



# Proposals to Amend (No.2) the New Zealand (Maximum Residue Limits of Agricultural Compounds) Food Standards 2013

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Prepared by the Biosecurity, Food and Animal Welfare Directorate of  
the Ministry for Primary Industries

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# 1 Submission

The Ministry for Primary Industries (MPI) invites public comment on this discussion document which outlines proposals to amend the New Zealand (Maximum Residue Limits of Agricultural Compounds) Food Standards.

The following points may be of assistance in preparing comments:

- Wherever possible, comment should be specific to a particular section in the document. All major sections are numbered and these numbers should be used to link comments to the document.
- Where possible, reasons and data to support comments are requested.
- The use of examples to illustrate particular points is encouraged.
- As a number of copies may be made of your comments, please use good quality type, or make sure the comments are clearly hand-written in black or blue ink.

Please include the following information in your submission:

- the title of the discussion document;
- your name and title (if applicable);
- your organisation's name (if applicable); and
- your address.

Please submit your response by 5:00pm on 25 April 2014. Your comments should be sent to:

MRL Amendments  
MPI Food Policy  
PO Box 2835  
Wellington

Email: [FoodPolicy@MPI.govt.nz](mailto:FoodPolicy@MPI.govt.nz)  
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If you are submitting on this discussion document, you may wish to indicate any grounds for withholding information contained in your submission. Reasons for withholding information could include that information is commercially sensitive or that the submitters wish personal information such as names or contact details to be withheld. MPI will take such indications into account when determining whether or not to release information.

Any decision to withhold information requested under the OIA may be reviewed by the Ombudsman.

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## 2 Introduction

The term Maximum Residue Limit refers to the maximum legal limits for residues of agricultural compounds and veterinary medicines in any food for sale in New Zealand..

Maximum residue limits (MRLs) are used to minimise risks to public health by ensuring that chemical residues in food are as low as practicable, without compromising the ability of the chemical to successfully do what is intended.

MRLs are also a tool for monitoring the use of agricultural compounds in accordance with good agricultural practice. Good Agricultural Practice or GAP is not explicitly defined or regulated, but is the generally accepted means for producing safe primary produce, in a particular location and taking account of climate, pests or diseases and other environmental factors.

## 3 Background

MRLs are set out in the ‘New Zealand (Maximum Residue Limits of Agricultural Compounds) Food Standards’ otherwise known as the MRL Standards.

The MRL Standards are amended a number of times each year to reflect changes in the use of agricultural compounds in the production of food. They are available from the Ministry for Primary Industries (MPI) Foodsafety website at:

<http://www.foodsafety.govt.nz/elibrary/industry/register-list-mrl-agricultural-compounds.htm>

MPI administers the MRL Standards, but the final decision on any changes made to these standards rests with the Minister for Food Safety.

Under section 11E and 11L of the Food Act 1981, when amending or issuing the MRL Standards, the Minister must take into account the following:

- The need to protect public health.
- The desirability of avoiding unnecessary restrictions on trade.
- The desirability of maintaining consistency between New Zealand's food standards and those applying internationally.
- New Zealand's obligations under any relevant international treaty, agreement, convention, or protocol, and, in particular, under the Australia-New Zealand Joint Food Standards Agreement.
- Such other matters as the Minister considers appropriate.

Possible public health implications are considered during toxicological and dietary risk assessments. The Estimated Dietary Intake of the residue is compared with a Potential Daily Exposure<sub>(food)</sub> (PDE<sub>(food)</sub>). Where there is no PDE<sub>(food)</sub>, the estimated dietary intake is compared with the Acceptable Daily Intake (ADI). PDE<sub>(food)</sub> and ADI are described below.

A PDE<sub>(food)</sub> is a value determined by the Environmental Protection Authority (EPA) through a toxicological evaluation. The EPA undertakes this as part of its responsibility for managing public health under the Hazardous Substances and New Organisms Act 1996 (the HSNO Act). A PDE<sub>(food)</sub> gives the potential daily exposure a person may be subject to from a substance, via food.

An ADI is defined by the World Health Organization (WHO) as:

*“the daily intake which, during an entire lifetime, appears to be without appreciable risk on the basis of all the known facts at the time”.*

The term “without appreciable risk” is further defined as: “the practical certainty that injury will not result even after a lifetime of exposure”.

ADIs are established by the WHO and Food and Agriculture Organization of the United Nations joint expert committees. These Committees are made up of toxicologists and residue specialists. The ADI information from these joint committees also feeds into the Codex Alimentarius Commission (Codex), which sets international MRLs.

As required by the HSNO Act, MPI uses a PDE<sub>(food)</sub> where it is available, rather than the internationally-determined ADI. The ADI and PDE<sub>(food)</sub> are largely equivalent, as they are determined using a very similar scientific process and the same set of toxicology data.

### 3.1 SUMMARY OF PROPOSED AMENDMENT

The proposed MRLs have been thoroughly assessed in accordance with international methodologies such as those used by the expert committees described above.

Information on the technical assessment of each proposal is included in this document (refer section 2) and covers the following:

- rationale;
- chemical information;
- good agricultural practice;
- residues information;
- dietary risk assessment;
- toxicological/public health assessment; and
- International MRLs.

MPI has reviewed the estimated dietary exposure assessments for the proposals in this discussion paper. MPI has determined that the residues associated with the proposed MRLs do not present any public health and safety concerns.

#### 3.1.1 New MRLS

MPI proposes to add the following new MRL to the MRL Standards:

- 0.01 mg/kg for chlorpyrifos when used as an insecticide in potatoes
- 0.01 mg/kg for kasugamycin when used as a bactericide in kiwifruit
- 0.01 mg/kg for propiconazole when used as a fungicide in avocados

#### 3.1.2 Exempt from MRLS

MPI proposes to exempt the following substances from MRLs:

- Extend the current exemption for benzalkonium chloride to use on avocados and use as bactericide on kiwifruit
- Extend the current exemption for chlorine dioxide to use as a bactericide
- Extend the current exemption for fatty acids of 8 carbons or more in their chains, and their salts to use as a plant growth regulator
- Harpin protein when used as a plant elicitor on horticultural crop
- Oxalic acid when used in beehives

- Extend the current exemption for potassium bicarbonate to use as plant growth regulator
- Soya bean oil when used as a fungicide
- Synthetic latex when used as an anti pod shatter.

### 3.1.3 Other Amendments

- Pirimiphos-methyl - Change pome fruits to apples and pears.

## 4 Proposals

### 4.1 PROPOSALS TO SET MRLS FOR CHLORPYRIFOS

It is proposed that an MRL is set for chlorpyrifos when used on potatoes. The current entry for chlorpyrifos in Schedule One of the MRL Standards is:

| Compound Common Name | CAS#      | Residue to which the maximum residue limit applies | Food   | Maximum Permitted Residue Level (mg/kg) |
|----------------------|-----------|--|--|---|
| Chlorpyrifos         | 2921-88-2 | Chlorpyrifos                                       | Bananas  | 2                                       |
|                      |           |  | Fruit (except bananas, grapes, kiwifruit and stone fruits) | 0.2                                     |
|                      |           |  | Grapes   | 1                                       |
|                      |           |  | Kiwifruit  | 2                                       |
|                      |           |  | Maize  | 0.02                                    |
|                      |           |  | Onions   | 0.1                                     |
|                      |           |  | Sheep fat  | 1.5                                     |
|                      |           |  | Stone fruits   | 1                                       |
|                      |           |  | Tomatoes   | 0.2                                     |

The revised entry for chlorpyrifos in Schedule One of the MRL Standards will therefore read:

| Compound Common Name | CAS#      | Residue to which the maximum residue limit applies | Food   | Maximum Permitted Residue Level (mg/kg) |
|----------------------|-----------|--|--|---|
| Chlorpyrifos         | 2921-88-2 | Chlorpyrifos                                       | Bananas  | 2                                       |
|                      |           |  | Fruit (except bananas, grapes, kiwifruit and stone fruits) | 0.2                                     |
|                      |           |  | Grapes   | 1                                       |
|                      |           |  | Kiwifruit  | 2                                       |
|                      |           |  | Maize  | 0.02                                    |
|                      |           |  | Onions   | 0.1                                     |
|                      |           |  | Potatoes   | 0.01(*)                                 |
|                      |           |  | Sheep fat  | 1.5                                     |
|                      |           |  | Stone fruits   | 1                                       |
| Tomatoes             | 0.2       |  |  |   |

(\*) indicates that the maximum residue limit has been set at or about the limit of analytical quantification.

#### 4.1.1 Amendment Rationale

The proposed MRL represents the expansion of use of a currently registered active ingredient. The proposed MRL will manage the use of chlorpyrifos as an insecticide on potatoes and in accordance with the application rates and withholding periods that are proposed as good agricultural practice (GAP) in New Zealand.

## 4.1.2 Chemical Information

|  |                 |
|--|-----------------|
| Common name of compound                          | Chlorpyrifos    |
| Use of compound                                  | Insecticide     |
| Chemical Abstract Services (CAS) Registry number | 2921-88-2       |
| Type of compound                                 | Organophosphate |
| Administration method                            | Spray           |

## 4.1.3 Good Agricultural Practice

Chlorpyrifos is proposed for use as an insecticide in potatoes. Application is at maximum rate of 500 gai/ha, to be applied to treat potato tuber moth at first sighting then at 2 weeks intervals, to treat tomato/potato psyllid with four 'back to back' applications at 7 day intervals with a 14 day withholding period.

## 4.1.4 Residue Information

The residue data for the crops supports an MRL of 0.01 mg/kg for chlorpyrifos in potatoes when the last treatment is 14 days prior to harvest. An MRL of 0.01 mg/kg in potatoes is proposed to support GAP.

## 4.1.5 Dietary Risk Assessment

The  $PDE_{(food)}$  of 0.003 mg/kg bw/d was considered appropriate for use in the assessment. The proposed MRL is; potatoes – 0.01 mg/kg.

The chronic dietary exposure to chlorpyrifos is estimated by the National Estimated Dietary Intake (NEDI) calculation encompassing all registered uses of the chemical and food consumption data based upon the 1997 National Nutritional Survey for adults and the 1995 National Nutrition Survey of Australia, for children. The NEDI calculation is made in accordance with Guidelines for predicting dietary intake of pesticide residues (revised) [World Health Organization, 1997].

Based on the proposed MRLs, the NEDI for chlorpyrifos is equivalent to 87 % of the  $PDE_{(food)}$  so the chronic dietary exposure and the risk is acceptable.

## 4.1.6 Toxicological/Public Health Assessment

The use of chlorpyrifos as an insecticide for potatoes according to the GAP specified above is very unlikely to pose any health risks from consumption of treated produce.

## 4.1.7 Other International MRLs

| Country        | Food     | Maximum Residue Limit (mg/kg) |
|----------------|----------|-------------------------------|
| Australia      | Potato   | 0.05                          |
| European Union | Potatoes | 0.05(*)                       |
| Japan          | Potato   | 0.05                          |

(\*) indicates that the maximum residue limit has been set at or about the limit of analytical quantification.

Under clause 6(3)(b) of the MRL Standards, imported food may contain residues of agricultural compounds no greater than the MRLs specified for that food in the current editions or supplements of the FAO/WHO Codex Alimentarius Commission publications *Pesticide Residues in Food* or *Residues of Veterinary Drugs in Foods*.

Therefore, New Zealand can meet its obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures, the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

## 4.2 PROPOSALS TO SET MRLS FOR KASUGAMYCIN

It is proposed that an MRL is set for kasugamycin when used in kiwifruit.

The final entry for kasugamycin in Schedule One of the MRL Standards will read:

| Compound<br>Common Name | CAS#       | Residue to which the<br>maximum residue<br>limit applies | Food      | Maximum Permitted<br>Residue Level (mg/kg) |
|-------------------------|------------|--|-----------|--|
| Kasugamycin             | 19408-46-9 | Kasugamycin  | Kiwifruit | 0.01(*)                                    |

(\*) indicates that the maximum residue limit has been set at or about the limit of analytical quantification.

### 4.2.1 Amendment Rationale

The proposed MRL represents a use of the new active ingredient. The proposed MRL will manage the use of kasugamycin as a bactericide in kiwifruit in accordance with the application rates and withholding periods that are proposed as good agricultural practice (GAP) in New Zealand.

### 4.2.2 Chemical Information

|  |                           |
|--|---------------------------|
| Common name of compound                          | Kasugamycin               |
| Use of compound                                  | Bactericide               |
| Chemical Abstract Services (CAS) Registry number | 19408-46-9                |
| Type of compound                                 | Aminoglycoside antibiotic |
| Administration method                            | Spray                     |

### 4.2.3 Good Agricultural Practice

Kasugamycin is proposed for use as a bactericide in kiwifruit. Application is at rate of 60 – 100 gai/ha, to be applied pre-flowering or after harvest at a maximum of 4 applications per season.

### 4.2.4 Residue Information

The residue data for the crops supports an MRL of 0.01 mg/kg for kasugamycin in kiwifruit. The MRL is proposed to support GAP.

### 4.2.5 Dietary Risk Assessment

The  $PDE_{(food)}$  of 0.08 mg/kg bw/d was considered appropriate for use in the assessment. The proposed MRL is 0.01 mg/kg.

Based on the proposed MRLs, the NEDI for kasugamycin is equivalent to less than 1 % of the  $PDE_{(food)}$ . It is therefore concluded that the chronic dietary exposure is small and the risk is acceptable.

### 4.2.6 Toxicological/Public Health Assessment

The use of kasugamycin as a bactericide for kiwifruit according to the GAP specified above, is very unlikely to pose any health risks from consumption of treated produce.

#### 4.2.7 Other International MRLs

| Country | Food      | Maximum Residue Limit (mg/kg) |
|---------|-----------|-------------------------------|
| Japan   | Kiwifruit | 0.04                          |

Under clause 6(3)(b) of the MRL Standards, imported food may contain residues of agricultural compounds no greater than the MRLs specified for that food in the current editions or supplements of the FAO/WHO Codex Alimentarius Commission publications *Pesticide Residues in Food* or *Residues of Veterinary Drugs in Foods*.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

### 4.3 PROPOSALS TO SET MRLS FOR PIRIMIPHOS-METHYL

It is proposed that the current MRLs for pirimiphos-methyl in pome fruits and persimmons are amended to reflect the inclusion of persimmons in the pome fruit crop group.

The current entry for pirimiphos-methyl in Schedule One of the MRL Standards is:

| Compound Common Name | CAS#       | Residue to which the maximum residue limit applies | Food                           | Maximum Permitted Residue Level (mg/kg) |
|----------------------|------------|--|--------------------------------|---|
| Pirimiphos-methyl    | 29232-93-7 | Pirimiphos-methyl                                  | Beans                          | 0.2                                     |
|                      |            |  | Berries and other small fruits | 1                                       |
|                      |            |  | Brassica vegetables            | 2                                       |
|                      |            |  | Cereal grains                  | 5                                       |
|                      |            |  | Citrus fruits                  | 1                                       |
|                      |            |  | Fruiting vegetables            | 1                                       |
|                      |            |  | Kiwifruit                      | 2                                       |
|                      |            |  | Leafy vegetables               | 10                                      |
|                      |            |  | Persimmons                     | 0.5                                     |
|                      |            |  | Pome fruits                    | 1                                       |

The revised entry for pirimiphos-methyl in Schedule One of the MRL Standards will therefore read:

| Compound Common Name | CAS#       | Residue to which the maximum residue limit applies | Food                           | Maximum Permitted Residue Level (mg/kg) |
|----------------------|------------|--|--------------------------------|---|
| Pirimiphos-methyl    | 29232-93-7 | Pirimiphos-methyl                                  | Beans                          | 0.2                                     |
|                      |            |  | Berries and other small fruits | 1                                       |
|                      |            |  | Brassica vegetables            | 2                                       |
|                      |            |  | Cereal grains                  | 5                                       |
|                      |            |  | Citrus fruits                  | 1                                       |
|                      |            |  | Fruiting vegetables            | 1                                       |
|                      |            |  | Kiwifruit                      | 2                                       |
|                      |            |  | Leafy vegetables               | 10                                      |
|                      |            |  | Persimmons                     | 0.5                                     |
|                      |            |  | Pomefruit except persimmons    | 1                                       |

#### 4.3.1 Amendment Rationale

The proposed changes reflect the new Codex classification for persimmons which is now included in the pome fruit group. New Zealand adopts the Codex crop grouping system. There are no other changes to the currently approved use pattern which are considered good agricultural practice in New Zealand.

#### 4.3.2 Chemical Information

|  |                   |
|--|-------------------|
| Common name of compound                          | Pirimiphos-methyl |
| Use of compound                                  | Insecticide       |
| Chemical Abstract Services (CAS) Registry number | 29232-93-7        |
| Type of compound                                 | Organophosphate   |
| Administration method                            | Spray             |

#### 4.3.3 Good Agricultural Practice

No changes

#### 4.3.4 Residue Information

No changes

#### 4.3.5 Dietary Risk Assessment

No changes

#### 4.3.6 Toxicological/Public Health Assessment

The use of pirimiphos-methyl as an insecticide for pome fruits according to GAP, is very unlikely to pose any health risks from consumption of treated produce.

#### 4.3.7 Other International MRLs

| Country        | Food                              | Maximum Residue Limit (mg/kg) |
|----------------|-----------------------------------|-------------------------------|
| European Union | Apples, Pears, Persimmon          | 0.05(*)                       |
| Japan          | Apples, Pears, Japanese persimmon | 1                             |

(\*) indicates that the maximum residue limit has been set at or about the limit of analytical quantification.

Under clause 6(3)(b) of the MRL Standards imported food may contain residues of agricultural compounds no greater than the MRLs specified for that food in the current editions or supplements of the FAO/WHO Codex Alimentarius Commission publications *Pesticide Residues in Food* or *Residues of Veterinary Drugs in Foods*.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

## 4.4 PROPOSALS TO SET MRLS FOR PROPICONAZOLE

It is proposed that an MRL is set for propiconazole when used on avocados.

The current entry for propiconazole in Schedule One of the MRL Standards is:

| Compound Common Name | CAS#       | Residue to which the maximum residue limit applies | Food      | Maximum Permitted Residue Level (mg/kg) |
|----------------------|------------|--|-----------|---|
| Propiconazole        | 60207-90-1 | Propiconazole                                      | Apples    | 0.01(*)                                 |
|                      |            |  | Barley    | 0.02(*)                                 |
|                      |            |  | Mushrooms | 0.05(*)                                 |
|                      |            |  | Oats      | 0.02(*)                                 |
|                      |            |  | Olives    | 0.01(*)                                 |
|                      |            |  | Wheat     | 0.02(*)                                 |

The revised entry for propiconazole in Schedule One of the MRL Standards will therefore read:

| Compound Common Name | CAS#       | Residue to which the maximum residue limit applies | Food      | Maximum Permitted Residue Level (mg/kg) |
|----------------------|------------|--|-----------|---|
| Propiconazole        | 60207-90-1 | Propiconazole                                      | Apples    | 0.01(*)                                 |
|                      |            |  | Avocados  | 0.01(*)                                 |
|                      |            |  | Barley    | 0.02(*)                                 |
|                      |            |  | Mushrooms | 0.05(*)                                 |
|                      |            |  | Oats      | 0.02(*)                                 |
|                      |            |  | Olives    | 0.01(*)                                 |
|                      |            |  | Wheat     | 0.02(*)                                 |

### 4.4.1 Amendment Rationale

The proposed MRL represents the expanded use of a currently registered active ingredient. The proposed MRL will manage the use of propiconazole as a fungicide to *anthracnose* on avocados and in accordance with the application rates and withholding periods that are proposed as good agricultural practice in New Zealand.

### 4.4.2 Chemical Information

|  |               |
|--|---------------|
| Common name of compound                          | Propiconazole |
| Use of compound                                  | Fungicide     |
| Chemical Abstract Services (CAS) Registry number | 60207-90-1    |
| Type of compound                                 | Triazole      |
| Administration method                            | Spray         |

### 4.4.3 Good Agricultural Practice

Propiconazole is proposed for use as a fungicide in avocados. Application is at rate of 7.5gai/100L, to be applied at two monthly intervals from flowering to harvest and 60 days withholding period.

### 4.4.4 Residue Information

The residue data for the crops supports an MRL of 0.01 mg/kg for propiconazole in avocados when the last treatment is 60 days prior to harvest. An MRL of 0.01 mg/kg in avocados is proposed to support GAP.

#### 4.4.5 Dietary Risk Assessment

The potential daily exposure via food ( $PDE_{(food)}$ ) is used for dietary intake calculation where a value has been set. An appropriate acceptable daily intake (ADI) is used in the absence of a  $PDE_{(food)}$ . The ADI of 0.04 mg/kg bw/d was considered appropriate for use in the assessment and is consistent with overseas reputable regulatory bodies. The proposed MRL is; avocado – 0.01 mg/kg.

The chronic dietary exposure to propiconazole is estimated by the National Estimated Dietary Intake (NEDI) calculation encompassing all registered uses of the chemical and food consumption data based upon the 1997 National Nutritional Survey for adults and the 1995 National Nutrition Survey of Australia, for children. The NEDI calculation is made in accordance with Guidelines for predicting dietary intake of pesticide residues (revised) [World Health Organization, 1997].

Based on the proposed MRLs, the NEDI for propiconazole is equivalent to less than 1 % of the ADI. It is therefore concluded that the chronic dietary exposure is small and the risk is acceptable.

#### 4.4.6 Toxicological/Public Health Assessment

The use of propiconazole as a fungicide for avocados according to the GAP specified above, is very unlikely to pose any health risks from consumption of treated produce.

#### 4.4.7 Other International MRLs

| Country        | Food    | Maximum Residue Limit (mg/kg) |
|----------------|---------|-------------------------------|
| Australia      | Avocado | 0.02(*)                       |
| European Union | Avocado | 0.05(*)                       |
| Japan          | Avocado | 0.05                          |
| USA            | Avocado | 10 (Section 18)               |

(\*) indicates that the maximum residue limit has been set at or about the limit of analytical quantification. Section 18 – Time-limited tolerances. Expires on 31/12/13

Under clause 6(3)(b) of the MRL Standards imported food may contain residues of agricultural compounds no greater than the MRLs specified for that food in the current editions or supplements of the FAO/WHO Codex Alimentarius Commission publications *Pesticide Residues in Food or Residues of Veterinary Drugs in Foods*.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

### 4.5 PROPOSAL TO EXEMPT BENZALKONIUM CHLORIDE FROM MRLS

It is proposed that the current MRL exemption for benzalkonium chloride be extended for as a fungicide on avocado and bactericide on kiwifruit.

The current entry in Schedule Two of the NZ (MRL) Standards 2013 is as follows:

| Compound              | CAS#      | Condition   |
|-----------------------|-----------|---|
| Benzalkonium chloride | 8001-54-4 | When applied as a fungicide prior to the end of flowering on kiwifruit, olives and as a fungicide applied prior to the end of December on pome fruits |

The resulting entry for benzalkonium chloride in Schedule Two will be:

| Compound              | CAS#      | Condition  |
|-----------------------|-----------|--|
| Benzalkonium chloride | 8001-54-4 | When applied prior to the end of flowering on kiwifruit and olives, from flowering on avocados and prior to the end of December on pome fruits |

#### 4.5.1 Amendment Rationale

The proposed MRL exemption represents an extension of the current use patterns for benzalkonium chloride to include treatment of avocados and use as bactericide on kiwifruit.

#### 4.5.2 Chemical Information

|  |                        |
|--|------------------------|
| Common name of compound                          | Benzalkonium chloride  |
| Use of compound                                  | Fungicide, Bactericide |
| Chemical Abstract Services (CAS) Registry number | 8001-54-4              |
| Type of compound                                 | Quaternary ammonium    |
| Administration method                            | Spray                  |

#### 4.5.3 Good Agricultural Practice

Benzalkonium chloride is proposed as fungicide for avocados and bactericide for kiwi fruit.

#### 4.5.4 Residue Information

As benzalkonium chloride is also used safely in many cleaning products and medicinal products such as eye drops and mouth washes, the management of GAP through the establishment of MRLs has been deemed unsuitable. There are too many other variables present to judge whether an MRL breach would represent misuse, including its presence in exempt agricultural chemicals and in surface sanitizers.

#### 4.5.5 Dietary Risk Assessment

No acceptable daily intake (ADI) has been set for benzalkonium chloride. Trace amounts of benzalkonium may be consumed with no incident through accidental contamination of food and water with surface cleaners and dishwashing liquids. No dietary risk is expected through the use of benzalkonium on avocados and kiwi fruit.

#### 4.5.6 Toxicological/Public Health Assessment

The exemption of benzalkonium chloride from an MRL to the conditions specified above is very unlikely to pose any health risks from consumption of the harvested commodities.

#### 4.5.7 Other International MRLS

There are no other international MRLs for benzalkonium chloride.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

## 4.6 PROPOSAL TO EXEMPT CHLORINE DIOXIDE FROM MRLS

It is proposed that the current MRL exemption for chlorine dioxide to include as bactericide.

The current entry in Schedule Two of the NZ (MRL) Standards 2013 is as follows:

| Compound         | CAS#       | Condition   |
|------------------|------------|---|
| Chlorine dioxide | 10049-04-4 | When applied as a fungicide to fruit and vegetables at a concentration not exceeding 10ppm. |

The resulting entry for chlorine dioxide in Schedule Two of the NZ (MRL) Food Standards 2013 will be:

| Compound         | CAS#       | Condition  |
|------------------|------------|--|
| Chlorine dioxide | 10049-04-4 | When applied as an agricultural chemical to fruit and vegetables at a concentration not exceeding 10ppm. |

### 4.6.1 Amendment Rationale

The proposed MRL exemption represents an extension of the current use patterns for chlorine dioxide to include use as bactericide on fruits and vegetables.

### 4.6.2 Chemical Information

|  |                        |
|--|------------------------|
| Common name of compound                          | Chlorine Dioxide       |
| Use of compound                                  | Fungicide, Bactericide |
| Chemical Abstract Services (CAS) Registry number | 10049-04-4             |
| Type of compound                                 | Halogen oxide          |
| Administration method                            | Spray                  |

### 4.6.3 Good Agricultural Practice

Chlorine dioxide is proposed for use as a bactericide for fruits and vegetables. Application may be at a concentration of up to 10 ppm chlorine dioxide.

### 4.6.4 Residue Information

Chlorine dioxide rapidly decomposes in the environment, breaking down to chloride ions and oxidised products of organic media. Given the low rate of application and the rapid decomposition it would not be expected that residues will remain on food at the time of consumption. Chlorine dioxide is also used in a range of processing aid roles and in some drinking water treatment.

### 4.6.5 Dietary Risk Assessment

No ADI has been set for chlorine dioxide however it was assessed by New Zealand's Environmental Risk Management Authority to represent a negligible risk to human health. Chlorine Dioxide is used already for treatment of drinking water and as a processing aid it is unlikely to represent a dietary risk.

### 4.6.6 Toxicological/Public Health Assessment

The exemption of chlorine dioxide from an MRL to the conditions specified above is very unlikely to pose any health risks from consumption of the harvested commodities.

#### 4.6.7 Other International MRLS

There are no other international MRLs for chlorine dioxide.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

### 4.7 PROPOSAL TO EXEMPT FATTY ACIDS OF 8 CARBONS OR MORE IN THEIR CHAINS, AND THEIR SALTS FROM MRL

It is proposed that the current MRL exemption for fatty acids with 8 carbons or more in their chains and their salts to include use as plant growth regulator.

The current entry in Schedule Two of the NZ (MRL) Standards 2013 is as follows:

| Compound  | CAS# | Condition                                      |
|---|------|--|
| Fatty acids of 8 carbons or more in their chains, and their salts | n/a  | Used as herbicides, insecticides or fungicides |

The resulting entry for fatty acid in Schedule Two of the NZ (MRL) Food Standards 2013 will be:

| Compound  | CAS# | Condition                             |
|---|------|---------------------------------------|
| Fatty acids of 8 carbons or more in their chains, and their salts | n/a  | When used as an agricultural chemical |

#### 4.7.1 Amendment Rationale

The proposed MRL exemption represents an extension of the current use patterns for fatty acid to include use to enhance maturity of white grapes.

#### 4.7.2 Chemical Information

|  |   |
|--|---|
| Common name of compound                          | Fatty acids of 8 carbons or more in their chains, and their salts |
| Use of compound                                  | Fungicide, Plant growth regulator                                 |
| Chemical Abstract Services (CAS) Registry number | n/a   |
| Type of compound                                 | Fatty acid  |
| Administration method                            | Spray   |

#### 4.7.3 Good Agricultural Practice

Fatty acids of 8 carbons or more in their chains, and their salts are proposed for use as a plant growth regulator for grapes, to be applied post veraison.

#### 4.7.4 Residue Information

Fatty acids of 8 carbons or more in their chains, and their salts are common and essential part of the human diet. They are naturally occurring in the environment, readily and rapidly metabolised and degraded by micro-organisms. It is expected that additional input of fatty acids to the environment resulting from use as agricultural chemicals will be indistinguishable from naturally present fatty acids. Therefore it is proposed that fatty acid be exempted from an MRL.

#### 4.7.5 Dietary Risk Assessment

No ADI has been set for fatty acids of 8 carbons or more in their chains, and their salts. Fatty acids are an essential component in all living organisms. Therefore the use of the compound as a fungicide presents no dietary risk.

#### 4.7.6 Toxicological/Public Health Assessment

The use of fatty acid as a plant growth regulator for use on grapes, in accordance with the good agricultural practice specified above, is very unlikely to pose any health risks from consumption of the harvested commodity.

#### 4.7.7 Other International MRLS

| Country   | Compound                            | Food                               | Maximum Residue Limit (mg/kg)   |
|-----------|-------------------------------------|------------------------------------|---|
| Australia | Potassium salts of fatty acids      | Grapes<br>Fruit, vegetable ,cotton | Exempt when used as a fungicide on grapevines<br>Exempt when used as an insecticide on fruit, vegetables and cotton   |
| EU        | Fatty acid C7 – C20                 | All food                           | No maximum residue levels are required (Annex 4)  |
| USA       | C12 -C18 fatty acid potassium salts | All raw commodities                | Exempt from the requirement of a tolerance for residues in or on all raw commodities when used in accordance with approved label rates and good agricultural practice |

Under clause 6(3)(b) of the MRL Standards, imported food may contain residues of agricultural compounds no greater than the MRLs specified for that food in the current editions or supplements of the FAO/WHO Codex Alimentarius Commission publications *Pesticide Residues in Food* or *Residues of Veterinary Drugs in Foods*.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

### 4.8 PROPOSAL TO EXEMPT HARPIN PROTEIN FROM MRL

It is proposed that an MRL exemption is set for harpin  $\alpha\beta$  protein when used as an agricultural chemical.

It is proposed that Schedule Two of the MRL Standards be amended by adding the following:

| Compound                     | CAS# | Condition   |
|------------------------------|------|---|
| Harpin $\alpha\beta$ protein | n/a  | The source(s) of the harpin $\alpha\beta$ protein must be non-pathogenic or non-toxic to human. The extracted Harpin $\alpha\beta$ protein must be purified and be free of any bacterial cells. |

#### 4.8.1 Amendment Rationale

The proposed MRL exemption represents a new use pattern in New Zealand for harpin  $\alpha\beta$  protein. It is not suitable to be managed against a chemical concentration limit as it degrades rapidly in the field and because of its very low toxicity, human health risks are expected to be minimal.

## Chemical Information

|  |                              |
|--|------------------------------|
| Common name of compound                          | Harpin $\alpha\beta$ protein |
| Use of compound                                  | Plant elicitor               |
| Chemical Abstract Services (CAS) Registry number | n/a                          |
| Type of compound                                 | Protein molecule             |
| Administration method                            | Spray                        |

### 4.8.2 Good Agricultural Practice

Harpin  $\alpha\beta$  protein is proposed for use as a plant elicitor on horticultural crops to improve plant health, vigour and yield.

### 4.8.3 Residue Information

Harpin  $\alpha\beta$  protein degrades rapidly in the field. Therefore, it is not appropriate to be regulated against an MRL.

### 4.8.4 Dietary Risk Assessment

Harpin  $\alpha\beta$  protein degrades rapidly in the field and it has very low toxicity. Therefore the use of harpin  $\alpha\beta$  as a plant elicitor presents no dietary risk.

### 4.8.5 Toxicological/Public Health Assessment

Human health risks posed by harpin  $\alpha\beta$  are expected to be minimal. No toxic effects were observed in the available mammalian toxicity data. Therefore, exemption of harpin  $\alpha\beta$  from an MRL to the conditions specified above will not pose any health risks from the consumption of the treated crop.

### 4.8.6 Other International MRLS

| Country | Food     | Maximum Residue Limit (mg/kg)   |
|---------|----------|---|
| USA     | All food | Exempt. Must meet specified physiochemical and toxicological criteria when used as biochemical pesticides |

Under clause 6(3)(b) of the MRL Standards imported food may contain residues of agricultural compounds no greater than the MRLs specified for that food in the current editions or supplements of the FAO/WHO Codex Alimentarius Commission publications *Pesticide Residues in Food* or *Residues of Veterinary Drugs in Foods*.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

## 4.9 PROPOSAL TO EXEMPT OXALIC ACID FROM MRL

It is proposed that an MRL exemption is set for oxalic acid when used as an agricultural compound in bee colonies.

It is proposed that Schedule Two of the MRL Standards be amended by adding the following:

| Compound    | CAS#     | Condition                           |
|-------------|----------|-------------------------------------|
| Oxalic acid | 144-62-7 | Used as a pesticide in bee colonies |

#### 4.9.1 Amendment Rationale

The proposed MRL exemption represents a new use pattern in New Zealand for oxalic acid. Oxalic acid is a common substance in food, with reported levels of about 0.5 – 2%, up to 12% in spinach. Oxalic residues in honey will vary considerably, depending on the nectar source, and the proposed use is not likely to contribute significantly to the inherent levels. It is also a natural constituent of honey and is found normally in the range of 1 mg/kg to 800 mg/kg. It exhibits low volatility and is not fat soluble, thus unlikely to migrate into wax or become widely dispersed throughout treated hives. Therefore, it is not suitable to be managed against a chemical concentration limit.

#### 4.9.2 Chemical Information

|  |                           |
|--|---------------------------|
| Common name of compound                          | Oxalic acid               |
| Use of compound                                  | Insecticide               |
| Chemical Abstract Services (CAS) Registry number | 144-62-7                  |
| Type of compound                                 | Organic dicarboxylic acid |
| Administration method                            | Trickling                 |

#### 4.9.3 Good Agricultural Practice

Oxalic acid is proposed for use as an insecticide to control varroa mites in honeybee colonies after honey supers have been removed.

#### 4.9.4 Residue Information

Oxalic acid is a common substance in food, with reported levels of about 0.5 – 2%, up to 12% in spinach. Oxalic residues in honey will vary considerably, depending on the nectar source, and the proposed use is not likely to contribute significantly to the inherent levels. It is also a natural constituent of honey and is found normally in the range of 1 mg/kg to 800 mg/kg. It exhibits low volatility and is not fat soluble, thus unlikely to migrate into wax or become widely dispersed throughout treated hives. Therefore, it is not appropriate to be regulated against an MRL.

#### 4.9.5 Dietary Risk Assessment

Oxalic acid is a natural constituent of honey and is found normally in the range of 1 mg/kg to 800 mg/kg. The proposed use of oxalic acid is not likely to contribute significantly to these levels.

#### 4.9.6 Toxicological/Public Health Assessment

Oxalic acid is corrosive to the eyes and skin. It is a natural constituent of honey and is found normally in the range of 1 mg/kg to 800 mg/kg and is very unlikely the proposed use pattern will significantly increase the natural contents. Therefore, exemption of oxalic acid from an MRL to the conditions specified above will not pose any health risks from the consumption of honey or any other food containing honey.

#### 4.9.7 Other International MRLS

| Country        | Food       | Maximum Residue Limit (mg/kg) |
|----------------|------------|-------------------------------|
| European Union | Honey bees | Exempt                        |

Under clause 6(3)(b) of the MRL Standards imported food may contain residues of agricultural compounds no greater than the MRLs specified for that food in the current editions or supplements of the FAO/WHO Codex Alimentarius Commission publications *Pesticide Residues in Food or Residues of Veterinary Drugs in Foods*.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

#### 4.10 PROPOSAL TO EXEMPT POTASSIUM BICARBONATE FROM MRL

It is proposed that the current MRL exemption for potassium bicarbonate to include use as plant growth regulator.

The current entry in Schedule Two of the NZ (MRL) Standards 2013 is as follows:

| Compound              | CAS#     | Condition   |
|-----------------------|----------|---|
| Potassium bicarbonate | 298-14-6 | When used as a fungicide for fruit and cucurbits. |

The resulting entry for potassium bicarbonate in Schedule Two of the NZ (MRL) Food Standards 2013 is:

| Compound              | CAS#     | Condition                             |
|-----------------------|----------|---------------------------------------|
| Potassium bicarbonate | 298-14-6 | When used as an agricultural chemical |

##### 4.10.1 Amendment Rationale

The proposed MRL exemption represents an extension of the current use patterns for potassium bicarbonate to include use to enhance maturity of white grapes.

##### 4.10.2 Chemical Information

|  |                                   |
|--|-----------------------------------|
| Common name of compound                          | Potassium bicarbonate             |
| Use of compound                                  | Fungicide, Plant growth regulator |
| Chemical Abstract Services (CAS) Registry number | 298-14-6                          |
| Type of compound                                 | Bicarbonate salt                  |
| Administration method                            | Spray                             |

##### 4.10.3 Good Agricultural Practice

Potassium bicarbonate is proposed for use as a plant growth regulator for grapes, to be applied post veraison.

#### 4.10.4 Residue Information

Potassium bicarbonate rapidly decomposes after use to form potassium carbonate, water and carbon dioxide. These are all naturally occurring in the environment. It is not expected that levels of potassium bicarbonate resulting from treatment of fruit and cucurbits will be distinguishable from the naturally occurring levels of potassium and bicarbonate ions in the plant or environment. It is therefore proposed that potassium bicarbonate be exempted from an MRL

#### 4.10.5 Dietary Risk Assessment

No ADI has been set for potassium bicarbonate. Levels of potassium bicarbonate in harvested fruit and cucurbits will not exceed levels of potassium bicarbonate present in its use as a food additive and through the natural presence of potassium and bicarbonate ions. Therefore the use of potassium bicarbonate as a fungicide presents no dietary risk.

#### 4.10.6 Toxicological/Public Health Assessment

It has been determined that the use of potassium bicarbonate as a plant growth regulator for grapes, according to the good agricultural practice specified above, is very unlikely to pose any health risks from consumption of the harvested commodity.

#### 4.10.7 Other International MRLS

| Country   | Food                | Maximum Residue Limit (mg/kg)   |
|-----------|---------------------|---|
| Australia | All foods           | Exempt when used as a fungicide   |
| Canada    | Food and feed crops | Exempt  |
| USA       | All foods           | Exempt when applied as a fungicide or post-harvest fungicide in accordance with good agricultural practices |

Under clause 6(3)(b) of the MRL Standards imported food may contain residues of agricultural compounds no greater than the MRLs specified for that food in the current editions or supplements of the FAO/WHO Codex Alimentarius Commission publications *Pesticide Residues in Food or Residues of Veterinary Drugs in Foods*.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

### 4.11 PROPOSAL TO EXEMPT SOYA BEAN OIL FROM MRL

It is proposed that an MRL exemption is set for soya bean oil when used as a fungicide.

It is proposed that Schedule Two of the MRL Standards be amended by adding the following:

| Compound      | CAS#      | Condition           |
|---------------|-----------|---------------------|
| Soya bean oil | 8001-22-7 | Used as a fungicide |

#### 4.11.1 Amendment Rationale

The proposed MRL exemption represents a new use pattern in New Zealand for soya bean oil. Soya bean oil is a common ingredient in food. Soya bean oil contains saturated and unsaturated fatty acids. Therefore, it is not suitable to be managed against a chemical concentration limit.

#### 4.11.2 Chemical Information

|  |               |
|--|---------------|
| Common name of compound                          | Soya bean oil |
| Use of compound                                  | Fungicide     |
| Chemical Abstract Services (CAS) Registry number | 8001-22-7     |
| Type of compound                                 | Vegetable oil |
| Administration method                            | Spray         |

#### 4.11.3 Good Agricultural Practice

Soya bean oil is proposed for use as a fungicide to control *Botrytis cinerea* and powdery mildew in grapes. It will be applied from pre-bunch closure to veraison with 2 to three applications.

#### 4.11.4 Residue Information

Soya bean oil is a common ingredient in food. It contains saturated and unsaturated fatty acids. Therefore, it is not appropriate to be regulated against an MRL.

#### 4.11.5 Dietary Risk Assessment

Soya bean oil is an ingredient in food. It is one of the most widely consumed cooking oil. The proposed use is not likely to contribute significantly to the levels normally found in food.

#### 4.11.6 Toxicological/Public Health Assessment

Soya bean oil exhibits low toxicity. It is a common ingredient in food. Therefore, exemption of soya bean oil from an MRL to the conditions specified above will not pose any health risks from the consumption of the treated commodities.

#### 4.11.7 Other International MRLs

There are no other international MRLs for soya bean oil.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.

### 4.12 PROPOSAL TO EXEMPT SYNTHETIC LATEX FROM MRL

It is proposed that an MRL exemption is set for synthetic latex when used as an agricultural chemical.

It is proposed that Schedule Two of the MRL Standards be amended by adding the following:

| Compound        | CAS# | Condition                   |
|-----------------|------|-----------------------------|
| Synthetic latex | n/a  | Used as an anti pod shatter |

#### 4.12.1 Amendment Rationale

The proposed MRL exemption represents a new use pattern in New Zealand for synthetic latex. The proposed use (applied to prevent pod from splitting open and losing the seeds) and difficulty in determining any residues, synthetic latex is suitable to be exempted from the requirement of an MRL.

#### 4.12.2 Chemical Information

|  |                  |
|--|------------------|
| Common name of compound                          | Synthetic latex  |
| Use of compound                                  | Anti pod shatter |
| Chemical Abstract Services (CAS) Registry number | N/A              |
| Type of compound                                 | Polymer          |
| Administration method                            | Sticker          |

#### 4.12.3 Good Agricultural Practice

Synthetic latex is proposed for use as an anti-pod shatter sticker in oil seed, rape and other brassica seed crops.

#### 4.12.4 Residue Information

Synthetic latex consists of multiple components. Due to the large number of components in the compound, it is difficult to determine an appropriate marker residue that would be consistent for all sources of the latex.

The compound is a polymer. Polymers are ubiquitous as they are used in all different type of applications. As such, analysis of residues in food resulting from the use of synthetic latex will not be accurate. On this basis setting an MRL will not be appropriate.

#### 4.12.5 Dietary Risk Assessment

Synthetic latex is not applied directly onto the seed. Therefore there is limited potential for dietary consumption.

#### 4.12.6 Toxicological/Public Health Assessment

Generally polymers have low toxicity as they have limited bioavailability. This is because they are macromolecules thus cannot pass through biomembranes. Therefore, exemption of synthetic latex from an MRL to the conditions specified above will not pose any health risks from the consumption of treated commodities.

#### 4.12.7 Other International MRLS

There are no other international MRLs for synthetic latex.

To meet New Zealand's obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures the proposed MRL will be notified to the World Trade Organization. Any country may choose to comment if they believe the proposed MRL represents a barrier to their trade.