

## BUSINESS

# USING MĀNUKA HONEY FORECASTS FOR TRADING HONEY

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It has become common to trade mānuka honey based on a forecast of its future grade and quality. However, simply using the maximum future grade of the honey may not be the best way of valuing honey today. Its current value will be affected by things like the cost of carrying the honey while it 'grows', the risk of the honey being damaged while it 'grows', and its ability to be packed into a product that can be sold in high-value overseas markets.



Analytica provides a mānuka honey forecasting service, and is often asked questions about how the forecasted grade and quality of honey should influence its price. As a testing lab, we don't offer opinions on the value of honey! However, this article has been written to offer a few thoughts to consider if using forecast results when trading mānuka honey.

## 1. Focus on the customer.

New Zealand's mānuka honey industry produces a high-value food and medical product, mainly for overseas customers. There are many people involved—from the beekeeper at the start of the process to the seller of the product at the other. For the end customer to have a great experience with mānuka honey (and to happily purchase more), we all need to work together to be sure the final product is safe, true to label, and trusted as an authentic and unadulterated natural product.

When trading honey, and considering the forecasted grade and quality of honey in future, the things that the end customer values should be front and centre of our thinking.

## 2. Having honey with potential is not the same as having honey that has realised its potential.

A forecast may show that your honey has potential to reach a much higher grade in future. However, there is a lot of work involved in managing that honey to reach its potential. For example:

- the honey will need to be stored for a period of anywhere between six and 18 months from harvest before it will be at



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an optimum point for processing. There is a carrying cost in holding valuable drums of honey for that period of time

- ideally, storage will be at a controlled temperature in the low- to mid-20s Celsius. Specialised storage facilities are expensive to build and operate
- there is risk that once honey is in storage, something might go wrong. Fires in storage facilities and overheating of honey when thermostats fail are two examples we have seen more than once in recent years.

This all means that the cost and risk of needing to store honey should be taken into account when negotiating its value.

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**3. Honey at its maximum MG concentration is past its best for processing.**

When a processor manufactures a final packed product, there is a statement on the label about the grade and quality of the honey inside the container. There is also a 'best before' date. The end consumer can reasonably expect the product will be true to its label until that time.

Changes in the grade and quality of mānuka honey continue once the honey has been processed and packed—there is nothing magical about packed honey that means it will stop changing as it does in the drum. Therefore, honey that is packed needs to have enough potential in it to remain at or above its labelled grade until its 'Best Before' date.

In practice this means that honey may well be best to be processed when MG (methylglyoxal) has reached 80–90% of its maximum, leaving some future growth potential to be sure it will last through the shipping process and on retail shelves for a 2–3 year period. For this reason, it is worth considering what proportion of the maximum grade should be used when valuing bulk honey.

The end consumer can reasonably expect the product will be true to its label until that time.

**4. High HMF makes mānuka honey hard to sell in high-value markets.**

High-value overseas markets in Asia, the Americas, and Europe tend to follow CODEX standards for honey—which include a maximum HMF (hydroxymethylfurfural) of 40 mg/kg. Storage of honey in warm conditions results in HMF increasing quickly, which can make it hard for processors to use when packing honey for export to these markets.

Forecast models should not only tell you about the future grade of the honey—they should also forecast how HMF will change over that time under different storage conditions. And those storing bulk honey should think about changes in HMF as well as MG when planning their storage conditions, so that honey is suitable for export as a high-quality product. Honey with high HMF is likely to be worth less than honey of a similar grade with a lower HMF.

**Conclusion**

To be sustainable, our industry will consider the needs of our end customer at all steps in the value chain. By doing this, our industry will produce consistently high-quality mānuka honey products that are true to label through their shelf life. And they will be able to be exported to all the high value markets that are available to us.

Forecasting is a useful tool to assist with this. It can be used by both sellers and buyers of bulk honey when agreeing on its value. As decisions are made on value, things other than the future maximum grade of the honey may be considered—such as carrying cost, risk, HMF, and the need for packed honey to sustain its grade for some years after processing.

These graphs should be read in conjunction with the text on page 25.

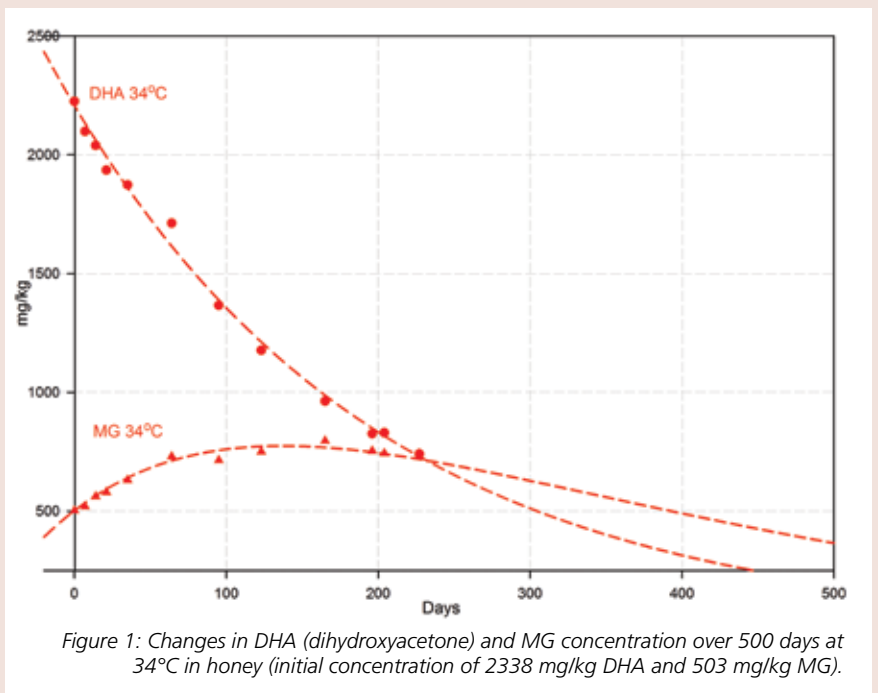


Figure 1: Changes in DHA (dihydroxyacetone) and MG concentration over 500 days at 34°C in honey (initial concentration of 2338 mg/kg DHA and 503 mg/kg MG).

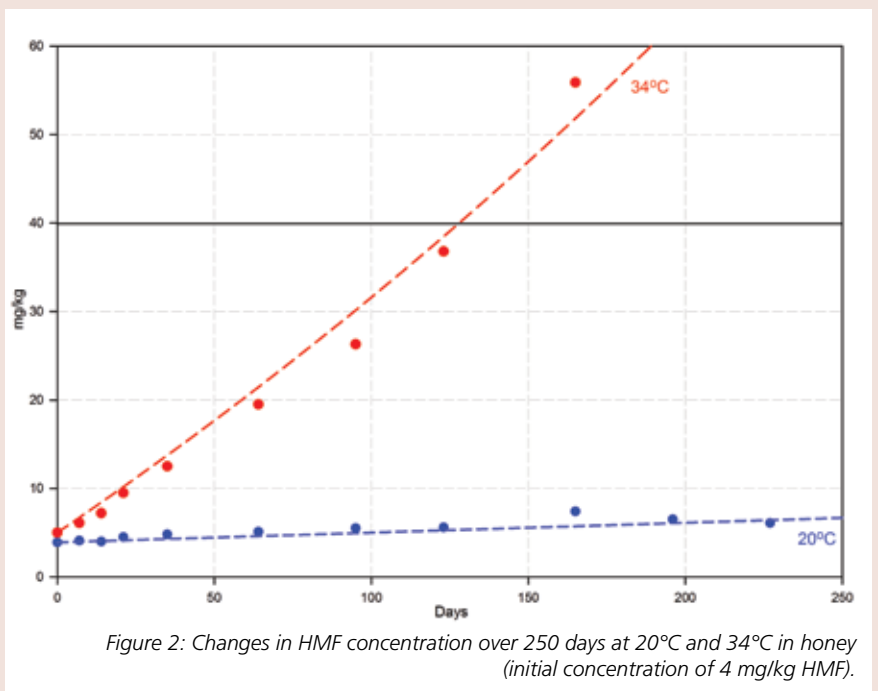


Figure 2: Changes in HMF concentration over 250 days at 20°C and 34°C in honey (initial concentration of 4 mg/kg HMF).

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## A reminder of how mānuka honey forecasting works

Mānuka honey is quite unique. The quality of most primary industry or natural products is never better than when it is first produced—think about milk, or meat, or fresh fruit and vegetables. But the grade and quality of mānuka honey improves after harvest, reaching its maximum months or even years later. Forecasting of the grade and quality of mānuka honey is useful, because it gives an indication of how that honey will change in future.

This topic was covered in detail in the October 2015 edition of the journal (Howse & Chernyshev, 2015). In summary, mānuka honey naturally contains two important compounds—DHA (dihydroxyacetone) and MG (methylglyoxal)—which are associated with the grade of the honey. The DHA is collected by bees in mānuka nectar, and is at its highest in freshly produced honey. Then, over time:

- DHA concentration decreases, as it converts to MG in the honey
- MG initially increases as a result of the DHA conversion. However, after a time MG (which is also converting to other things in the honey) reaches a maximum, and then it also starts to decline in concentration

- because grading systems like UMF, RM, and MGS are linked to MG concentration, the grade of the honey goes up and then down as the MG concentration does
- HMF (hydroxymethylfurfural, a measure of the age and heating of honey) increases over time. High HMF values are seen as a possible human health risk, and honey exported from New Zealand generally needs to have an HMF of 40 mg/kg or below.

Mānuka honey forecasting indicates how DHA, MG, HMF and the mānuka honey grade will change over time. Forecasts use an initial set of test results that show the makeup of the honey at the start of the forecast period. And they use a mathematical model to indicate how the honey will change in future. The best models are based on repeated testing of honey stored in controlled conditions at different temperatures. A few different models are used in the industry, both by some honey processors, as well as by laboratories like Analytica.

### Reference

Howse, S., & Chernyshev, A. (2015, October). Forecasting the change in manuka honey is now a reality. *The New Zealand Beekeeper*, 23 (9), 47–48.

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