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PROGRAMME

- HOW CAN WE HELP? –

How can the groundspread industry best support the New Zealand food and fibre sector?

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Executive Summary

This report sought to understand how the groundspread industry can support the New Zealand food and fibre sector during a period of increased regulation and reform.

In trying to understand how the groundspread industry could help, it was necessary first to establish the following:

- How imposed regulatory change impacts the food and fibre sector.
- What the groundspread industry is currently doing well (and should keep doing).
- What areas the groundspread industry could improve to support the sector.
- Why the New Zealand food and fibre sector requires trusted partners to support them in meeting their challenges.

Ki te kāpuia e kore e whati

We succeed together

Key Findings

This report identified key challenges for the food and fibre sector that the groundspread industry needs to be aware of:

- Increased production (economic activity) has negatively impacted on the natural environment (Cassells & Meister, 2001).
- Environmental policy attempts to reduce these negative impacts (Cassells & Meister, 2001) (Pannell & Rogers, 2022).
- The emotional response to policy change and the five stages of grief experienced during periods of imposed change (Friedrich & Wustenhagen, 2017).
- Trust is critical for supporting the food and fibre sector through change (Savage, et al., 2018).
- Rural New Zealand require **trusted partners** to support them.
- The groundspread industry shares concerns with the food and fibre sector (rapidly increasing costs and sustainability issues/compliance) and should **seek solutions** to help them mitigate these concerns.
- The groundspread industry supports their rural clients well but must ensure that this support is **more consistent** on every farm where Groundspread NZ members undertake nutrient placement.
- The groundspread industry should **share** its part of the **paddock-to-plate journey** by increasing marketing and education about the efficient and accurate work they undertake in applying nutrients.

Furthermore, change generates an emotional response, and each individual or organisation will progress through the stages of grief towards acceptance of imposed change at varied pace (Friedrich & Wustenhagen, 2017). While navigating this change process, members of the food and fibre sector require varying support dependent on their stage in the grief cycle as it applies to sustainability policy changes:

- **Information and communication** are important for people during the denial and anger stages of grief.
- **Emotional support** is required for people who are transitioning into the bargaining phase of the grief cycle.
- **Guidance and direction** are critical for supporting people as they move through the depressive and acceptance stages of grief as it applies to sustainability policy changes.

Recommendations

The recommendations included in this report aim to increase awareness of the professionalism of the groundspread industry. Groundspread NZ members can support the primary sector through increased engagement and by better sharing their skilled and essential role in New Zealand's food and fibre production in the following ways:

Implement Educational initiatives

- Ensure all groundspread operators, and their clients, are aware of the latest in-truck technologies, such as tracking/mapping technologies.
- Ensure that all groundspread operators, and the rural sector, understand the benefits of the Spreadmark scheme.

Develop a Marketing strategy

- Develop a marketing strategy to share the precision work undertaken by the groundspread industry.
- Promotion of an efficient groundspread industry to policymakers, farmers, and urban New Zealanders.

Build meaningful Partnerships

- Create meaningful relationships with companies developing technology for the industry to ensure they will fulfil the needs of the food and fibre sector.
- Establish meaningful relationships with policymakers to increase awareness of the precision work undertaken by the groundspread industry on behalf of their rural clients.
- Continue meaningful relationships with fertiliser manufacturers/suppliers to ensure that developed products can be applied as intended.

The research methodology included an extensive literature review focused on the converging importance of economic growth and environmental harm reduction. Data was collected through two focus groups of Groundspread NZ Association members: nine for the first focus group and 27 in the second focus group. An online survey of the New Zealand rural community was also conducted; 22 responses were collected. The data was then analysed using the transcript-based method prescribed by Krueger & Casey (2002). Subsequently, data was grouped for thematic analysis using Braun & Clarke's (2006) method and has highlighted many things that are being done well by the groundspread industry, but also that few people know about them. Increased engagement is at the heart of better supporting New Zealand's food and fibre sector.

1. Introduction

New Zealand has a unique greenhouse gas profile, in that around 50 per cent of the nation's emissions come from animal agriculture. Consequently, farming operations throughout New Zealand must change in order to reduce CO_2 emissions and contribute to a reduction in global warming.

About half of New Zealand's total land area is used for food and fibre production (Environment, 2021):

- 40 per cent exotic grassland (land covered with non-native grasses used for pasture, including dairy and sheep and beef farming)
- 8 per cent exotic forest (land covered by non-native forest, including forestry)
- 2 per cent cropping and horticulture (land covered by grain, seed, vegetable, fruit, or grape growing).

The area of highly productive land unavailable for food and fibre production (because it had a house on it) increased by 54 per cent from 2002 to 2019 (Environment, 2021). Highly productive land (HPL) that requires less irrigation, and fertiliser, often lies on the fringes of our towns and cities (Environment, 2021). HPL has been increasingly transformed into land for housing and removed from New Zealand food production areas. As a result, less productive land that needs to be fertilised (and irrigated) has been transformed into land capable of food production that will enable export goals to be met.

Farmers are producing more but simultaneously charged with reducing emissions. The New Zealand Government has ambitious plans to double primary industry exports from $32b in 2012 to $64b in 2025 (Brown & Roper, 2017). By 2022 the food and fibre sector had achieved extraordinary growth, and exports totalled $50.8b (Ministry for Primary Industries, 2022). However, as exports continue to grow in value, the sector is facing increasing pressure to limit the environmental impacts of its operations (Brown & Roper, 2017). Many New Zealanders believe that the sector needs to do more to reduce their activity's impacts on the environment and waterways (Environment, 2021).

However, reducing environmental harm while increasing production (and still making a profit) seems like an oxymoron without the proper support. Policymakers continue to introduce countermeasures to safeguard the environment, for example, the Resource Management Act (1991) reform, the Three Waters Reform Programme, and National Policy Statements for Freshwater, Indigenous Biodiversity, and for the management of Significant Natural Areas. These measures impact how the food and fibre sector can operate, and it has left the rural community wondering what the implications of this reform and regulation may look like for them in practice (Federated Farmers of New Zealand PODCAST, 2022). As farmers come to terms with these new regulations, their implementation, and their impact at a farm level, groundspread operators should endeavour to understand the impacts of this change and offer their support as rural partners. The food and fibre sector will require trusted partners who care about the environment when working on their properties and are prepared to change how they operate to support them in navigating regulatory change.

Restrictions on fertiliser use led to disastrous economic consequences in Sri Lanka and should provide a warning for other food-producing nations against such a ban (Barwick, 2022). A ban on synthetic fertilisers and pesticides in April 2021 led to 85 per cent of farmers experiencing crop losses, rice production dropping 20 per cent, and rice prices increasing 50 per cent in six months (Barwick, 2022). This example provides validation for continued fertiliser use in New Zealand.

Because fertiliser is required for growing food exports and supporting New Zealand's post-covid economic recovery, its use is likely to continue[1]. Thus, indicating that groundspread operators are likely to remain rural partners during this period of regulatory reform and should seek solutions alongside the rural community to not only survive the demands of increased sustainability regulations, but to thrive in meeting them.

2. Aims and Objectives

This research paper aims to better understand the impacts of new regulations on the food and fibre sector and how the groundspread industry can support them in meeting the increasing regulatory demands that they face.

2.1 Objectives

- To better understand the impacts of imposed changes on the rural community.
- To discover what the groundspread industry already does well to support their clients in meeting increasing regulatory demands and what areas could be improved.
- Analyse and evaluate the findings to offer recommendations to the groundspread industry about how they can continue to support New Zealand's food and fibre sector.

2.2 Scope

The scope of this research was Groundspread NZ members (voluntary Association of groundspread companies from throughout New Zealand), and members of the rural community, all based in New Zealand.

There is extensive research already available that explores and highlights the environmental and economic benefits of accurate fertiliser placement in New Zealand (Horrell, Metherell, Ford, & Doscher, 1999) (Grafton, Yule, & Rendle, 2011) (Grafton, 2016). However, no research is available about the extent to which New Zealanders know about this accuracy and efficiency of groundspread operators in nutrient placement. Additionally, there is no research available about the relationship between the groundspread industry and their rural clients, particularly in meeting the needs of their clients. Therefore, seeking feedback and input from both the groundspread industry and the food and fibre sector (using their services), was highlighted as a gap worth exploring to seek new solutions to help support the sector.

[1] The 2022 annual reports for New Zealand's two main fertiliser co-operatives, Ravensdown and Ballance, (Ballance Agri-Nutrients, 2022) (Ravensdown Ltd, 2022) indicate that 2.803 million tonnes of fertiliser were applied on New Zealand agricultural land during the 2021/22 season.

3. Methodology

3.1 Literature Review

A literature review was conducted to better understand the background of this project. The information reviewed highlighted tensions between achieving agricultural economic growth while also reducing harm to the New Zealand environment.

In the critical analysis of the sources reviewed, the author was hoping to better understand the following:

- The extent of agricultural emissions towards New Zealand's total greenhouse gas emissions (Cassells & Meister, 2001) (Pannell & Rogers, 2022).
- The extent that increased agricultural/economic activity as impacted on the natural environment in New Zealand (Cassells & Meister, 2001).
- How environmental policy attempts to reduce the negative impacts of food and fibre production (Cassells & Meister, 2001) (Pannell & Rogers, 2022).
- The emotional response to imposed environmental policies (Friedrich & Wustenhagen, 2017).
- Why trust is critical for meaningful change in the food and fibre sector (Savage, et al., 2018).

3.2 Focus Groups (Groundspread operators)

Focus group 1 was conducted to help establish what members of Groundspread NZ knew about imposed changes in New Zealand and the impact of these changes on their clients.

Involving the community in focus groups gives several major advantages; focus groups can be conducted in different languages and dialects by moderators whom the participants trust; focus group participants (and especially the research team) feel a sense of ownership of the study (especially important in this research as they will be the implementors of the recommendations), and the results are deemed more believable and trustworthy because they are familiar with the people conducting the study (Krueger & Casey, 2002).

A good focus group has the following characteristics: carefully recruited participants, interacting in a comfortable environment, led by a skillful moderator, followed by systematic analysis and reporting (Krueger & Casey, 2002). Accordingly, a focus group was

Figure 1
Question tree posed to focus group participants during Focus Group 1

recruited from members of the groundspread association, Groundspread NZ, from throughout New Zealand; selected participants had the experience and knowledge needed to provide rich information on the topic. Smaller groups of three people were carefully selected to avoid power differentials; this group knew a lot about the industry but usually worked alone, and therefore a comfortable environment, group size and reducing any power imbalances were imperative for engagement (Krueger & Casey, 2002). The focus groups were semi-structured and were provided with open-ended questions (Figure 1) to purposefully give the participants as much freedom as possible in their responses (Krueger & Casey, 2002). The feedback was then analysed using the 'transcript-based analysis' model (Table 1) and grouped into themes emerging from discussions (Krueger & Casey, 2002). This method was selected due to the 'low' risk of error and the 'high' perceived level of rigor (Krueger & Casey, 2002).

Table 1
Krueger & Casey's focus group analysis method - transcript based analysis selected (Krueger & Casey, 2002)

Analysis type	Memory-based analysis	Note-based analysis	Tape-based analysis	Transcript- based analysis
Description	Moderator analyzes based on memory and past experiences and gives oral debriefing to client.	Moderator prepares a brief written description based on summary comments, field notes, and selective review of tapes.	Moderator prepares written report based on an abridged transcript after listening to tapes, and consulting field notes and moderator debriefing.	Analyst prepares written report based on complete transcript, with some use of field notes and moderator debriefing.
Oral or written reports	Usually oral report only.	Usually oral and written report.	Usually oral and written report.	Usually oral and written report.
Time required per group	Very fast: within minutes following the discussion.	Fast: within 1-3 hours per group.	Fast: within 4-6 hours per group (includes time for completing abridged transcription).	Slow: about 2 days per group (includes time for completing full transcription).
Perceived level of rigor	Minimal.	Moderate.	Moderate to high.	High.
Risk of error	High.	Moderate--depends on quality of field notes.	Low.	Low.

The focus group data was analysed using the transcript-based analysis method (Krueger & Casey, 2002). The transcript was colour-coded to identify different speakers, and then grouped into themes emerging from the participant's responses (Krueger & Casey, 2002). Each quote was carefully analysed to identify a theme before deciding whether it was best placed alongside a similar quote or if it, although similar, raised a new idea or issue (Braun & Clarke, 2006).

Focus group 2 was conducted to explore the convergence of emerging themes from focus group 1 and the feedback/responses from an online survey of the rural community. The focus group was conducted similarly to focus group 1 to garner honest and credible feedback from the group. Focus group 2 had 27 participants from Groundspread NZ versus the initial focus group of nine. Therefore, groups were larger than focus group 1 but were limited to six people to ensure that all participants could feel comfortable and confident to express their views in the smaller group setting prescribed by Krueger & Casey (2002). Feedback from the focus groups was thematically analysed searching for key themes (Braun & Clarke, 2006). Key themes have been reviewed six times to form a coherent pattern for final analysis.

Bias cannot be ruled out of this methodology due to the selected focus group participants; the Groundspread NZ members in attendance were individuals who had volunteered their time on a Friday (workday) to be involved in this focus group and who are generally highly engaged members passionate about implementing change in the groundspread industry. Thus, participants saw their contribution in this focus group as a valuable use of time away from their businesses and this may not be representative of every groundspreader and could indicate a possible bias in the research.

3.3 Online Survey (Rural New Zealanders)

An online survey was opened using survey tool SurveyMonkey on March 30th 2022, and was closed on 1st August 2022. Due to the online nature (social media) in which this survey was shared, it is impossible to quantify how many people saw this survey invitation. The survey was shared by Groundspread NZ members with clients through social media platforms, and it was also shared by Farm Source, Ravensdown, and TracMap via social media platforms. There were 22 responses collected from varying participants from the food and fibre sector (Figure 2). Forestry is not represented in the survey, but they are negligible users of fertiliser (Figure 3), so this was not surprising to the author. Not all respondents answered all questions. Although there is a small sample size, valuable data was extracted from the 37 questions posed to participants (see 10.1, Appendix A). The questions ranged from simple tick boxes to answers that required more in-depth engagement and allowed individual opinions to be expressed (Braun, Clarke, Boulton, Davey, & McEvoy, 2021). On the one hand, Braun et. al (2021) warn that participants' literacy levels may limit online qualitative surveys, which could have limited the responses received (Braun, Clarke, Boulton, Davey, & McEvoy, 2021). On the other hand, anonymity allowed participants to express their views freely and allowed for honest data collection from people who may feel uncomfortable in face-to-face interviews (Braun, Clarke, Boulton, Davey, & McEvoy, 2021).

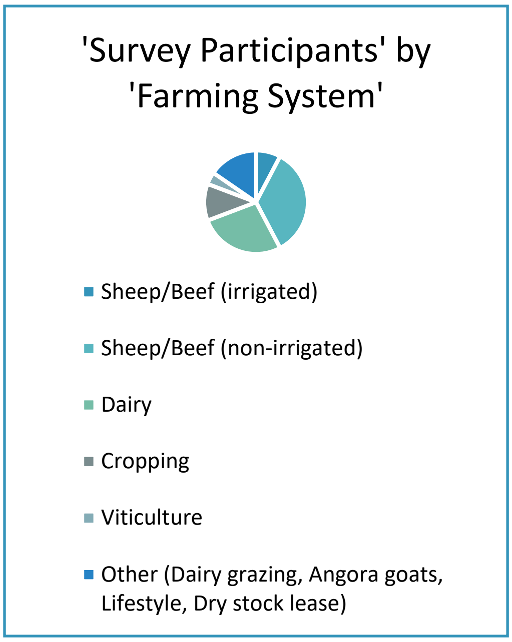

Figure 2
Farming system of survey participants

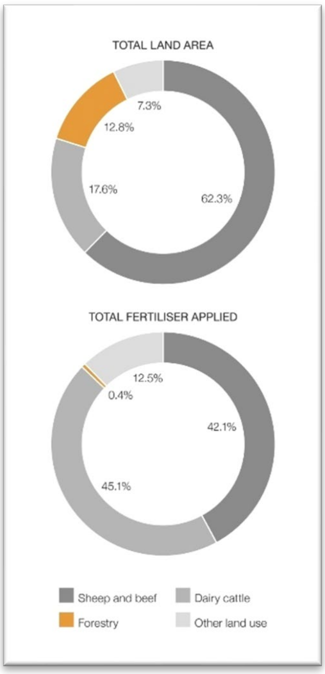

Figure 3
Land use and fertiliser use by sector (SCION, 2019)

4. Literature Review – Findings and Discussion

Key words: fertiliser, food production, New Zealand, trust, collaboration, environmental farm plans, Spreadmark, groundspread, fertiliser application, reform, regulatory, Stats NZ, regulation, reform, agriculture, emotions, stages of grief, organisational change, decision-making, corporate sustainability, dairy company policies, agriculture subsidies, emissions trading scheme, agricultural emissions, policy support, political affiliation, climate change.

The literature reviewed does not dispute that increased food and fibre economic activity has contributed to the growing deterioration of the natural environment (Cassells & Meister, 2001) and that this is a global issue (McWilliam & Balzarova, 2017) (Cassells & Meister, 2001).

New Zealand has a unique greenhouse gas emissions profile, with around 50 per cent of the nation's emissions produced via the agriculture sector (Stanley, Kerr, & Wilson, 2020). Animal agriculture produces large amounts of the potent gases methane and nitrous oxide, and each unit has a more intense warming effect on the environment than each unit of carbon dioxide (Stanley, Kerr, & Wilson, 2020). In the Climate Change Response Act, the Government has set a legislated target of net zero for carbon dioxide and nitrous oxide by 2050, and a 10 per cent reduction in methane by 2030, climbing to between 24-47 per cent by 2050 (Beef + Lamb NZ, 2022).

While several commentators have continued to claim this split gas approach to emissions "lets agriculture off the hook" (Beef + Lamb NZ, 2022), a collective of 33 scientists have recently published an article emphasising their high level of agreement on the underlying science of how different greenhouse gases affect global temperature (Allen, 2022). They emphasised that ambiguity in global temperature outcomes remains if targets for non-CO2 gases include a mixture of long-lived climate forcers (LLCFs), such as nitrous oxide, with atmospheric lifetimes around 100 years or longer, and short-lived climate forcers (SLCFs), such as methane, most of which have lifetimes shorter than 20 years (Allen, 2022).

The reviewed literature revealed a complicated landscape in which farmers are operating. Critical analysis of the academic literature reviewed identified key challenges for the food and fibre sector that the groundspread industry should be aware of:

- **4.1:** Increased production (economic activity) has impacted negatively on the natural environment (Cassells & Meister, 2001).
- **4.2:** Environmental policy attempts to reduce these negative impacts (Cassells & Meister, 2001) (Pannell & Rogers, 2022).
- **4.3:** The emotional response to imposed change and the five stages of grief experienced during periods of change (Friedrich & Wustenhagen, 2017).
- **4.4:** Trust is critical for supporting the food and fibre sector through change (Savage, et al., 2018).

4.1 New Zealand's growing export market and the negative environmental impact

In New Zealand, 51 per cent of the country's 26.8 million hectares is used for food and fibre production (Stats NZ, 2022). Because of the large proportion of land used for food and fibre production, New Zealand has a unique profile of greenhouse gases and the animal agriculture sector contributes around half of the country's greenhouse gas emissions (Stanley, Kerr, & Wilson, 2020). New Zealand emits the highest proportion of methane and nitrous oxide of all other OECD countries (Stanley, Kerr, & Wilson, 2020). In contrast, emissions in other OECD countries are predominantly attributed to transport, electricity, or industry, activities which principally produce carbon dioxide (Stanley, Kerr, & Wilson, 2020).

By the late 1960s and early 1970s, the negative impact of increased agricultural activity on the environment had resulted in many countries beginning to impose regulations to reduce environmental harm (Cassells & Meister, 2001). The greatest agri-environmental issues that have been the focus of policy in New Zealand are water quality, water availability, biodiversity, soil conservation, and climate change (Pannell & Rogers, 2022). Nutrients and sediment from agriculture are major causes of water pollution in New Zealand, affecting lakes, rivers, and marine environments (Pannell & Rogers, 2022).

Emissions have continued to grow alongside the New Zealand Government's goal of growing primary industry exports. Primary industry exports have doubled from $32b in 2012 to $64b in 2025 (Brown & Roper, 2017). Further, by 2022, the food and fibre sector had achieved extraordinary growth, and exports totalled $50.8b (Ministry for Primary Industries, 2022). However, as exports grow in value, the environmental burden continues to grow (Stanley, Kerr, & Wilson, 2020). Further, the complexity and extent of whole farm sustainability, regulatory drivers, and environmental compliance targets have increased dramatically. Brown & Roper (2017) warn of ambitious export plans, given the strict environmental laws and international commitments that New Zealand farmers are bound by.

4.2 Policy requirement to reduce environmental harm

By the time agri-environmental policy was being steadily introduced globally in the 1990s, New Zealand had already removed most subsidies for farmers (Pannell & Rogers, 2022). On the one hand, New Zealand farmers successfully adjusted to policy changes and became more efficient and export-focused (Pannell & Rogers, 2022). On the other hand, much of this adjustment focused on farm intensification, and increased production was achieved through external inputs such as fertilisers, pesticides, water, fuel and/or stock feed and the removal of green infrastructure (McWilliam & Balzarova, 2017). Therefore, by removing the government's financial support for farmers, the sector compensated with measures to increase production (and profits) that increased unintended detrimental environmental impacts (McWilliam & Balzarova, 2017).

In New Zealand, both trade and the protection of the environment are essential to the economy (Cassells & Meister, 2001), so policymakers are tasked with creating a balance between the two objectives.

The emissions trading scheme has been a central theme of New Zealand's climate change policy since 2008 (Pannell & Rogers, 2022). However, agriculture remained largely exempted from the policy for the next 10 years, possibly due to a government awareness that regulatory costs imposed on polluters may be passed onto consumers and could cause a change in international competitiveness (Cassells & Meister, 2001). However, both producers and food companies are under increasing pressure from regulators, non-government organisations (NGOs), customers, and the public to promote sustainable food production throughout their supply chains (McWilliam & Balzarova, 2017), so it was inevitable that agriculture would be charged for their emissions in an attempt to ensure this goal.

Farmer protests in the early 2000s led to an agreement with the government that the private sector would fund research into climate change while charging for emissions from animal agriculture remained excluded from an emissions levy/tax (Stanley, Kerr, & Wilson, 2020). However, despite heavy investments from both the private sector and government into research and development of technical solutions for reducing livestock emissions (Pannell & Rogers, 2022), the exclusion of agriculture has made it difficult for New Zealand to achieve substantial emissions reductions (Pannell & Rogers, 2022), and has ultimately led to the government's commitment to the pricing of agricultural emissions by 2025 (Pannell & Rogers, 2022).

4.3 The emotional response to imposed change

The emissions debate has become a somewhat political debate which does not help the food and fibre sector come to terms with the fact that emissions reductions are necessary for the future of New Zealand farming (Stanley, Kerr, & Wilson, 2020); both trade and the environment need protected for the nation's economy to thrive (Cassells & Meister, 2001). Research by Stanley et al. (2020) suggests that National Party voters lean towards opposing policy regardless of how it is framed in the media. Therefore, it is recommended that politicians, media, and science communicators should fairly communicate the purpose of a new policy to ensure that political attitudes can be somewhat removed from environmental debates on emissions (Stanley, Kerr, & Wilson, 2020).

Politics aside, farmers' emotions around environmental change are heightened. Emotions can be defined as strong reactions in response to a decisive event (Friedrich & Wustenhagen, 2017). One of the strongest emotions to an event is grief, and grief is often triggered by the loss or impending loss of an important aspect of life (Friedrich & Wustenhagen, 2017). For example, a farmer who was once subsidised for their work on the land (positive) will soon be charged (negative) for the perceived harm they are causing to that same land in undertaking the same activity that they were rewarded for previously.

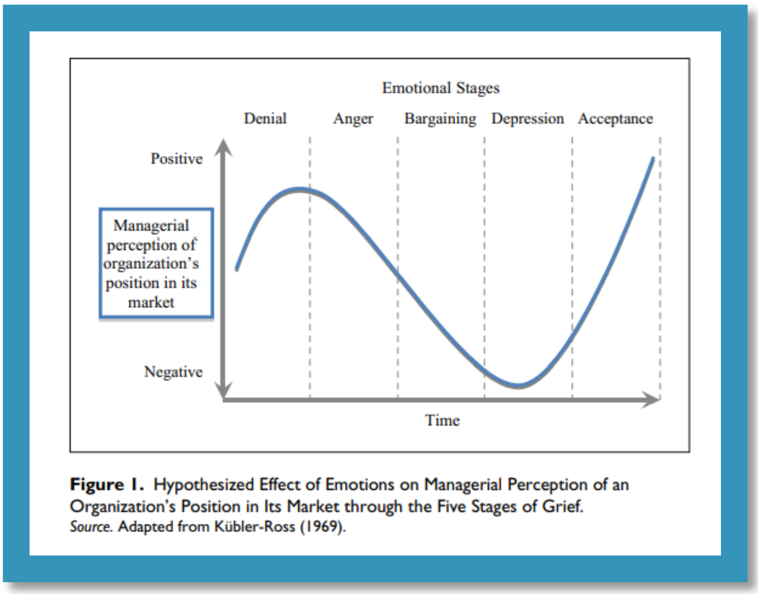

Figure 4
Hypothesized effect of emotions on managerial perception of an organisation's position in its market through the five stages of grief (Friedrich & Wustenhagen, 2017).

Kübler-Ross (1969) introduced the five stages of grief an individual may experience prior to reaching a stage of acceptance of a new reality. Research by Friedrich & Wustenhagen (2017) applies Kübler-Ross's theory to forced organisational change and the emotions of management in this process.

Sustainability-related issues can significantly influence the field in which an organisation or industry operates (Friedrich & Wustenhagen, 2017). The impact of each stage of grief on an organisation's positive/negative view of its position in the market is highlighted in Figure 4.

Corr (2021) examined critique of the Kübler-Ross (1969) model, some of which indicated that there is another stage, 'shock', and that not all people will experience all five stages modelled, or in the specific order she prescribes (Corr, 2021). However, Kearney & Hyle (2006) conducted a broad review of existing individual grief models and their relation to organisational change. They found that the Kübler-Ross (1969) model had the greatest depth and breadth of research as its foundation, and that there was a broad acceptance of its practical applicability (Kearney & Hyle, 2006). Thus, consideration of the Kübler-Ross (1969) model is justified in current farmer attitudes to sustainability and change.

The five stages of grief as they apply to imposed sustainability policy change (Friedrich & Wustenhagen, 2017):

- **Denial:** Denial is an initial reaction to imposed transformation (Kübler-Ross, 1969). In this stage, one is unwilling to admit that change is necessary or that it will impact them. During this phase, people or organisations tend to be passive and unlikely to embark on new strategies.
- **Anger:** When change can no longer be denied, a grieving individual or organisation will become enraged and resentful. They will express concerns about the change not being fair and look for someone to blame. At this phase, their emotional energy will not yet be directed towards solutions to the change.
- **Bargaining:** Individuals or organisations in this phase will try to bargain for more time or improved conditions to better cope with the change. One strategy is to prepare the public for the rising costs of their products. During this phase, the emotional response becomes more neutral towards change, as hopes and fears are more balanced.
- **Depression:** During the depression stage, the person or organisation realises that an important part of their life will be lost, they are facing the truth about the consequences. They might feel sad and hopeless about the future.
- **Acceptance:** The acceptance phase is an emerging ability to feel more positive about the change and a resolution that they can adapt to it and cannot fight change any longer. During this stage, organisations might look at strategic redirection and new opportunities driven by the change.

The author suggests that there are numerous farmer groups, all at different stages of grief relating to imposed environmental regulatory changes.

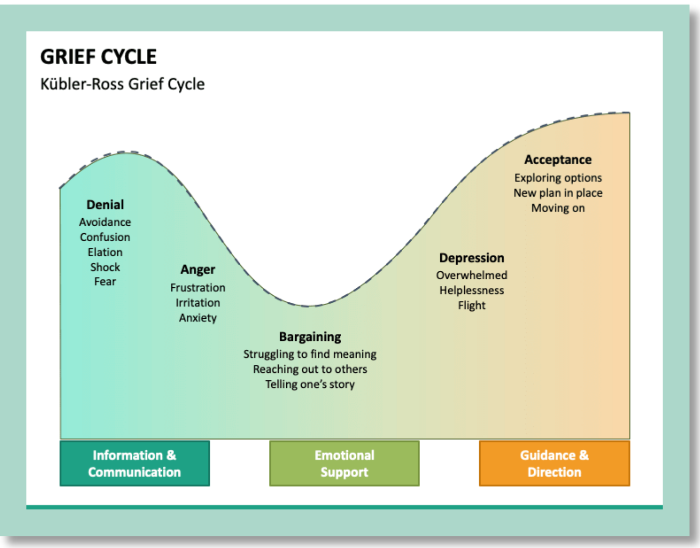

Figure 5
The Kübler-Ross (1969) grief cycle as it applies to sustainability policy changes. It highlights the support required by individuals or organisations as they transition towards acceptance to change (Friedrich & Wustenhagen, 2017).

As such, consideration of the Kübler-Ross (1969) model to change as it relates to policy-driven change (Figure 5) should be given. Partners of the food and fibre sector should adapt their support in such a way that it acknowledges the impacted individual or organisation's emotional reaction to change, as shown in Figure 5 (Friedrich & Wustenhagen, 2017). Consideration should be given as to whether individuals or organisations require (1) information and communication, (2) emotional support, or (3) guidance and direction, dependent on their transition through the five stages of grief.

4.4 Trust and collaboration are at the heart of meaningful change

A lack of trust in the system, or in the system's leaders, impacts an individuals or organisation's willingness to change (Kaser, Mundry, Stiles, & Loucks-Horsley, 2013).

Trust is built when partners are committed to shared goals, upholding their responsibilities and engaging with each other (Savage, et al., 2018). A lack of upholding responsibilities by regulators indicates an unhelpful relationship for change in the sector (Stokes, Macintosh, & McDowell, 2021) (Wallace, 2022) (Rae, 2022). An example of not upholding regulator responsibilities was evident in the failure to have a reporting system ready for farmers to report their nitrogen fertiliser (Wallace, 2022). Therefore, for success to be achievable, the sector requires different and trustworthy partners to support them in change. Successful collaboration involves coming together, growing together, and staying together (Figure 6). Collaboration occurs when members share a mutual mission or concerns and can help each other achieve outcomes that might have otherwise been impossible (Savage, et al., 2018). **Collaboration requires trust**.

Figure 6
Three key components to successful collaboration (Savage, et al., 2018)

Technology	Sustainability	Other
"Using better technology and move into better blends of fertiliser that are more suitable for spreading." *"Our technology is always evolving. We can help the farmer to reduce these compliance issues and provide them with data that helps in this area."* *"Smart technology that places product accurately and gives the general public confidence we are doing the right thing."* *"Further technological progress towards efficient and purposeful application techniques."*	*"A chance to clean up/naturalise fertiliser to mitigate climate change costs for future."* *"To showcase our efficiency in the aid of sustainable food production. highlighting spreadmark and its uniformity of the registered members."* *"To be more environmentally friendly. Only use Spreadmark accredited companies."* *"Spreadmark to become a national standard in compliance for contractors and farmers. This can set a worldwide standard that can work along side our clean green food production image, and premium prices for our products."*	*"Groundspread nz is a small and nimble enough industry to quickly adjust and develop to changing operational requirements."* *"Utilising the skills of the association and member businesses to assist business partners to best manage on farm application & information. Best practice for proof of product placement."* *"Maybe to manufacture more products in NZ, less reliance on imports?"*

Figure 7
Similarities in opportunities in the rural sector (The Research Agency (TRA), 2022)

Despite 61 per cent of Groundspread NZ members feeling 'positive' or 'very positive' about the outlook for the groundspread industry, Groundspread NZ members share similar concerns to the food and fibre sector (The Research Agency (TRA), 2022). See 10.2 Appendix B for a full survey summary.

A 2022 membership survey conducted by The Research Agency (TRA) indicated that the main concerns for groundspread operators were rapidly increasing costs (82%), sustainability issues/compliance (68%), and supply chain issues (66%) (The Research Agency (TRA), 2022). Further, the membership survey highlighted some perceived opportunities with aligned goals with the food and fibre sector (Figure 7).

While there are no exact figures on how fertiliser leaves the fertiliser co-operatives stores, personal communications with the two main co-operatives, Ravensdown Limited and Ballance Agri-Nutrients, it is estimated that approximately two-thirds of fertilisers leave their stores on the back of a groundspread unit. Thus, potentially 1.87 million tonnes of fertiliser is spread on agricultural land by groundspread trucks throughout New Zealand. Groundspread operators are in a unique position as they do not own the product they are spreading, nor do they own the land they are spreading it on.

Despite this, 95 per cent of those surveyed think about the environment and try to do their part to reduce their environmental impact when making decisions in their groundspread businesses (The Research Agency (TRA), 2022). Additionally, 93 per cent of groundspreaders are receptive to using new and different fertiliser products, technologies, and methods in nutrient application (The Research Agency (TRA), 2022). Hence, there is a shared vision for a positive future in the New Zealand food and fibre sector, and when people work together towards these, "a variety of resources, ideas, expertise, and support … can create success" (Savage, et al., 2018).

4.5 Success in the face of imposed change

Clear commitments have been agreed upon in terms of reducing environmental impacts of economic activity, a split-gas approach has been accepted, and charging for emissions will start at a farm-level in 2025. The pricing and details of these commitments are still being debated at the time that this report is published. However, this review has highlighted the need for considerations in both trade and the protection of the environment, as both are important to the New Zealand economy. This review has also explored the five stages of grief associated with emotional responses to environmental policy change. The author acknowledges that each organisation or individual will be at different stages of this journey to acceptance. As such, as rural partners of the food and fibre sector, groundspread operators should build trust and collaborate with their clients to support them through their individual stage of the grief cycle in helping to ensure the sector's ongoing success.

5. Focus groups (Groundspread NZ)

5.1 Focus Group 1 findings and discussion

Focus group 1 participants were asked to discuss three broad topics; health and safety, the environment, and the creation of a new accreditation system to include health and safety in the groundspread industry (traditionally the focus has been environmental excellence). The semi-structured nature of this approach meant that groups were given some leading questions but could spend more time answering the questions they were naturally passionate about (Krueger & Casey, 2002). This section examines the feedback from the three focus groups and outlines their discussion. The first part of this section discusses the focus group process (5.1.1 – 5.1.3), and the second part of this section discusses the analysis of their feedback (5.1.4 – 5.1.4). Lastly, the findings from the focus group discussions are outlined in this section (5.1.6).

5.1.1 Focus group 1 discussions on health and safety in the groundspread industry

Health and safety is an area of the groundspread industry that sits with individual companies. While there were discussions within the group to promote best practices, this is an area where people are often uncomfortable sharing personal information. Additionally, none of the groups answered the question, "have you been impacted by a workplace accident?". So, either there were no incidents to report, or people were uncomfortable talking about them if there were. Overall, there were shared thoughts that this was an area that the industry does "*pretty well. We're getting better and better. The younger generation coming through understand it more and more than the older ones did, and I think it's starting to kick over quite well*" (Focus Group 1 (Groundspreaders), 2022).

5.1.2 Focus group 1 discussions on the environment in the groundspread industry

During these focus groups, approximately two-thirds of the time was focused on environmental discussion amongst participants (45 minutes). Groundspread NZ is consistently involved in research projects that ensure best practice is continually growing and at a high standard. The association is currently involved in two research projects. The first is being led by Allister Holmes from Lincoln AgriTech and is entitled "*Reducing off-target fertiliser application and increasing crop performance by improving blended fertiliser spread uniformity*". Blended fertilisers are becoming increasingly recommended for use (by fertiliser representatives, agri-managers, and farm advisors) on New Zealand farms so it is important to understand if they are being spread as intended on paper. Further, the study is seeking to understand off-target fertiliser application. The second research project is being conducted by the New Zealand Fertiliser Quality Council (FQC) and is investigating the physical properties and quality of fertilisers throughout New Zealand's supply chain.

5.1.3 Focus group 1 discussions about implementing a new industry accreditation scheme to include both environmental and health and safety objectives

The last area for focus group discussion was the potential of a new industry accreditation system; there was not much discussion generated from this set of questions either. However, participants generally agreed that a new accreditation scheme, to include both environmental (existing – Spreadmark) and health and safety (new initiative) objectives, was worth investigation. Some concerns raised were about people leaving Spreadmark and Groundspread NZ "*if it [Groundspread NZ] doesn't do anything in the near future then we will start to lose members as people in here have in the past [left Spreadmark because no value was seen]*". Conversely, the cost of compliance was noted, "*but in the long term, once it's set up, [members] would benefit hugely from it [implementing a new accreditation scheme] financially*" (Focus Group 1 (Groundspreaders), 2022). However, a case study conducted about a similar scheme in the agricultural aviation sector (AirCare) failed to conclude that such a scheme enhanced the safety performance of accredited operators versus their unaccredited peers (Oldham, Stanton, Bilderbeck, & Spinetto, 2017).

5.1.4 Focus group 1 discussion on the Spreadmark quality-assurance scheme

Spreadmark was mentioned multiple times as an exceptional tool for ensuring the *"right product, right place, right time"* of fertiliser application and *"making people just aware of what we are doing because I think we already do a pretty good job"* (Focus Group 1 (Groundspreaders), 2022). However, only 50 per cent of the Groundspread NZ membership is Spreadmark accredited, *"we think that there could be more engagement with Spreadmark or make more people aware that Spreadmark operators are adhering to best practices at that moment, but they are always changing [research, who is accredited etc.]"* (Focus Group 1 (Groundspreaders), 2022).

Discussions were thematically analysed using the transcript-based method and grouped to seek emerging themes (Krueger & Casey, 2002). Initial analysis indicated that better promotion of, and greater engagement in, the Spreadmark scheme were important to participants (Figure 9).

Spreadmark

The Spreadmark scheme is a fertiliser placement quality assurance programme. It's objective is the placement of fertilisers in locations where they can be of the most agricultural benefit and the least environmental harm.

Accredited companies are subject to an independent audit to ensure that both farmers/growers and Regional Councils can have confidence in the programme.

There is no doubt that the proper placement of fertiliser is of considerable agronomic benefit to farmers and growers and will help protect the environment from the undesirable side effects of poor fertiliser spreading practices.

It is the integration of these factors that is at the heart of the Spreadmark scheme:

- Spreader operators have been trained
- Equipment is independently assessed and systems audited.
- Fertiliser is being applied at an even rate and distribution pattern.
- They can be confident a Spreadmark operator will place fertiliser where they want it.

Figure 8
What is the Spreadmark scheme?

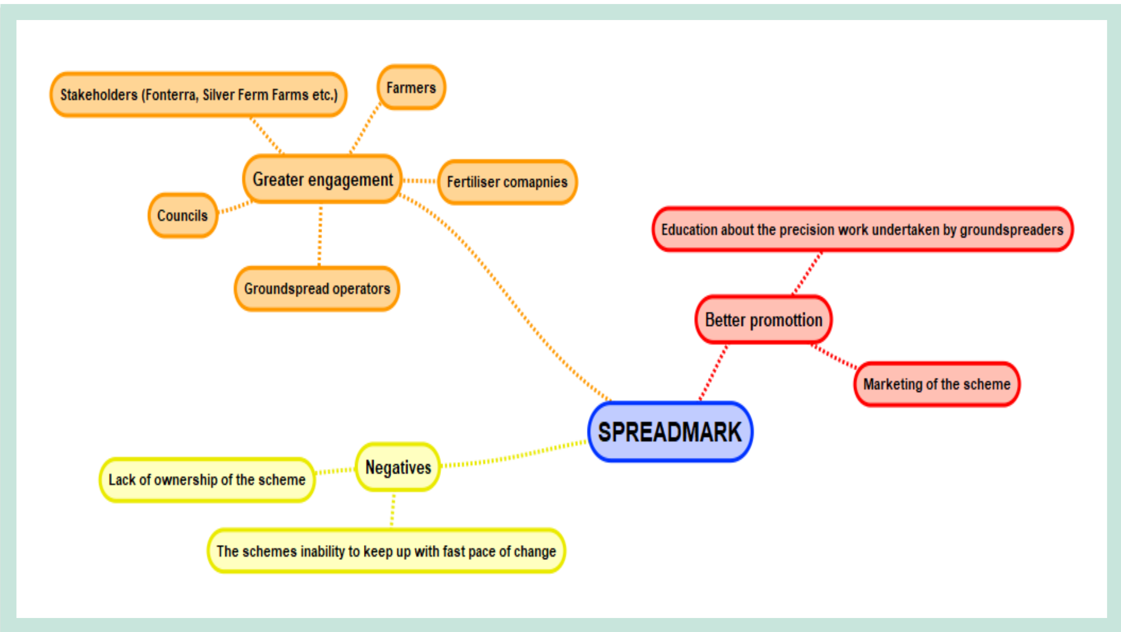

Figure 9
Initial Spreadmark discussion (Focus Group 1 (Groundspreaders), 2022).

5.1.5 Focus group 1 discussion on the opportunities with tracking and mapping companies

It became clear when analysing these discussions that technology may be one solution to better supporting rural New Zealand. TracMap has been a leader in the industry of accurate fertiliser placement technology since its inception in 2006. TracMap was mentioned several times in discussions as a mapping technology that "*probably 95 per cent of our members are using*" (Focus Group 1 (Groundspreaders), 2022) and could incorporate the types of changes that the groups were suggesting into their system. The groups suggested working with TracMap to develop their suggested inclusions (Figure 10) to increase environmental, and health and safety, opportunities in the industry.

Figure 10
Initial TracMap discussion (Focus Group 1 (Groundspreaders), 2022).

5.1.6 Focus group 1 findings

After initially organising the transcript of focus group discussion into the three sections originally given to focus groups (Figure 1), it became apparent that increased groundspread industry **engagement** with their clients, policymakers, industry partners, and the public was an underlying theme. When all comments were considered, two-thirds of the focus group comments related to engagement, marketing, partnerships, and education. Thus, highlighting a critical focus area for further development. Spreadmark was mentioned thirteen times in this sub-group, "*we've gotta sell it [Spreadmark] better to show what we can do, to have a difference between us, and Joe Blogs down the road, that's not doing all of this [ensuring drivers, gear and systems are all accredited]*" (Focus Group 1 (Groundspreaders), 2022).

Further, many discussions focused on being ahead of government regulations and working with Regional Councils and companies such as Fonterra and Silver Fern Farms "*so that they understand what we're about*". Groups said that they would like to see Spreadmark incorporated into more schemes rewarding gold-standard producers, such as Synlait's 'Lead with Pride' programme, that rewards suppliers who choose a Spreadmark-accredited operator to apply their nutrients on farm.

Key themes emerged through the thematic analysis of focus group 1 discussions:

- Marketing - the focus groups highlighted many things that the industry is doing well but that nobody knows about (e.g. Spreadmark). If these were promoted more widely, the public would be better aware of the precision work that occurs when gold-standard operators apply nutrients on New Zealand farms.

- Partnerships –partnerships with in-truck technology companies (TracMap for example) were identified as advantageous for enabling the food and fibre sector to meet changing regulations more easily by adapting current technology and ensuring more regulatory requirements can be met as part of the daily work groundspread operators undertake.
- Engagement with councils, food suppliers, and the public - to educate people about the groundspread industry and the precision of groundspread operators' role in the paddock-to-plate journey.
- Engagement - the focus group talked a lot about what farmers need, but "*rather than us sit here and go 'we think farmers are gonna need this', is actually to go and talk to them…. And ask the farmers what they actually need*" (Focus Group 1 (Groundspreaders), 2022).

5.2 Focus Group 2 findings and discussion

A second focus group of 27 Groundspread NZ members was facilitated to progress the feedback received from the food and fibre sector via an online survey. The group discussed the themes emerging from the first focus group in conjunction with the online survey responses. This work progressed the ideas generated, and further assessed the potential sub-themes underpinning the core issues for the groundspread industry in better supporting the food and fibre sector.

5.2.1 Focus group 2 discussion on the Spreadmark quality-assurance scheme

Focus group participants broke into groups of between five and six to analyse the Spreadmark schemes strengths, weaknesses, opportunities, and threats (SWOT). The Spreadmark scheme was mentioned numerous times during the first focus group, and the online survey results suggested a high faith and knowledge of the fertiliser quality-assurance scheme. However, Spreadmark has been in effect since 1994 and is not as successful or well-known as the groundspread industry had hoped for, nor is it the industry minimum-standard that farmers in the survey would like either. A SWOT analysis assessed the achievements of the scheme, but more importantly, it gave valuable insight into how the scheme could be adapted and improved to better support rural New Zealand in the future. Groundspread NZ does not manage or govern the scheme, but these insights will be helpful to the New Zealand Fertiliser Quality Council (FQC) and support them in growing and adapting the scheme to keep pace with current reform. The FQC chairman and Executive Director attended the second focus group to be part of these discussions.

After reviewing the themes further and refining them for clarity (Braun & Clarke, 2006), an over-arching theme across the analysis of the day's discussions became apparent - increased engagement between Groundspread NZ and their clients, policymakers, and the public was required for impactful support of the food and fibre sector (Figure 11). Several suggestions were again grouped under the engagement theme: education, marketing, promotion, and partnerships. These are areas that Groundspread NZ could actively participate in to promote the environmental benefits of the scheme and have the public see modern nutrient placement in a better light, helping to negate the bad publicity that fertiliser use can often receive.

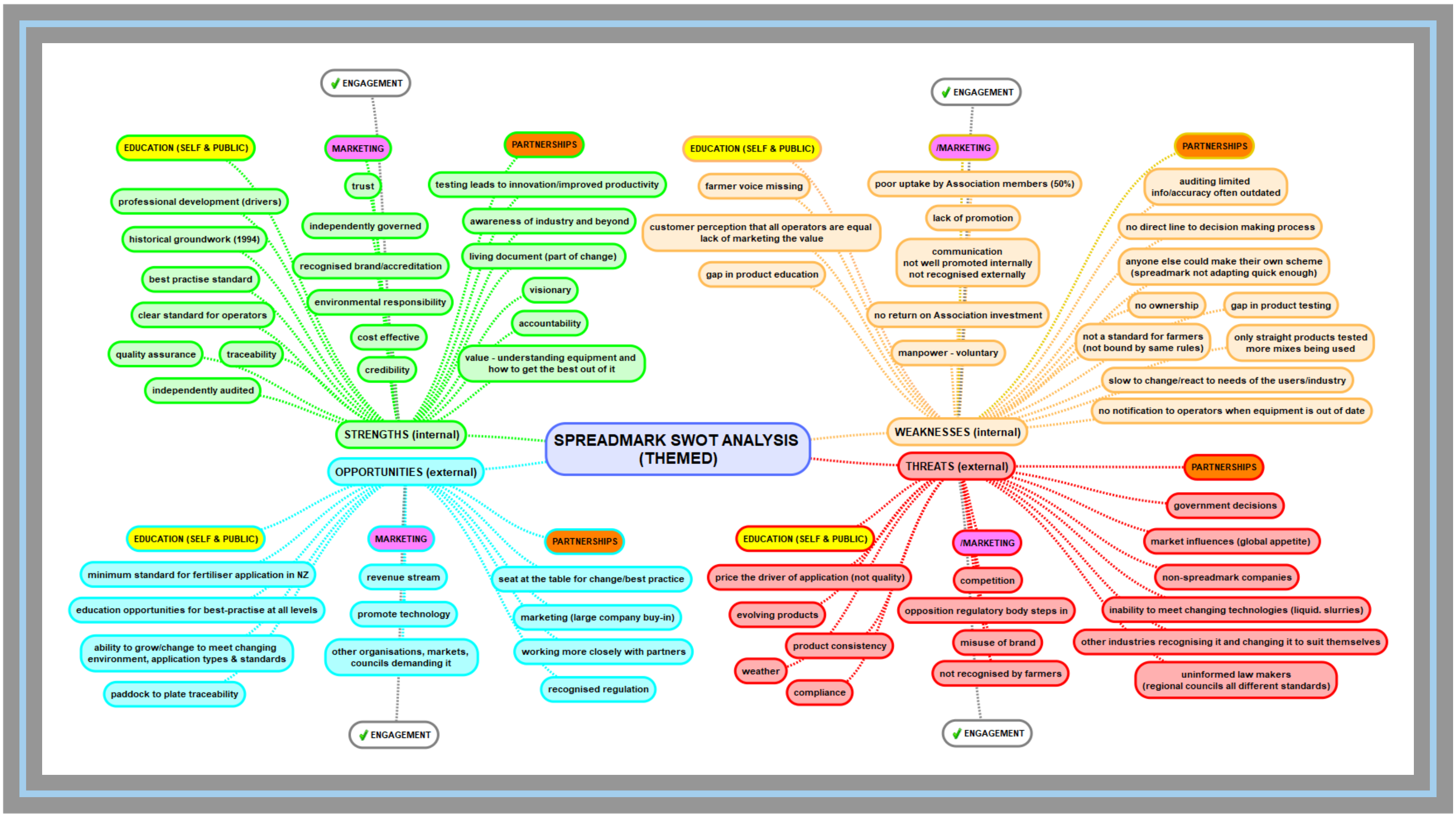

Figure 11
Spreadmark SWOT analysis - Focus Group 2

5.2.2 Focus group 2 discussion on the opportunities with tracking and mapping companies

In-truck technologies have the potential to better support some compliance targets set for the food and fibre sector. The first focus group suggested that most groundspread operators were running a TracMap proof of placement system in their trucks (there are others on the market). After reviewing the feedback from the online survey, groundspreaders focused on ideas for improvements with this technology. Groups explored potential ideas they had identified, providing some of the solutions to ideas generated in the online survey of their clients. The groups fed back to the full group at the end of the day's discussions with suggestions for environmental in-truck technology solutions (Figure 12).

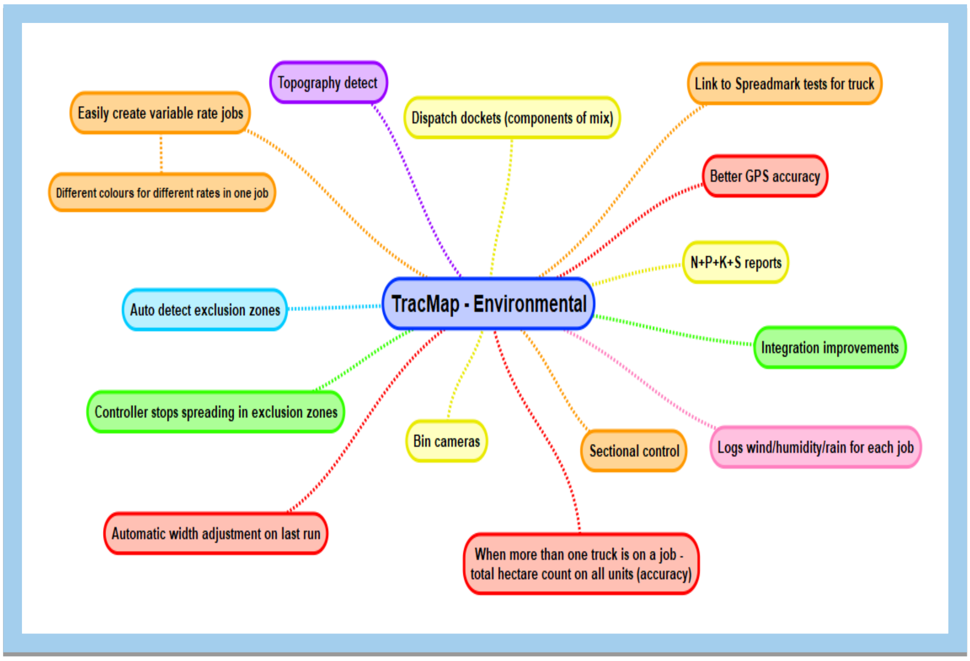

Figure 12
TracMap suggestions from Focus Group 2 - Environmental

Participants also presented suggestions for health and safety in-truck technology solutions to the group after the day's discussions (Figure 13).

Figure 13
TracMap suggestions from Focus Group 2 – Health and Safety.

Representatives from TracMap were at the second focus group and were able to provide feedback on the suggestions highlighted in Figures 12 and 13. Feedback from TracMap representatives helped to allocate the generated ideas into three categories: (1) already available, (2) currently being investigated/developed, and (3) new ideas.

Once the suggestions were grouped into these categories, solutions for each of them were discussed and considered:

1. **Already available**: the groundspread industry should increase education about the current technology available through marketing and promotion of them to Groundspread NZ members.
2. **Being investigated/developed currently**: promotion of emerging technology (to all stakeholders – groundspreaders, public, farmers, regulatory bodies) and partnerships with tracking/mapping companies such as TracMap should be part of product development.
3. **New ideas**: partnerships with tracking/mapping companies should continue to ensure collaboration in product development.

All categories indicate that increased engagement with in-truck technologies and their release to farmers and groundspreaders would benefit the food and fibre sector in more easily meeting some regulatory changes.

5.2.3 Focus group 2 findings

Despite not being the managers/governors of the Spreadmark quality-assurance scheme, as end users of the product and advocates for accurate nutrient placement, Groundspread NZ should actively participate in the wider promotion of the environmental benefits of the scheme. This would help to ensure that the public can see how efficient modern nutrient placement is and help to negate the poor publicity that fertiliser use can often receive. Several suggestions were grouped together under the engagement theme: education, marketing, promotion, and partnerships. Further assessment of these findings should be undertaken by the Groundspread NZ membership and its national council, and by the New Zealand Fertiliser Quality Council, who manages/governs the Spreadmark scheme. Additionally, focus group 2 discussions around in-truck technologies, specifically tracking/mapping technology, generated ideas that fell into three different categories: already available, investigated/developed currently, and new ideas. Again, while groundspread operators do not own or develop these technologies, their input into the development of them would be beneficial in ensuring that what is developed will help their clients more easily meet agricultural regulations. Thus, partnerships should be formed between Groundspread NZ and tracking/mapping companies to ensure this objective is continually met. Groundspread NZ members should work as intermediaries between their clients and tracking/mapping companies to ensure that all information and ideas are widely shared and that all parties strive for shared outcomes.

6. Online Survey (NZ rural community) – Findings and Discussion

Focus group 1 indicated that farmer's voices were crucial for understanding how the groundspread industry could best support the food and fibre sector. Accordingly, this section captures the farmer's voice on health and safety regulation, costs and meaning (6.2), farmer voices on environmental regulation, costs and meaning (6.3), and the farmer voice on other groundspread industry initiatives such as a new accreditation scheme, AirCare, Spreadmark, and the development of in-truck technologies (6.4). Lastly, the online rural survey findings are summarised in this section (6.4).

Understanding how regulation is enforced in New Zealand is important for interpreting this section. Both the Resource Management Act 1991 and the Local Government Act 2002 have charged Regional Councils with promoting economic and environmental outcomes (Cassells & Meister, 2001). The Acts allocate to them the power of ensuring that farmers meet environmental, and health and safety, standards through audits of their operations. However, Small et al. (2015) found that central, regional, and district governments were ranked the least trusted source of information across all farming systems (Small, Brown, & de Oca Munguia, 2015). Buy-in is achieved when trust is high; however, many dairy farms in New Zealand were effectively breaking the law due to the delays in creating a system for dairy farmers to report their synthetic nitrogen fertiliser use (Wallace, 2022). Ultimately, dairy farmers could have faced penalties from their Regional Councils for not reporting their usage due to these delays which does not instill the trust required for regulatory buy-in. Federated Farmers board member Colin Hurst said the situation was "confusing" and that it was "another example of legislation being rushed through Parliament before tools and systems are ready to make it work" (Wallace, 2022).

Therefore, if trust is critical to the success of necessary environmental change and farmers are operating in a low-trust environment with regulators, they will need the support of industry partners, such as Groundspread NZ members, to support them in meeting new regulations and passing on-farm audits with regulator enforcers. Thus, the inclusion of farmer voices was important for the groundspread industry in understanding the impact of this changing regulatory environment on their clients and to be better equipped to assist and support them in the future.

6.1 Graphical demographics of survey respondents

Names, contact details and spreader operators were kept confidential for this survey. The data in this section indicates that a cross-section of voices within various farming systems was collected in this research despite a small number (22) of respondents.

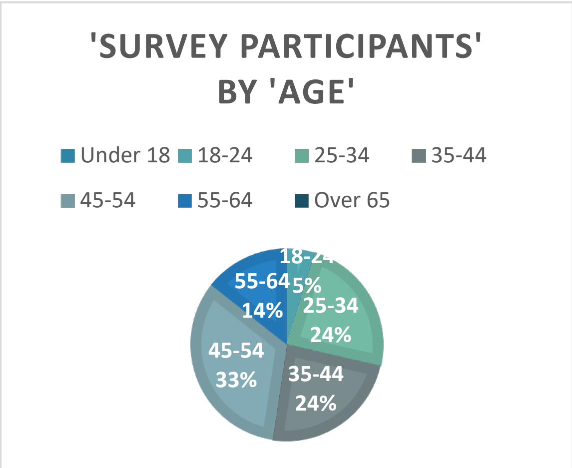

Figure 14
Age of those surveyed

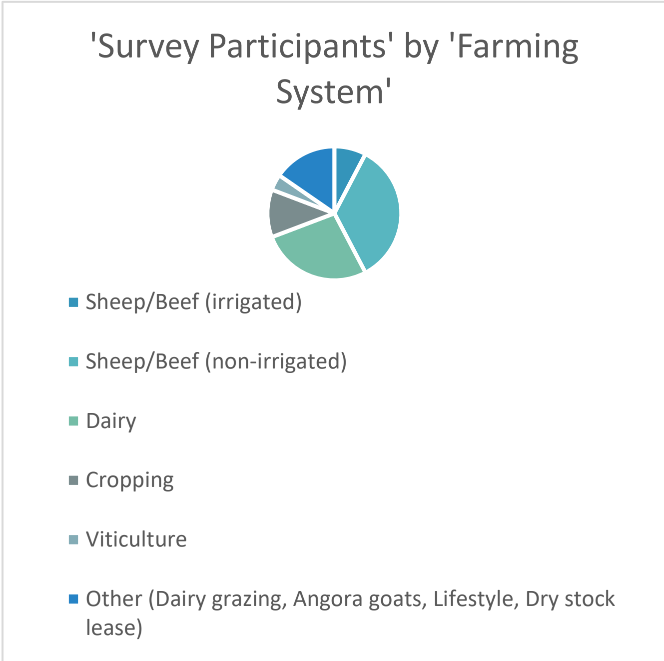

Figure 15
Farming system of survey participants

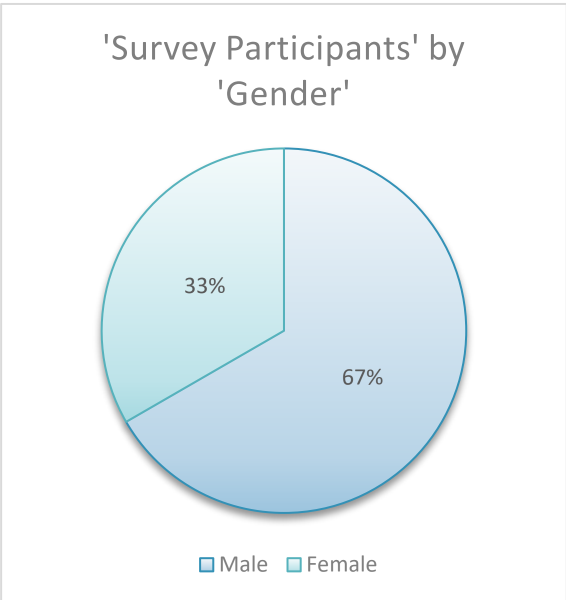

Figure 16
Gender of survey participants

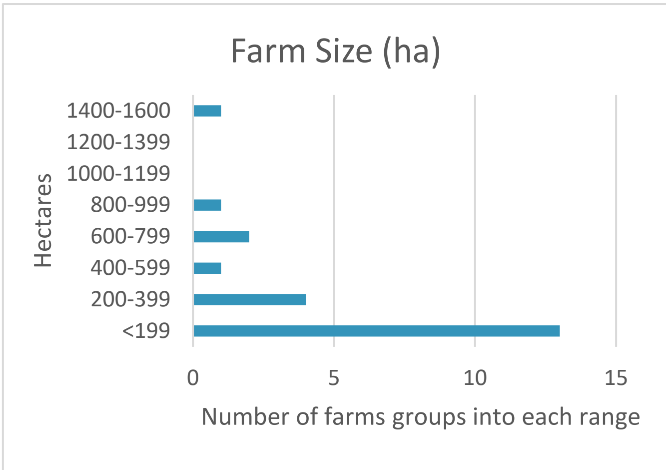

Figure 17
Farm size of survey participants

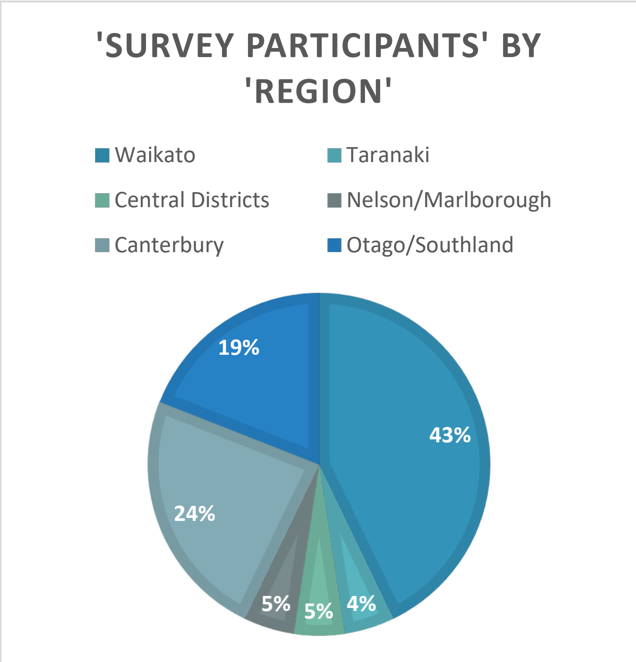

Figure 18
Participants by region

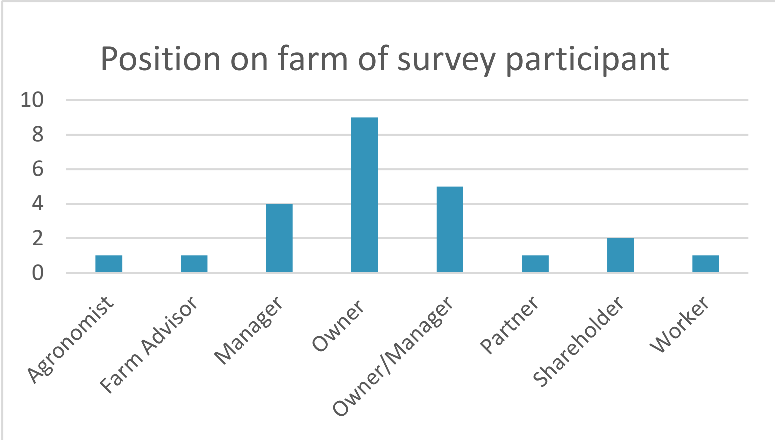

Figure 19
Participants by farm position

6.2 Rural survey health & safety feedback

For 55 per cent of respondents, the annual cost of health and safety audits was between $500 and $1500, but two participants said that the cost was higher ($2500 per annum for one respondent and $5000 per annum for another). Another commented, "*I hate to think how much it cost but also the extra stress it causes to mental well-being*".

However, only 5.56 per cent of respondents believed these audits did not add value to their operations. Therefore, with such a high percentage of farmers finding that these audits were meaningful to their farms, their farming partners (such as Groundspread NZ) should support them in these audits.

For 44 per cent of respondents, there was nothing further that their groundspread operator could do (above what they are already doing) to help them meet health and safety targets and regulations on their properties (Figure 20). Interestingly, some of the suggestions for improvements that several respondents offered in this section are offered as items already being done well by the industry by other participants. For example, 20 per cent of respondents

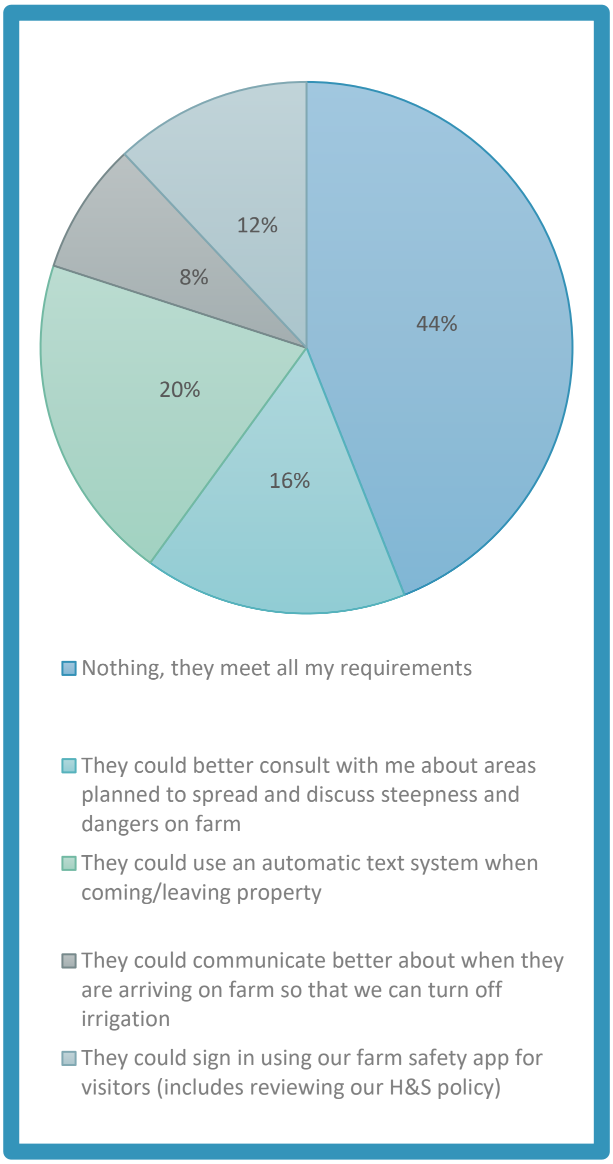

Figure 20
Survey results highlighting how the groundspread industry could do better in H&S.

said that they would like to receive an automatic text from their groundspreader as they enter and leave their property. However, this was identified as a strength in the 'what does your operator do well now' section. Again, this is similar to some of the other suggestions, which indicates that not all farmers receive the same level of service from their groundspread operator. Therefore, a need for greater consistency of service provision was highlighted.

6.3 Rural survey environmental feedback

Respondents were asked whom they were audited by, and the majority answered that Regional Councils (12) and Suppliers (10) (Fonterra, for example) were the main auditors on their properties, with three respondents saying their irrigation companies also audited them. Generally, all respondents said these audits cost them under $1500 in time to prepare for (one said this cost was $3000 per annum). However, the cost of implementing the changes required to stay compliant was much higher; for example, one respondent said that as a direct result of their audit, they had to put pivots on at the cost of $650,000.

Every respondent felt that environmental audits were meaningful (to varying degrees) on their properties. Again, this highlights that these audits are an area of compliance that farmers are passionate about achieving. Hence, their partners (such as groundspread operators) should be trying to support them in achieving their health and safety targets.

Respondents said that the groundspread industry helps with environmental audits now by being Spreadmark accredited (73% of responders), providing proof of placement mapping (86%), and adhering to exclusion zones (40%).

6.4 Rural survey general feedback

Another idea generated within the Groundspread NZ focus groups was to build a new scheme that included health and safety and to have additional knowledge of the environmental aspects of farmer businesses included. Respondents were asked if there was merit in progressing this idea, and there was a 68 per cent positive rating for this idea. The section below outlines some of the other feedback received from survey participants around the aviation quality-assurance scheme AirCare that includes both environmental and health and safety objectives (6.4.1), feedback received around the environmental quality-assurance groundspread scheme Spreadmark (6.4.2), and lastly, feedback received around the development of in-truck technologies to help support groundspread clients meet regulatory requirements (6.4.3).

6.4.1 Rural survey feedback on the aviation quality-assurance scheme AirCare

When investigating the possibility of implementing a system like the Aviation's AirCare scheme, it was essential to know if farmers knew about it and if it held value. So, the question was posed, "The NZAAA (New Zealand Agricultural Aviation Association) have an accreditation programme (AirCare) that promotes improved safety, simplifies compliance, and guarantees performance for aerial fertiliser application. However, no respondents used an AirCare-accredited operator on their property, and only 29.4 per cent said they had some knowledge of the scheme (70.5 per cent had never heard of it). These findings support literature review findings that the AirCare scheme failed to prove value for those who were accredited (Oldham, Stanton, Bilderbeck, & Spinetto, 2017).

6.4.2 Rural survey feedback on the groundspread quality-assurance scheme Spreadmark

Groundspread NZ promotes the Spreadmark quality-assurance programme that enhances fertiliser placement accuracy, uses tested gear and trained drivers, and ensures that solid systems are in place within each groundspread business. Only six per cent of survey respondents had never heard of Spreadmark. At the same time, 63 per cent of respondents stated that they selected their operator for this specific reason (31 per cent did not, but they were accredited). All respondents were able to find a Spreadmark-accredited operator in their area (Figure 21).

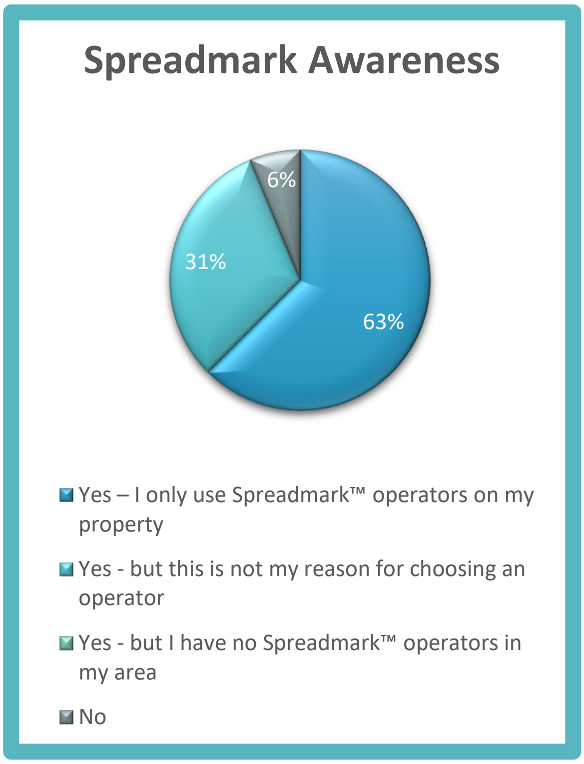

Figure 21
Spreadmark awareness in survey participants

6.4.3 Rural feedback on in-truck technology development

Seventy-five per cent of respondents would like to see the groundspread industry investigate in-truck technologies that might help them with their audits and improved outcomes. Suggestions included:

- Driver health & wellbeing checks.
- Farm hazard identifications.
- Sending notifications to farmers as they enter and leave properties.
- Sending a review of the job as they leave the property – with any new hazards identified.
- New environmental or H&S policy relevant to the farm popping up in the driver's screen.
- Greater engagement with hazards and H&S regulation.
- Live GPS tracking of trucks (including live identification of hazards or environmental concerns).

6.5 Rural survey findings

Audits help farmers to ensure that regulations are being met on their farms; feedback from respondents indicate that despite the costs of audits, most respondents saw them as valuable to their farming operations. This suggests to the author that regulations are largely aligned with farmers' environmental and health and safety values. This section helped identify some inconsistencies amongst groundspreaders in the knowledge of the technological advances available in the industry for farming clients. The feedback also helped to clarify the validity of creating and implementing a new quality-assurance scheme similar to aviation's AirCare model (6.4.1) and highlighted the credibility of the groundspread industry's Spreadmark scheme (6.4.2), despite it needing wider uptake and promotion. The feedback also provides tangible next steps for further investigations into in-truck technologies (6.4.3).

7. Conclusions

This research paper aimed to better understand the impacts of imposed change faced by the rural sector and how the groundspread industry can support the New Zealand food and fibre sector to meet the regulatory demands they continue to face.

7.1 The importance of groundspread operators better understanding the impacts of regulatory changes in the rural community.

This report identified key challenges for the food and fibre sector that the groundspread industry needs to be aware of:

- Increased production (economic activity) has negatively impacted on the natural environment (Cassells & Meister, 2001).
- Environmental policy attempts to reduce these negative impacts (Cassells & Meister, 2001) (Pannell & Rogers, 2022).
- The emotional response to imposed change and the five stages of grief experienced during periods of change (Friedrich & Wustenhagen, 2017).
- Trust is critical for supporting the food and fibre sector through change (Savage, et al., 2018).

7.2 Knowledge of what the industry already does well to support their rural clients in meeting increasing regulatory demands and the areas that could be improved

The bolstering of the Spreadmark quality-assurance scheme and in-truck technologies identified by groundspread operators in focus groups were supported by the rural community in the online surveys. Despite not being the managers/governors of the Spreadmark quality-assurance scheme, as end users of the product and advocates for accurate nutrient placement, Groundspread NZ members should actively participate in the wider promotion of the environmental benefits of the scheme. Additionally, while groundspread operators do not own or develop in-truck mapping/tracking technologies, their input into the development of them would be beneficial to ensure that what is developed will help their clients more easily meet regulations. Significantly, there were many things that some rural clients thought their groundspread operators did well to support them in meeting regulatory requirements. However, some of these were the same things that some other respondents had identified as areas for improvement from their groundspread operators. This indicates that not all farmers are receiving the same level of service from their groundspread operator, and therefore, a need for greater consistency was highlighted.

Furthermore, imposed change generates an emotional response, and each individual or organisation will progress through the five stages of grief towards acceptance at a different pace (Friedrich & Wustenhagen, 2017). While navigating this change process, members of the food and fibre sector require varying support dependent on their stage in the grief cycle as it applies to sustainability policy changes: **information and communication** are important for people during the denial and anger stages of grief, **emotional support** is required for people who are transitioning into the bargaining phase of the grief cycle, and **guidance and direction** are critical for supporting people as they move through the depressive and acceptance stages of grief as it applies to sustainability policy changes.

8. Recommendations

Initially, this research searched for specific improvements/changes that the groundspread industry could implement to help farmers meet increasing compliance in their businesses. However, it has emphasised that there is already so much that the groundspread industry is doing well. However, nobody knows about it, and this leaves the food and fibre sector more vulnerable to critique on fertiliser use than it needs to be.

Engagement is critical in better supporting the rural sector to survive and thrive

These recommendations aim to better promote the sustainable use of fertiliser on New Zealand farms and help to increase awareness of the professionalism of the food and fibre sector. The recommendations incorporate learnings from Friedrich & Wustenhagen's (2017) application of the Kübler Ross (1969) grief model to imposed sustainability change: information and communication, emotional support, guidance and direction.

The groundspread industry can best support the New Zealand food and fibre sector by more actively sharing their part in New Zealand's paddock-to-plate journey in the following ways:

8.1 Implement **Educational** initiatives

- ❖ Working with in-truck technology companies on continually educating groundspread operators, and their clients, about advancements of their products.
- ❖ Establish a 'Spreadmark Roadshow' to target food and fibre events around New Zealand with access to a wide range of New Zealanders that showcases the groundspread quality assurance scheme.

8.2 Develop a **Marketing** Strategy

- ❖ Marketing should highlight the need for fertiliser use in New Zealand and how accurately this is done by Groundspread NZ members.
- ❖ Promotion of the groundspread industry to policymakers, farmers, and public. Groundspread NZ members should approach their local newspapers about stories, and their local schools to speak about the role that they play in food production.

8.3 Build meaningful **Partnerships**

- ❖ Continue to nurture relationships with developers of new technology; this will help ensure that the technology developed will meet the needs of the groundspreading community and the rural community that they serve.
- ❖ Establish meaningful relationships with central and local government policymakers to increase awareness of the precision work undertaken by the groundspread industry on behalf of their rural clients. The author suggests that each regional branch of Groundspread NZ should invite Regional Councillors and members of their local catchment groups to their events/meetings to raise the profile of the accurate fertiliser placement they undertake.
- ❖ Invite local fertiliser representatives to any spread-testing days in their regions to ensure that the recommendations they are making to farmers align with the spreadability of these products.

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10. Appendices

10.1 Appendix A – Online rural survey questions

GROUNDSPREADNZ

The Groundspread Industry - How can we help?

Background Section:

I would like to know a bit about you and your farming operation to begin with, your name and email will always remain confidential to me.

1. Name (confidential)

2. Age
- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

3. Gender
- Male
- Female
- Rather not say

4. Email (confidential)

5. Name of Groundspreader Operator (confidential - this is for my reference regarding whether they are members of Groundspread NZ (Groundspread Association) or not.

6. Region (these are organised to align with the seven branch regions of Groundspread NZ)
- Northland
- Waikato
- Taranaki
- Central Districts
- Nelson/Marlborough
- Canterbury
- Otago/Southland

7. Farming system
- Sheep/Beef – irrigated
- Sheep/Beef – non-irrigated
- Dairy
- Cropping
- Deer
- Horticulture
- Viticulture
- Other (please specify)

8. Farm size

9. Number of staff on your farm

10. Position on farm
- Owner
- Owner/Manager
- Manager
- 2IC
- Worker
- Partner
- Shareholder
- Lessee
- Farm Advisor - Health & Safety
- Farm Advisor - Environmental
- Other (please specify)

11. If you were asked to go and speak at your local school about farming in New Zealand, how likely would you be to recommend farming as a career to the next generation?

Definitely not — Absolutely - I see a bright future for farming in NZ

12. Please provide some insight on your previous answer (optional). The ideas generated in my pilot test of this survey are listed here for guidance but feel free to build on these.
- Agriculture is crucial to our existence as humans. We need to eat, be clothed, and live somewhere. All these resources come from farmers producing the raw materials that make up these living resources. We need agriculture so, it is the best career choice as it will always be needed
- I would encourage young people to take up a career in farming but also look at diversification and keep ahead of world trends and opportunities
- Farmers can sometimes get a tough rap, but if we can see that through, then a future in agriculture is a good one
- Farming has changed immensely because of increased regulation and social pressures
- Other

Health & Safety Section:

Each farming system in New Zealand is governed by numerous laws and regulations that impact on your right to operate and we would like to know more about these.

13. How often are you audited on your property regarding Health & Safety?

- [ ] continuously under review
- [ ] yearly
- [ ] monthly
- [ ] 2-yearly
- [ ] 6-monthly
- [ ] Other (please specify)

14. Thinking of H&S specifically, can you think of some of the audits that you are required to undertake to retain the right to operate?

- [ ] WorkSafe
- [ ] Hazard Register
- [ ] Vehicle checks
- [ ] Near Misses
- [ ] Toolbox Meetings
- [ ] Farm Visitors
- [ ] Chemical Checks
- [ ] Accident Register
- [ ] Machinery and Vehicle Staff Training
- [ ] Emergency Procedures
- [ ] Contractor Reviews and Signoffs
- [ ] PPE use
- [ ] Other (please specify)

15. Do you believe that these audits are worthwhile and meaningful to your operation?

No - they are unconstructive and offer little to me	Somewhat - but they are largely a box ticking exercise that allows me to operate	Mostly - they ensure we run a safe work environment	Yes - auditors see lots of operations and provide me with good examples for improvements
○	○	○	○

Comment on your answer (optional)

20. What were the impacts of this accident for you and others that were involved?

- [ ] Worksafe investigation
- [ ] Emotional harm
- [ ] Financial harm
- [ ] Significant time investment
- [ ] Other (please specify)

21. Any final comments relating to H&S? (optional)

GROUNDSPREADNZ

The Groundspread Industry - How can we help?

Environmental Section:

Each farming system in New Zealand is governed by numerous laws and regulations that impact on your right to operate and we would like to know more about these.

22. How often are you audited on your property regarding the environment?

- [ ] continuously under review
- [ ] annually
- [ ] monthly
- [ ] 2 yearly
- [ ] 6-monthly
- [ ] Other (please specify)

23. Thinking of the environment specifically, can you list some of the audits that you are required to undertake to retain the right to operate?

- [ ] Irrigation Company
- [ ] Regional Council
- [ ] Supplier (eg Fonterra)
- [ ] Other (please specify)

24. Do you believe that these audits are worthwhile and meaningful to your operation?

No - these are unconstructive and offer little to me	Somewhat - but largely they are a box ticking exercise that allows me to operate	Mostly - they ensure that we are doing what we need to environmentally	Yes - they help me to see a bigger picture and to keep abreast of upcoming changes to regulations
○	○	○	○

Comment on your answer (optional)

16. If you had to guess, what is the estimated annual cost incurred from these audits? (accounting for your/staff time, support in preparing for them, technology required etc.)

- [ ] Under $500
- [ ] $500 - $1000
- [ ] $1000-$1500
- [ ] Other (please specify)

17. What does your groundspread operator do well now to support you with these audits and/or H&S in general?

- [ ] Nothing off the top of my head
- [ ] They are signed off on the Contractor H&S pack
- [ ] They use an automatic text service when they go on farm and off farm
- [ ] They give us fair warning when they are coming out so we can switch irrigation off
- [ ] Hazard and no go zones are built into in-truck software that ensures they don't go into dangerous areas
- [ ] They sign in using our farm safety app (which includes reviewing our H&S policy).
- [ ] Other (please specify)

18. What things could your groundspread operator do to better support you with these audits and/or H&S in general?

- [ ] Nothing, they meet all my requirements
- [ ] They could better consult with me about areas planned to spread and discuss steepness and dangers on farm
- [ ] They could use an automatic text system when coming/leaving property
- [ ] They could communicate better about when they are arriving on farm so that we can turn off irrigation
- [ ] They could sign in using our farm safety app for visitors (includes reviewing our H&S policy)
- [ ] Other (please specify)

16. If you had to guess, what is the estimated annual cost incurred from these audits? (accounting for your/staff time, support in preparing for them, technology required etc.)

- [ ] Under $500
- [ ] $500 - $1000
- [ ] $1000-$1500
- [ ] Other (please specify)

17. What does your groundspread operator do well now to support you with these audits and/or H&S in general?

- [ ] Nothing off the top of my head
- [ ] They are signed off on the Contractor H&S pack
- [ ] They use an automatic text service when they go on farm and off farm
- [ ] They give us fair warning when they are coming out so we can switch irrigation off
- [ ] Hazard and no go zones are built into in-truck software that ensures they don't go into dangerous areas
- [ ] They sign in using our farm safety app (which includes reviewing our H&S policy).
- [ ] Other (please specify)

18. What things could your groundspread operator do to better support you with these audits and/or H&S in general?

- [ ] Nothing, they meet all my requirements
- [ ] They could better consult with me about areas planned to spread and discuss steepness and dangers on farm
- [ ] They could use an automatic text system when coming/leaving property
- [ ] They could communicate better about when they are arriving on farm so that we can turn off irrigation
- [ ] They could sign in using our farm safety app for visitors (includes reviewing our H&S policy)
- [ ] Other (please specify)

19. Has your business been impacted by a groundspread operator accident on your property?

- ( ) Yes
- ( ) No - go to Q21

GROUNDSPREADNZ

The Groundspread Industry - How can we help?

Environmental Section:

Each farming system in New Zealand is governed by numerous laws and regulations that impact on your right to operate and we would like to know more about these.

22. How often are you audited on your property regarding the environment?

- [ ] continuously under review
- [ ] monthly
- [ ] 6-monthly
- [ ] annually
- [ ] 2 yearly
- [ ] Other (please specify)

23. Thinking of the environment specifically, can you list some of the audits that you are required to undertake to retain the right to operate?

- [ ] Irrigation Company
- [ ] Regional Council
- [ ] Supplier (eg Fonterra)
- [ ] Other (please specify)

24. Do you believe that these audits are worthwhile and meaningful to your operation?

No - these are unconstructive and offer little to me	Somewhat - but largely they are a box ticking exercise that allows me to operate	Mostly - they ensure that we are doing what we need to environmentally	Yes - they help me to see a bigger picture and to keep abreast of upcoming changes to regulations
( )	( )	( )	( )

Comment on your answer (optional)

25. If you had to guess, what might be the likely cost incurred from each of these audits? (implementing changes/actions outside of what you would have normally undertaken, accounting for your/staff time, support in preparing for them, technology required etc.)

- [ ] under $500
- [ ] $500 - $1000
- [ ] $1000 - $1500
- [ ] Other (please specify)

26. What does your groundspread operator do well now to support you with these audits and/or the environment in general?

- [ ] Spreadmark accredited
- [ ] Proof of placement mapping
- [ ] Adheres to exclusion zones
- [ ] Other (please specify)

27. What things could your groundspread operator do to better support you with these audits and/or the environment in general?

28. Any final comments relating to the environment? (optional)

GROUNDSPREADNZ

The Groundspread Industry - How can we help?

Groundspread NZ Accreditation System:

Groundspread NZ (NZGFA) are currently investigating ways to better support their clients (you) to meet growing environmental and heath & safety regulations that impact on your livelihoods.

29. The NZAAA (New Zealand Agricultural Aviation Association) have an accreditation programme (AIRCARE™) that promotes improved safety, simplifies compliance, and guarantees performance for aerial fertiliser application. Have you heard about AIRCARE™?

- ( ) Yes - I use an AIRCARE™ accredited operator on my property
- ( ) Yes – some knowledge
- ( ) No
- ( ) Other (please specify)

30. Currently, Groundspread NZ promote the Spreadmark quality assurance programme that enhances the accuracy of fertiliser placement, using tested gear, trained drivers, and having solid systems in place. Have you heard of Spreadmark™?

- ( ) Yes – I only use Spreadmark™ operators on my property
- ( ) Yes - but this is not my reason for choosing an operator
- ( ) Yes - but I have no Spreadmark™ operators in my area
- ( ) No
- ( ) Other (please specify)

31. The groundspread industry could investigate in-truck technologies that might help you with your audits. Do you think this idea has merit?

- [ ] Yes
- [ ] Somewhat
- [ ] No
- [ ] Other (please specify)

32. What sorts of things would you like to see investigated further? (these are merely some ideas to get you started - please build on these without limitation).

- [ ] Driver Health & Wellbeing Checks
- [ ] Farm Hazard Identification (pop up when driver enters farm)
- [ ] Sending notifications to the farmer as they enter and leave property
- [ ] Sending a review of the job as they leave the property- any hazards identified (for example)
- [ ] Other (please specify)
- [ ] New Environmental or H&S policy relevant to the farm popping up on the drivers screen when they enter property/paddock (for example)
- [ ] Greater engagement with hazards and H&S regulation.
- [ ] Live GPS of trucks as they carry out work on farm (including live identification of hazards or environmental concerns directly to farmer)

33. Another idea generated within Groundspread NZ is to build a programme that also includes Health & Safety and has improved knowledge of the environmental aspects of your business included. If this proceeds, would you like your operator to become accredited?

No - it does not interest me at all — Yes - this would be helpful to my business

34. Can you think of some specific things that you would like to see included in this that would help you with your audits and/or meet on-farm targets?

35. Any general comments about the groundspread industry?

36. Would you be agreeable to being contacted for further information?

- ( ) Yes
- ( ) No

37. The report in which this information will be collated and used will be available in July, please indicate if you would like a copy of the report emailed to you

- ( ) Yes
- ( ) No

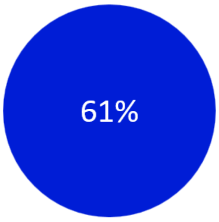
10.2 Appendix B – 2022 Groundspread NZ Membership Survey

GROUNDSPREAD NZ

Six in ten members feel that the state of the fertiliser industry is positive

Despite tough market conditions, they believe demand for their services will continue to increase.

THINKING BROADLY ABOUT THE OUTLOOK FOR THE INDUSTRY, HOW DO YOU FEEL ABOUT THE FUTURE OF THE FERTILISER CATEGORY GENERALLY?



Feel the future of the fertiliser category is positive / very positive

AND WHAT MAKES YOU THINK THAT THE FUTURE OF THE FERTILISER CATEGORY IS POSITIVE/VERY POSITIVE?

"I feel there is strong demand for fertiliser products from farmers and I think we will see that continue."

"As long as we have farmers they will need fert."

"There is going to be a global food shortage so we need to be able to feed our own country and potentially export food."

"More regulations and compliance will mean professional groundspreaders will become more in demand on more productive country."

"Moving forward is getting harder with government rules around nitrogen but with the price of product moving up the fact that the use of Spreadmark companies will be very important to the farming industry."

CONFIDENTIAL @ TRA 2022

Thinking broadly about the outlook for the industry, how do you feel about the future of the fertiliser category generally?
And what makes you think that the future of the fertiliser category is [pipe: STATE lower]? (Optional)
Base: Total sample n=44

TF

GROUNDSPREAD

Increasing costs are seen as the biggest risk to the fertiliser industry

With the other trends being seen as risky too, just slightly less severe.

BELOW ARE SOME TRENDS AND RISKS THAT MAY IMPACT THE FERTILISER INDUSTRY. WHAT TYPE OF IMPACT DO YOU THINK EACH WILL HAVE ON THE INDUSTRY IN THE FUTURE?

	Big risk	Some risk	No risk
Rapidly increasing costs	82%	18%	0%
Sustainability issues/compliance	68%	30%	2%
Supply chain issues	66%	34%	0%
Fertiliser spraying/efficiency	23%	73%	2%

CONFIDENTIAL @ TRA 2022

Below are some trends and risks that may impact the fertiliser industry. What type of impact do you think each will have on the industry in the future?
Base: total sample n=44

GROUNDSPREA

There are a range of different initiatives that members are excited by

Though, there are still some who aren't aware of any.

WHAT INITIATIVES HAPPENING IN THE INDUSTRY AT THE MOMENT ARE YOU MOST EXCITED BY?

Spreadmark

"The development of spreadmark, the advantages both farmres and spreader operators are getting from using it."

"Spreadmark and FEP's."

"Proof of placement, Spreadmark."

Safety

"The focus on safety .the feeling from the drivers that they have the option to say no."

"Health and safety."

"I'm interested in what addition's can be made to Hawk eye and Tracmap to better facilitate health and safety requirements."

New products

"Technology is moving quickly for our gear to help along with efficiencies not only for us but our customers."

"Product development. Fertiliser products and Vehicles. Working alongside industry partners and regulators to provide guidance and support."

"Real time variable rate nitrogen application."

None/not sure

"What initiatives are there?"

"Is there any, I'm not sure?"

"None that I can think of."

CONFIDENTIAL @ TRA 2022

What initiatives happening in the industry at the moment are you most excited by?
Base: Total sample n=44

GROUNDSPREAD NZ 9

And for those members who don't believe the outlook is positive, prices and regulations are top of mind

Click to add text

AND WHAT MAKES YOU THINK THAT THE FUTURE OF THE FERTILISER CATEGORY IS NEITHER POSITIVE NOR NEGATIVE/NEGATIVE/VERY NEGATIVE?

Prices

"Pricing and new regulations are having an effect on our work loads"

"I am a little worried to the rising cost of fert and if this will effect my business"

"if the product prices continue to increase as people are already cutting back."

"It is going to be testing times, with increased prices, and shortages in product, honest capable drivers and less people in the spreading industry with little to no interest in new people coming into the industry."

Regulations

"Increased environmental concerns and farm debt levels making destocking to levels suitable to meet regulations difficult."

"With the way things are at the moment with nutrient budgets, pricing things are becoming more difficult for the farmers."

"Pressure from environmentalists & govt"

"Environmental pressure"

CONFIDENTIAL @ TRA 2022

And what makes you think that the future of the fertiliser category is neither positive nor negative/negative/very negative?
Base: total sample n=44

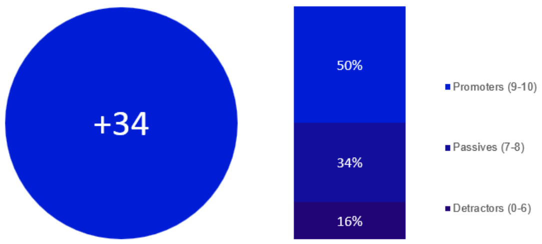
TRA

GROUNDSPREAD NZ 11

The likelihood of members to recommend Groundspread is largely positive

A Net Promoter Score (NPS) of +34, with 50% giving a 9 or 10 out of 10.

HOW LIKELY IS IT THAT YOU WOULD RECOMMEND GROUNDSPREAD NZ TO SOMEONE ELSE AS AN ORGANISATION TO BELONG TO?



CONFIDENTIAL @ TRA 2022

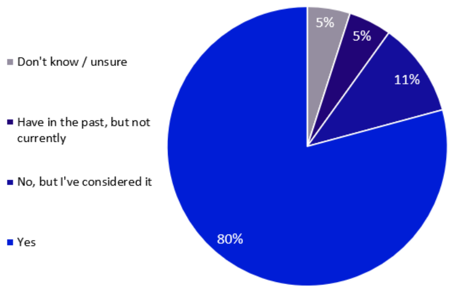
How likely is it that you would recommend Groundspread NZ to someone else as an organisation to belong to?
Base: total sample n=44

GROUNDSPREAD NZ 13

Eight in ten members surveyed have their Spreadmark Accreditation

And those who do not are either considering it or used to have it.

DO YOU CURRENTLY HAVE A SPREADMARK ACCREDITATION?



Spreadmark

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Do you currently have a Spreadmark Accreditation?
Base: total sample n=44

TRA

GROUNDSPREAD NZ 12

Promoters and Passives largely encourage Groundspread to keep on doing what they're doing

However, Detractors have some clear areas they'd like to see improvements on.

WHAT IS THE ONE THING YOU FEEL THAT GROUNDSPREAD NZ NEEDS TO DO, OR KEEP DOING, IN TERMS OF THEIR OVERALL SERVICE OFFERING TO SPREADERS?

Promoters

"Keep members informed of information."

"Keep providing information on changes etc."

"Keep doing what they are doing. FQC need to catch up not the Groundspread nz."

"I think that Groundspreading NZ is doing a fantastic job in all areas. They have certainly raised the bar over the last few years."

"It would be nice to see some support for members around employee contracts and a health and safety standard implemented."

Passives

"Keep representing us at a government decision level."

"Keep doing what you are doing."

"keep up communication with all parties."

"Keep us in a positive light, particularly with Political Parties and Regional Councils."

"More pressure on farmer groups to improve their property's eg dairy to get pivot ruts into health and safety audits."

Detractors

"Be more active."

"Get more people on board as we don't have any clients that state that we have to be cert. but have wee out fits competing against us with out the cost."

"Make your website easier to use. Have better meeting structure, and guidelines, make sure everyone has the ability to have there say without being talked over or pushed aside because they don't align with what the ones with the bigger/more prominent voices say."

"National recognition of the groundspread certification at a government and regional council level."

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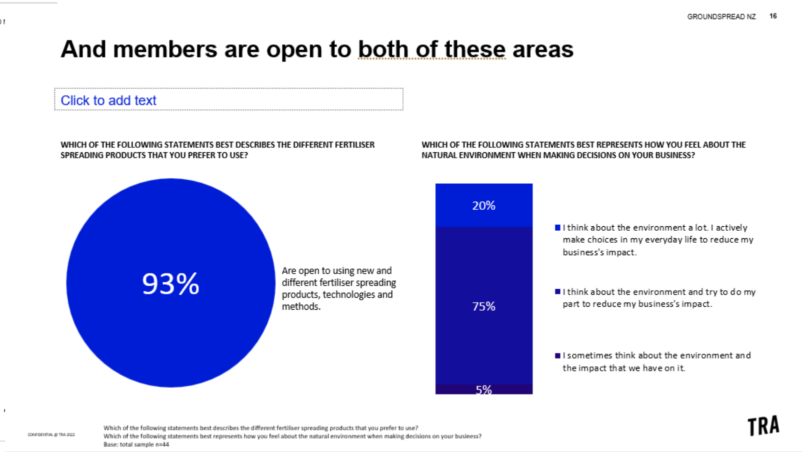
What is the one thing you feel that Groundspread NZ needs to do, or keep doing, in terms of their overall service offering to spreaders?
Base: total sample n=44

TRA

3
The future of fertiliser
TRA

GROUNDSPREAD N
Members believe our biggest opportunities revolve around technology and sustainability
Click to add text
WHAT DO YOU SEE AS THE BIGGEST OPPORTUNITY FOR THE FUTURE OF THE FERTILISER INDUSTRY, AND WHY?
Technology
"Using better technology and move into better blends of fertiliser that are more suitable for spreading."
"Our technology is always evolving. We can help the farmer to reduce these compliance issues and provide them with data that helps in this area."
"Smart technology that places product accurately and gives the general public confidence we are doing the right thing."
"Further technological progress towards efficient and purposeful application techniques."
Sustainability
"A chance to clean up/naturalise fertiliser to mitigate climate change costs for future."
"To showcase our efficiency in the aid of sustainable food production. highlighting spreadmark and its uniformity of the registered members."
"To be more environmentally friendly. Only use Spreadmark accredited companies."
"Spreadmark to become a national standard in compliance for contractors and farmers. This can set a worldwide standard that can work along side our clean green food production image, and premium prices for our products."
Other
"Groundspread nz is a small and nimble enough industry to quickly adjust and develop to changing operational requirements."
"Utilising the skills of the association and member businesses to assist business partners to best manage on farm application & information. Best practice for proof of product placement."
"Maybe to manufacture more products in NZ, less reliance on imports?"
What do you see as the biggest opportunity for the future of the fertiliser industry, and why?
Base: total sample n=44



GROUNDSPREAD NZ 16
And members are open to both of these areas
Click to add text
WHICH OF THE FOLLOWING STATEMENTS BEST DESCRIBES THE DIFFERENT FERTILISER SPREADING PRODUCTS THAT YOU PREFER TO USE?
93%
Are open to using new and different fertiliser spreading products, technologies and methods.
WHICH OF THE FOLLOWING STATEMENTS BEST REPRESENTS HOW YOU FEEL ABOUT THE NATURAL ENVIRONMENT WHEN MAKING DECISIONS ON YOUR BUSINESS?
20%
75%
5%
I think about the environment a lot. I actively make choices in my everyday life to reduce my business's impact.
I think about the environment and try to do my part to reduce my business's impact.
I sometimes think about the environment and the impact that we have on it.
Which of the following statements best describes the different fertiliser spreading products that you prefer to use?
Which of the following statements best represents how you feel about the natural environment when making decisions on your business?
Base: total sample n=44
TRA

GROUNDSPREAD NZ
However, holding us back are costs, staffing shortages and a general lack of recognition and appreciation
Click to add text
WHAT, IF ANYTHING, DO YOU THINK HOLDS SPREADERS BACK FROM PURSUING THESE OPPORTUNITIES?
Costs
"Perceived cost and no understanding of benefits to business."
"Cost and willingness to adopt new technology."
"Scale, costs and lack of requirement. Overseer requires improvement to facilitate end client gains."
"Cost and staff ability."
"Cost / knowledge / Systems and controls. Time and business development and long term planning."
Staffing
"Staffing and rising costs."
"A staffing crisis Lack of Promotion."
"Shortage of skilled labour who are willing to work."
Recognition & Appreciation
"Lack of understanding of the value we add by the general public (urban)."
"Lack of recognition at present for being spreakmark certified."
"Lack of understanding of older farmers."
"A lack of profile."
"Lack of interest."
What, if anything, do you think holds spreaders back from pursuing these opportunities?
Base: total sample n=44

GROUNDSPREAD NZ 18
IMPLICATION
1. Harness the excitement, and advance conversations around new initiatives
Members are excited about the initiatives going on, are feeling largely positive towards Groundspread, and uptake of Spreadmark appears to be high. Further, they are open to doing things differently and are supportive of a shift towards a more sustainable future. These are people who want Groundspread to succeed and are really invested in what goes on.
2. Help members respond to and manage the risks
However, the future of the industry is worrying for some. There are a range of risks that can impact them, with costs and regulation being the biggest, as well as staffing shortage, supply chain issues, and a sense that some don't believe what they do is recognised.
3. Elevate familiarity with, and perceived value of Groundspread NZ and Spreadmark
Members feel like there is a lack of wider recognition and appreciation for both what they do and what the Spreadmark accreditation means. Even though they believe demand for their services will always be there in the future, rising costs (among other risks) means they may need to work harder to communicate and justify the value they bring.
TRA