

# **SPRAY USE IN THE KIWIFRUIT INDUSTRY**

**HOW ARE WE COMMUNICATING WITH OUR  
COMMUNITY IN THE BAY OF PLENTY**

CRAIG WARD

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## EXECUTIVE SUMMARY

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This report provides a review of how we are communicating with our communities (grower communities and wider public) within the context of the Bay of Plenty kiwifruit industry, as a way of starting to answer the question of whether we are adequately communicating, and if there are areas we need to focus on for improvement.

Sources reviewed included material made available by the Bay of Plenty Regional Council, Zespri, New Zealand Kiwifruit Growers Incorporated, traditional news media, alternative news media, and social media. There were also conversations held with several orchardists. The goal was to find information that would come up when a member of the public searches, and this meant that not all sources were the newest available.

The first sources that came up in most searches were from the regional council, followed by news media and social media. Material from the kiwifruit industry tended to be further down the list unless the search terms were modified with terms related to these (such as adding “Zespri” or “NZKGI” to the search). While most sources were quite balanced, alternative media had a tendency to publish more opinion pieces which were often negatively pointed towards spraying, and social media was all negative with one or two exceptions.

How should we communicate with our communities going forward?

- Grower education – Make sure growers understand what their responsibilities are, and what their neighbours’ expectations are. Ensure that they know how to use their products correctly.

- Community education – Help the community understand what their rights are, so that they understand there are laws to help protect them. Inform them as to what types of products we are using, why we’re using them, how those products compare to their alternatives, and what steps we have taken as an industry to reduce the impact we have on our neighbours through spraying.

The report finds that the kiwifruit industry is in the process of developing a strong communication programme regarding orchard spraying, but that the information we want to get in front of the public isn’t necessarily being shared with them right now. The industry has made great improvements to our spray practices in the last few years, and we need to make sure we promote this to the community prior to any major spray application periods via newspapers, mailbox drops, and community meetings, to counter the negativity before it becomes a major issue.

A time limitation while working on this report has led to detailed interviews with orchardists and the public not being conducted. Some additional work needed is suggested in the “Next Steps” section for anyone wanting to go into more depth on the issue of communication regarding spraying and agrichemicals.

## ACKNOWLEDGEMENTS

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After writing a 45-page report, it might seem counter intuitive to want to thank the people who initiated it. However, Dr Patrick Aldwell, Anne Hindson, and Desley Tucker have obviously put in a huge amount of effort to give us the opportunity to hear from inspirational leaders, to take educational classes, and to challenge ourselves within an environment from which we can develop ourselves. It is also clear that a programme of this quality and scale wouldn't have been possible without the funding provided by the strategic partners and programme partners.

I would like to acknowledge Anne Hindson for the direction you provided me when I was trying to decide on a topic and what direction I might take it in. And Patrick Aldwell for your encouraging words when I was only able to provide a few pages as a draft for review not long before the due date. My appreciation goes to Anthony Pangborn for the time and advice you gave me, and to those who gave their time for interviews or discussions.

Finally, I need to thank my wonderful wife for putting up with the late nights, and unsociable weekends. I'm not sure how I would have stayed on track without her.

## 1.0 INTRODUCTION

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In 2010, community angst around spraying on kiwifruit orchards, in particular *Hydrogen cyanamide*, had reached a high, which included picketing outside the Zespri offices (Skipage, 2016), and front page news on the Bay of Plenty Times newspaper (Lynch, 2016). Around this time a spray action group was formed which consists of Zespri, The Bay of Plenty Regional Council (BOP), NZ Post, and New Zealand Kiwifruit Growers Incorporated (NZKGI). The aim of this group is to promote improved orchard spray practices and to educate the public around orchard spraying. Over the six years since that point, we have seen big improvements in spray practice, and growers are more open to taking their neighbours' concerns into account.

Prior to the formation of the Spray Action Group there were around 40 complaints related to *Hydrogen cyanamide* lodged with the council each year (Skipage, 2016). This dropped to around a quarter of that number in more recent years, and in the winter of 2016 it was down as low as two complaints (Lynch, 2016). *Hydrogen cyanamide* is the spray with the greatest level of public discomfort about its use, it is the most immediately noticeable if there is spray drift, is used by almost every conventionally managed orchard, and is sprayed in the Bay of Plenty close to 2,500 times within the space of five weeks. It therefore makes a useful candidate for measuring success in improving practices and public communication.

There is a common perception within groups in the public that we are heavy users of dangerous agrichemicals, and every time we spray they believe we are putting their health at risk. Due to my role within the kiwifruit industry, I am aware of the effort that is made to reduce the impact on our neighbours and the process of assessing and replacing products on the allowed product list with

friendlier alternatives. When it comes to issues like this, perception is reality, and unfortunately public perception often lags behind where we are now.

The aim of this project is to review what information is available to our Bay of Plenty communities around spray usage in the kiwifruit industry. Information will be consolidated from traditional media, alternative media, social media, the kiwifruit industry, the regional council, and others. The hope is that the report provides a background of what the public perception is, why we need to be addressing these perceptions, and identify some areas where action is needed.



## 2.0 METHOD

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Given the scope of the project, and the way that it focuses on keeping communities informed, it is important to review what information is available to the public.

### 2.1 PUBLICLY ACCESSABLE INFORMATION

Upon review, the two main sources of information that people are likely to access are the internet – due to easy access, and their neighbours, friends, and family – due to this being a popular topic of discussion for people living near orchards. For this reason, is it important for us to include these more casual sources alongside more traditional sources in the literature review. A particular emphasis will be placed on local and regional council, and news media as it is likely that the community will view these as their authoritative sources in comparison to material produced by the kiwifruit industry.

While the council sources are likely to be neutral in their information, there is a larger potential for bias from sources such as blogs, social media, and conventional media (regardless of whether they introduce that bias or not). While our community might take these at face value, it is important for us to analyse these critically. We need to consider the author's background, personal bias, any potential agendas, and beliefs. This also means that within the context of this project, we need to make sure not to dismiss them if we think they aren't an authoritative source, because their opinions and perspectives are a critical part of answering how well we are communicating with our communities. There is also proof that if the person is seen as an opinion leader in the field, that they will have a greater influence on the opinions of those reading their material (Winter & Neubaum, 2016).

## **2.2 FORMAL INTERVIEWS AND INFORMAL DISCUSSIONS**

As for the second type of source, a series of short and informal interviews with a few key targets would help answer the project question. Those formally scheduled for interview are both Zespri staff who are involved in spraying and communication. They will describe the processes that Zespri currently has in place, as well as discuss plans for the future. This will help to give context to Zespri's current understanding and their stance on the topic of communicating with our communities. A question and answer style interview approach will be applied here.

Casual sources include several conversations with orchardists who deal regularly with notifying neighbours and applying sprays, including those who have had issues with neighbours as well as those who haven't. These will take part as casual conversations, and won't be recorded to maintain the casual and open nature of the discussion. The opinions expressed here will be used to help direct the project and form parts of the report.

## 3.0 LITERATURE REVIEW AND BACKGROUND

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### 3.1 WHAT ARE THE LEGAL REQUIREMENTS FOR ENFORCEMENT BODIES

The relevant documents of control and required authority actions are:

- Resource Management Act (1991) (RMA) – Specifies that Environment Bay of Plenty is responsible for the control of spraying within the region. It also specifies that the council doesn't have the power to stop a land owner from spraying as part of their business practices unless they are deemed to be in breach of the RMA (BOP Regional Council, 2016a)
- Regional Air Plan – Sets the standard for sustainable processes in practices which cause discharge into the air around the Bay of Plenty. Therefore, it specifies what spray operators can do and what they can't do from a regulatory approach, not designed for contractors to read and use as part of their everyday process, so it doesn't fill that purpose. The document is formed around public complaints identified during surveys carried out in 1992 and 2005 (Environment Bay of Plenty, 2003)
- Local health protection authorities are required to investigate claims from people who feel their health has been affected by spray drift (BOP Regional Council, 2016a).
- Under Ministry of Primary Industry regulations, spray drift damage to other properties (plants in particular) could result in criminal charges (BOP Regional Council, 2016a).
- The Environmental Protection Agency (EPA) is responsible for handling the risk to people and the environment from hazardous substances, including agrichemical use (BOP Regional Council, 2016C)

The decision around which enforcement body will take the lead on any investigations can be assessed using the flow chart shown in Figure 1 below.

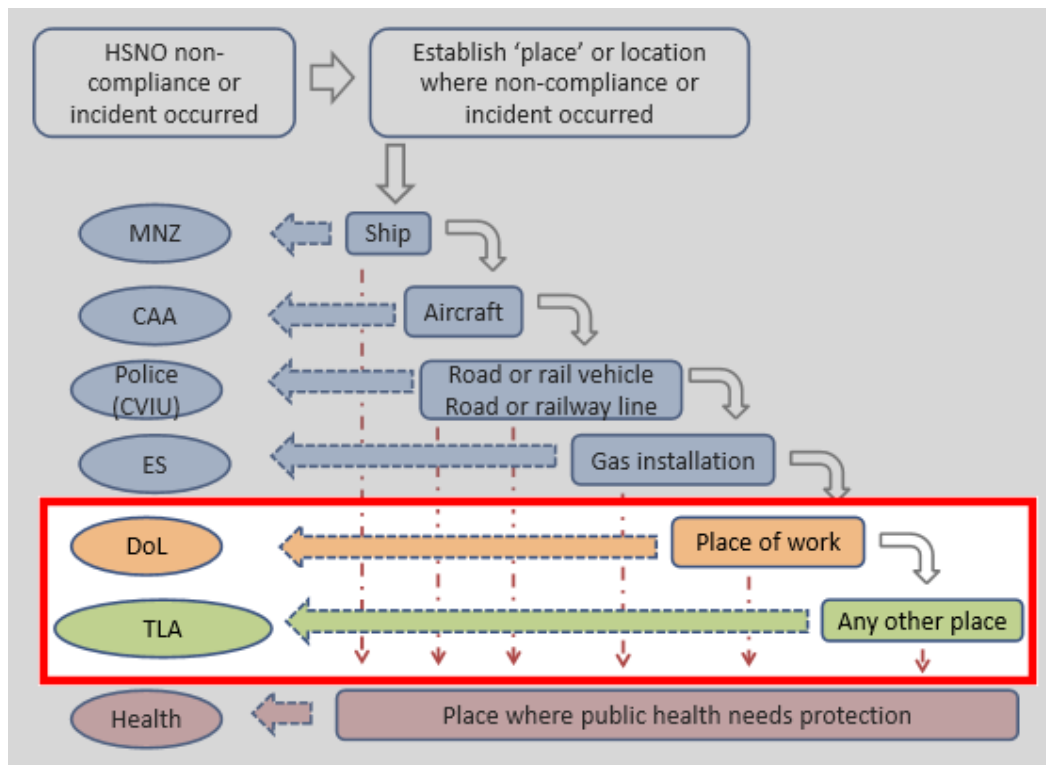


Figure 1. Flow chart showing the decision-making process for selecting which regulatory body is responsible for leading the investigation into an agrichemical complaint. Department of Labour (now part of Ministry of Business, Innovation, and Employment) and The Local Authority (Regional Council) have been highlighted as these are the most likely to be involved in a kiwifruit orchard spray complaint. Reproduced from (Environmental Protection Authority, 2012)

## 3.2 WHAT ARE THE LEGAL REQUIREMENTS FOR SPRAY

### APPLICATORS?

Spray applicators are required to follow a few rules when applying agrichemicals:

- Notify the occupier or tenant of any adjacent property which is within 50 metres of the point of discharge, that spraying will be happening (BOP Regional Council, 2016B).
- They must give this notification no less than 12 hours prior to the start of spray application (BOP Regional Council, 2016B).

- They must also display signage at the entrance to the orchard which states the agrichemical being used, the time of application, the re-entry period, name and contact details of the applicator (BOP Regional Council, 2016B). These signs must be displayed at least 24 hours before spray application (Zespri, 2012).
- If the spray being applied is one of a short list of key identified sprays, such as *Hydrogen cyanamide*, then it is a legal requirement to spray using air induction (AI) nozzles and a drift reducing additive, to minimise the potential impact on neighbours.
- It is strongly recommended not to spray when wind speed is above 20km/h to reduce off target spraying and to reduce spray drift (BOP Regional Council, 2016B). Industry best practice recommendations suggest not spraying in anything more than a gentle breeze – wind felt on face, and leaves rustling – to reduce potential for drift (Zespri, 2012)

### **3.3 HOW ARE GROWERS COMMUNICATING WITH THEIR NEIGHBOURS**

As part of the required notification process, growers are contacting their neighbours prior to spray application. The most common method is via text (SMS) messages. While this simplifies the notification process, it also removes much of the opportunity for people to ask questions about the products being used. We currently have two spray notification businesses, which will handle the legally required notifications to neighbours on behalf of the land owner or spray applicator, for a small fee. One of these, SeeSpray, has a unique system which still uses SMS message, but includes URL links for people to click which includes custom tailored product information pages giving more detail on the product being used.

One of the growers I talked to who has an orchard surrounded by subdivision makes a point of going around each winter about a couple of weeks before applying *Hydrogen cyanamide* to talk to each neighbour face to face about spraying on his orchard, what he plans to be doing, how he will notify them, and so forth.

### **3.4 WHAT INFORMATION IS AVAILABLE FROM THE REGIONAL COUNCIL**

One of the main local sources of information on agrichemical use and spray drift in the Bay of Plenty is the Bay of Plenty Regional Council website, where there are several pages dedicated to spraying and agrichemicals.

#### **3.4.1 DEALING WITH SPRAY DRIFT**

On a page about agrichemical spray drift, the effects section states

*Spray drift can affect your health, how badly will depend on such things as the extent of the drift, the chemical makeup of the spray, and the concentration of the spray. If you have concerns about your health, after there has been spraying in your area, contact your doctor or health professional (BOP Regional Council, 2016a).*

The message about seeking medical advice if you think you've been poisoned also appears in other council sources such as (BOP Regional Council, 2016B).

### **3.4.2 RECOMMENDATIONS DURING SPRAYING**

(BOP Regional Council, 2016a) recommends that people:

- Stop any outdoor activity – for example, children and pets playing outside.
- Close windows.
- Bring in washing from the line.
- Store some water in clean containers. (To keep it clean, add ½ a teaspoon of household bleach per 10 litres.)
- Disconnect the pipes to any water tanks collecting rainwater from a roof.
- Cover fishponds.

The council’s public document entitled “Kiwifruit Spraying: Answers to Common Questions” has similar recommendations, suggesting that those who are sensitive to agrichemicals should remain inside while spraying is happening, washing shouldn’t be hung out during spraying, pets should be kept inside to stop them entering the orchards, and some sprays might require the stock near the boundary to be moved (BOP Regional Council, 2016B).

### **3.4.3 COUNCIL RESPONSIBILITIES**

The BOP Regional Council doesn’t have the power to stop orchardists spraying as part of their standard business practice – unless they deem that application to be breaching the Resource Management Act – regardless of how much a neighbour doesn’t approve of agrichemical use or how many complaints are laid with the council (BOP Regional Council, 2016B). It is important to note that members of the public don’t have the ability to stop their neighbour from spraying, even if they believe that the RMA has been breached (BOP Regional Council, 2016B), they must report it to the council to investigate instead.

Discussions between the author and growers who have had complaints laid against them have found that in most cases the council investigators are reasonable in their assessments and will assess the conditions at the time of application as well as checking that legal requirements have been met.

#### **3.4.4 THOUGHTS ON COUNCIL INFORMATION**

The regional council guidelines for what the community should do to minimise the risk of spray drift affecting them are sensible for scenarios where substantial spray drift is expected. Unfortunately, in the first council source cited (BOP Regional Council, 2016a), because they are listed as recommendations for avoiding spray drift in general, rather than targeted at specific products, they could add to the negative perception of agrichemical and non-agrichemical spraying. There is no context presented as to which type of sprays might warrant this type of behaviour, or how close you must be to the spray source to be concerned. To further add to the perception that all agrichemicals are highly toxic, the recommendation of storing clean water also encourages people to add 2.5 ml of bleach per 10 L of water, which could subconsciously cause people to assume that agrichemical spray drift is more dangerous than drinking a solution which contains bleach, regardless of the product being applied.

Fortunately, in the second council source (BOP Regional Council, 2016B), it specifies that the more in depth spray avoidance instructions are aimed at those who are sensitive to agrichemicals. There are two other key points in this second source which I feel should be pointed out. One which has the potential to be viewed as negative is that when asked “Can I stop someone from spraying their orchards because I don’t like sprays?” the answer begins “Unfortunately you cannot stop...”. The use of “unfortunately” gives the impression that the neighbour should have the ability to stop a business practice vital to running a commercial orchard, and that it is just unfortunate that the law doesn’t allow this. However, there is a positive comment which is important to have in a



document like this; it mentions that there is improved spray technology in use by the kiwifruit industry in recent years which minimises spray drift, and that if the orchard being sprayed has a good shelterbelt then the risk of drift that would affect neighbours is very low.

All things considered, the information available from the council website is factual and sensible, without any unnecessarily concerning information, only some minor wording which could cause potential negative outcomes.

### **3.5 WHAT INFORMATION IS AVAILABLE FROM THE KIWIFRUIT INDUSTRY**

The information from these sources tends to portray agrichemicals in a more positive light, while still impressing upon orchardists and the public, the need for care and consideration during use. As expected most of these sources tend to be more targeted towards orchardists.

#### **3.5.1 REQUIREMENTS AND RECOMMENDATIONS**

General spray recommendations from industry sources are in line with those from the council, with a number of *Hydrogen cyanamide* specific parameters to suit the target audience. They include:

- Air inclusion (AI) nozzles are compulsory when applying *Hydrogen cyanamide* [and a couple of other controversial products], due to the effect they have at reducing spray drift. Drift reducing adjuvants must also be used with these products (Zespri, 2014).
- Neighbours must be notified of spraying at least 12 hours prior to application (Zespri, 2014).
- Recommended not to apply *Hydrogen cyanamide* if wind conditions are more than a light breeze (Zespri, 2014).

- A decent shelter such as evergreen trees [or a decent thickness of a cloth artificial shelter] around the outside of the orchard is recommended to act as a boundary for spray drift. Otherwise Zespri recommends to allow a 30 metre buffer zone (Zespri, 2014), or using methods such as turning off one side of the sprayer when near the road to stop overspray (Skipage, 2016).
- Take care regarding school children walking passed, people exercising or walking pets, and the rural post delivery (Zespri, 2014).

### **3.5.2 MESSAGES TO THE PUBLIC**

Community members are encouraged to report spray operators who are breaking the rules to the BOP Regional Council, because the clear majority of applicators are getting it right and the kiwifruit industry considers it unacceptable for anyone to be breaking these rules (Zespri, 2014; Skipage, 2016; Lynch, 2016). For example, out of almost 2,500 *Hydrogen cyanamide* applications over a five week “application window” in 2016, there were two complaints logged with the BOP Regional Council. There were ten in the 2015 season.

An action group was setup in 2010 to discuss issues around *Hydrogen cyanamide*, the spray with the most negative public attention by the public (Skipage, 2016). This group consists of Zespri, NZKGI, BOP Regional Council, community groups, and other interested parties (Zespri, 2014). This group meets to discuss spray use in the Bay of Plenty and this helps develop key guidelines for kiwifruit spraying including: arranging best practice education; developing standards for better notification of neighbours and signage usage; pushing for adoption of new technologies to reduce spray drift; improvements to the investigative process for determining compliant and non-compliant spraying; and developing proactive relationships between the kiwifruit industry and community spray action groups (Zespri, 2014).

### **3.5.3 THOUGHTS ON INDUSTRY INFORMATION**

The previously cited “Spraying on Kiwifruit Orchards” document (Zespri, 2014) is published in winter each year and kept up to date with current spraying information – the latest version is from 2016. Older versions have been cited here since they are the ones that come up when searching online, and are therefore the ones most likely to be seen by our community. They discuss legal requirements of applicators and industry best practice in a manner that effectively says “look what we’re doing to keep you safe”, and encourages members of the public to lodge any spray complaints which helps reduce concerns that people might have regarding bias.

Importantly, the industry documents are quick to point out that not every spray being applied is an agrichemical, and that while there are agrichemicals applied, there has been an increasing trend towards foliar fertilisers, especially seaweed based ones. Public perception to these sorts of products is much more positive than agrichemicals, and people would tend to assume that every spray was an agrichemical if this distinction wasn’t made.

These industry documents are quite a good source of information for showing what the industry is doing in terms of agrichemical control and is quite credible since it is a joint publication by Zespri, NZKGI, BOP Regional Council, and NZ Post. This means that all four organisations have had input into, and verified the information within this document, which gives it a lot of credibility as a non-biased source of information.

There is other information available from product manufacturers and spray merchants, but as this is more difficult for the public to find, and very unlikely to show up in their searches it hasn’t been cited here.

## **3.6 WHAT INFORMATION IS AVAILABLE FROM THIRD PARTY SOURCES**

These third-party sources, which include traditional media, social media, family and friends are likely to be the number one source of information for most people, due to the way that most of these can be obtained passively i.e. not necessary to actively seek the information. People are already reading the news or browsing social media, so the likelihood of people coming across information about sprays without looking is relatively high. Likewise, family and friends are likely to give their views on spray use if the topic came up in conversation. Often these sources are harder to control and with the exclusion of traditional media, there is a high chance for the spread of half-truths or incorrect information.

### **3.6.1 TRADITIONAL MEDIA**

When searching local Bay of Plenty newspapers and news websites, there were a few articles covering “the start of the kiwifruit spraying season”. These articles discuss how as part of the Bay of Plenty Spray Focus Group, Zespri, NZKGI, Kiwifruit Vine Health (KVH), BOP Regional Council, and members of the public are working to reduce spray concerns by designing and promoting best practice spraying (Bay of Plenty Times, 2015). These articles mention the same sorts of requirements of growers around notification and communication with neighbours as the council and industry sources do. When *Hydrogen cyanamide* is discussed, there is mention of how the spray improves production on orchard, showing why it is useful to the industry (Bay of Plenty Times, 2015).

A press release from the BOP Regional Council is available from August 2016 on [scoop.co.nz](http://scoop.co.nz), which is presenting a similar message in regards to application requirements, and why *Hydrogen cyanamide* is needed by growers. There are some additional key messages, which include

*Bay of Plenty Regional Council Senior Pollution Prevention Officer, John Morris, said that growers are usually compliant with spray rules, but in some areas, a little extra care is appropriate (Scoop Media, 2016).*

And

*Kiwifruit growers are part of the community. If everyone works together to look out for each other we can keep building on the great work that's been done over the past few years to improve spray management. Unsafe or un-notified spraying should be reported... (Scoop Media, 2016).*

### **3.6.2 ALTERNATIVE MEDIA**

Sunlive is a Bay of Plenty specific news website which specialises in “first on the scene” style news along with community focused stories. In an article about local man Tommy Kapai, who is concerned about spraying in his area (Kendon, 2012), they incorrectly identify the purpose of using Hicane, and incorrectly identify some of the legal requirements around spray notification. Tommy’s anti-agrichemical views are quoted several times throughout the article, and these are presented as if they were fact. Examples include

*They use Hicane like Agent Orange was used in Vietnam. It is a defoliant that strips the [vines] of growth to cheat nature into an early bud*

*There’s an 80 percent increase in respiratory problems in Te Puna in August and September which is the Hicane spray season*

*The spray just sits there like a fog. You can’t really escape it*

*...but until I can come up with the science to prove all of this...*

### 3.6.3 SOCIAL MEDIA

Social media is defined as “websites and applications that enable users to create and share content or to participate in social networking” (Oxford English Dictionary, 2016). In addition to popular social networks, the comment section of news websites will be considered social media in this report, as they allow users to create and communicate content.

Support for spraying by the kiwifruit industry isn't very frequent, but can be found on social media, examples include

*Hicane spraying coincides with the pine pollen season & many people sensitive to pollen blame their condition on Hicane poisoning (mr mizprint, 2011).*

Mr mizprint then goes on to explain that Hicane isn't a hormone spray as he claims has been reported in the past, and then comments on the function of the product.

Support against spraying by the kiwifruit industry has a few main focuses, the first is related to air pollution and the effect on human health.

*So once again the [kiwifruit] industry goes ahead and pollutes the air of the region with a chemical that should not be tolerated... ...All this is subsidised by degradation [sic] of our health and wellbeing and damage to our gardens from spray drift on windy days... (the\_fourth\_estate, 2011).*

Other commenters share the same sentiments

*...one might know why one feels unwell all the time, without actually being sick... (sojourner, 2011).*

*We are not being told the truth ... The spray Hi Cane is ‘killing our people’. How do I know this? By the amount of Western Bay folk who have cancer, and [from] speaking with [cancer patients] at the lion’s cancer lodge in Hamilton... 85% of the people receiving treatment lived in the ‘Spray Zones’ ... It was bloody sad and angered me that for the sake of the kiwifruit [industry] and the almighty dollar we have an undisclosed cancer epidemic in the Western Bay ... what are we doing about it? Nothing!! ... I don’t know how these people can sleep at night knowing fully what they are doing ... (bobs8, 2011).*

Another common focus of commenters is the safety of their families.

*i [sic] hate this time of year! poison in the air I wish they had to use natural products the thought of our kids breathing this is terrible (lanzgirl, 2011)*

### **3.6.4 THOUGHTS ON THIRD PARTY SOURCES**

These are the sources that have the potential to do the most damage to the reputation of our industry in the eyes of our community. Many of the mainstream news media sources were articles produced from press releases from organisations such as Zespri and the BOP Regional Council, and the messages were standard fare. Examples of these are (Bay of Plenty Times, 2015) and (Scoop Media, 2016).

However, alternative media such as Sunlive (Kendon, 2012), tends to prefer the community opinion type stories. In the case of the article cited above, they have printed the opinion of a well-known anti-spray advocate as though it is fact, including a quote hidden away in a paragraph saying “...but until I can come up with the science to prove all this...” confirming that this is an opinion piece. The article does show some balance by allowing Mike Chapman, CEO of NZKGI to make

statements to the contrary, but because these appear later in the article, many people who are concerned about agrichemical use and have found this article, would have already formed their opinions based on the first part of the article.

It should be noted that contrary to council, industry, and traditional media sources the alternative and social media sources tend to reference things they have been told by a friend, or family member without disclosing the authority which they hold to be making those claims.

### **3.7 WHAT IS BEST PRACTICE FOR AGRICHEMICAL USE IN THE KIWIFRUIT INDUSTRY**

The (BOP Regional Council, 2016a) has a set of generic agrichemical use guidelines which can form the basis of a best practice recommendation. These are to follow all regulatory requirements laid out in the Bay of Plenty Regional Air Plan, to pay careful attention to the product label instructions [particularly around toxicity and spraying conditions], to only use qualified and experienced spray contractors, and to follow the Growsafe Agrichemical Users' Code of Practice.

When considering environmental conditions when spraying, it is strongly recommended not to spray when the wind speed is over 20km/h (BOP Regional Council, 2016B) as this increases off target application, gives greater risk of spray drift, and has a higher likelihood of impacting on neighbours.

Additional recommendations from (Zespri, 2014) include using AI nozzles and drift reducing adjuvants when spraying certain products. Additionally, applicators following all legally required



notification regulations, and using courtesy and common sense with the requirements of the community. Finally, thought should be given to how spray droplets can be contained within the property, such as maintaining thick external shelter, or switching off the outside bank of spray nozzles when next to the road.

## 4.0 FINDINGS AND ANALYSIS

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What was apparent to the author is that there is plenty of information available when one does an online search – the method which is most likely to be used by members of the public looking to learn more about spraying in their area. When searching for “agricultural AND kiwifruit AND bay of plenty” the information sources at the top of the list were council based, followed by news media sources, and finally some information from the kiwifruit industry. If you start adding words such as “poisoning” a few additional sources come up with information about the damage they believe these sprays cause.

### 4.1 BAY OF PLENTY REGIONAL COUNCIL

The council sources are fairly well rounded in terms of avoiding most bias towards either the industry or the community, and focuses mostly on what the legal requirements are for spray applications. It is encouraging that these could be the first sources that people view when hunting for information. However, the council information is not without concern. I found that some of the wording used and emphasis put on dealing with more extreme spray drift situations could scare those who are looking for a bit of information on what they need to know about living near an orchard. Members of our community might come away with concerns about their safety even when their neighbour is following best practice spraying and regardless of the type of product being used.

## 4.2 TRADITIONAL MEDIA AND SOCIAL MEDIA

The news media articles can vary in how they report on agrichemical use, with some sources unfortunately tending towards reporting on the opinions of anti-agrichemical advocates. Many people won't make the distinction between factual news and opinion pieces, and will credit these articles with the same level of authoritative weighting as they would give to any well-known news media. The clear majority of social media sources are negative towards agrichemical use in the Bay of Plenty kiwifruit industry. This is almost certainly because members of the public who feel that the official information from the council, or information being presented by the industry isn't accurate, are more likely to use social media as a tool to express their views. As are those who are philosophically opposed to the use of agrichemicals on orchards, as they feel the need to rally against the status quo. These two points are directly comparable to the common practice of using online avenues to complain to the public, as outlined in a research paper by (Ward & Ostrom, 2006) focusing on online consumer complaint outlets to express dissatisfaction in goods or services. In this case, those who are unhappy with spray use will use a common pattern to make their complaint appear relevant to others. They will identify an injustice (real or perceived), and use it to provoke outrage (Ward & Ostrom, 2006). Then they will identify who they believe is responsible for the injustice (orchardists, Zespri etc), and can go as far as to associate a perceived intentional harm with their actions so that there is a common enemy (Ward & Ostrom, 2006). Finally, some complaints will go as far as to call people to action (e.g. "We can't let them get away with this") to rally people to their cause, thus growing the negative movement (Ward & Ostrom, 2006). The problem we face from this is that many of the people expressing their views in this way present them as though they are fact, and it isn't uncommon to find claims being made that have a weak science or no science behind them.

### **4.3 THE KIWIFRUIT INDUSTRY**

The industry sources understandably have the least mention of harmful side effects from some sprays – although this isn't to say they are missing, they are just given less emphasis. The information here focuses mostly on a few factors, such as what the legal requirements are for spray applicators, what the best practice recommendations are for the industry to follow, and messaging on what steps the industry is taking to reduce the impact that spraying has on the public. Industry sources often contain the most factual information of a non-legal nature (as opposed to the council information which mostly focuses on legal requirements). Material put together by the industry has protecting the industries reputation as a key driver, as well as the goal of making sure that those who live around orchards understand the sprays being used and the reasons for why they are being used. The industry focus is education.

### **4.4 FUTURE PROJECTS IN DEVELOPMENT**

As I was reading through the available literature, talking to growers, and summarising the complaints people had who were vocally against spraying in the Bay of Plenty, I started to identify some key areas which could be addressed to improve our communication. Later in the project I interviewed a couple of key staff at Zespri who are involved in agrichemicals, spraying, and communication and they detailed a project which is currently being developed in conjunction between the BOP Council, Zespri, NZKGI, HortNZ, [Avocado Industry Council], EPA, Bee Keepers, Feijoa Industry, Agcarm, and the Spray Watch Community (Lynch, 2016). This project focuses on educating growers as to their responsibilities when spraying, including the needs and concerns of their neighbours, and on how we will educate the community on what we spray, why we spray, and how we spray.

#### 4.4.1 GROWER EDUCATION

How well growers follow the regulations, how they interact, and more importantly how they react when dealing with their neighbours plays a huge part in generating or reducing public agitation around spray use on kiwifruit orchards. Zespri acknowledges this and picked it as one of the early areas of focus for reducing spray complaints.

*[One of our initiatives] is educating growers and spray contractors, we've got a really concerted programme through OPC, and NZKGI through their comms channels, and KVH as well. This is all around best practice, not just Hicane, but all spraying in general. (Lynch, 2016)*

This messaging is done in multiple ways, including guides available via the Zespri website or in their kiwiflier newsletter, via NZKGI newsletters, presented at the annual Crop Protection Forum, at field days run by Zespri and packhouses. The idea is that if you say it in enough different ways, eventually it will become ingrained (Lynch, 2016). (Lynch, 2016) says that this approach extends to spray contractors too, due to the responsibility that many growers place on them to handle the spraying requirements on their properties.

When growers were told that they would be legally required to spray using AI nozzles and a drift reducing adjuvant when using certain products, there was a lot of frustration from those who thought they were compromising the performance of the products by doing that. However, Zespri has put a lot of time and funding into research trials showing that using these technologies properly resulted in no decrease in efficacy.

*There was a lot of concern about AI nozzles not working and growers were reluctant to use them. So we've done lots of work to actually prove that AI nozzles are effective. So just building the trust in that technology so growers are more accepting of it (Skipage, 2016).*

That work also extends to showing growers how just because they are using the correct technology, doesn't mean that they can stop being vigilant to weather conditions and sprayer setup.

*... at this year's crop protection forum we had the video of a spray drift event of a grower who was using AI nozzles, but he was getting it wrong. And that visual impact, everywhere we went everyone in the room was like "WOW, oh man!". And they understand that without the technology we don't have the product (Skipage, 2016).*

#### **4.4.2 PUBLIC PERCEPTION**

One of the most controversial sprays we use is *Hydrogen cyanamide*, due to the immediacy of signs and symptoms of spray drift, and the reputation it has as being the most toxic product we still use.

*A lot of the issue around Hicane [Hydrogen cyanamide] is that if you do stuff up and get drift, it is immediately apparent... [signs and symptoms described here] ... Because of that immediate impact, I believe it's what people are [most] concerned about it, it's a particularly nasty chemical. (Skipage, 2016)*

For this reason, it also gets the most time and space dedicated to it in news media articles, on social media, and during agrichemical use discussions. There is also a lot of misinformation being spread about this spray, which has a wider reaching impact that affects the perception of all products we use.

*...because there is a little bit of information out there [about Hydrogen cyanamide], people have this misconception that every spray we are putting on is hicane. It doesn't matter if it is January or February "Oh it's Hicane" and "it affects people's breathing and health" and so on. (Skipage, 2016).*

This quote is supported by research I've done into comments people are making on social media and to growers I've talked with, such as examples of people claiming to have been drifted with *Hydrogen cyanamide* in summer. It is highly unlikely to be *Hydrogen cyanamide* as it would defoliate vines and remove fruit at that time of year.

#### **4.4.3 COMMUNITY EDUCATION**

Due to the disconnect between public perception and reality with many spray activities and products, Zespri has seen the need to partner with the BOP Regional Council, NZKGI, KVH, and NZ Post. This partnership was developed to craft the message in a way that is fair to growers and fair to the public, so that it considers the point of view of both sides.

*One of the things that the industry has done is that we work particularly closely with the BOP Regional Council, because they are the ones that take the complaints and are doing the investigations. Zespri working alongside NZKGI and the council have really tried to engage with the communities and gauge their concerns [regarding spraying]. Since 2010 ... we've had regular meetings and engagements with community groups ... and the local posties as well ... we try to understand their concerns and their complaints...*  
(Skipage, 2016)

Once we have a handle on the concerns being expressed by our communities, we need to educate them as to the types of agrichemicals being used.

*Part of the challenge is that there are agrichemicals, and there are agrichemicals. Some of them are much safer than others. For our industry, we're actually doing a very good job, we've been very proactive in not allowing some of those more toxic agrichemicals...  
...Our industry is doing a very good job on agrichemical usage (Skipage, 2016).*

## 5.0 DISCUSSION

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### 5.1 THE TWO MAIN TYPES OF PEOPLE SEEKING INFORMATION

This project has provided a review that shows when a member of the public searches for information on agrichemical use in the Bay of Plenty area, they will find a variety of sources, including the regional council, mainstream media, social media, and the kiwifruit industry. Members of our community who are interested in spray use in their area are likely to get their information from the council sources and from traditional news media. They are also likely to appreciate the information that the industry provides to them via mail drops.

There is a second group which consists of those who are looking for information because they are concerned about their neighbours spray practices or who have a belief that spraying is causing negative health impact to them or their family. This group will consider any information put together by the industry as propaganda, but are likely to still consider the council and traditional media as reliable sources of information. They are also more likely to seek out comments made by people on social media regarding the issue (including news article comments sections), and to give them more credibility than they might otherwise get.

### 5.2 WHAT THEMES APPEAR IN THE COMMUNITY CREATED INFORMATION

Much of the information produced by the community, i.e. social media, is focused on the negative impacts that spraying can have. There are complaints about not being notified correctly regarding spraying, these include:



- Not receiving appropriate notification periods, although some of the complaints were ones wanting a longer notification time than legally required.
- Complaining about spray drift onto their property
- Annoyance at the types of sprays being used and the impact these could have on the health of them and their family
- The association of health conditions with spray applications, e.g. feeling under the weather in late winter associated with Hicane application, watery eyes and runny nose in early spring associated with Psa spraying, higher cancer rates in the sunny Bay of Plenty associated with agrichemical usage.
- A misunderstanding of the types of sprays being used at various times of the year and an assumption that they are all dangerous agrichemicals
- A belief that orchardists and spray contractors don't care about their practices or the impact they could have on the community
- A tendency to make statements that start with "I've heard...", "I've been told...", "A friend of mine said..."

### **5.3 HOW SHOULD WE COMMUNICATE**

The types of people seeking information and the themes that appear in community created information shows that as an industry we need to ensure we are focusing on multiple methods of communication to properly address the questions and issues around orchard spraying. The messaging needs to be covered through grower awareness programmes, via sources that nay-sayers will trust such as the council, and via direct messaging.

It is important to note here that several of the topics in this section were going to be covered in the recommendations / next steps. However, an interview with a couple of Zespri staff who are active in this space showed me that many of the conclusions that I had drawn based on my reviews had already been reached within Zespri, and there were already projects in development to deal with these issues.

### **5.3.1 GROWER AWARENESS PROGRAMMES**

Some of the issues that the community raises can be tracked back to a lack of awareness by the growers of what their responsibilities are, and just as important is a lack of awareness of what their neighbours expectations are.

This programme would take two approaches. The first would be educating growers as to what their legal requirements, and industry best practice recommendations are. This has been on-going for a few years now, with it getting significant space in newsletters or time at field days, both Zespri and Packhouse related. Repetition of the message will be the key to making it sink in, and most growers are conforming to best practice requirements now, but similar to the problem that the dairy industry is having with bobby calves, it is the few who are the exception to the rule who will colour public opinion of our practices.

There are best practice and general spray guides available on the Zespri website, and the information that these contain is useful and accurate, however they are also fairly wordy and many haven't been updated in the last few years. In recent years, kiwifruit growers have become more used to the idea of being presented with a one page summary of the information, with a mixture of bullet points, diagrams, and images. Which is then backed up by a larger informational document for those who want to do more digging into the information available in the background. Zespri has

taken this approach in developing infographics for topics such as “Methods for Improving Gold3 Dry Matter”, and “Predicting Budbreak and Flowering”. The infographic goes up on the shed wall, and the report behind it is available via the Zespri Canopy website as additional reading. An example of these infographics can be seen in figure 2 below



Figure 2. Example of Zespri infographics, reproduced from (Zespri, 2016)

The second approach is related to helping growers understand what their neighbours’ concerns are, and how they can run their spray programmes in a way that satisfies both groups. One of the trends that showed in social media content was that people believed that the orchardist spraying near them didn’t care about them or their families, and any potential impacts on their health. Part of this perception will have come about because of how they approach and interact with each other. If a member of the public who has a strong anti-spray belief approaches a grower who is currently trying to apply a product which they see as vital to their business, and is aggressive as to their views around spraying, this can cause the grower to become defensive or argumentative in return. This

only causes the situation to escalate to a point where neither party will listen to the views of the other.

We need to make sure that growers are aware that there are situations where best practice might not be suitable, and further steps are needed to minimise impact. An example would be on orchard next to a school, where all the legal and best practice standards around notification, weather conditions, signage and so forth still apply, but the extra step of deciding not to spray during school hours or after school sports will reduce the risk to the community and will have a huge impact on how the public views our spraying practices (Skipage, 2016).

### **5.3.2 MESSAGING TO THE PUBLIC**

It is important that we have a voice with the public. Quite often in New Zealand, when something that the community is unhappy about becomes a major issue, it gets reported on and publicised by those who are against it. We see this with topics such as the TPPA, where all the benefits get outweighed by the negatives that its detractors focus on, and much of the public coverage in the early days was negatively focused, putting the thought in people's minds of "Why would we want this? It sounds terrible!". Another example would be irrigation use in Canterbury. Several entities, such as Forrest & Bird, Fish & Game, and public action groups have been very vocal over the last few years over their concerns around irrigation use in Canterbury, the impact that it has on nitrogen leaching, soil runoff, and the effect that these have on the quality of our rivers and streams. Groups such as Environment Canterbury and Irrigation NZ are now involved in dealing with these people, and running public awareness campaigns, using research based evidence to quantify the problem and guide decision making.

These examples highlight the necessity of the kiwifruit industry being involved in public awareness of spray use in the Bay of Plenty, to help add some balance to the discussions. As mentioned earlier, some of the angst against spraying in our industry is due to misunderstandings by members of the public as to what their rights are. When people feel that they have no rights, they place a greater emphasis on agitating the system to get those rights. Any messaging to the public needs to include a rundown of what their rights are, so they are aware that they are being protected by the law.

The next step is about informing our communities about what products we are using and why. Spraying in the kiwifruit industry is highly regulated and the products allowed are controlled by Zespri, and this means that there is a lot to gain by educating people around our sprays. For example, most of the products which are regularly used on kiwifruit orchards have orchard re-entry periods of “When fully dry”, reflecting the relatively low risk nature of those products. We need to use research based evidence to counter the negative perception and support the current efforts to minimise our spray impact.

This is also our opportunity to promote that not all sprays are agrichemicals, as there has been an increasing amount of foliar fertilisers (especially seaweed based) being used on kiwifruit vines. Reviewing social media and discussing this concept with growers indicated that those who are strongly against spraying have a tendency not to believe that the product being applied is actually a fertiliser and they believe they are being lied to.

*...to work with the community to make them aware of their rights if you're living alongside any sort of orchard or horticultural property this is what you can expect to be notified about. Not every spray is an agrichemical... (Lynch, 2016).*

## 6.0 CONCLUSION

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*I would argue we are the best in New Zealand, if not one of the best in the world, with the programme that we run and how we spray agrichemicals. There is no other industry in the world, I'm told, that uses technology like AI nozzles as precisely and as accurately as we do in New Zealand. We're absolutely the best in the world at what we do. But the general perception out there in the community ... .. is that maybe we're actually quite bad at what we do ... .. but the reality is something very different. We're actually one of the best if not the best in the world at doing it, but there is no recognition there (Skipage, 2016).*

If you were to ask many people in the Bay of Plenty - who have no direct connection to working within the kiwifruit industry - what they think of kiwifruit, it would only be a matter of time until the concept of spray usage arose. In particular, a focus on agrichemicals and the impact they believe they have on health. In the author's experience, and the experience of many of the orchardists who I have been spoken to, there are a lot of half-truths (and some falsities) which come up in discussions.

If you were to go hunting for information on spray usage, you would find council regulations regarding the legal requirements for spray notification and usage, material on best practice and grower education from the kiwifruit industry, and a number of members of the public discussing their outrage at the idea of spraying agrichemicals on orchards. The problem is that the information available in defence of spraying in the Bay of Plenty is very passive in nature, tucked away in places where they need to be sought to be found. Whereas conversations and community meetings will

happen regardless of whether we are there or not. We need to listen to the concerns of these groups and address them with our future projects.

It is important that we have a voice in these discussions. There is always room to improve our practices, and there will always be new technological development which will lower spray drift, or provide us with a new product that is as effective as the old one, but with a lower environmental impact. But we have made huge strides in the last few years in adoption of drift reduction technologies, and orchardists in key areas (e.g. near schools) have a better understanding of the impact they have on their neighbours. There is a process in place which sees out-dated sprays be phased out and replaced with more eco-friendly alternatives when they are proven to have the level of efficacy needed. The problem is that we aren't telling anyone about it. We should be promoting what is being done within the industry to improve spray practice, to show that it is something we care about and are improving. The community needs to know that not every spray is an agrichemical.

A programme of grower education has been running over the last few years, and I would view this as a success due to the steadily declining number of spray applications complaints lodged with the council each year. This shows that growers are taking the concerns of their neighbours into account when they are planning and performing spray application. A similar approach is needed to educate the public. The public need to understand their rights, so they realise the law does protect them. But just as important, we need to ensure we are providing information about the products we use and why we use them, to stop false information from spreading.

Are we adequately communicating with the community? Currently we're communicating, but new projects in the works show that this will improve in the future.

## 7.0 NEXT STEPS

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The original scope of this report was intended to cover extensive interviews with Zespri, agrichemical companies, orchard management contractors, orchardists, their neighbours, the wider community, and anti-spray advocates. Early in the background development and literature review process it became obvious that the original idea was beyond the scale of what I could cover within this project.

This report has evolved to look at what information might be found by a member of the public who wants to get more information on spraying and agrichemicals in their area, what the themes of that information are, the likelihood of bias or misinformation, and a discussion around what we should do as an industry to improve our communication with the community to reduce future issues.

There are a few key areas that need to be explored in greater depth to help develop our knowledge around this subject:

- In depth review of published research on the topics of dealing with incorrect negative information being spread in the public domain, how to educate those who have negative opinions towards your cause, and the use of advanced orchard spray technology around the world to compare and contrast how well the kiwifruit industry in the Bay of Plenty stands up compared to these.
- Canvass growers in the kiwifruit industry, with particular emphasis on those who live in the rural/urban fringe. These growers are dealing with a larger number of neighbours, and are more likely to have neighbours who have moved to a lifestyle block from an urban background, and therefore might have a lack of understanding around spraying and agrichemical usage on orchards.



- Follow a similar approach as above but apply it to orchard management contractors and spray contractors.
- Interview members of the community, with an emphasis on those within 50 – 100 m of an orchard. It would be particularly interesting to try and find the root causes behind any anti-spray beliefs they have, as this will give the most insight into where our messaging needs to focus.
- Compare and contrast the qualitative results obtained from the various interview groups against the current and planned spray messaging projects.

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