is required do other labelling requirements apply, such as a list of ingredients or common name.”¹⁰ Prepackaged foods are those packaged in a container for sale to other people. Under the SFCR all food sold in Canada, even within province, must comply with the traceability and labelling requirements. The **core labelling elements** can be found under the main labelling page here - [http://inspection.gc.ca/food/general-food-requirements-and-guidance/labelling/for-](http://inspection.gc.ca/food/general-food-requirements-and-guidance/labelling/for-industry/eng/1383607266489/1383607344939)

[industry/eng/1383607266489/1383607344939](http://inspection.gc.ca/food/general-food-requirements-and-guidance/labelling/for-industry/eng/1383607266489/1383607344939) All food sold in Canada must have these elements if sold across provincial borders. They include bilingual labelling, common name, date markings/storage instructions, name and principle place of business, list of ingredients, net quantity, and a nutritional facts table.¹¹

No matter where it’s sold, according to subsection 6(1) of the SFCA,

[i]t is prohibited for a person to manufacture, prepare, package, label, sell, import or advertise a food commodity in a manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its character, quality, value, quantity, composition, merit, safety or origin or the method of its manufacture or preparation.

Subsection 199(1) of the SFCR identifies some, but not all, of the ways that labels can mislead with respect to net quantity and composition. “False, misleading or deceptive” labelling includes, but is not limited to:

here - http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fstandards%252FCODEX%252FBSTAN%252B12-1981%252Fcxs_012e.pdf Section 6.1.6 reads, “Honey may be designated according to floral or plant source if it comes wholly or mainly from that particular source and has the organoleptic, physicochemical and microscopic properties corresponding with that origin.”

⁹ <http://inspection.gc.ca/food/general-food-requirements-and-guidance/labelling/for-industry/general-principles/eng/1392324632253/1392324755688?chap=1>

¹⁰ <http://inspection.gc.ca/food/general-food-requirements-and-guidance/labelling/for-industry/label/eng/1388160267737/1388160350769?chap=1>

¹¹ See “Labelling Requirements for Honey Products” here - <http://www.inspection.gc.ca/food/general-food-requirements-and-guidance/labelling-standards-of-identity-and-grades/for-industry/honey-products/eng/1392907854578/1392907941975>

- “any representation in which expressions, words, figures, depictions or symbols are used that may reasonably be considered to qualify the declared net quantity or that is likely to deceive a consumer with respect to the net quantity of a consumer prepackaged food; or
- any expression, word, figure, depiction or symbol that may reasonably be considered to imply that a consumer prepackaged food contains any matter that it does not in fact contain or that it does not contain any matter that it does in fact contain.”¹²

Regarding organic honey, the SFCR define an organic product as “a food commodity that has been certified as organic under subsection 345(1) or certified as organic by an entity accredited by a foreign state that is referred to in subparagraph 357(1)(a)(ii). (produit biologique).”¹³ Part 13 of the SFCR is “designed to protect consumers against false and misleading organic claims and to govern the use of the organic logo. All aspects of food labels and advertising contribute to the overall impression a food product makes. Therefore, foods making organic claims must also comply with the [General Principles for Labelling and Advertising](#).”¹⁴



However, Part 13 of the SFCR does not apply to products sold only within province “unless the product bears the Canada Organic Logo. At the federal level, these are subject to the [Food and Drugs Act](#) and the [Safe Food for Canadians Act](#), which prohibit false or misleading claims in labelling and advertising. Producers of intraprovincially traded products bearing organic claims are expected to be able to demonstrate that the product is organic.”¹⁵

Newfoundland and Labrador (NL) does not currently have an organic certification system in place unlike Nova Scotia, New Brunswick, Quebec, Manitoba and British Columbia.

Labelling our honey in NL for provincial sales

The above federal legislation and regulations do not mention honey specifically with respect to claims about the floral source or organic quality of the product, when sold within our province. However, regulations related to false and misleading claims apply to our honey no matter where it is sold. The following, then, is my interpretation of the information we should put on our honey labels for provincial sales only — in local stores, farmers’ markets, restaurants, tourist kiosks, etc. (no out-of-province sales).

- The common name of the product — honey! You can use your brand name if it mentions honey (e.g., *Four Cousins Honey*).
- Contact address and phone number (company or personal name; the address must be complete enough for someone to be able to reach you by mail).

¹² <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-108/page-21.html#h-54>

¹³ See <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-108/page-1.html#h-1>

¹⁴ <http://inspection.gc.ca/food/general-food-requirements-and-guidance/labelling-standards-of-identity-and-grades/for-industry/organic-claims/eng/1389725994094/1389726052482?chap=1>

¹⁵ <http://inspection.gc.ca/food/general-food-requirements-and-guidance/labelling-standards-of-identity-and-grades/for-industry/organic-claims/eng/1389725994094/1389726052482?chap=7>

- Net quantity of the contents by weight or volume (most beekeepers use weight in grams)
- The label must be bilingual if you are selling your honey outside the “local government unit” where it was produced, as well as outside the units immediately adjacent to it. E.g., my honey label must be bilingual if I’m retailing in St. John’s, but not if my sales are restricted to stores in my Local Service District on the Bonavista Peninsula where it’s produced or the farmer’s market in Clarendville which is the adjacent local government unit.¹⁶
- A nutritional facts table is required if someone else is selling your honey (this is not required if you are selling directly to the buyer, e.g., from a farmer’s market table or road-side stand).¹⁷

| Nutrition Facts Valeur nutritive | |
|--|---|
| Per HM (MM) pour MD (MM) | |
| Calories ### | % Daily Value * % valeur quotidienne * |
| Fat / Lipides ## g | ## % |
| Carbohydrate / Glucides ## g | |
| Protein / Protéines ## g | |
| Not a significant source of saturated fat, trans fat, fibre, sugars, cholesterol, sodium, potassium, calcium, or iron. | |
| Source négligeable de lipides saturés, lipides trans, fibres, sucres, cholestérol, sodium, potassium, calcium et fer. | |
| *5% or less is a little, 15% or more is a lot / *5% ou moins c'est peu, 15% ou plus c'est beaucoup | |

Figure 1. One of four options
for legal honey nutritional
facts labels

Everything else you put on the label is discretionary if you are selling only within NL. For example, the descriptions of the honey as “raw, unfiltered, unpasteurized, wildflower honey” are discretionary.¹⁸ In addition, a best before date is not required, and if our sales are confined to NL, we’re not required to grade or label our honey according to the federal classification system based on moisture content and colour (e.g., Canada No. 1 <17.8”, Canada No. 2 <18.6%, and Canada No. 3 <20%).¹⁹ However, it’s good to ensure that we aren’t selling green honey, that is, with moisture content >20%, because it’s likely to ferment. You need a properly calibrated refractometer in order to test your honey for moisture content.

It may be tempting to claim our honey is organic because there are no specific NL laws regarding organic labelling, and specific federal regulations regarding organics do not apply if honey sales are within provincial boundaries (except the organic logo). However, we risk violating subsection 6(1) of the SFCA that prohibits false, misleading or deceptive claims. I note that many of our honey bee forage areas overlap with transmission line corridors, agricultural, residential, and other lands where insecticides and herbicides are used frequently. Claiming that our honey is organic if our bees forage in pesticide exposed areas is a bit of a stretch!

Whether we can claim that our honey is a varietal (monofloral) type such as “fireweed,” “goldenrod,” or “white clover” is somewhat more complicated. As noted previously, federal regulations prohibit the misrepresentation of the honey content. However, there are no regulations in Canada specifying the manner in which monofloral content is to be proven to consumers, and there are no certified laboratories where honey can be tested for floral source.²⁰ We could send honey to a European

¹⁶ See bilingual requirements, <http://www.inspection.gc.ca/food/general-food-requirements-and-guidance/labelling-standards-of-identity-and-grades/for-industry/bilingual/eng/1328121549968/1328121616816?chap=1>

¹⁷ See nutrition label options, <http://honeycouncil.ca/new-nutritional-facts-tables-nft-now-available/>

¹⁸ In this context, “unfiltered” means that the honey has not been filtered with anything finer than the stainless steel mesh sieves we use to catch bits of bee anatomy, wax, and other debris.

¹⁹ For a complete description of this classification system, see <http://www.inspection.gc.ca/about-the-cfia/acts-and-regulations/list-of-acts-and-regulations/documents-incorporated-by-reference/canadian-grade-compendium-volume-6/eng/1523388139064/1523388171017#a3>

²⁰ I suspect that federal regulations regarding misrepresentation are not likely to be enforced unless there’s a complaint. Even then, action by the Canadian Food Inspection Agency re. a prosecution would likely make for an interesting legal test case given the absence of legal criteria in Canada to define monofloral honeys, etc. Bee Maid in Manitoba tests pollen content in its clover honey in its own lab as a “moral statement” and for export to Japan where it is retested to ensure >65% clover pollen content. Bee Maid has country of origin testing done at an

lab for testing, but they must be capable of analyzing honey for NL pollens and other physico-chemical properties.²¹ Were we in Europe, the testing would have to show a certain minimum percentage of pollen in our honey and meet other criteria for us to claim it as monofloral (see George Prigent above). Table 1 provides examples of minimum pollen percentages for monofloral honeys in five European countries, according to their national regulations. Note that three countries listed here give 45% as the threshold for “general monofloral” honeys. Louveau, et al. (1978: 143-144) state that in general, “honey has been produced mainly from one plant (unifloral honey) if the pollen of that plant is predominant,” where “predominant pollen” means that >45% of the pollen grains counted in a sample were of the monofloral species.



Such rigour is apparently not required in Canada. What beekeepers do elsewhere in the country is to place colonies in monofloral landscapes (e.g., a clearcut area covered with fireweed flowers) for several weeks, and take the honey off prior to moving colonies to different floral habitat. Commercial beekeepers who provide pollination services to blueberry growers operate on the same basis; blueberry nectar yields a blueberry varietal honey. Alternatively, beekeepers may select honey made during a honey flow when a particular species is the dominant floral source (e.g., goldenrod).

There may indeed be regions in NL with large monofloral landscapes (e.g., forest cutting blocks in the Cormack area) that can pretty much guarantee a monofloral honey which can be labeled as such without misrepresenting the content. However, in most parts of the province, our floral species composition is too diverse to provide such a guarantee. **This is why it's best to label our honey "wildflower."** Unless you can guarantee to your honey customers that your product is monofloral – fireweed, goldenrod, white clover, etc. – then label it “wildflower.”

At the end of the day, what we put on our labels is about much more than federal government regulations the main purpose of which is to protect consumers. It's also about protecting the integrity and reputation of honey and other apicultural products, and creating a level playing field for all beekeepers where ethical business practices are the norm.

Intertek lab in Germany <http://www.intertek.com/food/testing/honey-analysis/> (Randy Lewicky, Bee Maid, personal communication 28 Mar. 2019). Melissa Girard, affiliated with the Centre de recherches en sciences animales de Deschambault in Quebec, offers a non-certified melissopalynological service. However, it does not provide the full range of honey analysis services provided by European labs. http://www.crsad.qc.ca/fileadmin/fichiers/fichiersCRSAD/Publications_Services_Conseils/Autres_sources/Fiche_cordonnees_et_echantillons.pdf

²¹ Trevor Weatherhead, of the Australian Honey Bee Industry Council, wrote of problems with European honey testing labs regarding the analysis of monofloral Eucalyptus honeys in a post to the BEE-L LISTSERV on 30 Jan. 2019. He questioned the validity of European tests of Australian honeys because they are reliant on European and Brazilian pollen databases not Australian ones.

Table 1. Minimum percentage of pollen required for the characterization of monofloral honeys in five European countries according to their national legislation: or provisions, decisions or guidelines (from Thrasyvoulou, et al. 2018: 90).

| Pollen grains | Croatia (%) | Greece (%) | Germany (%) | Italy (%) | Serbia (%) |
|-------------------------------|-------------|------------|-------------|-----------|------------|
| <i>Arbutus unedo</i> | 10 | | | | |
| <i>Brassica napus</i> | 60 | – | 80 | | |
| <i>Calluna vulgaris</i> | 20 | – | – | | 20 |
| <i>Castanea sativa</i> | 85 | 87 | 90 | | 85 |
| <i>Citrus</i> spp. | 10 (5*) | 3 | 20 | 10 | |
| <i>Gossypium</i> (cotton- | | 3 | | | |
| <i>Erica</i> spp. | | 45 | 45 | | |
| <i>Eucalyptus</i> spp. | | | 85 | | |
| General monofloral | 45 | 45 | 45 | | |
| <i>Medicago sativa</i> | | | | | > 30 |
| <i>Lavandula</i> spp. | 10 (5*) | | | | |
| <i>Phacelia tanacetifolia</i> | 60 | | | | |
| <i>Robinia pseudoacacia</i> | 20 | | – | | 20 |
| <i>Rosmarinus officinalis</i> | | | | | 20 |
| <i>Salvia officinalis</i> | 15 (10*) | | | | |
| <i>Satureja montana</i> | 20 | | | | |
| <i>Taraxacum officinalis</i> | | | | | 20 |
| <i>Thymus</i> spp. | – | 18 | | 15 | |
| <i>Tilia</i> spp. | 25 (10*) | | 20 | | 25 |
| <i>Trifolium, melilotus</i> | | | 70 | | |
| <i>Helianthus</i> | – | 20 | 50 | | 40 |

*With characteristic organoleptic properties of honey for particular plant species (smell, taste, color).

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