



**KELLOGG**  
RURAL LEADERSHIP  
PROGRAMME



## **Eradicating Complacency**

How does New Zealand ensure we do not get complacent in long-term disease control, specifically, Bovine Tuberculosis?

Kellogg Rural Leadership Programme Course 50 2023

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I want to thank the Kellogg Programme Investing Partners for their continued support.

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## 1.0 Key Abbreviations

- Bovine Tuberculosis – BTB
- Tuberculosis - TB
- New Zealand – NZ
- Common Brushtail possum – CBP
- National Pest Management Plan – NPMP

## 2.0 Executive Summary:

Bovine Tuberculosis (TB) has been a persistent concern for New Zealand's agricultural sector since the 1880's and is still ongoing today in some parts of the country. While considerable progress has been made in reducing the prevalence of bovine TB, complacency in both farmers and industry representatives poses a threat to its effective control and eradication.

New Zealand Inc. must be bold in the fight for TB freedom. Eradicating Complacency looks at the historical journey New Zealand has been on with the disease, the efforts taken to reduce possum numbers and infected herd numbers, and what the current state of play of the disease is currently at in 2023.

This report, Eradicating Complacency, investigates the current perception and understanding of Bovine TB with farmers and industry, to gauge if there is a level of complacency happening with the disease in NZ. The aims of this study were to:

- Investigate the current perception and knowledge of Bovine TB and the TBfree programme with farmers and industry in NZ.
- From the above findings, determine what is needed to make TB visible in regions where there aren't infected herds or wildlife.
- Review what story telling has already been done with farmers and industry representatives that have been impacted by TB in the past.
- Determine a people centred strategy going forward to ensure complacency does not occur with farmers and industry, and efforts are sustained the closer we get to eradication of TB in herds by 2026.

To carry this out a literature review was done on the international efforts of eradication of Bovine TB in other countries, the stories that have already been told of those impacted by the disease and how story telling can impact recovery in adverse events. A digital survey focusing on knowledge and perception of the TBfree programme was created and had 71 responses from farmers and industry professionals around NZ. A thematic analysis was used to theme the perception responses. One interview with a Senior Vet from OSPRI NZ was conducted to understand how the TBfree programme has evolved over time.

The research highlights that farmers and industry have a relatively sound understanding of the TBfree programme, however farmers feel there are not enough stories being told on the human and farming impacts of being TB infected. More literature reviews were conducted on the impacts of storytelling in recovery from adverse events.

Recommendations to eradicate complacency, the closer we get to Bovine TB eradication are:

- Human centred communications focusing on the people impacts, alongside the technical information.
- Increase story telling of impacted farmers and industry professionals to help make TB visible in non-visible areas of NZ.
- Education with younger generations, life stylers on impacts of TB, and what it means to be TB free in New Zealand.

Eradicating Complacency shows valuable insights into what the next few years could look like as we move closer to 2026. It's human-centred and has the people in the industry at its core.

### 3.0 Introduction:

New Zealand's agriculture sector generates a multi-billion-dollar income for the country. The annual export value, according to two reports conducted through Dairy NZ and Beef and Lamb New Zealand, state that the Dairy sector contributes to the New Zealand economy, with the dairy sector generating \$26 billion (Sense Partners, 2023) and red meat \$11.4 billion (MIA New Zealand, 2023).

Disease in livestock is a significant risk to both our access to export markets and sector economy, and we need a robust disease management system in place to be able to access the global market. One disease is bovine Tuberculosis. Bovine Tuberculosis (TB) is a bacterial disease that can affect cattle, deer, and our native wildlife, with significant economic and environmental consequences, such as limiting access to export markets for red meat and milk products and spread of TB in wildlife, making it harder to control the disease.

New Zealand has made substantial efforts to control and eventually eradicate bovine TB, including extensive testing regimes, regional-based movement restrictions, and possum control.

In 1993, the Animal Health Board, now OSPRI NZ, took on the management of the National Pest Management Plan for bovine Tuberculosis under the TBfree New Zealand programme, which is still running today. There are three main milestones that TBfree New Zealand are mandated to achieve. TB eradication in herds (cattle and deer) by 2026, TB eradication in wildlife by 2040, and finally, biological freedom of TB in New Zealand by 2055.

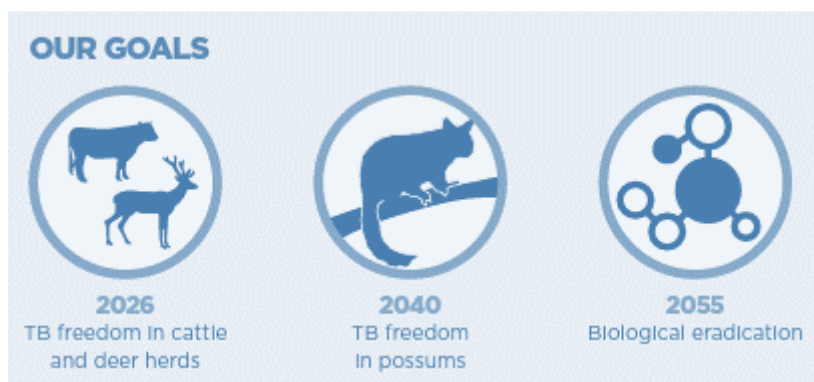


Figure 1. (TBfree New Zealand strategic goals to TB eradication 2018)

There are only 2.5 years to go to achieve the first milestone of TB freedom in cattle and deer herds, which highlighted the question; "How are we going to achieve this without getting complacent when the disease is becoming more invisible the closer, we get to eradication"?

Eradicating complacency takes a deep dive into how farmers and industry professionals currently understand and perceive the TBfree NZ programme. It looks at past case studies of people who have gone through the decades of being an infected farm, and those who have supported them, and the duties involved to do so.

The research also focuses on the needs of the people within the agricultural industry to understand what is needed in to keep Bovine TB front of mind and understand the external factors that may be limitations to achieving TB freedom.



## 4.0 Aims:

The aims of this research project are to:

- Review and analyse the current understanding of the agricultural industry's knowledge and perception of bovine TB in NZ from both farmers and industry professionals.
- Review and analyse how the industry perceives eradication of TB in terms of priority for the industry.
- Determine a recommendation going forward to ensure realistic, innovative ways to avoid complacency of progress towards bovine TB eradication based on feedback from survey respondents.



## 5.0 Background:

Bovine TB was introduced to domestic cattle herds through transmission from the Common Bush Tail Possum. These were introduced to New Zealand in 1850 from Australia by European settlers bringing them into the country for food and fibre purposes (*Common Brushtail Possum in New Zealand*, 2021). The population of the CBT possum was at its peak by the 1980s, posing a major threat to domestic beef cattle, deer, and dairy farming herds.

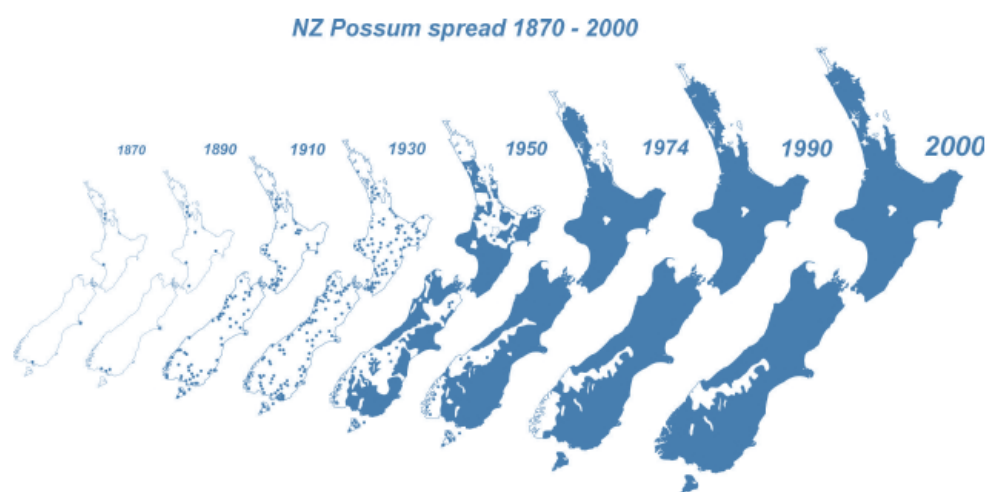


Figure 3: Possum spread throughout New Zealand from 1870 - 2000. (*Common Brushtail Possum in New Zealand*, 2021)

While it is unconfirmed when bovine TB was first introduced to New Zealand, by 1880, the disease had made itself present in cattle herds in Wellington and Taranaki, with between 4% - 7% of cattle slaughtered, infected with TB. By 1893, bovine TB had become a notifiable disease in New Zealand, and slaughter inspectors were given the power to condemn infected meat and infected stock that were sent to slaughter. (Livingstone et al., 2015)

From 1992 to 1995, TB testing became voluntary for farmers; however, as the disease became more prevalent by 1970, all milk supply dairy herds were under compulsory testing, and beef herds joined in 1975. While TB testing regimes were underway, the number of possums increased; therefore, possum control increased between 1970 and 1994. This then saw the establishment of the National Pest Management Strategy under the Biosecurity Act 1993, which at the time was given to the Animal Health Board and established the TBfree NZ programme; the agency responsible for managing the disease in both wildlife and domestic cattle and deer herds. (Livingstone et al 2015.) Today the TB programme is managed by OSPRI NZ.

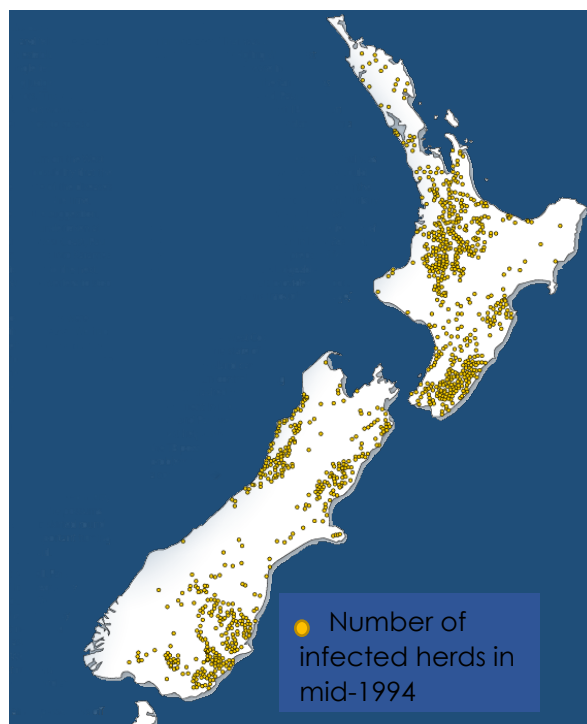


Figure 3- Number of infected herds in '1994 (OSPRI NZ Ltd, 2011)

# Timeline of Bovine TB evolution in NZ 1850 -2055

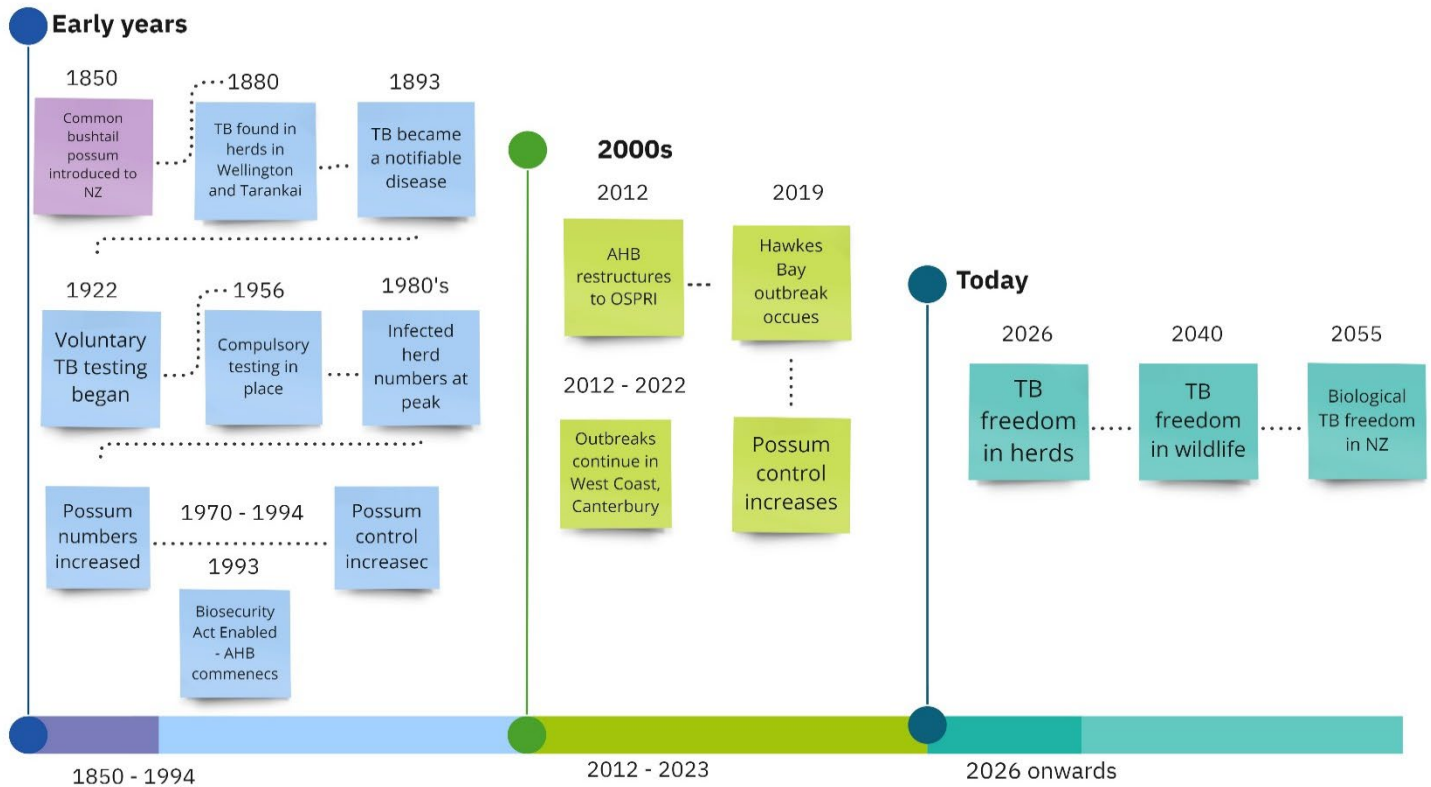


Figure 4. Gantt chart timeline of key dates since the discovery of bovine TB in NZ (Miro) (Livingstone et al., 2015)

Throughout this history, there have been many different generations of farmers experiencing both TB in their herds and in the wildlife surrounding their herd, with varying methods of control and testing evolving over time.

Once the establishment of the NPMP was in place from 1993, the methods, strategies and testing regimes have not changed significantly as the method of disease management has proven successful; however, the ways in which TB is surveyed have increased both at the meat works and by conducting pig surveys to monitor TB in the wildlife (Ospri et al.). Therefore, the methods of controlling bovine TB in New Zealand have stayed relatively the same since the early '90s, with more emphasis on research into wildlife transmission in the later years, thus being the topic of this research – “How do we ensure we do not get complacent, the closer we get to the eradication of TB in cattle and deer herds in New Zealand?”

Today, as of October 10, 2023, there are only 23 herds still infected with bovine TB, which is a significant decrease from when TB was at its peak in the 1980s when the number of herds infected was over 1700. (Livingstone et al., 2015)

## National TB infected herd update

As at 10 October 2023



Figure 5. National TB Infected herd numbers nationally (OSPRI NZ Ltd, 2023)

## 6.0 Method:

### 6.1 Digital Survey

A survey using Microsoft Forms was put together to assist in understanding how the New Zealand agriculture industry (farmers and industry professionals) perceives and understands the current state of bovine TB in NZ. The survey asked multiple questions focusing on three aspects of the Bovine TB in NZ, and the TBFree NZ programme (Appendix D: Eradicating Complacency Survey). They were:

- a) Understanding of the disease within cattle and deer herds
- b) How tuberculosis is spread from wildlife to domestic animals, and the methods of testing and surveillance
- c) The knowledge and confidence people have in tuberculosis being eradicated from New Zealand and how they view their current levy contributions to the Programme.

The survey had 71 responses from farmers and industry professionals across NZ. The data captured needed to have a varying representation nationally to get unbiased responses, as some regions in the country are currently more affected by bovine TB than others. Regions such as the West Coast of the South Island and Hawke's Bay in the North Island have higher infected herd numbers. This means they are tested more frequently than regions with lower risk of TB infection from wildlife.

The Eradicating Complacency survey was sent out through several channels, including but not limited to the following:

- OSPRI TBfree Committees. Of these groups, they were asked to share with their farming connections and contacts.
  - Northland
  - Hamilton
  - Taranaki
  - Gisborne
  - Hawke's Bay
  - Manawatu
  - Wellington / Wairarapa
  - Canterbury
  - Otago
  - Southland
- Personal LinkedIn connections ranging from industry professionals to farmers.
- Kellogg 50 cohort members working in the agricultural industry.

A statement at the beginning of the survey outlined the purpose of the survey and the anonymity of respondents. A permissions question was asked about using their answers to form data for this research topic, to which all answered yes.

It is also important to note that the number of respondents is only a snapshot of the wider industry representation.

## 6.2 Thematic Analysis

The survey presented both knowledge-based questions and opinion-based questions. For one of the opinion-based questions a thematic analysis was used, a method used for analysing data and identifying themes and patterns within that data set (Braun & Clarke 2006)

## 6.3 Interview

To understand the history of the NPMP and how it has or has not evolved, an interview was conducted with a Senior Veterinarian Disease Manager at OSPRI NZ who has been with the TBfree NZ programme since its infancy in 1995 and was a significant part of the development of the first National Pest Management Plan.

This interview was conducted over Microsoft Teams, with permission granted to be interviewed and recorded and for the interview to be used in the research. Please see Appendix 3.0 for the interview permission form.

The interview was a lengthy discussion on the evolution of the National Pest Management Plan (NPMP) for Bovine TB and its impact on efforts to eradicate TB in cattle, deer and possums. The conversation touches upon changes in the NPMP, the importance of storytelling and communication in the context of TB control, as well as some challenges and strategies for maintaining public and stakeholder engagement to achieve the eradication goals.

## 7.0 Literature Review:

The purpose of this literature review was to investigate what work has been done in other countries in with TB eradication efforts and the social impacts of the disease. The review also looked at what stories of impacted farmers and industry bodies are available domestically to identify key and common themes between different stages of TB eradication in NZ. Then following from this, the impact of storytelling in adverse events and its role in recovery.

### 7.1 Biosecurity number one priority

There are several priorities the agricultural industry is dealing with that can distract from the TB eradication efforts. KPMG Agribusiness agenda 2023 states some of those priorities are reducing greenhouse gas emissions, attracting people into the sector, an aging population, retention of talented people and continuous improvements in technology and innovation, just to name a few (KPMG New Zealand, 2023). However, when it comes to disease eradication, specifically bovine TB, it falls below the radar of the industry as it competes with the above priorities. However, the 2023 KPMG Agri-Business agenda © has Bio-security ranking number one again, as its top priority. Page 18 of the agenda states that, Once again, the need for world-class biosecurity is the highest priority for industry leaders, but after a relatively benign year with respect to incursions, the issue did not feature prominently in discussions. Recognising biosecurity as the highest priority suggests leaders understand the risks; however, we need to be careful not to pay lip service to the threat but to take practical steps to ensure we are prepared and ready to respond when an incursion occurs.

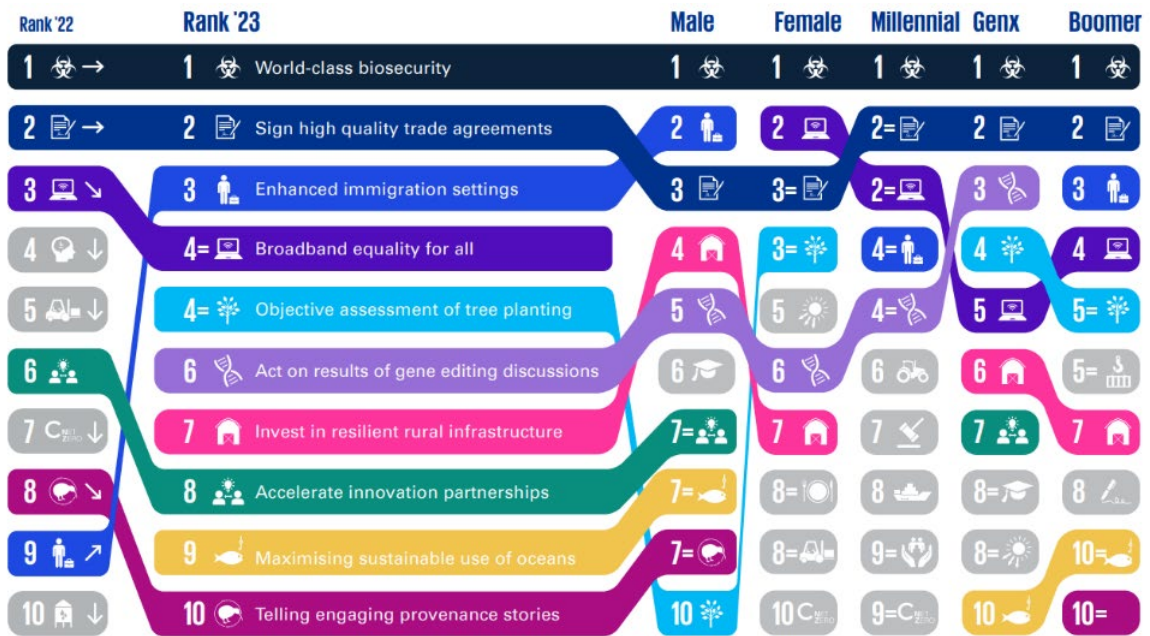


Figure 6. Top 10 priorities 2023 (KPMG New Zealand, 2023)

It's important to keep the narrative around biosecurity and disease management a realistic part of the conversation, noting the other priorities that the industry is dealing with.

## 7.2 Eradication efforts internationally

There are few countries who have successfully eradicated Bovine TB, some of them being Australia, Japan, Mongolia, Myanmar, Singapore, and Thailand (World Organization for Animal Health, 2023). However, many countries are still facing the challenge of eradication due to differing levels of vector and transmission factors. For example, in the UK, the protected badger is the main vector and transmitter but due to it being protected it cannot be eradicated, leaving the UK with an ongoing problem of TB spread to domestic cattle and deer. (TB HUB - Home of TB in UK information, 2019) In the United States Bovine TB is spread through wildlife and more specifically feral deer. (Hanson, 2021) In Africa however the prevalence of bovine TB is also a human health risk is there no formal eradication schemes in place. (Mohamed, 2020)

A map of the global state of Bovine Tuberculosis displayed below shows how the disease is present in differing countries.

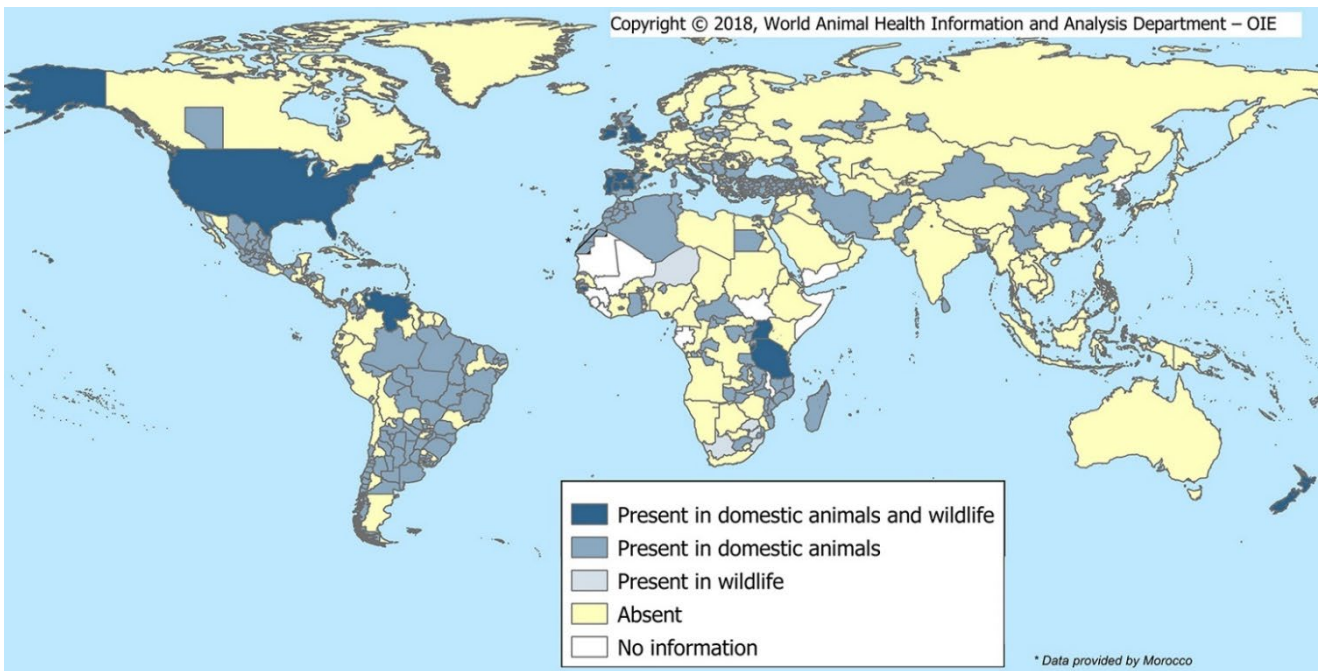


Figure 7: Global representation of Bovine TB prevalence (World Organization for Animal Health, 2023)

While New Zealand is still going in the battle of eradication of TB, part of this research was to explore and understand the progress of bovine TB eradication in other countries and compare similarities between each country's eradication system. One article looked at the success of other countries, such as Australia, which eradicated bovine TB over a 27-year period from 1970 to 1997 (Glanville, 2023), and New Zealand's current efforts of eradication.

- **Government responsibility:** In Ireland, the issue of TB in cattle is widely considered a government problem. This suggests that the primary responsibility for TB control in the Irish context has traditionally rested with the government.
- **Australian TB Eradication Program:** In Australia, the TB eradication program is cited as a successful example of industry involvement. The program is described as having industry ownership and involvement at all levels of management. Industry participation in funding and policy development is considered an essential factor in the program's success. The program was funded on a 50:50 basis by the government and industry, with industry funding coming from a cattle transaction levy. The text also mentions that a cost-sharing model of 20:80 (government: industry) would be applied if TB were to recur in Australia.
- **A risk-based approach:** This method is currently the only method available internationally to mitigate harm caused by residual infection and animal movement, as well as ensuring minimal impact on farming income. A risk-based approach is identifying the highest risks to a programme or organisation, making them a priority, then lowering that priority as they shift to lower risk levels (Guerra & Rivero Prado, 2021).
- **Protected vs unprotected vectors:** Challenges sit with Ireland as their main vector is the protected badger, therefore, vaccination is required to minimise the spread of TB. Australia and New Zealand vectors are not protected, making it easier to perform pest control.
- **Animal Health Ireland:** Established in 2009, Animal Health Ireland is highlighted as an organisation that has facilitated industry engagement. It is a model worth considering for enhancing industry involvement in the Irish TB eradication efforts.

Countries that rely on international export markets have all displayed an eradication scheme that is made up of surveillance and testing, and where possible, vector control. However, in this research, it was hard to find specific efforts made at a social and community level. There is a contrasting approach to TB eradication in cattle in Ireland and internationally, emphasising the importance of industry engagement and cost-sharing in successful programs like those in Australia and New Zealand. There are valuable lessons to be learned from these international models to address TB in Ireland.

### 7.3 Social Impacts of Bovine TB in communities and individuals in NZ

Personal accounts from the frontline of New Zealand's battle with bovine tuberculosis (OSPRI NZ Ltd (AHB), 2011) illustrates the effect of community collaboration and commitment to eradication, when TB is present in an area.

Insights from the frontline, Making TB History displays the real-life impact on deer, dairy and beef farmers, veterinarians, field technicians, herd testers, a wild animal control manager, and the national disease control manager.

Peering back through the lens of time at what we have left behind frequently informs us about what may still lie ahead. (Dalziel, 2011)

When reviewing the stories of previously infected farmers there were clear themes that emerged that assisted them in gaining a TB free status on their properties.

#### ➤ Community Involvement and Collaboration:

Gaskin (2011) highlights the transformative power of community involvement. The collaborative effort from the TB committee in the area meant joint strategies, data collection and shared commitment to overcome the disease in the community.

Similar with Gilmore's (2011) experience. Joining the Southland TBfree Committee meant an opportunity to leverage both technical expertise and practical farming knowledge from others, emphasizing the significance of collaboration.

#### ➤ Adaptation and Research-Based Strategies

A change of farming strategy was undertaken for Gaskin. Through careful data collection and pest control methods, research-based strategies were implemented. This adaptive approach was crucial in achieving a significant reduction in TB-infected animals.

Gilmour's (2011) experience as a possum trapper brought aware to the limitations of existing pest control methods. The committee's combination of technical expertise and practical knowledge led to a new approach, including a successful aerial pest control operation. This emphasis on adapting strategies based on insights gained from experience and research was fundamental to success.

#### ➤ Resilience and Perseverance:

Resilience in the face of adversity, despite years of loss and frustration, farmers remained committed to overcoming TB on their farms. The discovery of modern blood tests and the introduction of aerial pest control in 1986 became a turning point in their battle against the disease.

The experiences of all previously infected farmers underscore the importance of resilience and perseverance. Overcoming the challenges posed by bovine TB required enduring years of uncertainty, loss, and frustration. Making TB History reflects the indomitable spirit of farmers in the face of agricultural challenges.



➤ Importance of Open Discussion:

Gilmour (2011) emphasizes the importance of open discussion about TB. By removing the stigma associated with the disease, the community can work together more effectively. Open dialogue facilitates continued efforts to control TB and ensures that the community remains vigilant in the face of potential resurgence.

➤ Caution against complacency:

Gill (2011) stresses the importance of remaining vigilant and not becoming complacent. Even after achieving TB eradication on farm, it's important to recognize the potential for the disease to resurface. This cautionary note serves as a reminder to the farming community to stay proactive in disease control measures.

➤ Inspiration for others:

Overall, the shared experiences of Gaskin, Gilmour, and Gill (2011) offer valuable insights and inspiration. Their success stories serve as beacons for others engaged in the battle against bovine TB, showcasing that with community involvement, research-based strategies, and effective pest control, it is possible to overcome the challenges posed by this challenging disease without becoming complacent.

## 7.4 The power of storytelling

From *Making TB History* and the high need from survey respondents on education and communications to avoid stigmas and Complacency with bovine TB, there is power and impact in telling the farmer story and the story of what eradication means to the agriculture industry.

So, what is a story? Furthermore, how can stories have an impact? The definition of a story is outlined below:

---

*A **story** or narrative is a connected series of events told through words (written or spoken), imagery (still and moving), body language, performance, music, or any other form of communication. You can tell a story about anything, and the events described can be real or imaginary, covering both fiction and nonfiction and leaving no topic, genre, or style untouched. There are stories about all things and all times: past, present, and future. Whenever you're telling somebody about a series of events, you are telling a story, no matter what the subject or when they occurred. As such, stories are of excellent value to human culture and are some of the oldest, most important parts of life. (Literary Terms, 2018)*

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So, how do we take a story and nurture it to have an impact on the target audience, especially for community engagement and awareness of eradicating bovine TB?

Joe Lazauskas from the Content Marketing Institute (Lazauskas, 2019) conducted an interview that talks about why neuroscience is the best argument for marketers to use their storytelling skills.

The discussion sheds light on how understanding the brain's response to stories can help marketers design more engaging and persuasive content. The review focuses on the key neurological basis of storytelling, the release of oxytocin, the importance of relatability, and the ethical considerations surrounding the use of emotion and persuasion in communications, engagement and extension.

## Neurological Basis of Storytelling:

Storytelling is deeply ingrained in human nature and is not a “wishy-washy” concept (Lazauskas, 2019). Lazauskas, 2019 argues that, as human beings, we are programmed to respond to stories, and this tendency has evolutionary roots. Stories have been essential in helping humans understand their place in the world, convey vital information, and build relationships within tribes and families. Neuroscience plays a crucial role in this process, with the brain's neural activity increasing significantly when exposed to a compelling narrative. The concept that "neurons that fire together, wire together" highlights how stories enhance memory retention and information absorption. Memory retention and information absorption being a key aspect of farmer's and industry contributions to eradicating bovine TB from New Zealand.

## Oxytocin Release and Emotional Engagement:

Oxytocin, often referred to as the "love drug," is released when people engage with stories. The conversation references the work of neuroscientists like Dr Paul Zak (Zak, 2015), who has demonstrated that stories trigger the release of oxytocin, leading to emotional engagement and empathy. This neurological response reinforces the idea that stories make people remember and care about the content they encounter.

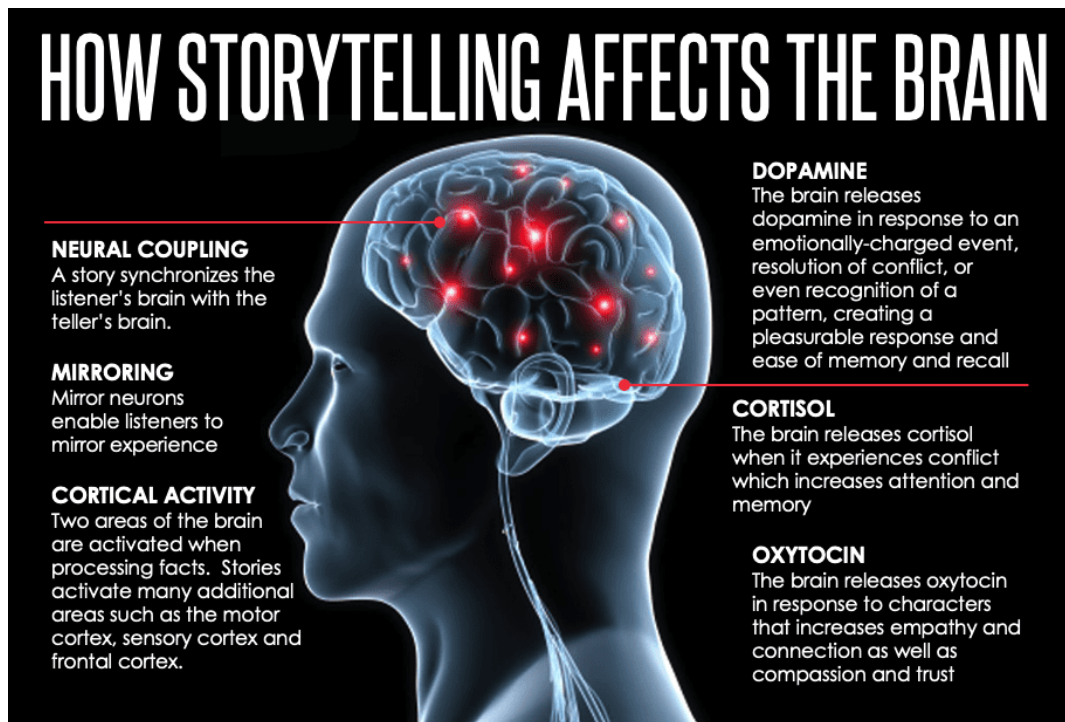


Figure 8: Impacts of storytelling on brain chemicals (Rutledge, 2020)

This insight emphasises the power of storytelling in content marketing and its ability to establish a genuine connection with the audience, in this instance, farmers, rural communities and industry professionals.

## Relatability and Targeted Content:

The conversation highlights that storytelling's effectiveness is not universal; it depends on the quality of the story. Not all stories have the same impact, and the conversation acknowledges

that while our brains are wired for stories, they respond more favourably to engaging and relatable narratives. The interviewee stresses the importance of creating content that the audience can relate to and that speaks directly to their concerns, beliefs, and experiences.

### **Ethical Considerations in Marketing:**

Ethical concerns about the use of emotion and persuasion in marketing. JL argues that appealing to emotions and building connections with the audience is a fundamental aspect of human interaction. He suggests that storytelling in marketing is not manipulation but rather a natural way to create connections and engage with consumers.

The conversation emphasises the pivotal role of neuroscience in understanding the impact of storytelling in marketing. It emphasises the neurological foundations of storytelling, its emotional impact, and the importance of crafting relatable narratives. It challenges the notion of manipulation in marketing and suggests that appealing to emotions, telling relatable stories, and building connections is a fundamental aspect of human communication.

If we look at the correlation between storytelling and infectious disease, there are relationships forming regardless of whether we are dealing with human-related disease or infection or animals where the humans are affected in other ways such as social embarrassment, economic loss, grief, and the toll the road to recovery can take (Gurney et al., 2023).

The below study of COVID-19-infected patients talks about the power of storytelling and the relationship storytelling has with patient recovery.

### **The Role of Storytelling as a Relational Intervention in COVID-19 Recovery: Insights from the Patient Stories Project**

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*“Evidence suggests that the creation and sharing of personal stories by patients can empower patients to engage in their care, increase a sense of well-being and help others suffering from similar illnesses understand their own experiences, as well as letting the patient themselves feel less alone]. Furthermore, in the context of chronic disease self-management, Gucciardi found that storytelling encourages patients to take on a more active role in their health management and enables them to form strong bonds with others with similar health challenges “(Gurney et al., 2023)*

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The COVID-19 pandemic has brought to light various mental and physical challenges faced by infected individuals, especially those who required hospitalisation. Understanding the importance of providing support to patients during their recovery journey, the concept of storytelling as a relational intervention has gained prominence. This literature review examines the findings and implications of a qualitative study conducted in an urban acute care hospital, where the "Patient Stories Project (PSP)" was employed to help COVID-19 survivors navigate their recovery process and improve their relationships with healthcare providers, families, and themselves.

### **Narrative Medicine and Relational Interventions:**

Narrative medicine, characterised by using stories to make sense of one's illness experiences, has been increasingly recognised for its role in patient care. The text emphasises the importance of relational interventions that aim to create positive, healing stories rather than negative ones, acknowledging the therapeutic potential of storytelling in the context of

COVID-19 recovery. While bovine TB is having no impact in humans in New Zealand, you could apply narrative medicine to the mental well-being of farmers that are or have experienced the disease on their farms or communities.

### Key Themes in COVID-19 Recovery:

The qualitative study identified several key themes in the COVID-19 recovery journey as presented by participants in the PSP. The identified themes include:

- **Making Sense of Illness:** Participants reported using storytelling to make sense of their COVID-19 experiences, allowing them to process their symptoms and emotions.
- **Providing Feedback to Care Providers:** The study highlighted the role of patient stories in providing valuable feedback to healthcare providers, which can contribute to improved patient care.
- **Gratitude for Care Received:** Patients expressed gratitude for the care they received, showing how storytelling can foster positive emotions and enhance the patient-provider relationship.
- **Transition to a New State of Normal:** Survivors went through a phase of adjusting to a "new state of normal," signifying their journey towards recovery and adaptation.
- **Regaining Control:** Storytelling played a role in helping individuals regain a sense of control over their lives as they recuperated from COVID-19.
- **Discovering Meaning and Lessons:** Ultimately, participants discovered meaning and important life lessons from their illness experience, highlighting the therapeutic value of storytelling in the healing process.

Pathway through COVID-19 Recovery. Participants progressed through the above steps during their COVID-19 recovery journey.

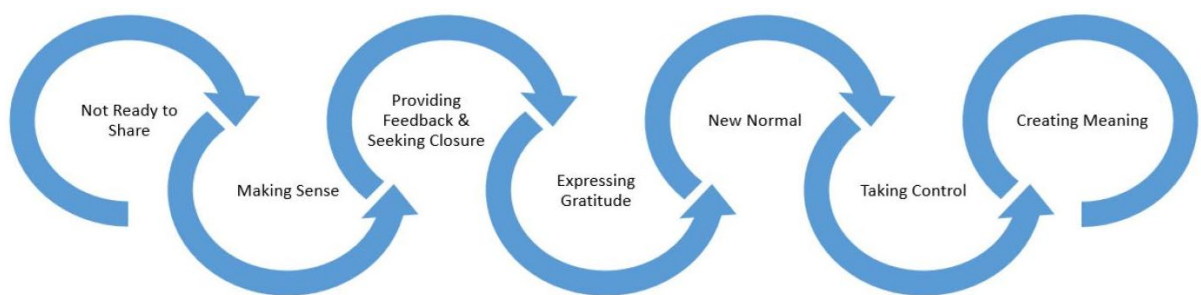


Figure 9 Pathway through COVID19 recovery model (Gurney et al., 2023)

This model could also be used to describe the journey of a farmer experiencing TB infection in his herd, from initially getting the news to becoming clear of infection. This model can be used by those asking farmers to tell their stories to help identify where in the journey they may be.

Storytelling projects, such as the PSP, may be a therapeutic way to support farmer mental welfare, as well as awareness for the industry after going through a TB infection in their cattle or deer herds.

## 8.0 Analysis and Discussion – Survey

### 8.1 Respondant diversity

Given the lengthy history of bovine TB in New Zealand, the survey needed a diverse range of ages and regional spread as this would determine if there were different levels of knowledge on the disease, depending on if people have had direct experience with TB either in the 1980s or in later years. Out of the 71 respondents, 22 of them were aged between 50 – 59 years of age, with five of them experiencing TB across the '80s, '90s, early 2000's and as recent as 2017.

Two of the respondents were between 70 -74, and one had experienced TB on farm, the other had known many farmers who had been TB infected.

### 8.2 Geographical representation

As outlined above in Figure 5, National Infected Herds update, regions that are currently affected by bovine TB are Canterbury, Otago, West Coast, Marlborough, Manawatu / Whanganui, Hawke's Bay and Waikato. The highest number of respondents came from Canterbury and Otago, where TB has been prevalent since the 1970s, with Hawke's Bay coming in third in the number of respondents who had a TB outbreak in 2019.

Respondents who are currently in areas where the disease is present make up 76% of the respondents, and of that 76%, 33% of them have been directly impacted by the disease.

Respondents of the survey were made up of the following geographical spread within New Zealand: (Appleby, 2023)

1. Auckland, Marlborough, and Southland = **0**
2. Tasman = **1**
3. Bay of Plenty, Gisborne, and Taranaki = **2**
4. Manawatu / Whanganui and Wellington = **3**
5. Waikato and Wairarapa = **4**
6. South Island West Coast = **5**
7. Hawke's Bay = **7**
8. Otago = **9**
9. Canterbury = **21**

As outlined above in the National Infected Herds update, regions that are currently affected by bovine TB are Canterbury, Otago, West Coast, Marlborough, Manawatu / Whanganui, Hawke's Bay and Waikato. The highest number of respondents came from Canterbury and Otago, where TB has been prevalent since the 1970s, with Hawke's Bay coming in third in the number of respondents who had a TB outbreak in 2019.

### 8.3 Who were the respondents?

The survey was aimed at gathering knowledge from both farmers and industry professionals. The TBfree New Zealand programme is funded through levies and the Ministry of Primary

Industries therefore, it was important to understand who in the respondents are levy payers and who are the industry professionals supporting those levy payers in their farming businesses.

An assumption is made that a levy payer may have more interest and knowledge of the disease and the management system towards eradication as they have a financial interest in the Programme. The question was asked which each respondent identified the most with. Respondents could pick up to 2 options, as there can be multiple farming systems on one farm, or a farmer may have different farms with different systems.

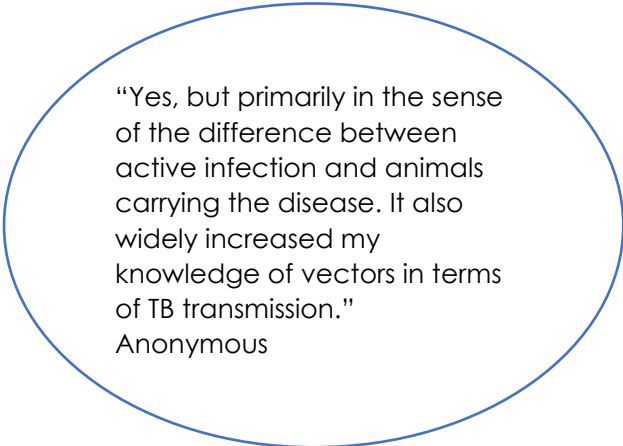
The respondents are broken down into six categories: (Appleby, 2023)

1. Dairy Farmer
2. Sheep and beef farmer
3. Deer farmer
4. Grazier
5. Industry professional (Banking, advisory, advocacy Etc.)
6. Other. \* Note that other was not defined in the survey.

Sheep and beef farmers made up 32 of the respondents, followed by dairy farmers at 24, 13 industry professionals, six OTHER and deer farmers and graziers having two responses. Of these 71 respondents, 19 of them had or have directly been affected by bovine TB, ranging from as far back as 1975 to July 2023, with five of the 19 having experienced TB infection multiple times and one in the UK in 2009.

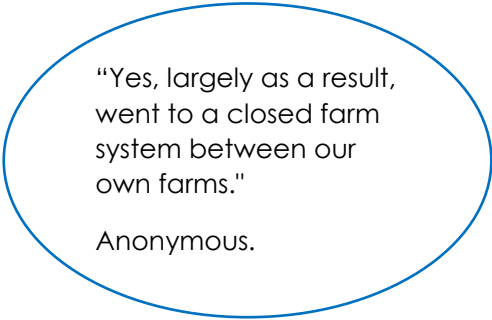
Of the 52 other respondents that have not experienced TB directly on farm, 31 of them knew of someone who had. This then resulted in them understanding how traumatic it was for impacted farmers.

Comments from three of the 31 non-affected from were:

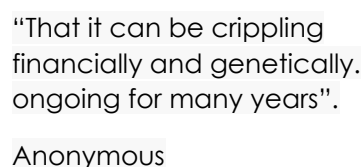


"Yes, but primarily in the sense of the difference between active infection and animals carrying the disease. It also widely increased my knowledge of vectors in terms of TB transmission."  
Anonymous

(Appleby, 2023)



"Yes, largely as a result, went to a closed farm system between our own farms."  
Anonymous.



"That it can be crippling financially and genetically. ongoing for many years".  
Anonymous

One respondent commented that it encouraged them to change their stock-buying decisions and increased their knowledge of vectors in terms of TB transmission.

## 8.4 Knowledge-based questions of the TBfree NZ programme

The following questions were designed to test the knowledge of the respondents on the TBfree NZ programme. It was highlighted in the survey that there is no wrong answer and to answer as truthfully as they could to get a true representation of the industry's understanding.

The questions were also designed to identify if the age and location of the respondents had an impact on their answers depending on whether they themselves had experienced TB in their farming careers.

## 8.5 Analysis of knowledge-based responses

### Insights into individual knowledge of bovine TB:

The respondents were asked to pick a number from a scale of one to five on how they rate their knowledge of Bovine TB. 1 = I know nothing at all, 5 = I consider myself an expert

The average rating from respondents was 3.52 out of 5. Level two had 5 responses, and level three had 28 responses, level four had the most responses at 34 and level five had 4 responses. Out of the four that considered themselves a rating of five, two had directly experienced having Bovine TB on their farm in 1975 and 1997, and two had not experienced TB on farm but did know of someone who had. However, when asked what year they thought NZ would be TB free in herds, only one of these respondents selected the correct answer and had NOT experienced TB on farm; for the two that had experienced TB on farm, one selected an incorrect year, and the other was not aware there was a goal year. The other respondent also wasn't aware there was a year.

### Knowledge of the goal year for TB eradication in herds in NZ:

The goal set by both shareholders of the TBfree NZ programme and the government is to be TB free in herds by 2026. Out of the 71 respondents, 17 were correct. 24 of them needed to be made aware there was a year, which was the most selected answer. Of those respondents that had directly experienced TB on farm, six of them selected the correct answer of 2026. The other nine correct respondents had not experienced TB on farm.

### Understanding of why we need to TB test / undertake slaughter surveillance.

The respondents were allowed to select multiple answers, and on average, the respondents selected three answers.

The results for these answers are:

1. So meat can be eaten for human consumption = **26**
2. To ensure we are not spreading TB to humans = **39**
3. To access international trade markets = **50**
4. To keep the value of beef at a competitive price = **16**
5. To ensure we are not sending TB overseas = **22**
6. To ensure we are not spreading TB between farms = **60**

There are multiple reasons why we need to TB test and undergo slaughter surveillance in New Zealand. Animal health and welfare, access to international markets, and ensuring we are not spreading the disease between farms in New Zealand. The results on this question indicate a sound knowledge of our domestic and international reasoning, with 50 out of 71 respondents selecting access to international markets and 60 out of 71 selecting to ensure we are not spreading TB between farms. Noting that animal health and welfare was not given as an option for no particular

The OSPRI NZ website states the different testing frequencies for cattle and deer herds depending on their geographical location in New Zealand. If a farm is sending stock to slaughter ONLY, then that farm would not need to undergo regular TB testing.

Testing is broken down into four categories.

**1. Surveillance area** – Testing In surveillance areas occurs every 5 years in cattle and deer over 24 months of age.

**2. Special testing area** – biennially - In these areas, testing occurs every two years in cattle and deer over 24 months of age.

**3. Special testing area** - annually - In these areas, testing occurs annually in cattle over 12 months and deer over 15 months of age.

**4. Movement Control area** - In MCAs, all cattle or deer on a farm are tested annually. Your cattle or deer over three months old must have a TB test before they move within an MCA. You must complete the movement within 60 days of the pre-movement test. Stock going direct to slaughter does not require a pre-movement test.

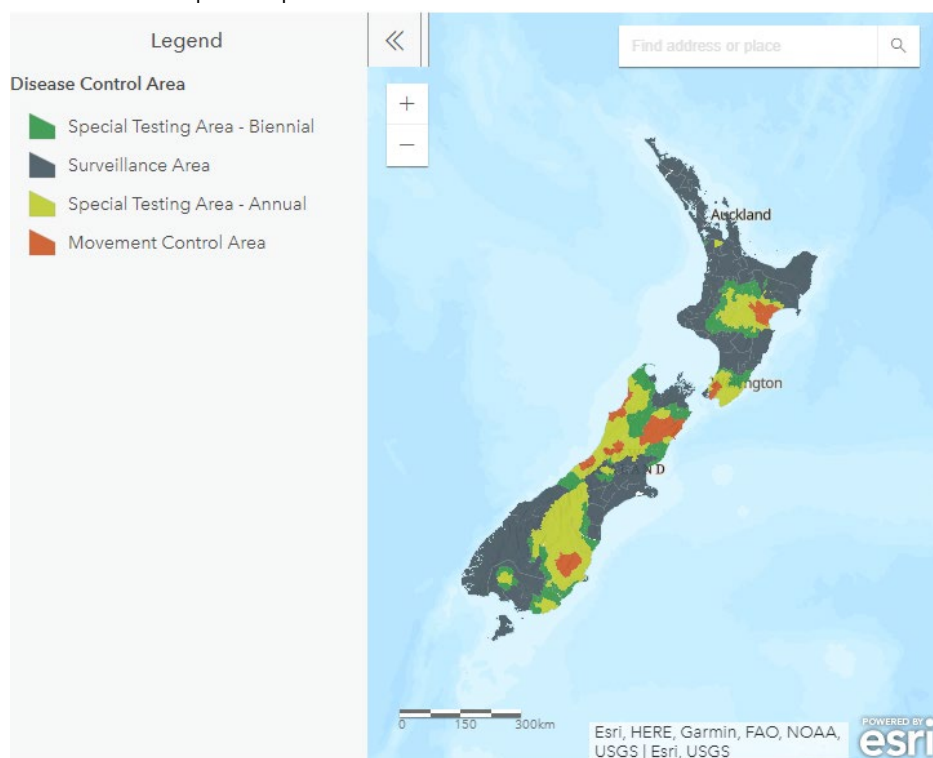


Figure 10 Disease Control Area map (OSPRI et al., n.d.)

Currently, there are seven movement control areas in NZ: coastal /central Otago, Hari Hari, Tasman / West Coast, North Canterbury / Marlborough, Wellington, Hawke's Bay and Central North Island.



These farmers will be experiencing a higher level of testing for their herds than in all other parts of the country.

The only INCORRECT answer provided was the first option so that meat can be eaten for human consumption, which received 26 clicks. While it is not encouraged to eat meat that has come from an infected animal, the OSPRI.CO.NZ states that:

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*“The most likely source of exposure to bovine TB in New Zealand would be through:*

- *Drinking unpasteurised milk from an infected cow*
- *Having close contact with infected livestock, such as during milking*
- *Handling an infected animal carcass*

*The best protection is to make sure all meat is well cooked and eat and drink pasteurised dairy products — avoid raw milk. Human cases of bovine TB are rare in developed countries like New Zealand thanks to our pasteurisation and testing programmes. However, in areas of the developing world where pasteurisation is not routine, bovine TB is a fairly common cause of TB in people. TB in humans is more often caused by a related — but different — form of bacterium, Mycobacterium tuberculosis, that also mostly affects the lungs. Cases of humans contracting bovine TB in New Zealand are few and far between.* “(OSPRI NZ Ltd, n.d.)

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#### **TB is spread to, and within, cattle and deer in NZ:**

Respondents were given the option to select from the below multiple answers.

- Spread through wild deer and pigs.
- Movement of animals between farms
- Spread from possums.
- It was planted here years ago and injected into cows.
- Spread through other pests, i.e., ferrets and stoats.
- It was first passed from a human in the 1880s to a home-milking cow and has spread ever since.

The average amount of answers selected was three. Number of answers selected / number of respondents = 216 / 71 = 3.0 There are two aspects to the TBfree NZ programme: disease management and possum control. This question was designed to understand the knowledge of disease spread and the vectors that are associated with bovine TB. In the above selections, there are two confirmed ways of disease spread which are:

1. Movement of animals between farms
2. Spread from possums.

TB can also be spread through wild deer and pigs, as well as ferrets and stoats. In fact, any mammal can contract TB, however, when it comes to transmission to domestic cattle and deer, research has shown us that the main cause of spread is the possum and then the movement of infected animals from farm to farm.

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*“In New Zealand, possums transmit TB to livestock, often through aerosol transmission — through interaction between cattle and deer and infected possums on farmland. When a*

*farmed animal is infected, the disease can then spread to the rest of the herd or to other herds through stock movements between farms". (OSPRI NZ Ltd, n.d.-a)*

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The two answers with the highest number of clicks were spread from possums at 60 clicks and movement of animals between farms at 65, indicating that respondents have a sound understanding of how TB is spread to cattle and deer in New Zealand.

Only six respondents did not click movement between farms, and five respondents did not click on spread from possums. These five all clicked on movement between animals.

### **TB is monitoring in domestic in cattle and deer in NZ:**

Respondents could select multiple answers from the following choices:

- Only at the works
- TB Testing
- My stock agent does it for me
- NAIT - When animals are moved between farms.
- Some animals are monitored at the works.
- Catching wild pigs to see if they have TB.
- Monitoring possums
- My vet usually does it for me

From the choice of answers, there are four incorrect options:

- NAIT – when animals are moved between farms.
- My vet usually does it for me.
- Only at the works.
- My stock agent does it for me.

While some farmers may ask their vets to check, under the TBfree New Zealand programme, this is not a part of the official management process for testing TB in cattle and deer.

Below are the official ways that New Zealand monitors Tb in both wildlife and domestic cattle and deer herds to achieve disease eradication:

## **Delivering the TBfree programme**

We deliver the TBfree programme through a nationally coordinated program that looks for the disease in all domestic herds through:

- on-farm TB testing and meat works inspection
- livestock movement controls, and
- possum population management.

Possum control requires systematic, large landscape control of NZ's possum population. Over time, this will result in TB being eradicated from the possums.

Figure 11: How the TBfree programme is delivered (OSPRI et al., n.d.-a)

## **Wildlife surveillance**

Before an area can be classed as TB-free, we do surveys to find out if TB is still present in local wildlife. We do this by:

- trapping possums and other species, such as pigs and ferrets, that can spread TB
- doing post-mortems on them, and
- testing them for TB.

We do surveys in areas where we believe TB has been eradicated and don't expect to find any TB-infected possums or other wildlife.

Figure 12: How TB is surveyed in wildlife (Ospri et al., n.d.)

This graph shows that all 71 respondents know that TB testing is one of the main ways that TB is monitored in cattle and deer herds in New Zealand and that possums are monitored in NZ.

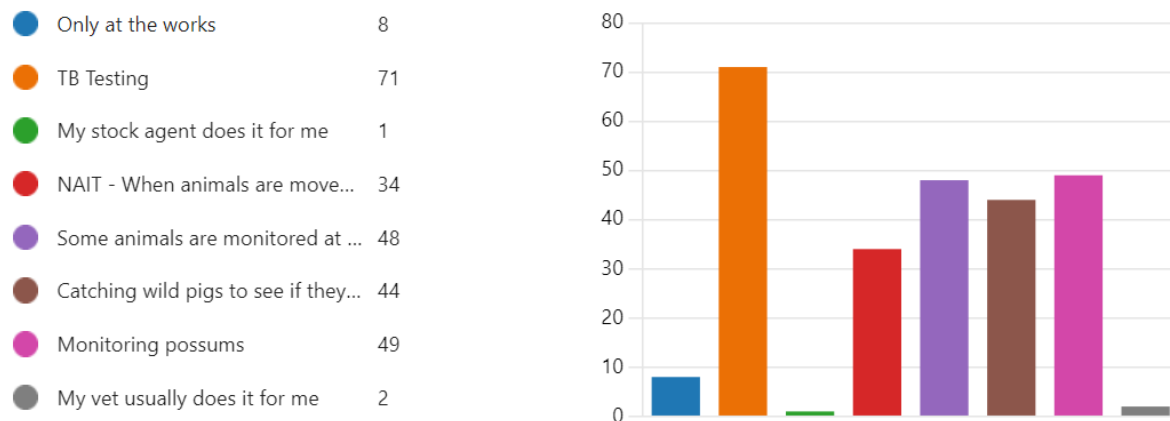


Figure 13 Graph from survey showing knowledge on how TB is monitored in NZ (Appleby, 2023)

The use of NAIT (National Animal Identification and Tracing System) is not a way to monitor disease, however, it is a very important and useful tool to track animals that have been infected and moved to different farms. The NAIT scheme can be used for disease purposes and was a crucial part of the MBOVIS (Mycoplasma bovis) outbreak in 2017 through to 2022 for tracing animals that were at risk. (Ministry for Primary Industries, 2023)

## 8.6 Opinion-based questions on the bovine TB in New Zealand

To gain an understanding of the attitude and opinion of **Bovine TB** in New Zealand, there were four opinion-based questions. Those questions were:

1. Do you think the industry needs to be doing more to keep TB relevant with farmers? If yes, what could be done?
2. On a scale of one-five, one being very low and five being very high, how important do you think it is to eradicate TB from NZ?
3. TBfree is funded by farmer levies and MPI. If levies were increased to eradicate TB in herds and wildlife sooner, would you support this increase?
4. Do you see the benefits to you as a farmer if we are TBfree in NZ?

## 8.7 Analysis of opinion-based questions

### Keeping TB relevant in communities and areas throughout NZ:

This question was going to form a base for the recommendations of this project. It was an opportunity to take the technical information out of the narrative and hear the levy payer's ideas on how they thought their money should be spent to help communicate the road to eradication.

Not all respondents answered this question; there were 49 responses, and of those 49, six wrote down that they did not think more needed or could be done for their answer. There were 22 respondents that did not answer at all.

The comments shared common ideas and themes of the below keywords:



Figure 13 Keywords and themes on how to avoid complacency - Miro

A thematic analysis helped to break these comments down into five main themes and three sub-themes. (Braun & Clarke, 2006)

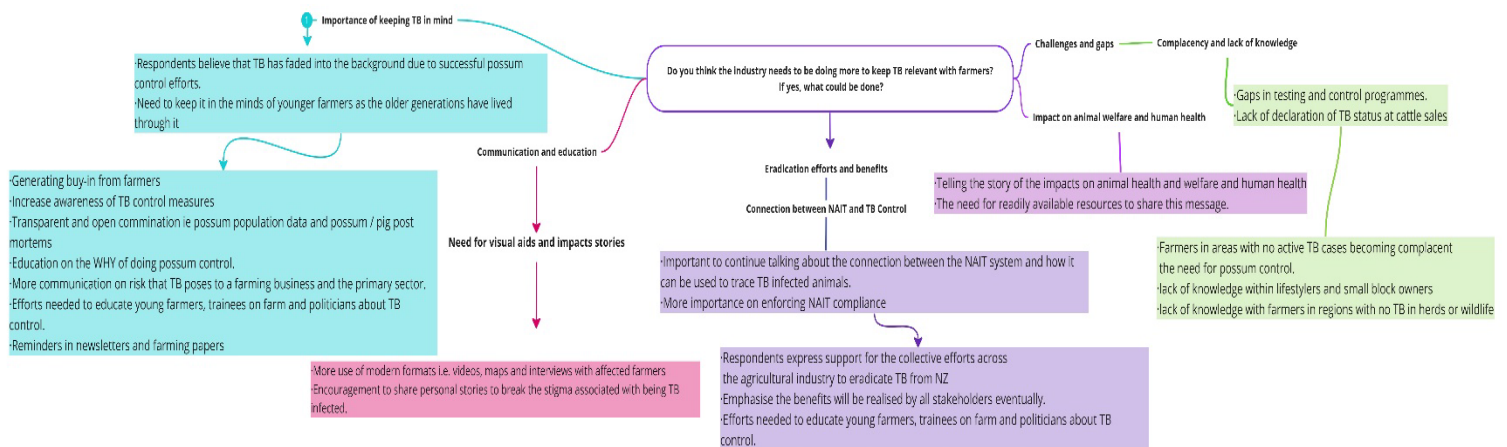


Figure 14 Thematic analysis of common themes of respondent ideas for what could be done to avoid eradication complacency.

These themes suggest a shared agreement among respondents on the importance of education, transparency, and ongoing communication to maintain awareness of and support for the TBfree NZ programme and efforts among farmers and stakeholders. Additionally, addressing complacency and knowledge gaps remains a priority in the fight against TB.

### Importance of TB eradication from NZ:

Respondents were asked to select from a scale of one to five, one being not important at all and five being extremely important, on how important they think eradicating bovine TB from New Zealand is.

It is pleasing to see that 68 of the respondents see the importance of eradicating TB from NZ. Of those who were neutral or did not see the importance, two of them had not directly experienced TB, and one had in 2009 in the UK. The three of them are also dairy farmers, and the effects of TB on a dairy system are far less impactful than that of a breeding cattle or deer herd. This is because milk is pasteurised and, therefore, eliminates any traces of TB in milk. The impacts on a dairy system only take effect if the farm is a high trading, high breeding system.

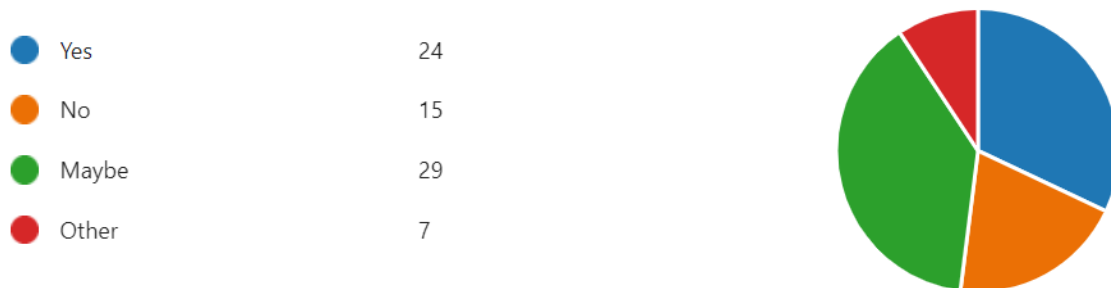


Figure 15 – Survey answers on the importance of eradication (Appleby, 2023)

Of the 68 respondents who place high importance on the eradication of TB in NZ, 18 of them have directly experienced TB on farms, and of the other 50 respondents who have not had TB on farms, 28 of them know of someone who has.

### Hypothetical increase of levies to eradicate TB sooner:

It is positive to see that 66 of the respondents do see the benefits of being TBfree in New Zealand, and of the 66, 24 of these would support increases on levies to get TB free sooner. From the other 42 respondents, 29 of them selected maybe on increased levies, with commentary around their answers, and 11 of them selected no, which would indicate they see the benefit but are happy with the levies they are contributing and the trajectory the programme is on to achieving its 2026 target of TB freedom in herds and 2040 goals of TB freedom in wildlife.

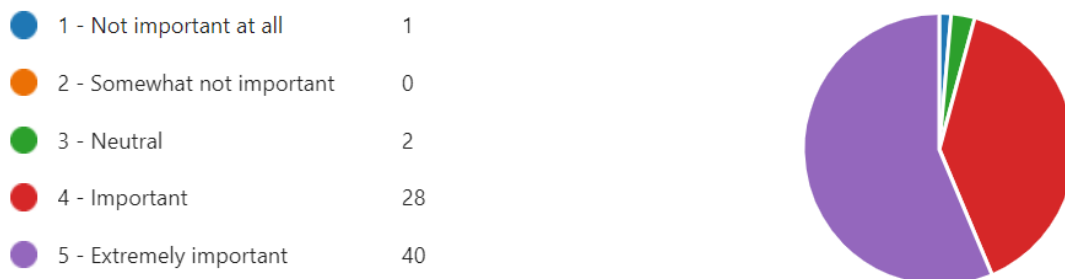


Figure 16 – Survey answer for a hypothetical increase in levies (Appleby, 2023)

The TBfree New Zealand programme is funded by two main streams: farmer levies and government funding. Government funding makes up 40% of the funding each year, and levies make up the other 60%

The levies come from funding partners Beef and Lamb New Zealand, Dairy NZ and DINZ (Deer Industry New Zealand).

- The dairy milk solid levy
- levies on all cattle slaughtered.
- Levies on Deer Industry NZ (DINZ) meat and velvet
- levies on live export of cattle and deer.

The portion of funding from each partner can change each year depending on their herd size and value. Levies are adjusted each year to match each industry's contribution. (OSPRI NZ Ltd, n.d.-b)

The levies that contribute to the TBfree programme go towards possum control to eradication, TB testing and lastly, operating costs of the programme. This question was designed to gauge if farmers think they are already paying enough of their levies towards the Programme and are happy with the pace of eradication or if they would contribute more levies to see New Zealand become TB free sooner in herds and wildlife.

It is positive to see that 66 of the respondents do see the benefits of being TBfree in New Zealand, and of the 66, 24 of these would support increases on levies to get TB free sooner. From the other 42 respondents, 29 of them selected maybe on increased levies, with commentary around their answers, and 11 of them selected no, which would indicate they see the benefit but are happy with the amount of levies they are contributing and the trajectory the Programme is on to achieving its 2026 target of TB freedom in herds and 2040 goals of TB freedom in wildlife.

Comments made by respondents were:

- "If Government input matched increased levies dollar for dollar".
- "Depending on where the extra funding was getting spent".
- "Maybe", "Depends on the resources and where they are spent. Funds can be spread from areas on no infection and booster those areas of infection".
- "Maybe", "Also need to look at the use of current levies and make sure they're being utilised in the best interests of farmers. "
- "Yes", "provided that a robust cost-benefit calculation supports it".

### Benefits to a farmer if we are TBfree in NZ?

● Yes with confidence	49
● No, absolutely not	2
● Yes, but still a little unclear	17
● No, I don't have enough inform...	3



Figure 17 – Survey answers – Do farmers see the benefit in being TB free? (Appleby, 2023)

## 8.8 Analysis and Discussion - Interview with Senior Disease Manager

### ➤ **Understanding the evolution of the NPMP over time from 1995 to 2023?**

Crews stated the National Pest Management Plan (NPMP) has evolved somewhat over time as more learnings have surfaced to what is driving New Zealand's bovine TB problem. It was in the late seventies and early eighties that showed that there was no rule book or playlist for this disease. It was a unique problem in New Zealand.

The programme, prior to the first National Pest Management Plan in the mid-1990s, was still essentially based on a programme to eradicate TB from cattle without any other external source. Furthermore, that was why it was failing. It was not until there was a realisation that pest control and possum control needed to be added into the mix, as well as a good surveillance programme and movement controls, that real change started to occur.

The second NPMP, which was only three years after the first, brought in a huge increase in the funding for possum control.

The science programs continued around what is driving TB with confidence that the science was working. Most of the research now is around wildlife and efficient ways of counting and killing possums.

Essentially, it is a three-legged stool, possum control, herd testing and movement restrictions that are still the main fundamentals for the current NPMP."

### ➤ **Farmers buy in and response to the NPMP over time**

There has been generational change since the peak of herd outbreaks in the 1980's-90's.. A lot of the farming leaders and people would remember the dark days. Many areas are not experiencing TB in their backyard, and this becomes a major issue when it comes to funding reviews for the Programme.

The longer you go with low TB rates, the less people remember what it was like. This is why it's important to keep the story going, as when farmers are asked to vote on whether they want to continue this amount of funding for the TB program, the disease can't be invisible to communities and regions that aren't experiencing the effects.

(K. Crews).

The NPMP (National Pest Management Plan) is dynamic in nature and its ability to adapt to changing circumstances. In its initial stages, the program was primarily focused on eradicating TB from cattle, but it needed to be more effectively addressing the broader issue. It was only when they recognised the need to incorporate pest control and possum control into the programme that a notable change occurred.

This shift in focus, which occurred in the mid-1990s with increased funding for possum control, marked a turning point in TB control efforts. A comprehensive approach involving surveillance programs, movement controls, and animal monitoring was crucial. The NPMP evolved to encompass these aspects, ultimately enhancing the effectiveness of TB control.

Crew's highlights the importance of effective storytelling in communicating the goals and progress of the NPMP, stressing that the program's messaging should extend beyond technical details and incorporate compelling narratives. While the technical aspects of the program are vital, communicating the overarching objective to farmers and industry—eradicating TB in herds by 2026—requires a clear, relatable story.



There are challenges associated with crafting a story around a long-term disease that is invisible in some communities and regions, but simplifying the message is essential. It is noted that focusing on the collective effort to roll back TB to zero by 2040 can be a powerful narrative. Kevin also highlights the importance of storytelling as a means to engage and maintain public interest in a program with long-term objectives.

There is a challenge of maintaining support and funding for the NPMP when TB prevalence becomes less visible due to program success. This raises questions about how to engage stakeholders, especially those who may need to remember the challenges and consequences of TB outbreaks. There is a need for stakeholder engagement and communication strategies to ensure continued support, even in low TB prevalence periods.

## 9.0 Findings:

### 9.1 Survey results

The survey results provide a snapshot of how farmers and industry professionals in New Zealand perceive bovine TB and the ongoing efforts to eradicate it. It's important to note that respondents' opinions may be influenced by their direct experiences, their regions' history with TB, and their roles in the industry.

Results suggest that there is a general understanding of the importance of TB eradication, but there are differing opinions on whether increased levies should be used to speed up the process. The comments from respondents indicate that support for increased levies would be conditional on transparency and clear benefits.

The survey aimed to capture diverse opinions by including respondents from various age groups and regions. It's essential to consider these demographics when interpreting the results, as they can influence respondents' knowledge and experiences with TB.

There were 71 respondents, with a significant portion (22) aged between 50-59 years. Five of them had direct experience with TB across different decades, showing the long history of TB in New Zealand.

Two respondents were between 70-74 years, with one having experienced TB on the farm, and the other knew farmers affected by TB.

It is clear from the results that bovine TB has been having an impact on New Zealand farming systems since the 1850s and the fight is not over yet. Through the peaks and troughs of this disease spreading both through wildlife and domestic cattle and deer herds over the years, farmers and industry have been relying on a three-legged stool approach to reach the targeted years of 2026, 2040 and finally, 2055, when NZ aims to be biologically free of the disease TB.

This method has seen the success of declining infected herd numbers, declining possum populations and fewer new infected animals turning up in herds, with the exception of the Hawke's Bay outbreak in 2019, which has moved from a response mode to active management.

OSPRI NZ What is bovine TB publication displays this three-legged stool approach as below:

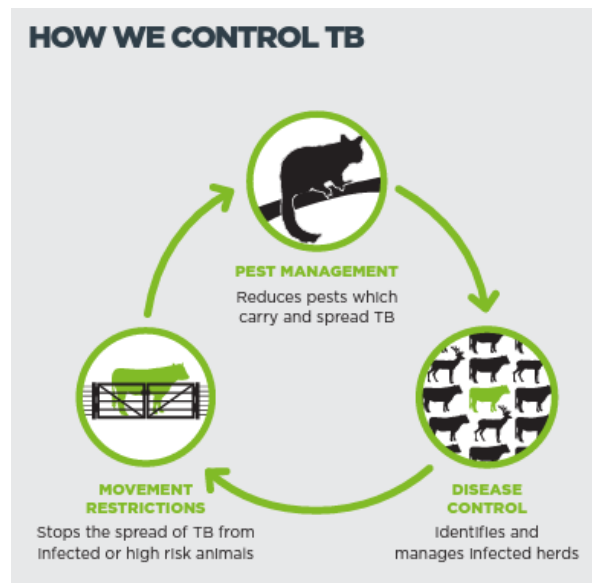


Figure 18 – Three-legged stool method to TB eradication OSPRI NZ Ltd, n.d.)

### Distribution of respondents from regions currently affected by bovine TB in New Zealand:

It's noteworthy that regions with a history of TB outbreaks, such as Canterbury and Otago, had a higher number of respondents. Of the 54 (76%) survey respondents that are located within movement control and annual testing areas, their understanding and day-to-day interaction with the three-legged stool method is higher than those that sit within biennial and surveillance areas, with the exception that only 15 of these people know that 2026 is the year when NZ will be TB free in herds. This indicates more communication, and education are needed around the three main milestone years of TB, 2026, 2040 and 2055, with an emphasis on 2026 as a priority.

Respondents showed a reasonable knowledge of the TB programme and an understanding of why TB testing and surveillance are necessary, with most acknowledging the importance of preventing disease spread and ensuring access to international markets.

The majority of respondents (68 out of 71) considered eradicating TB from New Zealand to be very important. This highlights the consensus on the significance of TB eradication.

Most respondents (24 out of 42) were open to increased levies if they would accelerate TB eradication. Some were uncertain (29 out of 42), and a few were against it (11 out of 42).

The majority recognised that TB could be spread through possums and the movement of animals between farms, aligning with official information.

Work is also needed to break the association and stigma of being an infected TB farm, to generate community support and education, and to break the isolated feelings farmers can gain from being TB infected.

Survey results offer valuable insights into the opinions and knowledge of New Zealand farmers and industry professionals regarding bovine TB. These findings can guide efforts to maintain support for TB eradication and enhance the effectiveness of the TBfree NZ program.

Movement-related spread:

More work can be done on the importance of highlighting traceability and its role in tracing TB infected animals. The current National Animal Identification and Tracing System (NAIT) states that animal movements must be recorded within 48 hours of moving off the farm, and for those sitting in movement control areas, a pre-movement test is required before they can. There is a relationship between post-movement testing and recording animal movements within the 48-hour period. It minimises the risk of TB spread, and if the disease is spread, the ability to contain infected animals quickly increases.

Another suggestion to mitigate the spread of TB through animal movements is to provide education to farmers and industry to know where they are buying stock from and the questions that need to be asked when buying from high-risk areas.



Figure 19 (OSPRI et al., n.d.)

The 48-hour movement requirement is one of five fundamentals of the NAIT programme:



Figure 20 Five NAIT fundamentals (NAIT Ltd & OSPRI NZ Ltd, n.d.)

## 10. Conclusions:

In the decades that bovine TB has been present in New Zealand, from the 1850s through to today, the technical management of the disease has evolved, with the people in the industry mostly having a good understanding of how the TBfree New Zealand programme functions.

The road to eradicating bovine TB has been a lengthy one for New Zealand and its farming industry. The road has not yet come to an end, and messages from industry are *“Don't take your foot off the gas”*.

Farmers who are facing TB on their farms and communities have low tolerance for the eradication efforts of the BTB disease going backwards and prove to be extremely supportive of the TBfree New Zealand programme, needing minimal reminding of their obligations and contributions to eradication.

Fundamentally, the recipe stays the same: control of possums, movement restrictions and herd testing, unless a major outbreak occurs requiring the recipe to be challenged.

The challenge for the industry is that TB is invisible in some regions throughout the country, and that is where Complacency starts to lie.

The next two and half years are crucial, and this research highlights that education, transparency and storytelling are needed to make the invisible visible and to create a New Zealand INC combined effort for disease eradication.

The responses from the survey outlined a need for more communications, education, especially in the younger generations and storytelling of previously infected farms. There is also a call to increase NAIT (National Animal Identification and Tracing System) compliance for disease tracing purposes and not only bovine TB but other animal diseases.

The evolution of the National Pest Management Plan in New Zealand highlights the program's adaptability and success in addressing TB in cattle. However more emphasises on storytelling and communication in engaging stakeholders and ensuring the program's long-term viability. As TB prevalence decreases, maintaining support and interest remains a critical challenge, requiring innovative communication strategies to convey the ongoing importance of the NPMP. TB is dynamic in nature and this report highlights the need for effective communication to sustain progress toward eradication.

*Mahi taki Aotearoa*

*Collective Effort New Zealand*

## 11. Recommendations:

The farming and industry representation in this research are mostly aware of New Zealand's current and past position in the fight to eradicate bovine TB from domestic cattle and deer herds and wildlife. While communications in the past have been focused on the technical aspect of disease management and where the disease comes from, there is little evidence to show what the road to eradication looks like, and the impacts of being TB infected has on farmers.

By using farmers' stories to show the importance of vigilance and collaboration in the fight against TB, the human and economic impact of TB, as well as the emotional toll of being an infected farmer. The same can be said for the industry professionals working alongside these farming communities, undertaking research-driven strategies and comprehensive pest control methods to eradicate the disease across New Zealand.

Recommendations are as follows:

- **Telling a different story.** People like to hear about other people, therefore, telling more human-centred stories or case studies as opposed to technical information on disease management would help provide more relatable recognition of the TB freedom goals of 2026, 2040 and 2055.  
Consistency is also key here. Telling one story will not have the memorable impact that telling multiple stories over time would. By using farmer narratives, industry, government, and disease management agencies can better understand the emotional and psychological aspects of an infected farm. Overall, the text underscores the significance of storytelling as a means to promote healing and improve relationships in the challenging context of COVID-19 recovery.
- **Targeted education.** Increased education and awareness on topics such as the impacts of being on an infected farm, NAIT as a resource to trace infected animals, and the responsibilities of farmers who are moving or buying livestock from high-risk areas in the country. Education with younger generations also who most likely have not experienced bovine TB in its 1990's peak.
- **Making the invisible visible.** Target communication efforts to those regions that live without TB present in their communities. This could be done in partnership with industry shareholders to have a higher impact by ways of workshops, speaking of the success to date with the TBfree programme and bringing real-life farmers and their stories to the communities. Outlining benefits to being TBfree to keep our target milestone of TB freedom in herds by 2026.

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## 13. Appendices:

### 13.1 Statement for the survey:

Tena koutou,

My name is Tess Appleby, and I am part of the 50<sup>th</sup> cohort for the Rural Leaders NZ Kellogg programme,

One aspect of doing this rural leadership programme is completing a research project, which will benefit our primary industries.

Therefore, my research project is "Eradicating Complacency: How does NZ ensure we don't get complacent in long-term disease control, specifically, Bovine Tuberculosis.

This [Eradicating Complacency Survey](#) is purely to understand people's understanding of Bovine Tuberculosis (TB) in Cattle and Deer in NZ.

Link:

<https://forms.office.com/Pages/ResponsePage.aspx?id=dMzCfi5DGUSxSMw48FQSAfhcTv3AoopHm0XJLVLI3JNUOUVONVU3TU9MV01DR0IPMktLUk1MSVkzNS4u>

Please ensure you tick the permissions box if you are happy for your answers to be used in my research. Please note **NO** names will be shared with the results, and your answers will remain completely **anonymous**.

There is no wrong answer, and it is not a test, so please answer as honestly as you can.

The data will be used in my research report to help identify themes and their relevance to how people perceive TB in the farming industry.

This research is being conducted independently of OSPRI NZ Ltd, my current employer.

Thank you for taking part!

## 13.2 Survey – Eradicating Complacency

The understanding of Bovine Tuberculosis and how it impacts New Zealand farming.

This survey is purely to understand people's understanding of Tuberculosis (TB) in Cattle and Deer in NZ and to assist in my Kellogg research topic of "Keeping TB relevant the closer we get to eradication"

There is no wrong answer, and it is not a test, so please answer as honestly as you can.

The data will be used in my research report to help identify themes and their relevance to how people perceive TB in the farming industry.

Please note **NO** names will be shared with the results, and your answers will remain completely **anonymous**.

Thank you for participating!

Required

1. Do you give permission for your answers to be used as data in the research project?

- Yes
- No

2. Gender

- Male
- Female
- Non-binary
- Prefer not to say

3. Please select which region in NZ you are from

- Northland
- Auckland
- Waikato
- Bay of Plenty
- Gisborne
- Hawke's Bay
- Taranaki
- Manawatu / Whanganui
- Wairarapa
- Wellington
- Marlborough
- Tasman

- West Coast
- Canterbury
- Otago
- Southland

4. Please select your age range

- 18-30
- 31 - 39
- 40-49
- 50-59
- 60-69
- 70-74
- 75 or older

5. Please select out of the following which you identify with the most:  
Please select at most two options.

- Dairy Farmer
- Sheep and Beef farmer
- Deer farmer
- Grazier
- Industry professional
- Other

6. How would you rate your knowledge of Bovine TB

One = I know nothing at all

Five = I consider myself an expert

- 1
- 2
- 3
- 4
- 5

7. Have you ever experienced a TB infection on a farm you owned or worked on?

- Yes
- No

8. If yes, what year did your farm experience being infected?

9. If no, do you know of a farm that has been TB infected either currently or previously?

- Yes
- No

10. If yes, did this change your understanding of being an infected TB farm?

11. Please select which year you think NZ is going to be TBfree in herds

- 2025
- 2026
- 2050
- 2040
- I wasn't aware there was a year.

12. Please select from the below your understanding of why we need to TB test / undertake slaughter surveillance. You can select multiple answers.

- So that meat can be eaten for human consumption.
- To ensure we aren't spreading TB to humans.
- To access international markets
- To keep the value of beef at a good price
- To ensure we aren't sending TB overseas.
- To ensure we aren't spreading TB between farms.

13. Please select from the following how you think TB is spread to and within cattle and deer in NZ. You can select multiple answers.

- Spread through wild deer and pigs.
- Movement of animals between farms
- Spread from possums.
- It was planted here years ago and injected into cows.
- Spread through other pests, i.e. ferrets and stoats

It was first passed from a human in the 1880s to a home-milking cow and has spread ever since.

14. Do you think the industry needs to be doing more to keep TB relevant with farmers? If yes, what could be done?

15. On a scale of 1-5, 1 being very low and 5 being very high, how important do you think it is to eradicate TB from NZ?

- 1 - Not important at all
- 2 - Somewhat not important
- 3 - Neutral
- 4 - Important
- 5 - Extremely important

16. Please select from the below how you think we monitor TB in NZ in cattle and deer. You can select multiple answers.

- Only at the works
- TB Testing
- My stock agent does it for me
- NAIT - When animals are moved between farms.
- Some animals are monitored at the works.
- Catching wild pigs to see if they have TB.
- Monitoring possums
- My vet usually does it for me.

17. TBfree is funded by farmer levies and MPI. If levies were increased to eradicate TB in herds and wildlife sooner, would you support this increase?

- Yes
- No
- Maybe
- 

18. Thank you for getting this far and participating. Lastly, Do you see the benefits to you as a farmer if we are TBfree in NZ?

- Yes, with confidence.

- No, absolutely not.
- Yes, but it's still a little unclear.
- No, I don't have enough information about it.

19. If you are interested in receiving the results of this survey, please enter your email address. Again, all results are anonymous.

Submit

### 13.3 Interviewee Consent:

#### Appendix 7: Interview consent form

Tessa Appleby - Kellogg Rural Leadership Programme K50

Eradicating complacency

Research Project MGMT 631

NB: This is a demonstration version. Some questions may not apply to your situation. The key principle is that you protect your interviewee's anonymity and information - confidentiality unless you have written consent to do otherwise.

#### Consent to take part in research

- **1** ..... Kevin Crews ..... voluntarily agree to participate in this research study.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
- I understand that participation involves being asked a range of research questions, to assist the researcher in gathering information for his/her research project.
- I understand that I will not benefit directly from participating in this research.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous. This will be done by

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changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.

- I understand that disguised extracts from my interview may be quoted in a published research paper & research project presentation.
- I understand that signed consent forms, original audio recordings and notes will be retained by the researcher in their password protected laptop computer until after day and full date, when all the course & research projects are all completed.
- I understand that a transcript of my interview in which all identifying information has been removed will be retained until after day and full date, when all the course & research projects are all completed.
- I understand that under freedom of information legislation I am entitled to access the information I have provided at any time while it is in storage as specified above.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

[Tessa Appleby: [tessa.appleby@ospri.co.nz](mailto:tessa.appleby@ospri.co.nz) ]

Signature of interviewee Date 4/12/23

I believe the interviewee is giving informed consent to participate in this study:

Signature of Kellogg participant Date: 26/10/2023

Kellogg Rural Leadership Programme & Lincoln University  
PGCertCom

Dr Patrick Aldwell (Academic Director) Kellogg Rural Leadership Programme.

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### 13.4 Survey consent:

1. Do you give permission for your answers to be used as data in the research project.

[More Details](#)

[Insights](#)

- Yes 71
- No 0

