TECHNICAL SUMMARY

Practical tips for tutin testing

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Tutin is a toxin from the native tutu plant, which is found in a number of areas in New Zealand during summer and early autumn. The Ministry for Primary Industries (MPI) has published regulations with which honey producers must comply (MPI, 2016a; 2016b). These regulations are designed to prevent people from eating honey that could cause harm to them.

One way of meeting MPI's requirements is to have honey tested for tutin. Testing can be done as a composite of up to 10 samples (composite testing) or by testing samples individually (individual testing).

COMPOSITE TESTING (EXTRACTED HONEY)

To make a composite sample, laboratories prepare an extract from each of the individual samples and mix together an equal amount of honey. It's important to remember that a composite result is an **average** of all the samples in that composite group and the result cannot be directly compared with the maximum residue level (MRL) specified by MPI (0.7 mg/kg). Laboratory reports are generally set out in a way that helps the honey producer work out how their composite average result compares with MPI's requirements.

Testing as part of a composite group is a very cost-effective option when there is a low risk that any one sample in the composite will contain significant amounts of tutin. However, if the composite fails, each sample will then need to be tested individually to determine which sample (or samples) contains a tutin concentration over the MRL.

While it does not happen often, it is good to keep in mind that composite testing can produce a 'false positive' result. This can happen when some of the samples in the composite groups have a modest amount of tutin, which can appear to represent a risk in the composite result, but when retested proves not to be a problem. This is an unavoidable feature but testing in smaller composite groups can lower the risk of this happening.

TIPS

- Before choosing your testing option, think about the risk that the sample may contain tutin: it can save you time and money. Honey should be tested individually when located in high-risk areas: North Island and the top of the South Island.
- Consider testing in smaller composite groups. If you receive a failed composite, fewer samples will need to be retested using individual analysis.
- Many laboratories retain samples for roughly four weeks after testing. If you receive a failed composite, requesting a retest saves you time and money as there is no need to resample.
- Testing through your local bee club can be a cost-efficient way to have your samples tested, as clubs often send samples in bulk. But before submitting a club sample, it's important to agree whether everyone is happy to accept the risks and how the group will pay if retesting is needed.
- It's important to note that MPI regulations state that composite samples **must** be created by a laboratory. Any composite sample created outside of the laboratory cannot be tested.

Adult passion vine hopper and nymphs. Passion vine hoppers feed on tutu and produce secretions then collected by bees. Photo: Wikimedia.

INDIVIDUAL TESTING (EXTRACTED HONEY)

When laboratories individually prepare and analyse each sample for testing, the result can be directly compared with the MRL specified by MPI.

It is a good idea to test your samples individually when there is a reasonable chance that a honey sample has a high tutin concentration; a composite test has failed and you need to confirm which sample(s) are above the MPI limit; or if you are testing a final production batch to ensure your honey meets MPI regulations.

Honeycomb must be analysed individually, as regulations state that the amount of tutin allowed in comb honey is 0.01 mg/kg.

REFERENCES AND FURTHER READING

Howse, S., & Hutcheson, M. (2019, October). About 13% of tutin composites fail. *The New Zealand Beekeeper, 27*(9), 45–47.

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