

## TECHNICAL SUMMARY

# WHAT YOU NEED TO KNOW: GLYPHOSATE

Kerri-Jane McAlinden, Analytica Laboratories

Analytica Laboratories explains how glyphosate residues find their way into honey and reports on their recent testing of honey samples.



Farmer spraying a field by crop sprayer. Stock photo.

## WHAT IS GLYPHOSATE?

Glyphosate is a chemical compound found in many herbicides, making it the most commonly used weed killer here in New Zealand and worldwide. As a result, some markets and consumers have an interest in measuring for glyphosate residues in honey.

## HOW DOES GLYPHOSATE GET INTO HONEY?

Glyphosate kills a wide range of weeds so may be sprayed wherever there are unwanted plants, including farms, orchards, gardens and forestry areas. If glyphosate has been sprayed in an area where bees are foraging (e.g., pasture that is being desiccated during wilting), it can end up in honey. Bees are exposed to glyphosate via contaminated pollen and nectar. Water and dust can also transfer glyphosate to hives.

## RECENT DEVELOPMENTS

Glyphosate has been gaining interest internationally as a residue of concern for a number of years. This has been driven in part by high-profile court cases in the USA, and in part by countries putting partial or full bans on the sale or use of the chemical.

## Recent media attention

In mid-2020 New Zealand's honey industry was thrust into the spotlight when concerns were raised about traces of glyphosate being found in some New Zealand honey, based on surveys conducted by the Ministry for Primary Industries (MPI). While MPI issued a statement that there were no food safety concerns, the issue still gained media attention overseas, particularly in Japan.

## The Japanese market

At the beginning of 2021, Japanese officials warned that they would stop importing honey from New Zealand if they continued to find levels of glyphosate that exceeded their maximum residue limit (MRL). They also advised that they would be implementing 100% border testing for honey being imported from New Zealand. In response, MPI published an OMAR (Overseas Market Access Requirement) notification, requiring all honey being exported to Japan to be tested prior to export to ensure it meets Japan's MRL for glyphosate.

## TESTING HONEY FOR GLYPHOSATE

### How is honey tested for glyphosate residues?

The testing method is broadly similar to the one used for tutin—following solvent extraction and fluorenylmethyloxycarbonyl chloride (FMOC) derivatisation, the honey sample is analysed for glyphosate residue using sophisticated testing instruments like LC-MS/MS (a combination of liquid chromatography [LC] with mass spectrometry [MS]) to reach the very low detection limits needed (0.01 mg/kg).

### What can the results be used for?

Despite the fact that many governments regard glyphosate to be not very harmful, consumers are increasingly concerned about the presence of glyphosate (and any other agrichemical) residues in their food. Testing for glyphosate residues in honey can help to address consumer concerns about food safety—regardless of whether those concerns are based on perception or fact.

Testing honey for glyphosate can be of value to check whether glyphosate use near hives is contributing to increased levels of glyphosate in honey from different apiary sites.

For most New Zealand honey producers, there is probably only a low risk of finding significant glyphosate residues in honey. Most commonly glyphosate test results will be used to meet market specific export

requirements where maximum residue limits (MRLs) are enforced.

### MRLs

Maximum Residue Limits vary globally—the domestic MRL for glyphosate in New Zealand honey is 0.1 mg/kg; in Europe the MRL is 0.05 mg/kg; and in Japan the MRL is 0.01 mg/kg.

### What we have observed over the past six months

Since glyphosate entered the spotlight last year, Analytica has performed thousands of glyphosate tests on honey samples. Over the past six months: 82.4% of samples we tested have met the criteria for export to Japan (MRL of <0.01 mg/kg); 97.0% of samples met the European MRL (<0.05 mg/kg); 98.7% met the New Zealand limit (<0.1 mg/kg); and 1.3% of samples were over the domestic limit.

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### Pasture honey

It is worth noting that although glyphosate is effective at killing many plants, clover is naturally resistant to glyphosate at normal application rates. This means clover plants that have been sprayed with glyphosate are likely to continue growing and producing nectar with glyphosate residues on the plant and in the soil around them.

Consequently, honey made from clover nectar in areas where glyphosate has been sprayed may have a higher risk of containing glyphosate residues. In addition to normal use for weed control, some farmers spray surplus pasture with glyphosate in spring to expedite wilting before making silage, and clover which regrows in those pastures may be at risk of containing glyphosate residues as a result.

## MESSAGE FROM APINZ

It's good to see the significant increase in testing which shows the responsible approach our producers are taking towards this latest challenge, and this is despite the cost of testing. Clearly no one wants non-compliant product putting our export markets at risk or causing consumers to lose confidence in our honey. The results from Analytica indicate a high level of compliance already exists or can be managed.

However, there remains the need for further conversations with land users around glyphosate use. ApiNZ has begun these conversations with Government and regional councils across New Zealand and will be doing more in the coming months.

## TIMELY REMINDER FOR BEEKEEPERS

It's important for all beekeepers to be aware of the risks of pesticides. Here's a simple checklist sourced from the Environmental Protection Authority (EPA):

- No spraying near hives.
- No spraying on crops likely to be visited by bees, or when bees are foraging.
- No spraying when flowering crops or weeds are present in the treated area.
- Avoid spraying budding or flower plants.

Although greater awareness exists about pesticide use and the impact on bees, it is vital that beekeepers and landowners keep in good communication around intentions to spray, and where possible, discuss whether spraying is necessary or the option of using bee-friendly products.

**For more information on managing the risk of pesticides, check out Apiculture New Zealand's website [www.apinz.org.nz/pesticides](http://www.apinz.org.nz/pesticides)**

