Protocol for the Collection of Honey Reference Samples for the Construction of Authenticity Databases

October 2023

Department for Environment Food & Rural Affairs

Department for Science, Innovation & Technology

Department for Environment Food & Rural Affairs

Department for Science, Innovation & Technology

Contents

Protocol for the Collection of Honey Reference Samples for the Construction of Authenticity Databases

Protocol for the Collection of Honey Reference Samples for the Construction of Authenticity Databases

1. OBJECTIVE

To develop and publish a robust protocol for the collection of honey reference samples for the construction of authenticity databases.

The protocol defines a practical process for obtaining reference samples at different points in the honey supply chain, and to specify what associated records, documents and other considerations are necessary for a sample to be deemed acceptable for inclusion in a honey authenticity database.

2. SCOPE

This document provides guidance on collection of reference samples along the honey supply chain for use in authenticity databases with relevant examples for illustration.

As honey is a globally traded commodity, it should be noted that this protocol does not take into consideration any legal definitions of honey and thus does not include a specification for its compositional requirements.

This protocol does not relate directly to the sampling of honey taken for the purposes of authenticity testing.

Non-honey reference samples such as syrups and bee feeding materials are out of scope of this protocol.

3. INTRODUCTION

The Government Chemist (GC), the Department for Environment, Food and Rural Affairs (Defra), the Food Standards Agency (FSA) and Food Standards Scotland (FSS) have been collaborating, since 2018, to identify areas where government can facilitate progress on some of the underpinning scientific issues related to honey authenticity.

There are a number of commercial honey authenticity databases currently being used for assessing the integrity of honey. It is necessary to ensure that databases are fit-for-purpose and contain data derived from ‘authentic’ reference honey samples that are fully representative of their defined scope. It is therefore essential that the homogeneity, integrity, and provenance of honey reference samples used to compile such databases can be assured. To date, no documented protocol detailing recommendations and requirements for the collection of honey reference samples, for verification of authenticity, has been published. This work aims to address this critical deficiency.

A working group (WG) comprised of experts in honey authenticity testing, its production and supply chain was formed to conduct this project. Organisations represented are presented in ANNEX 1.

This protocol has been produced by the WG, which was led by the GC, after exercise of all reasonable care and skill, and is provided without liability in its application and use. The research was commissioned and funded by Defra and the GC. The views expressed reflect the agreed view of the WG; they do not necessarily reflect Defra or the GC's policies or opinions.

In order to assess best practice that may exist in other sectors, the following food and drink industry sectors were consulted prior to compiling this protocol:

- Fruit juice
- Olive oil
- Herbs & Spices
- Wine.

These sectors were selected on the basis that, like for honey, there are significant challenges with the verification of authenticity, and the commodity groups are also among those that are most commonly reported as being adulterated[1].

In the development of this protocol, the WG:

- Conducted a literature review (academic and grey) and reviewed relevant published documents, which are listed in section 13 (References).
- Acknowledges that due to the complexities involved, a pragmatic and realistic approach to sampling has been adopted.

4. DEFINITIONS

In the context of this protocol, the following terms are defined:

- '**Sampling**': 'the process of taking samples of honey for use as reference samples for the construction of authenticity databases.'
- '**Honey reference sample**': 'a honey (see section 5 for examples) sample of appropriate, pre-defined, size (refer to section 10) that is representative of the bulk lot from which it has been taken. It must be contained, labelled, sealed, transported, and stored under appropriate pre-defined conditions throughout its life, both prior to and post testing. It should have defined provenance metadata associated with it, covering all of its supply chain, from apiary to testing.'

[1] Which foods are most adulterated: Food Authenticity

- '**Authenticity database**': 'an organised collection of data curated from the analysis, to established protocols, of a representative number of honey reference samples, with the purpose of defining the variability of a particular characteristic(s) of the reference dataset.'

- '**Batch**': 'Honey, normally of similar botanical and geographic origin, derived from one or more beehives which has been extracted and combined. This process may be carried out with or without mixing / homogenisation and other processes such as filtering / straining and moisture reduction. This process is typically carried-out in the country of origin.'

- '**Load**' – Bulked honey, normally of similar botanical and geographic origin, comprising one or more **Batches** which has undergone factory processing, for example, mixing/homogenisation, filtration and/or moisture reduction. This process is typically carried-out in the country of origin.

- '**Lot**' – Bulked honey, normally destined for retail sale, comprising one or more combined **Loads** which have been processed prior to packing. Such processing typically includes filtering, warming / pasteurisation and mixing / homogenisation.

5. REFERENCE SAMPLES

Examples (not exhaustive) of reference honey samples include:

- Honey sampled directly from beehives.
- Honey from a single geographic origin taken from any point across the supply chain. This may be monofloral, polyfloral or honeydew honey.
- Honey blends of known blend percentages and provenance of each component honey[2] traceable back to the beekeeper, apiary and, where possible, back to the hive.
- Honey produced by other honeybee species e.g., the stingless bee.
- Honeys differing in the extraction technique used or pre-packing production processes.
- Honey of known provenance, composition, and concentration with known adulterants also of known provenance.

Cut comb in honey and chunk honey products are not recommended for use as reference samples due to the possibility of the chunk/comb in such honey being derived from a different batch to the liquid component of the honey it is contained within, unless the traceability data can show the link between the comb and liquid component of the honey.

[2] 95% by volume of the UK retail market was blended honey for the 12-month period ending 31/12/22. Retail market is defined as 'the main retailers, discounters and a high percentage of health and bargain stores' (A C Nielsen)

6. SAMPLING STRATEGY

Any adopted sampling strategy for obtaining honey reference samples for building an authenticity database must reflect the desired scope and objectives of the specific database in question. For example, if a database is being built to provide assurance to the consumer and retailer, then such a database should contain samples representative of retail products, or at least provide a mechanism for relating any samples contained within such a database to the retail product sampled for testing.

Consideration should be given to the practicality of obtaining relevant samples in statistically relevant numbers, defined by established and declared statistical best practice. Use of market import and sales data can assist in structuring such sampling strategies i.e., the types of honey of commercial importance in a particular country / region / to a company, and it may be beneficial to consult with a qualified statistician in this respect.

The limitations of the applicability of any database should also be considered when designing a sampling strategy, along with any limitations or sample types unsuitable for assessment. For example, a database comprised solely of UK sourced honey cannot be used to assess honey from other geographic origins and ideally, comparisons against honey produced in the same year will give the greatest confidence.

This protocol has considered relevant points on sampling processes specified in the national Control Plans of the UK and Italy. Other national protocols for the collection of honey samples, may also be suitable and if so, can be supplemented by the guidance provided in this protocol where applicable.

7. SAMPLE REPRESENTATION AND STATISTICAL VALIDITY

The composition of any honey may vary significantly depending on what point in a season it is produced due to changes in flora, environmental conditions, and nectar flow, for example. Honey from the same geographic or floral origin may also vary significantly from year-to-year for similar reasons. Thus, for the database to be representative, it is important that seasonality and potential year-to-year variability are considered when taking reference samples of honey.

Sampling plans and adopted strategies for authenticity databases should also take into consideration the need to ensure that sufficient, statistically significant, numbers (see section 6) of samples of each honey type are included to allow robust and defensible interpretations to be made. It is also considered essential that a range of sample types appropriate to the scope are included within any authenticity database.

8. INTEGRITY OF SAMPLING

The process of taking honey for use as reference samples is critical to the integrity of any authenticity database.

In view of the complexities involved, the same sampling procedure may not be possible to implement / achieve for honeys collected throughout the honey supply chain. A range of sampling approaches are most likely to be needed to be able to collect honey reference samples from all points in the honey supply chain prior to packing into retail units e.g., jars or other containers.

Bulk honey sampling

A range of sampling scenarios has been outlined below and ranked in the order of decreasing confidence in terms of demonstrating full traceability:

- Sampling performed by personnel from an independent organisation **[A]**.
- Sampling performed by personnel from the laboratory responsible for the authenticity database **[B]**.
- Sampling performed by personnel from the producer (e.g., apiary or packer) witnessed by personnel from the laboratory responsible for the authenticity database, or independent organisation **[C]**.
- Sampling performed by personnel from the producer (e.g., apiary or packer) **[D]**.
- Mode of sampling unknown or performed by untrained personnel / no sampling protocol **[E]**.

It is important to gain documented evidence that all personnel undertaking the above sampling activities are: -

- Fully trained in the sampling procedures to be employed.
- Using a pre-defined documented sampling protocol.

Third-party audit and / or certification of both the process of collecting reference honey samples, and the provenance of the metadata associated with it, may provide an additional, more practical, approach for achieving independent verification of the sample collection process employed for any given database. There are many independent commercial companies who provide such audit and certification services.

It is equally important that all information being recorded for sampling is integral, fully traceable, and verifiable as being accurate. The following approaches to the recording of sampling activities and associated information (for example, unique sample reference code or barcode) are considered essential and again ranked in the order of decreasing confidence:

- Sampling activity recorded in full using digital technology (e.g., video/photo with linked time, date, and GPS data) uploaded directly to blockchain software (i.e., an immutable record). **[1]**
- Sampling activity recorded in full using digital technology (e.g., video/photo with linked time, date, and GPS data) and held as metadata associated with the sample (no blockchain record). **[2]**
- Sampling activity captured by an independent audit / certification mechanism. **[3]**
- Sampling activity recorded as paper / electronic records only. **[4]**

- Partial; where only some of the required metadata, according to the scope of the database (as defined by the database owner) is available. **[5]**
- No records available. **[6]**

Using the approaches described above, introduces the possibility of assigning a honey reference sample with a 'sampling classification score' i.e., reference samples obtained following the most robust sampling procedures will be ranked **A** and those having the most robust and complete metadata associated with them will be ranked **1** so in combination, the sample could be rated **A1**; those obtained using the poorest sampling approach and with little associated metadata / records could be rated **E5**.

This classification system allows open acknowledgement of the fact that most commercial authenticity databases are constructed with reference samples of varying confidence (as described above). It is considered best practice to use such information in the interpretation and reporting of unknown samples for authenticity e.g., "this sample is not consistent with this database when assessed with reference samples with a sampling classification of **A1**" (a definition of the sampling classification would need to be provided).

The above approach, or similar, should be considered as part of the quality assurance measures to ensure the validity of any authenticity database.

Retail Honey Sampling

Commercial relevance and practical application are also key aspects of any commercial honey authenticity database, therefore, depending on its scope, it may be considered necessary to include retail honey samples as reference samples.

Retail products may be comprised of one honey type or, more typically as in the UK market, a blend of honeys from several different origins and / or bulk honey batches from the same or similar source. Where the metadata shows that retail batches or lots of such products have been homogenised, the sampling of one or more sealed retail unit(s) is considered sufficient. If homogenisation has not occurred or no metadata exists, sampling should adopt a statistical approach as outlined in section 10.

Retail units can be sampled (taken) either from packing establishments or off-the-shelf at retail outlets.

9. SAMPLE TRACEABILITY AND ASSOCIATED METADATA

Metadata relevance, scope and availability are critical aspects of database verification, and determine the integrity and robustness of any authenticity database.

Traceability documentation and records

Full traceability documentation and records from beekeeper to point of testing is considered essential when taking reference samples for inclusion in authenticity databases from any point in the honey supply chain prior to packing into retail units.

Due predominantly to the global sourcing of commercially traded honey, it is recognised that the possibilities and practicalities of being able to collect honey reference samples along all parts of the supply chain, with full traceability, may prove extremely difficult; even if it were to be achieved, the associated cost would likely be prohibitive. Thus, the recording of relevant metadata such as sampling location using GPS data and the potential use of Apps specifically designed to record remote sampling information, may provide a cost-effective solution to this issue. Furthermore, the association of such Apps with blockchain technologies can offer immutable records of the metadata associated with honey reference samples taken.

Test data

The inclusion of test data relating to a honey reference sample in its associated metadata is beneficial. The scope of a database should determine the criteria for inclusion of a reference sample into a database. Where the scope of a database requires compliance with, for example, specific regulatory limits in the EU Honey Regulations, then the relevant test data should be used to determine the acceptability of a reference sample.

For monofloral honeys and honeys from particular botanical origins, it is important to assess the floral origin using tests such as pollen and sensory analysis. Other specific test data may also be beneficial.

There are well established tests that indicate the quality of honey such as tests for HMF (hydroxymethylfurfural), diastase, moisture, pH/acidity and sugar content (glucose, fructose and sucrose), and these are recommended.

Tests should ideally be performed using methods and laboratories accredited to ISO17025.

The honey supply chain

A generic supply chain map for honey is presented in ANNEX 2A. Two distinct supply chains can be recognised for global honey supply, namely '**direct supply**' and '**factory supply**.'

The simplest example of '**direct supply'** would involve a single beekeeper or apiary extracting honey from its hives into bulk batches, with on-site packing of each bulked batch into retail units. This process may, or may not, involve a mixing/homogenisation step. This example represents small-scale/hobbyist operations. 'Direct supply' also represents harvest of honey of a specific type e.g., monofloral honey, bulking of a batch with or without mixing/homogenisation at the apiary or handling unit, and shipment to the country where the honey is then packed and sold.

Where extracted honey batches from a number of beekeepers and/or apiaries are supplied to a processing facility or factory in the country of origin for further processing this is termed '**factory supply.'** Processing typically involves bulking, filtering, and

mixing/homogenisation of a number of different batches. The operations may also include moisture reduction processes. The processed honey is then packed into bulk containers (typically drums or intermediate bulk containers (IBCs)) for shipment to the destination country where it will be further processed and packed into retail units. Such supply chains can be long and complex.

This supply chain map also illustrates points at which honey reference samples could potentially be taken across this supply chain. Example forms summarising the metadata requirements for honey reference samples taken from each of these different points in the supply chain are shown in Annex 3 and the equivalent blank forms, ready for use, are also provided in Annex 4.

The points in the supply chain requiring consideration will vary depending on honey origin and supply chain complexity. This can be relatively simple, for example from single beekeeper directly to retail unit, or extremely complex involving each of the four stages detailed below: -

i. **Apiary/Beekeeper Operations**
This step of the supply chain involves extraction of honey from hives into bulk containers with possible mixing/homogenisation of the batch. Form A Part 1 (ANNEX 4) should be completed capturing metadata associated with the batch of honey being sampled. Where a honey being sampled has been bulked/mixed/blended with other batches Form A Part 1 must be completed for each batch involved.

ii. **Post factory/facility processing**
Processing can include bulking of batches, further processing (mixing/homogenisation, possible moisture reduction), and packing into bulk containers such as drums or IBCs. These operations are typically conducted in country of origin. Form A Part 2 (ANNEX 4) must be completed for the processed load sampled. Form A Part 1 must also be completed for each ex-apiary/beekeeper batch involved.

iii. **Post arrival in import country**
Sampling post shipment could be conducted at port of import or after transport to packing factory or interim storage depot (in country of importation). Form A Part 3 (ANNEX 4) must be completed for each load sampled. Form A Part 1 must also be completed for each ex-apiary/beekeeper batch involved and Form A Part 2 completed for the sampled load to capture any bulking and processing records.

iv. **Final product post packing-factory processing (retail samples)**
Packing factory processing may include blending and homogenisation operations prior to filling and packing. Sampling may occur, for example, from the filling line, from warehouse storage, or after distribution at wholesale or retail sites (typically off-the-shelf). Form B (ANNEX 4) must be completed for each

final honey lot sampled. If retail honey samples are to be included as reference samples in a database, then it is critical that metadata associated with such samples includes any and all blending and processing information associated with that particular sample lot, and that each component of that honey blend batch has fully traceable provenance to the beekeeper/apiary and, where possible, back to the hive. Metadata as described in Form A Parts 1 to 3 must be available, where applicable, for each batch of honey comprising the retail product sampled.

Potential sampling points in the honey supply chain and recommended forms are presented in ANNEX 2B.

10. SAMPLING HONEY

The obtaining of reference samples that are as representative as possible of the lot or batch of honey from which the samples were taken is a critical aim for any authenticity database. This may be achieved by:

- The use of recognised statistical approaches for randomly sampling large numbers of drums, barrels etc. of homogenised honey such as the 'square root of number of units plus one,' and 15% of number of units (rounded up).
- Well-mixed equal portions of each of the sub-samples taken should be bulked and mixed thoroughly to form a single sample for testing.
- Non-homogenised bulk honey samples held in drums or other bulk containers can be extremely difficult to sample representatively. The use of a hollow honey sampling spike or 'corer,' often fitted with an integral plunger, and designed specifically for this task is recommended.
- A minimum sample size of 100g per sub-sample and minimum 300g for any single or aggregate sample is recommended.
- It is considered unnecessary to take replicate samples for testing. Single sample testing is considered fit-for purpose.
- Samples should be collected in clean food grade opaque glass, or preferably plastic, containers labelled with a unique sample identification code or number.
- Samples must be sealed, or bagged and sealed, with tamper-evident closures as part of the sampling process and this requirement should be written into the pre-defined sampling protocol.

Best practice guidance on sampling honey is provided in reference 12 (also provided as a footnote[3]).

[3] Howe, S. (2020) 'Honey Sampling: Some Dos and Don'ts.' New Zealand Beekeeper Magazine, Dec. p10-11.

11. SAMPLE INTEGRITY DURING TRANSPORT AND STORAGE

Most honey is typically stable at ambient (20 degrees Celsius approx.) temperatures, however, its composition will change gradually over time – HMF content, sugar profile and enzyme profiles for example. Thus, it is recommended that honey reference samples should be stored and transported at temperatures between 25 and 35 degrees Celsius prior to analysis. This is a recommendation to avoid crystallisation and maintain the quality of the honey. Where this is not possible, or not recommended due to the moisture content of the honey (see below), it is critical to ensure that the honey is homogenised prior to testing (see Section 12).

For higher moisture honey reference samples (moisture content >23.0%), frozen storage from point of sampling to analysis is recommended to maintain sample integrity prior to testing.

After testing it is strongly recommended that all honey reference samples are stored frozen (minus 18 degrees Celsius or lower) to maintain their integrity.

If a honey reference sample is to be stored for potential additional future testing, it is essential that a record of sample storage history is maintained.

12. HANDLING OF SAMPLES ON ARRIVAL AT THE TEST LABORATORY

Sample homogeneity is extremely important. Crystallised/semi-crystallised samples must be avoided; gentle warming of samples to no greater than 40 degrees Celsius can be used to melt any observed crystals and the honey should be thoroughly mixed before sampling for analysis.

Honey containing visible extraneous matter e.g., bee parts, frame fragments, wax etc. should be passed through a stainless steel 0.5 mm sieve.

Any honey reference samples received at a testing laboratory showing visible container damage where contents may have been compromised should be discarded.

13. REFERENCES

1. Donarski *et al.* 'Sampling guidelines for building and curating food authenticity databases' Trends in Food Science & Technology Vol 90 (2019) 187–193.
2. Álvarez *et al.* 'A Review on existing databases relevant for food fraud and authenticity' Arch. Zootec. 62(R): 73-91. 2013.
3. Pawliszyn, J. (2002) Index. In D. Barceló (Vol. Ed.), Sampling and sample preparation for field and laboratory: Vol. 37, (pp. 1107–1131), Elsevier.
4. Wine traceability and authenticity: approaches for geographical origin, variety and vintage assessment Ciência Téc. Vitiv. 35(2) 133–147. 2020.
5. Eurofins Germany Web Page last updated 2020 https://www.eurofins.de/food-analysis/food-news/food-testing-news/key-questions-for-the-development-of-reference-databases/
6. The Food Safety (Sampling & Qualifications) (England) Regulations 2013.
7. FSA Food Safety Act (1990) (as amended) Code of Practice No. 7 'Sampling for Analysis or Examination' (Revised October 2020).
8. National Honey Monitoring Scheme (UK) Honey Sampling Protocol – Video UK Centre for Ecology & Hydrology 2018 honey-monitoring.ac.uk
9. Bogdanov, S. 'Harmonised Methods of the International Honey Commission (IHC)' 2002 p. 6-7.
10. AOAC 920.180-1920 Honey (liquid, strained, or comb). Preparation of test sample.
11. DIN 10742 Analysis of honey - Guideline for sampling Deutsches Institut Fur Normung E.V. (German National Standard), 06/01/2011.
12. Howe, S. (2020) 'Honey Sampling: Some Dos and Don'ts.' New Zealand Beekeeper Magazine, Dec. p10-11.
13. British Honey Importers and Packers Association 'BHIPA-Fera Honey Adulteration Database Protocol' September 2022.
14. Blanck, F. C. (1927) 'Report of the Committee on Sampling', J. Assoc. Official Agricultural Chemists, 10, 92-98.
15. Burgess, C. (2014)'Is a Sample Size of n=6 a 'Magic' Number?'. Pharmaceutical Technology, 06-02-2014, Volume 38, Issue 6, P54.
16. Voysey, P.A., Jewell, K. and Alldrick, A.J. (2019) Campden BRI Guidance number 78: 'Sampling for food safety – a practical guide'.
17. Seasoning & Spice Association (SSA) 'Guidance on authenticity of herbs and spices – Industry best practice on assessing and protecting culinary dried herbs and spices' http://www.seasoningandspice.org.uk/ssa/home.aspx
18. 'Piano Nazionale Per La Ricerca Dei Residui' Italian Minitero della salute 2022.

19. Joint Knowledge Transfer Framework for Food Standards and Food Safety Analysis eSeminar: 'The Global Honey Supply Chain' https://www.gov.uk/government/news/the-global-honey-supply-chain

20. AOAC SMPR® 2020.006 Standard Method Performance Requirements (SMPRs®) for Nontargeted Testing (NTT) of Ingredients for Food Authenticity/Fraud Evaluation of Honey.

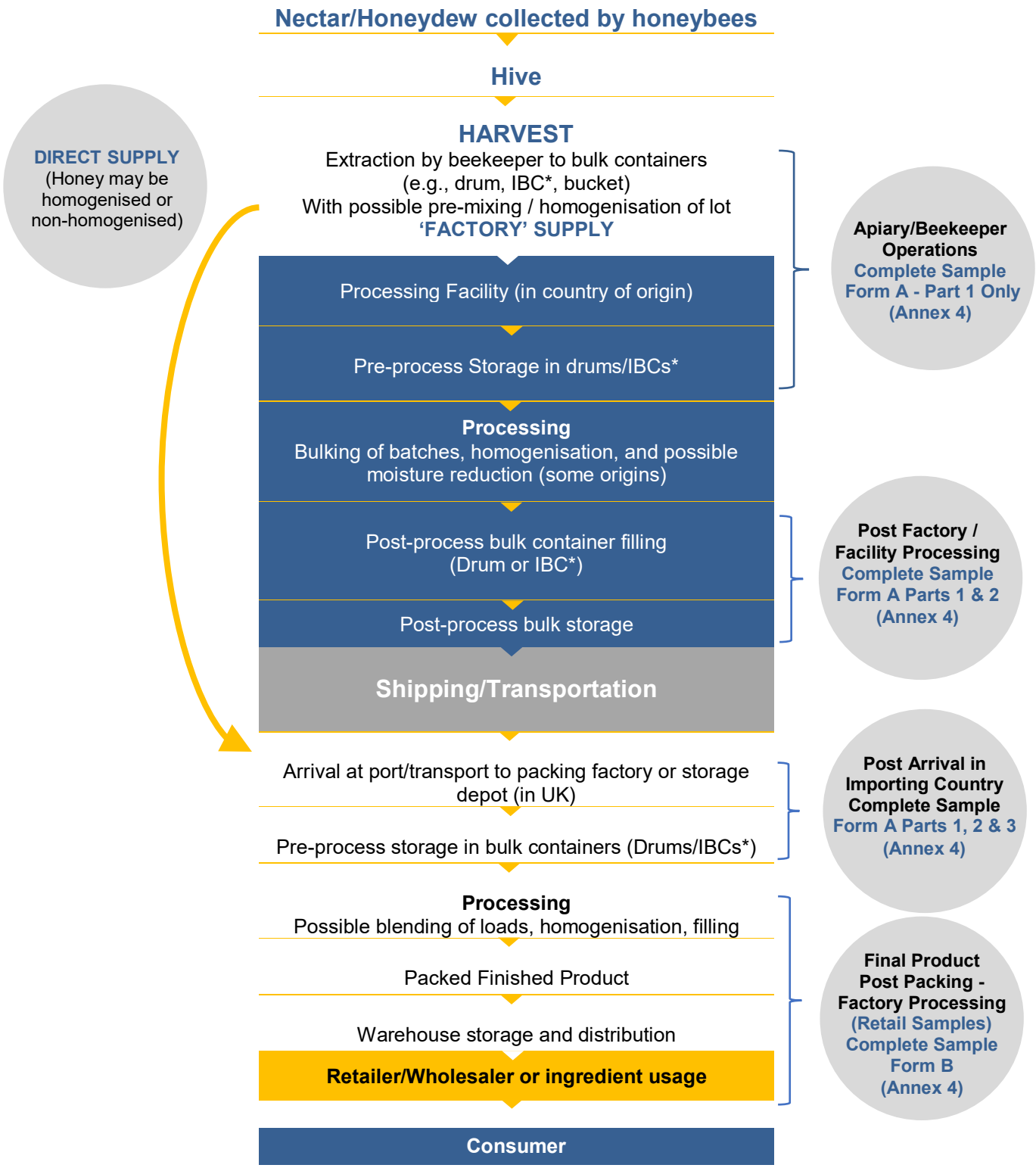
21. ISO/IEC 17025 2017 General requirements for the competence of testing and calibration laboratories ISBN 978-92-67-10780-6 International Organization for Standardization.

22. CEN/TC 460/WG 5 Validation concepts of non-targeted methods – 3rd draft PWI for WI 00460'15 'General considerations and definitions'. Standard in development.

ANNEX 1: ORGANISATIONS REPRESENTED ON WORKING GROUP

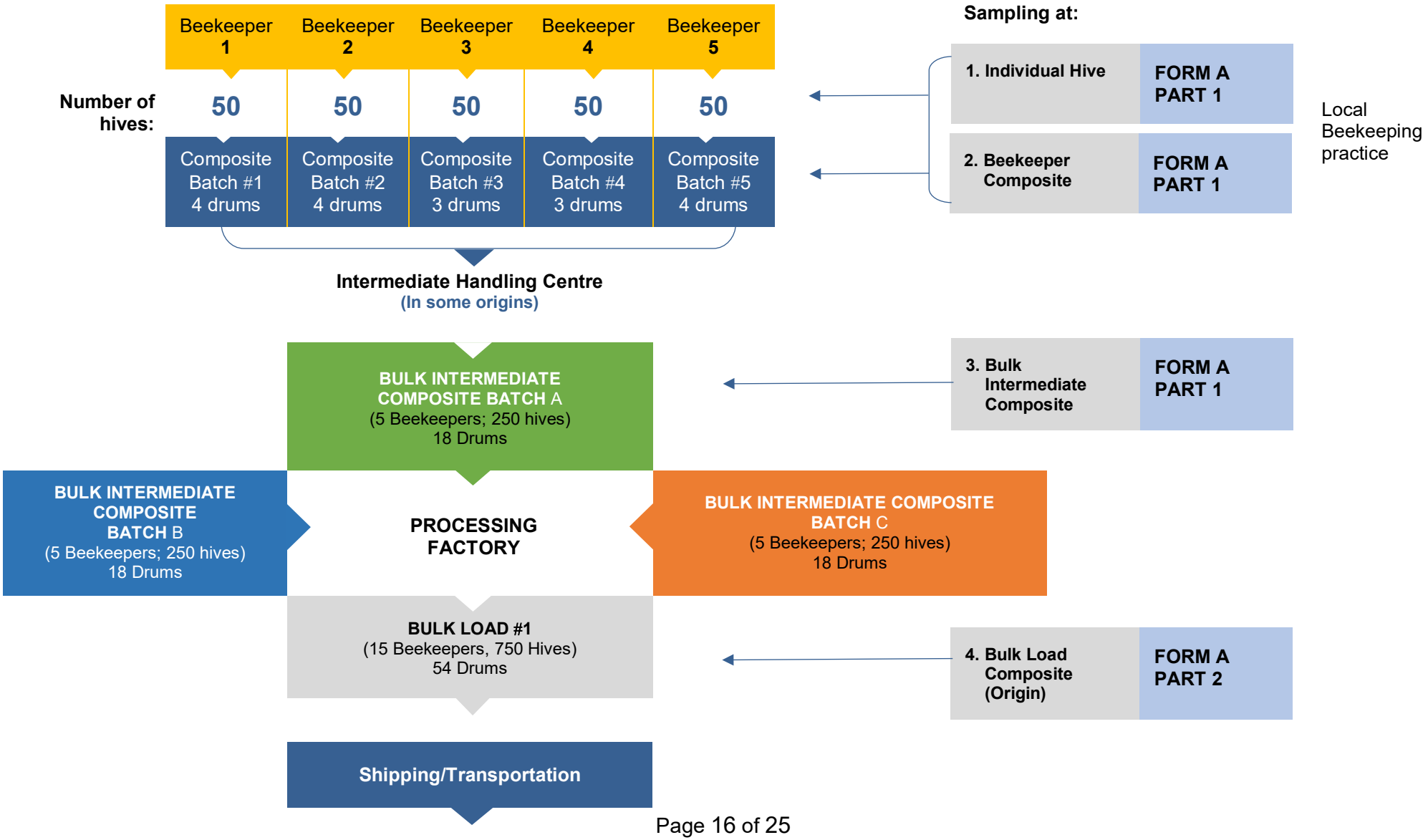
Organisation	Representative	Role in WG
The Government Chemist at LGC	Selvarani Elahi MBE	Chair
Independent consultant with >20 years expertise in honey	Dr David Hoyland	Secretary
Minerva Scientific (Food Authenticity Centre of Expertise for Honey)	Jay Madden	Member
Fera Science Limited	Dr Adrian Charlton	Member
Eurofins	Dr Christof Kunert	Member
European Honey Importers and Packers Association (FEEDM)	Dr Giancarlo Quaglia	Member
British Bee Farmers Association	Paul Horton	Member
Food Forensics	Dr Alison Johnson	Member
Department for Environment, Food and Rural Affairs (Defra)	Dr Michelle McQuillan Dr Eleanor Smith	Observer
Food Standards Agency	Bhavna Parmar	Observer

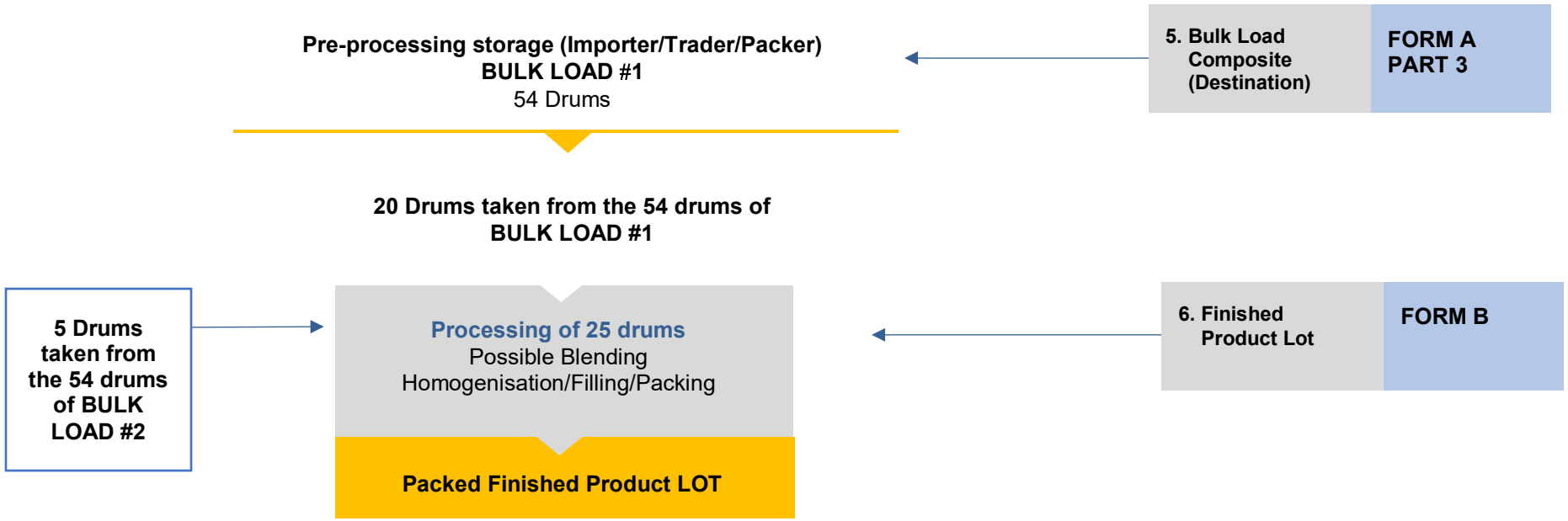
ANNEX 2A: GENERIC SUPPLY CHAIN MAP FOR HONEY



* IBC = Intermediate Bulk Container

ANNEX 2B: POTENTIAL SAMPLING POINTS IN THE HONEY SUPPLY CHAIN





The complexity of the above process and number of steps involved varies with origin and size of operation.

Form A Part 1

- Sampling one or more hives (beekeeper level).
- Sampling extracted honey composite from many hives from same beekeeper/apiary.
- Sampling at intermediate handling centre of bulk intermediate honey comprised of batches from several beekeepers/apiaries.

Form A Part 2

- Origin-based sampling of bulked honey load comprising several honey batches from one or more beekeepers/apiaries/intermediate handling centres after blending, processing (including possible moisture reduction) and homogenisation of the load.

Form A Part 3

- Sampling of bulk load post transportation/shipping to destination country (importer/packer site or storage depot, port of entry etc.)

Form B

- Sampling of packed finished product (jars, bottles, buckets etc.).

ANNEX 3: WORKED EXAMPLES OF SAMPLE FORMS

All names, businesses, places, and associated data in Annex 3 are fictitious and are provided for the purposes of illustration only. Any resemblance to actual persons, businesses, or real-life data is purely coincidental.

Sampled from apiary / beekeeper operations: SAMPLE FORM A PART 1

REFERENCE HONEY SAMPLE FORM A PART 1 – EXAMPLE [SAMPLED FROM APIARY / BEEKEEPER OPERATIONS]	
UNIQUE REFERENCE SAMPLE CODE	**REF021-20**
Sampling Date	23/06/20
Sampling Point(s)	Drum numbers 6, 9 and 11 (Composite sample prepared)
Apiary/Beekeeper Information	
Apiary/Beekeeper(s) Name and Number/Reference (if applicable) (Attach additional pages if required)	Mieley Apiary Jonuta Mexico
Apiary address (where applicable) or GPS Coordinates (Apiary or single beekeeper only)	Honey Drive Sweeton Lat: 21.123456 Long: -98.1452
Hive Information	
Hive Number(s)/Reference(s) (**Attach additional pages if necessary**)	See attached page for information on all hives included
Honey Reference Sample Information	
Honey Batch Reference	ABC123
Honey type (floral origin, polyflora or honeydew)	Polyflora
Bee species producing this honey	Apis mellifera
Country of origin	Mexico
Region (Geographic)	Yucatan
Extraction dates (inclusive, first and last))	14th June 2020 to 17th June 2020
Number of hives comprising batch	86
Weight of honey in batch	1980 kg
Batch Processing Information	
Has the honey batch been mixed/homogenised? (Yes/No)	Yes
Bee-feeding & adverse pre-harvest weather information	
Record date and details (e.g. **feed type/Brand/volumes used**) of bee feeding. As a minimum, details should be provided for the last feed. **Attach additional pages if required**. **Date:** 14/02/20 **Feed type:** 2:1 sugar syrup (sucrose) **Brand:** Home produced **Volume:** 4.5 litres for 86 hives.	
Were any unusual/adverse weather conditions noted prior to harvest? (YES/NO)	NO
If YES provide brief details of the weather noted (attach separate pages if required)	N/A
TOTAL NUMBER OF ADDITIONAL APPENDED PAGES: 2	
FORM COMPLETED ON (DATE):	23/06/20
BY: NAME (PRINT)	A. BEE
SIGNATURE	
STATUS/JOB TITLE	Independent Auditor – Orditit Ltd
VERIFIED BY: NAME (PRINT)	R KEEPER
SIGNATURE	
STATUS/JOB TITLE	Apiary Supervisor

Sampled post factory processing: **SAMPLE FORM A PART 2**

REFERENCE HONEY SAMPLE FORM A PART 2 – EXAMPLE [SAMPLED POST FACTORY PROCESSING]	
UNIQUE REFERENCE SAMPLE CODE	**REF099-20**
Sampling Date	23/06/20
Sampling Point(s)	Factory post-processing warehouse: Drum numbers X6, X19, X26, X42 and X50 (Composite sample prepared)
Factory/Processing Centre Information	
Factory/Processing Centre name	Mixenfill
Factory/Processing Centre address or GPS Coordinates	Honey Boulevard Mexican City
Honey Load Information	
Bulked Honey Load Reference/Number	XYZ567
Honey Product Name	Polyflora Honey
Country of origin	Mexico
Load Processing Information	
Number of batches in load	4
Reference code(s) for each batch in load	K1245; G3542; H5436; L9821
Total number of drums/IBCs/drums in load	72
Total weight/volume of bulked load	83 MT
Has the honey load been mixed/homogenised? (Yes/No)	Yes
If Yes provide homogenisation process data and/or certificate (attach separate pages if required)	See attached 1 page
Has the honey load been filtered/sieved? (Yes/No)	Yes
If Yes provide filtration process data (attach separate pages if required)	See attached 1 page
Has the honey load been subjected to moisture reduction? (Yes/No)	No
If Yes provide processing data (attach separate pages if required)	N/A
TOTAL NUMBER OF ADDITIONAL APPENDED PAGES: 2	
FORM COMPLETED ON (DATE): -	**23/06/20**
BY: NAME (PRINT)	A. BEE
SIGNATURE	
STATUS/JOB TITLE	Independent Auditor – Orditit Ltd
VERIFIED BY: NAME (PRINT)	C. HECK
SIGNATURE	
STATUS/JOB TITLE	Production Manager, Mixenfill

Sampled post arrival in importing country: **SAMPLE FORM A PART 3**

REFERENCE HONEY SAMPLE FORM A PART 3 – EXAMPLE [SAMPLED POST ARRIVAL IN IMPORTING COUNTRY]	
UNIQUE REFERENCE SAMPLE CODE	**REF100-20**
Sampling Date	23/08/20
Sampling Point(s)	Packers' depot. Drum numbers: - 1; 12; 20; 29; 34; 45; 50; 55; 62; 70 (Composite sample prepared)
Honey Packer/Importer Information	
Packer/Importer name	Bloggs Honey
Packer/Importer address or GPS Coordinates	Wildflower Road Sherfed SH6 4DJ Lat: 53.38333 Long: -1.46667
Honey Load Information	
Bulked Honey Load Reference/Number	XYZ567
Honey Product Name	Polyflora Honey
Country of origin	Mexico
Packer/Importer Lot/Batch Reference/Number	567432
Container Number	BFSC2345678
Total number of drums/IBCs/drums in load	72
TOTAL NUMBER OF ADDITIONAL APPENDED PAGES: 0	
FORM COMPLETED ON (DATE):	**23/08/20**
BY: NAME (PRINT)	A. BEE
SIGNATURE	
STATUS/JOB TITLE	Independent Auditor – Orditit Ltd
VERIFIED BY: NAME (PRINT)	A. BLOGGS
SIGNATURE	
STATUS/JOB TITLE	Packing Supervisor

Retail units sampled post packing: **SAMPLE FORM B**

REFERENCE HONEY SAMPLE FORM B - EXAMPLE [RETAIL UNITS SAMPLED POST PACKING]	
UNIQUE REFERENCE SAMPLE CODE	**REF999-20**
Sampling Date	23/06/20
Sampling Point(s)	Verns Supermarket, Fiddlingham, FH1 4BE
Pack-derived information	
Product Brand	Verns Supermarket
Description	Set honey
Botanical origin (floral description	Not stated
Geographic origin (country, countries, and region where stated)	Blend of EU and Non-EU honeys
Lot Number/Batch Number	123456
Best Before Date	02/02/22
Information from Brand Owner (obtained from the honey products' packer)	
Blend Composition in % (where applicable) (Attach additional pages if required)	See Attached 1 page
Date of filling	02/02/20
Blending, homogenisation, and filling process information (Attach additional pages if required)	See Attached 2 pages
Batch references for each honey in blend, where applicable	See Attached 1 page
TOTAL NUMBER OF ADDITIONAL APPENDED PAGES: 4	
FORM COMPLETED ON (DATE):	**23/06/20**
BY: NAME (PRINT)	A. Bee
SIGNATURE	
STATUS/JOB TITLE	Technician
VERIFIED BY: NAME (PRINT)	S. STACKER
SIGNATURE	
STATUS/JOB TITLE	Shop Manager

ANNEX 4: TEMPLATES OF SAMPLE FORMS FOR COMPLETION

Sampled from apiary/beekeeper operations: SAMPLE FORM A PART 1

REFERENCE HONEY SAMPLE FORM A PART 1 [SAMPLED FROM APIARY/BEEKEEPER OPERATIONS]	
UNIQUE REFERENCE SAMPLE CODE	
Sampling Date	
Sampling Point(s)	
Apiary/Beekeeper Information	
Apiary/Beekeeper(s) Name and Number/Reference (if applicable) (Attach additional pages if required)	
Apiary address (where applicable) or GPS Coordinates	
Hive Information	
Hive Number(s)/Reference(s) (Attach additional pages if necessary)	
Honey Reference Sample Information	
Honey Batch Reference	
Honey type (floral origin, polyflora or honeydew)	
Bee species producing this honey	
Country of origin	
Region (Geographic)	
Extraction dates (inclusive, first and last))	
Number of hives comprising batch	
Weight of honey in batch	
Batch Processing Information	
Has the honey batch been mixed/homogenised? (Yes/No)	
Bee-feeding & adverse pre-harvest weather information	
Record date and details (e.g. **feed type/Brand/volumes used**) of bee feeding. As a minimum, details should be provided for the last feed. **Attach additional pages if required**.	
Were any unusual/adverse weather conditions noted prior to harvest? (YES/NO)	
If YES provide brief details of the weather noted (attach separate pages if required)	
TOTAL NUMBER OF ADDITIONAL APPENDED PAGES:	
FORM COMPLETED ON (DATE):	
BY: NAME (PRINT)	
SIGNATURE	
STATUS/JOB TITLE	
VERIFIED BY: NAME (PRINT)	
SIGNATURE	
STATUS/JOB TITLE	

Sampled post factory processing: **SAMPLE FORM A PART 2**

REFERENCE HONEY SAMPLE FORM A PART 2 [SAMPLED POST FACTORY PROCESSING]	
UNIQUE REFERENCE SAMPLE CODE	
Sampling Date	
Sampling Point(s)	
Factory/Processing Centre Information	
Factory/Processing Centre name	
Factory/Processing Centre address or GPS Coordinates	
Honey Load Information	
Bulked Honey Load Reference/Number	
Honey Product Name	
Country of origin	
Load Processing Information	
Number of batches in load	
Reference code(s) for each batch in load	
Total number of drums/IBCs/drums in load	
Total weight/volume of bulked load	
Has the honey load been mixed/homogenised? (Yes/No)	
If Yes provide homogenisation process data and/or certificate (attach separate pages if required)	
Has the honey load been filtered/sieved? (Yes/No)	
If Yes provide filtration process data (attach separate pages if required)	
Has the honey load been subjected to moisture reduction? (Yes/No)	
If Yes provide processing data (attach separate pages if required)	
TOTAL NUMBER OF ADDITIONAL APPENDED PAGES:	
FORM COMPLETED ON (DATE):	
BY: NAME (PRINT)	
SIGNATURE	
STATUS/JOB TITLE	
VERIFIED BY: NAME (PRINT)	
SIGNATURE	
STATUS/JOB TITLE	

Sampled post arrival in importing country: **SAMPLE FORM A PART 3**

REFERENCE HONEY SAMPLE FORM A PART 3 [SAMPLED POST ARRIVAL IN IMPORTING COUNTRY]	
UNIQUE REFERENCE SAMPLE CODE	
Sampling Date	
Sampling Point(s)	
Honey Packer/Importer Information	
Packer/Importer name	
Packer/Importer address or GPS Coordinates	
Honey Load Information	
Bulked Honey Load Reference/Number	
Honey Product Name	
Country of origin	
Packer/Importer Lot/Batch Reference/Number	
Container Number	
Total number of drums/IBCs/drums in load	
TOTAL NUMBER OF ADDITIONAL APPENDED PAGES:	
FORM COMPLETED ON (DATE):	
BY: NAME (PRINT)	
SIGNATURE	
STATUS/JOB TITLE	
VERIFIED BY: NAME (PRINT)	
SIGNATURE	
STATUS/JOB TITLE	

Retail units sampled post packing: **SAMPLE FORM B**

REFERENCE HONEY SAMPLE FORM B [RETAIL UNITS SAMPLED POST PACKING]	
UNIQUE REFERENCE SAMPLE CODE	
Sampling Date	
Sampling Point(s)	
Pack-derived information	
Product Brand	
Description	
Botanical origin (floral description)	
Geographic origin (country, countries, and region where stated)	
Lot Number/Batch Number	
Best Before Date	
Information from Brand Owner (obtained from the honey products' packer)	
Blend Composition in % (where applicable) (Attach additional pages if required)	
Date of filling	
Blending, homogenisation, and filling process information (Attach additional pages if required)	
Batch references for each honey in blend, where applicable	
TOTAL NUMBER OF ADDITIONAL APPENDED PAGES:	
FORM COMPLETED ON (DATE):	
BY: NAME (PRINT)	
SIGNATURE	
STATUS/JOB TITLE	
VERIFIED BY: NAME (PRINT)	
SIGNATURE	
STATUS/JOB TITLE	