Ministry for Primary Industries
Manatū Ahu Matua

Summary of Submissions on Options for Defining Monofloral Manuka Honey

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Introduction

MPI released a discussion paper, *Options for Defining Monofloral Manuka Honey* on 10 September 2013. It sought feedback on options for defining manuka honey, to assist in developing a draft guideline. Submissions closed on 30 September 2013. Late submissions were accepted for an additional two weeks.

Outlined below is a summary of both the general themes from submissions and the responses to the specific questions in the discussion paper. Please note this does not reflect MPI analysis of the issues or present an opinion about a preferred option.

Submissions received

MPI received 72 submissions on the discussion paper. Fifty-three submissions were made by New Zealand individuals and businesses involved in the honey industry (beekeeping, honey production, packing, export or a combination of these), and an additional three submissions were from overseas importers and distributors of manuka honey. Six submissions were from industry groups and collectives, including the Unique Manuka Honey Factor Association (UMFHA), the Bee Products Standards Council (BPSC), the New Zealand Manuka Honey Exporters Collective, the New Zealand Food and Grocery Council and the Miere Coalition. Nine submissions were received from scientists and laboratories involved in research or testing relating to manuka honey and one submission was made by an overseas regulatory body.

Themes from submissions

PROBLEMS WITH IDENTIFYING MONOFLORAL MANUKA HONEY NEED TO BE ADDRESSED

There was agreement generally among submitters that there are problems with the status quo. Particular issues identified were:

- consumer confusion and misunderstanding with the way manuka honey is currently labelled;
- risks to New Zealand's reputation and to manuka honey exports if this is not addressed;
- problems with adulteration and fraud (submitters suggested risks both of products being falsely labelled and of honey being manipulated to make it appear to have desired properties); and
- the inability of the honey industry to agree on a definition itself.

Many submitters noted that defining manuka honey has been a contentious issue for some time. A few outlined the history of the industry over the past 20 years, in part as illustration of the difficulty in coming to an agreement on a definition. Further illustration of the contentious nature of this debate was the three submissions that suggested that the options outlined in the discussion paper would lead to MPI being challenged in court.

The majority of submitters were in favour of some definition for manuka honey being developed, although opinions over what form this should take varied considerably. Eight submissions, including one from a group of large exporters, suggested that the proposed MPI guideline should be backed up with government regulation.

Manuka honey should test true to label throughout its shelf-life

The majority of submitters agreed with the importance of ensuring that, whatever definition is used, manuka honey must test true to label. A number noted the need for the honey to meet the required parameters throughout its shelf-life. Some identified issues that would need to be considered in relation to this, in terms of the variability of levels of methylglyoxal (MG) and dihydroxyacetone (DHA) over time, and the points at which honey testing is done.

There are different assumptions about what is 'genuine' manuka honey

Many submitters commented on how a particular parameter would work in terms of its ability to determine what is 'genuine' or 'authentic' manuka honey. This was generally based on the assumption that the honey they were familiar with or citing to support their case ***is*** manuka honey, and thus if it would not meet the proposed parameter, that parameter was flawed. However, because different submitters have different starting assumptions about what is genuine manuka honey (i.e. honey with a particular level of methylglyoxal or honey with a particular level of manuka/kanuka pollen) it is possible to come to opposing conclusions about the validity of each of the parameters outlined.

There are regional differences in the properties of manuka honey

A common theme from submissions was that there are differences in the types of manuka honey produced in different regions of New Zealand. Many submitters noted that South Island honey tends to test for higher levels of manuka/kanuka pollen but lower non-peroxide activity (NPA). In the North Island this is reversed, with honeys generally having lower pollen counts but higher NPA. There were also differences identified between regions within the North Island. Many submitters provided anecdotal comments about the properties of the honey they produced to illustrate these points. Data was also supplied from large honey producers that identified variations in MG levels according to region.

There is not a strong correlation between MG levels and pollen count

Submitters who provided datasets about the levels of MG and manuka/kanuka pollen percentage in honey samples stated that there is not a strong correlation between these two properties.

Much science is disputed or is not conclusive

There was general agreement among responders that any definition for manuka honey needed to be backed up by robust science. However, there was a lot of dispute over what could be conclusively said about the properties of manuka honey. A number of submitters stated that interpretations of pollen analysis were flawed or incomplete, while another group of submitters stated that there were problems with science for determining MG or DHA content and its correlation to NPA levels. Some believed that all current science is too weak to form the basis for a definition. Many submitters noted that research is underway into chemical fingerprinting for manuka and that this might provide some clarity in the future.

There are divergent views on consumer expectations

There were varying views as to consumer expectations when buying manuka honey. One group of submissions suggested that consumers bought based on the taste and were not particularly interested in 'numbers' or content claims. On the other hand, other submissions stated that the main reason people buy manuka honey is because of the perceived health benefits, and in particular the honey's NPA.

Additional measures proposed

Around a sixth of submissions suggested additional enforcement or implementation measures that they believed should be applied either in conjunction with, or instead of, a manuka honey definition. These included:

- honey to only be exported in retail packaging;
- country of origin labelling;
- confirmation and labelling that New Zealand honey is GMO free;
- greater public education to explain the various labelling systems, or to help consumers understand the properties of manuka honey;
- regulation of the supply of DHA to help prevent this being added to honey;
- research to determine if DHA can be detected if added to honey;
- support for research into chemical fingerprinting;
- honey promoted with health benefits to be regulated as a health food product;
- agreement on sugar testing methods; and
- a better system for tracking honey with ID to enable tracing from harvest to batch.

Responses to proposed options

Submitters tend to hold strong and opposing views as to what would be the appropriate definition for manuka honey. Approximately 20 submissions supported Option 1, nine supported Option 2 and six supported Option 3. Much of the support for each of these options was based on strong opposition to another option. A total of 16 submissions did not support any of the three options in the discussion paper. Twelve submitters proposed an alternative option for defining manuka honey.

OPTION 1 - DEFINITION BASED ON POLLEN COUNT

The main reasons given in support of Option 1 were that a definition based on pollen count was accepted current practice and would line up with the Codex standard for defining honey. Submitters noted that there was little international precedent for a definition based on a chemical component of honey.

Many of those who supported this option stated that this was how their business had been defining and selling manuka honey for many years, and it was the option with the least impact on them. They also tended to highlight the negative impacts that not choosing this option would have for their business or customers.

Among those who did not support Option 1 the main objections raised were:

- as manuka and kanuka pollen cannot currently be distinguished, this option would allow a proportion of honey that was kanuka to be marketed as manuka;
- bees collect pollen from one floral source and nectar from another so pollen count doesn't reflect how much of the honey is actually manuka;
- the option would exclude some honey that had a low manuka/kanuka pollen count, but had a high NPA rating from being called manuka honey, even though it is the activity rating that consumers are most interested in when buying manuka honey.

OPTION 2 – DEFINITION BASED ON METHYLGLYOXAL CONTENT (MG)

Submissions representing large manuka honey exporters generally supported this option. Some of these submitters saw it as an interim measure while chemical fingerprinting is being developed or also proposed an alternative option that included MG *or* pollen.

One main reason given for supporting Option 2 was that it continued current industry marketing practice. Submitters stated that it reflected the way the majority of manuka honey was currently being marketed and it was what consumers in the United Kingdom, China and other markets would understand. Submitters stated that NPA, derived from MG content, was the main property that gave manuka honey its premium value and thus needed to be included in the definition. A large number of those who supported this option also identified it as preferable to Option 1 because of the problems they saw in a pollen count-based definition (as noted above).

Those submitters who did not support Option 2 stated one of the main problems was that it would exclude some 'genuine' manuka honey, which did not have high levels of MG. A couple of submitters also stated that MG was present in some Australian honeys so the definition would not be exclusive to New Zealand manuka.

Others noted that this option was 'too risky' as MG or DHA could be fraudulently added to manuka honey and this could not be detected. There were also a small number of submitters who disputed the claims that bees often collect nectar from manuka plants but pollen from other floral species. They proposed an alternative view that such honey could have a small amount of very high activity manuka and low overall manuka/kanuka pollen. One scientist suggested controlled testing was needed to determine these claims.

Four submissions stated that MG is toxic at high levels. These submitters suggested that a definition that included MG would encourage the manipulation of honey to increase the level of this chemical, and this could have detrimental health effects.

OPTION 3 – DEFINITION BASED ON METHYLGLYOXAL CONTENT AND POLLEN COUNT

Option 3 was favoured in only 6 submissions. The main reasons given for supporting this definition was that it was a good compromise, that it was needed in the interests of industry unity, or that it was the most robust in terms of preventing fraudulent behaviour.

However, more than a third of all submitters opposed this option. In the majority of cases the reasoning was that the flaws they had identified with either Option 1 or Option 2 would apply equally to Option 3. Some of those opposed to Option 3 said it would exacerbate the problems of the other options, for example by requiring 'excessive testing' or by excluding more 'genuine' manuka from market.

ALTERNATIVE OPTIONS

An alternative option was outlined by some of the larger businesses and groups representing honey exporters. This was proposed by some as an interim definition while research into chemical fingerprinting for manuka honey is underway. Another submission saw this as an interim definition while transitioning to Option 2. The alternative option would define manuka honey based on:

- a minimum NPA level of 5+; or
- a minimum MG level of 100 mg/kg; or
- a minimum percentage of manuka/kanuka pollen of 70%.

One submitter who supported this option in general said that the minimum NPA level should be 10+ rather than 5+.

Some submitters suggested defining different classes of manuka honey. For example 'standard' or 'table' manuka with a minimum manuka/kanuka pollen percentage and no further claims on the label, and 'active' manuka or 'medical' manuka with a minimum MG level and a minimum pollen percentage.

A few submitters proposed using thixotropy as the unique measure of manuka honey.[1] They suggested this could be used in conjunction with the other organoleptic and physicochemical properties of manuka honey (to distinguish it from overseas honeys that are thixotropic), and with no reference to either pollen count or MG content in the definition.

Responses to Specific Discussion Paper Questions

QUESTION 1: ARE THE BPSC PARAMETERS FOR ORGANOLEPTIC AND PHYSICOCHEMICAL PROPERTIES OF MANUKA HONEY APPROPRIATE?

Twelve submitters stated that these parameters were appropriate. One comment was that the Codex organoleptic, physiochemical and microscopic properties are a package and should be read as a whole. That is, a definition should not be solely about pollen count but needs to include the other Codex parameters also. A couple of submitters suggested that there should be official honey graders employed to determine the aroma, flavour and colour parameters.

Nineteen submitters did not agree the parameters were appropriate. The main reasons given were that they were too subjective, open to manipulation, or not widely used to market New Zealand honey at present. A number of submitters noted that there was greater regional variation in terms of colour, flavour and aroma than allowed for in the parameters. A couple of submitters noted that the manuka honey they produced would not meet the stated colour. One large exporter commented that "… the colour of UMF Manuka honey ranges between 40-60mm".

Eleven submitters suggested thixotropy as an additional parameter to be included in the definition. Three additional submissions noted that thixotropy is a property of manuka, though did not recommend it be included as a parameter. There were differing views on whether thixotropy is unique to manuka or also present in kanuka. One submission cited an online technical bulletin from an English food analytical laboratory which claimed "kanuka honey exhibits normal Newtonian (i.e. non-thixotropic) behaviour, and can thus be distinguished from manuka honey on that basis". The submitter suggested that this result would need to be verified using carefully sourced honeys. Another submission stated that "While published evidence (Stephens (2006)) suggests that thixotropy can be used to distinguish between manuka and kanuka honey, internal experts have indicated that kanuka honey also demonstrates thixotropic behaviour".

The BPSC, who developed the original parameters identified in MPI's discussion paper, stated that although thixotropy is an additional tool, they had not included this in the parameters because "it is difficult to identify in retail packs that are most often granulated (creamed) honey".

[1] Thixotropy is the property exhibited by certain gels of becoming fluid when stirred or shaken and returning to the semisolid state upon standing.

QUESTION 2: ARE THERE ALTERNATIVE OPTIONS FOR DEFINING MANUKA HONEY, AND WHAT SCIENTIFIC EVIDENCE SUPPORTS THIS?

The main alternative, noted in a number of submissions, is chemical fingerprinting to develop markers that would be able to identify the unique characteristics of manuka (as distinct from kanuka). Most submissions who mention this noted that the science and research needed is still being developed, so chemical fingerprinting is not identified as an immediate option.

QUESTION 3: WHAT ARE THE LIKELY IMPACTS OF OPTION 1 FOR BUSINESSES?

Of the 28 submitters who answered this question, around half said that this option would have 'significant', 'major' or 'serious' impacts for businesses. One submitter stated "This option could potentially destroy a number of businesses".

One large manuka honey producer and exporter stated that up to half of the NPA honey being harvested in the North Island would not contain 70% manuka/kanuka pollen. In its submission, the company estimated that up to 800 tonnes of honey would be excluded and notes "The cost to smaller apiary operations could, in many cases, lead to business failure". Some specific costs of this option identified by submitters included an increase in the number of tests required, rebranding of products, and re-education for consumers.

There were differing views on the impacts of additional pollen testing. One of the large manuka honey producers stated "The cost of accurate testing of $1.30 per kg make the product unmarketable, if pollen testing was to occur at point of purchase". Another submission stated that these tests were not common industry practice at the moment and are not standardised around the world which would lead to variable results. Estimates of the costs of pollen analysis varied (from $180 to $350 per sample).

Some responses commented on the impact of Option 1 in terms of increasing fraud. They suggested that a definition based on a pollen count would lead to manuka pollen being added to honey, or honey being filtered to remove the larger pollen grains and increase the proportion of smaller manuka pollen. Another submitted that current straining of honey was not done at a level that would capture larger pollen grains.

Two submissions stated that this option would have little impact on their own businesses, and one further submitter noted that it would benefit some businesses who are currently selling honey based on manuka/kanuka pollen count.

QUESTION 4: WHAT ARE THE LIKELY IMPACTS OF OPTION 1 FOR CONSUMERS?

Of the 29 submissions that responded to this question, 19 identified negative impacts for consumers, in particular:

- misinformation and confusion, "consumers would not have assurance they were getting a biologically active honey"; and
- reduction of supply of good quality manuka, leading to higher prices.

By contrast, the remaining ten submitters generally thought that Option 1 would either have no impact on consumers, or would have beneficial effects in terms of greater assurance about the authenticity of the honey being purchased.

QUESTION 5: WHAT PRACTICAL STEPS ARE REQUIRED TO EFFECTIVELY IMPLEMENT OPTION 1?

Of the 19 who commented on question 5, around half stated that they did not support Option 1 and there were no practical steps possible to implement it. Of the submissions that did identify practical steps required for implementation, the most common areas identified were the need for independent accredited laboratories that can provide competitive and verifiable ring-testing, and an agreed reliable methodology for pollen analysis.

QUESTION 6: IF A DEFINITION BASED ON POLLEN COUNT IS ADOPTED: WHAT IS THE APPROPRIATE PERCENTAGE OF POLLEN TO INDICATE A MONOFLORAL HONEY?

Thirteen submitters made suggestions of an appropriate percentage of pollen to indicate a monofloral honey. The most common percentage suggested was 70%, with half of responders supporting this. Three submissions suggested a 50% minimum pollen count and a further three suggested a 60 - 65% minimum. A number of submitters largely against Option 1 stated that there was insufficient evidence to determine an appropriate pollen percentage. Others stated that, if a pollen count definition was used, then the percentage of manuka pollen required should be set as low as possible.

QUESTION 6: WHAT, IF ANY, ADDITIONAL PARAMETERS SHOULD BE INCLUDED?

Five submitters stated that a minimum pollen concentration should be included in the parameters alongside pollen percentage. A pollen concentration of 500,000 grains per 10g of honey was suggested to indicate 100% manuka, and so it was suggested that 350,000 grains per 10g would be appropriate to determine 70% manuka pollen.

Internationally traded honey that includes multiple genera but is marketed under a common name

The following examples were provided of honeys from different species or genera are marketed under a common name: Ling and Heather honey; Eucalyptus honeys; Lavender; Thyme; Acacia; Sage and Clover.

Datasets where both pollen count and MG levels are measured for the same honey samples

Five submissions included datasets that showed the pollen count, MG level, and DHA level for the same honey samples. However, some of these datasets were duplicates (related to the same original honey samples). All of the submitters who had included data commented that there was no obvious or strong correlation between the percentage of pollen (or total pollen count) and the level of MG present in the samples.

QUESTION 7: WHAT ARE THE LIKELY IMPACTS OF OPTION 2 FOR BUSINESSES?

Of the 27 responses to this question eight suggested that it would have little impact on their business. Reasons for this were that MG testing is already established and this is the way they were currently marketing and selling their honey. One submitter noted that over 80% of labelled manuka honey exported from New Zealand is MG tested.

Twenty submitters identified some negative impacts for businesses for Option 2. These were largely related to the additional cost of monitoring MG levels, and the variability in MG levels meaning that some ‘true’ manuka honey would be excluded. A common theme was the big variations in MG levels. A few submissions noted that honey produced in the South Island had generally lower levels of MG so would be most affected by this option. A submission from a collective noted that MG as a sole marker is not a good indication of monofloral status,

both because the level of MG is not stable and honey from different regions produce very different levels of MG. The submission suggested that the cut-off level of MG would need to be different between the regions, and this would be hard to monitor.

A further risk identified by five submitters was that, as DHA can be added to honey undetectably to increase the MG content, Option 2 could result in an increase in honey adulteration.

QUESTION 8: WHAT ARE THE LIKELY IMPACTS OF OPTION 2 FOR CONSUMERS?

Around half of the 21 who responded to this question identified negative impacts for consumers. Two submissions stated that if MG was fraudulently added to honey this could not be detected and consumers would be misled: "those who wish to purchase a 'chemical component' in their honey will be assured that it contains the chemical, however, there can be no assurance that MG is a natural occurrence in the honey". Other submitters said that Option 2 would lead to less 'genuine manuka honey' being available, which would mean higher prices. A further potential impact, identified in four submissions, was that high levels of MG pose a health risk, and this component of manuka honey should not be promoted.

The other half who responded to this question identified benefits to consumers from Option 2, in terms of reliability and clarity about the contents of the honey they purchase. For example, "the consumer will consistently be able to identify genuine NZ manuka honey and choose the price point/ MG level they wish to purchase with certainty that the product is 'true to label'". A couple of submitters in favour of using MG as a defining characteristic also stated that concern about adulteration should not influence the standard. They stated that this would be illegal under existing legislation and is an issue for enforcement.

QUESTION 9: WHAT PRACTICAL STEPS ARE REQUIRED TO EFFECTIVELY IMPLEMENT OPTION 2?

Two submitters (each representing large exporters and producers) noted that the impact would be minimal as there were a number of laboratories already providing MG tests and these were relatively quick and inexpensive. One submission stated that there needed to be work done on the method currently used by some of measuring MG and estimating a NPA based on the correlation.

QUESTION 10: IF A DEFINITION BASED ON MG ACTIVITY IS ADOPTED: WHAT ARE THE APPROPRIATE LEVELS OF MG TO INCLUDE?

Sixteen submissions provided a view on the appropriate level of MG, although this was expressed in a number of forms (mg/kg, NPA, or UMF). The most common level suggested was 100 mg/kg, which was supported by seven submitters. A number of other submitters suggested that this level was too low, with alternative proposed of 150mg/kg, 250mg/kg or 260mg/kg. A couple of submitters suggested an amount equivalent to NPA 5+, while others stated that honey with an NPA5+ was too low to have an antibacterial effect and suggested a minimum of at least NPA10+. A few submitters noted the need for robust science to determine the appropriate level, and also to confirm the correlation between MG content and NPA.

QUESTION 10: WHAT, IF ANY, ADDITIONAL PARAMETERS SHOULD BE INCLUDED? (E.G. DHA)

A couple of submitters suggested that DHA could be a suitable additional parameter for inclusion. The main benefit being that it would be more robust and harder to counterfeit manuka honey if MG and DHA were both measured. However, submitters also expressed

reservations about DHA, suggesting further science is needed to understand the relationship between MG and DHA more thoroughly.

QUESTION 11: WHAT ARE THE LIKELY IMPACTS OF OPTION 3 FOR BUSINESSES?

The most common response from submitters was that the problems they had identified in either Option 1 or Option 2 would be present in Option 3 also. For example, those who believed that Option 1 would have negative impacts on their business because it would exclude their product being labelled as manuka honey noted this would also be true for Option 3. The same was true for those who said Option 2 would reduce their ability to trade manuka honey.

QUESTION 12: WHAT ARE THE LIKELY IMPACTS OF OPTION 3 FOR CONSUMERS?

A couple of submissions stated that Option 3 would result in a reduction in supply of 'genuine manuka honey' with a resulting increase in prices. Two further submitters said that it would eliminate honeys with low MG and low pollen counts being sold as manuka, but only provided there was enforcement to police honey adulteration.

QUESTION 13: WHAT PRACTICAL STEPS ARE REQUIRED TO EFFECTIVELY IMPLEMENT OPTION 3?

There was only one response specific to this question, which said that research into combined pollen and MG testing was needed and laboratories with this capacity in New Zealand would need to be set up. Other submissions identified that the practical steps mentioned in relation to Option 1 or 2 would also apply to Option 3.

QUESTION 14: ARE CLAIMS RELATED TO PEROXIDE ACTIVITY APPROPRIATE FOR MANUKA HONEY? IF SO, WHICH ONES?

Twenty-one of the 31 submissions responding to this question did not think that claims relating to peroxide activity were appropriate for manuka honey labels. A common reason given was that all honeys exhibit some peroxide activity. Seven submissions stated that claims relating to peroxide activity were misleading or confusing for consumers. Two submitters said that antibacterial claims do not confer long-term benefits and should be treated differently to the definition of manuka, and five referred to the stability (and shelf-life) of peroxide activity and the reliability of tests in quantifying peroxide levels.

The remaining ten submissions thought peroxide activity claims were appropriate, with seven of those saying they were only appropriate with certain conditions. These included references to: stability, the amount of peroxide having a measurable bio-active effect, and ensuring health claims were not attached to the label. A common theme across submissions that said claims for peroxide activity were appropriate is that there should be standardisation and truth in labelling as well as sound scientific backing. One submission said that "total activity should be able to be used because it validates the NPA activity, which in turn can validate the MG and DHA and vice versa".

One submitter who agreed with peroxide claims and one who didn't both mentioned preventing the use of the term 'active' or any peroxide content claims "where expressed numerically".