TECHNICAL SUMMARY

TUTIN LEVELS LOWER AT START OF THE 2020 SEASON

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There have been significantly fewer composite samples with high tutin residues over the first two months of this year to date.

Background

Tutin is a natural plant toxin which is covered by an MPI food standard issued in early 2016. For anyone who has not read it, the document does a really good job of both explaining the significance of tutin from a food safety perspective and providing options for honey producers to ensure that honey they are producing is safe to eat.

While there are a number of options available to comply with the food standard, one of the most common is to test honey samples in composite batches of up to 10 at a time. The logic of a composite test is:

- up to 10 samples are accurately combined by an approved laboratory to make one composite sample, which is then analysed for tutin. The result of that test is the average of the samples that make up the composite.
- if the composite result is low, then none of the samples included in it will contain high enough amounts of tutin to present a problem. Therefore all of those samples can be considered to comply with the requirements of the food standard.
- if the composite test result is high, then there is at least a chance that one of the samples included in it will exceed the Maximum Residue Limit (MRL) of 0.7 mg/kg of tutin. Those samples then need to be re-tested individually to work out which (if any) have residue levels above the MRL.

Where there is a low risk of high concentrations of tutin being present in samples, composite testing is the cheapest option to comply with the requirements of the food standard for most producers.

Low results this season

Analytica tests a lot of composite tutin samples for New Zealand honey producers, and the results of these are a good way of monitoring tutin levels in freshly extracted honey across the industry. Table 1 contains a summary of the percentage of composite tutin samples that fall into four different categories:

Scolypopa australis *(passion vine hopper) on a tutu* (Coraria) *bush, showing the adult and juvenile ('fluffy bum') stages of scolypopa. Photo: Frank Lindsay.*

- **composite fail**—a high tutin concentration in the composite sample means that there is a chance that one of the samples included could be above the MRL.
- **composite may not comply**—the composite tutin concentration is below the level that would be regarded as a failure, but close enough that with sampling and testing variation a re-test could come back as a fail.
- **low residue detected**—a low concentration of tutin was detected in the sample, but not high enough to represent a risk of any individual sample being above the MRL.
- **no residue detected**—tutin was not detected in the composite sample.

One of the key observations from Table 1 is that the percentage of samples that have failed a composite tutin test in 2020 so far are much lower than the last three seasons. The percentage with no detectable tutin in them are higher than they have been in recent years.

As a laboratory, Analytica is not in a position to understand the reason for these results. However, with the season being generally

Table 1: A comparison of composite tutin results from January to early March over the period 2017 to 2020

	2020	2019	2018	2017
Composite fail	2%	13%	9%	10%
Composite may not comply	1%	2%	2%	1%
Low residue detected	27%	34%	39%	22%
No residue detected	69%	58%	64%	54%

continued...

regarded as a good one for honey production, it's possible that bees have been more focused on collecting nectar than honeydew. Honey extracted during March–May often contains higher tutin concentrations, and it will be interesting to see if this early trend applies across the full extraction period to the end of May.

Reference

Ministry for Primary Industries. (2016). Food Standard: Tutin In Honey. Retrieved March 11, 2020, from https://www.mpi.govt.nz/dmsdocument/11137/direct

Why do some failed composites contain no individual samples with high tutin?

Sometimes the individual samples from a failed composite sample will be re-tested, only to find that none of the individual samples are above the MRL of 0.7 mg/kg of tutin. This can be hard for honey producers to understand.

The reason for this is that a conservative approach needs to be taken when interpreting composite tutin results. This is best explained using an example.

Imagine a honey producer has five honey samples, which they ask to be combined for a composite tutin test. The composite result comes back as 0.2 mg/kg, and this is reported by the lab as being a a 'Fail'.

The reason for this being a 'Fail' is that if all the tutin in the composite sample was contained in one of the five samples that are included in it, that sample would have 1.0 mg/kg of tutin in it (which is above the MRL in the food standard). The maths of this is, one sample with 1.0 mg/kg, and four other samples with no tutin, will give you an average of 0.2 mg/kg in the composite sample that includes them all.

However, it is also possible that a number of samples can have low levels of tutin, and achieve the same outcome. For example, if one sample had 0.4 mg/kg, 2 had 0.3 mg/kg, and two samples had no tutin, the composite sample result would still be 0.2 mg/kg. But in this case, the re-test of individual samples will show that none of them are above the food standard MRL.

IMPORTANT REMINDER: PROVIDE A CORRECT ADDRESS

A reminder that *The New Zealand BeeKeeper* journal and other correspondence are sent via NZ Post. Please ensure that you have provided ApiNZ with a correct postal address, particularly if you have a rural address.

If you don't add the correct RD number, NZ Post returns mail as 'incorrect address' or 'no delivery address'.

The following is from NZ Post's address standards.

NZ Post have increased requirements for delivery addresses, so to ensure your mail is not unduly delayed, or returned to sender, check that the item is correctly addressed with the area postcode included. To find your postcode go to the NZ Post Address & Postcode Finder https://www.nzpost.co.nz/tools/address-postcode-finder/

NZ Post delivers to each street address in major towns and cities on either Monday, Wednesday and Friday or on Tuesday, Thursday and Saturday.

Central City Delivery

In many cases there is no postal delivery service to CBDs in our major cities, so a PO Box number must be supplied to ensure delivery.

Rural Delivery

The Rural Delivery Identifier e.g. RD1 specifies the Rural Delivery round that the delivery point is located on.

The Rural Delivery information is 'RD' followed by the Rural Delivery Identifier of the round.

The following are examples of how the Rural Identifier element may be written within the address structure:

RD 3

RD 22

RD 12B

To ensure you have the correct mailing address you can check on the NZ Post Address & Postcode Finder https://www.nzpost.co.nz/tools/address-postcode-finder/

WHO TO CONTACT WITHIN APINZ

Are you shifting house, changing your e-mail address or changing your business address?
Has your hub or club made changes to officers or other contact details?

Here's a handy list of who to contact within ApiNZ.

Changes to membership details (i.e., not a hub or club)

E-mail your changes to memberships@apinz.org.nz

This ensures that your details are current and that relevant correspondence (such as the ApiNZ weekly member update) and *The New Zealand BeeKeeper* journal will be sent to your new address as quickly as possible.

Don't forget to advise the AFB PMP team of your changes as well by contacting info@afb.org.nz

Changes to hub or club details

E-mail info@apinz.org.nz AND editor@apinz.org.nz

This ensures that hub and club* details will be updated on the ApiNZ website and in *The New Zealand BeeKeeper.*

* Club changes will be updated regularly on the ApiNZ website, and published in *The New Zealand BeeKeeper* in the April and October issues.