

# Winter Grazing Taskforce

## Final Report & Recommendations

### Improving Animal Welfare on Winter Grazing Systems

#### Key Messages

- In this report we make recommendations for both immediate and longer-term actions. There is an urgent need for MPI to establish a pan-sector action group to implement these recommendations.
- Poor animal welfare in intensive winter grazing systems is not solely a ‘farmer’ problem: it will take a concerted effort along the supply chain to improve animal welfare in winter grazing systems.
- Farming leaders need to support coordinated actions for farmers to improve animal welfare. Some changes can be made immediately.
- Government and the primary sector need to invest in animal welfare research to better understand the extent of the intensive winter grazing problem and inform the potential solutions.

#### Context

Intensive winter grazing on crop or pasture is common in the South Island, but is used elsewhere and is becoming more common in the Taupo/Central Plateau area of the North Island. Livestock – including sheep, beef cattle, dairy cattle and deer – are held on a restricted area of pasture or crop (a break or strip) at a high stocking density<sup>1</sup>. When one section of forage is eaten, animals are given access to a new break. They may also be given supplementary feed such as silage or hay at the same time. Intensive winter grazing is used in pastoral farming to manage feed supply at a time of year when pasture growth is limited by cool temperatures and short daylength. Relatively large amounts of surplus rainfall occur at this time of year and intensive winter grazing systems help to preserve soil structure and pasture quality on other parts of the farm.

In response to media coverage of livestock in wet, muddy conditions on winter grazing, Minister O’Connor announced on 7 August 2019 the establishment of a pan-sector taskforce (the Taskforce), to respond to the animal welfare issues associated with the practice of winter grazing.

In calling the Taskforce together, it is clear that expectations of New Zealanders and overseas consumers are changing. Animal welfare is expected to be a clear focus in farming.

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<sup>1</sup> Relatively high stocking *densities* are typical of winter grazing systems due to the large amounts of feed available per unit area (often between 10 – 20 T DM ha<sup>-1</sup>). When combined with typical daily feed allocations to animals, these represent relatively high grazing *intensities* (typically between 0.5 – 2.0 Relative Stock Units per m<sup>2</sup> per equivalent daily break).

This is supported by our law that explicitly recognises sentience<sup>2</sup>, and by science that is defining the physical and psychological impacts of poor management and environmental conditions on pastoral livestock, thus better identifying their ‘wants’ as well as their ‘needs’<sup>3</sup>. Whilst we have been asked to set clear goalposts, we also recognise that it is unreasonable to expect these will not change over time in response to changing public and consumer expectations.

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*“We’ve come a long way in animal welfare as farmers, but where we have to go has to be a lot further than where we are today,” Southland farmer.*

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This issue is often seen as a problem caused solely by farmers.

Farmers, whether as the owners or people in charge, do have the ultimate responsibility for the welfare of animals in their care. However, they operate in a system that has been driven by a desire for production from their animals and their land, and they are therefore both supported and constrained by others. We see this issue as one that has responsibilities shared by all in the pastoral farming supply chains.

This report provides a summary of the key findings and recommendations of the Taskforce. We include statements on the investment and commitment needed from Government and from the primary sector. This is not a regional issue, it is a national issue; and strong and visible leadership is needed to ensure that animal welfare is at the forefront of all decisions along the supply chain of responsibility in winter grazing across the country.

### The problem for animal welfare

While this issue is clearly one of perception affecting trust and approval of the primary sector (social licence), there are also very real impacts on animal welfare. Many features of intensive winter grazing can affect animal welfare for sheep, cattle and deer, with a range of impacts that ultimately result in negative experiences<sup>4</sup> (see Figure over the page).

In addition, there are likely to be long-term consequences for the health and welfare of grazed animals, as well as for the offspring of animals that are winter-grazed while pregnant, which are not understood.

*Recommendation 1: Work is needed to understand and mitigate the long-term animal welfare consequences of intensive winter grazing practices.*

The incidence of these problems in New Zealand is unknown, partly due to a lack of tools to objectively measure them on farm, and a lack of reliable reporting of on-farm problems. Reports to the Taskforce varied, with some reporting as low as 5% of farmers are doing badly with regard to intensive winter grazing animal welfare, while other reports suggest 20% or more are doing badly with a further 30% of farmers not following best practice<sup>5</sup>. However, there are no objective

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<sup>2</sup> Sentience is the ability to feel, or perceive, or be conscious, or have subjective experiences as distinct from the ability to reason; this is sometimes described as the animal ‘having feelings that matter to it’.

<sup>3</sup> See for example Boissy and Lee 2014, Ede *et al* 2019; and Mellor 2012.

<sup>4</sup> See for example Chen *et al* 2017; Cooper *et al* 2008; Phythian *et al*, 2016; Pollard & Wilson, 2002. While there is more published information on the impacts of wintering systems on dairy cattle than deer, beef cattle and sheep, it is clear that the range of impacts is possible across all species. Similarly, there are some issues that are specific to certain forage types, but the range of impacts described here should be considered for all winter grazing regardless of fodder type.

<sup>5</sup> The Taskforce heard from a range of speakers including sector bodies, rural professionals, farmers, waterway catchment group members and veterinarians.

assessments of the size of these welfare problems, and these will be needed in the future to ensure that progress is being made.

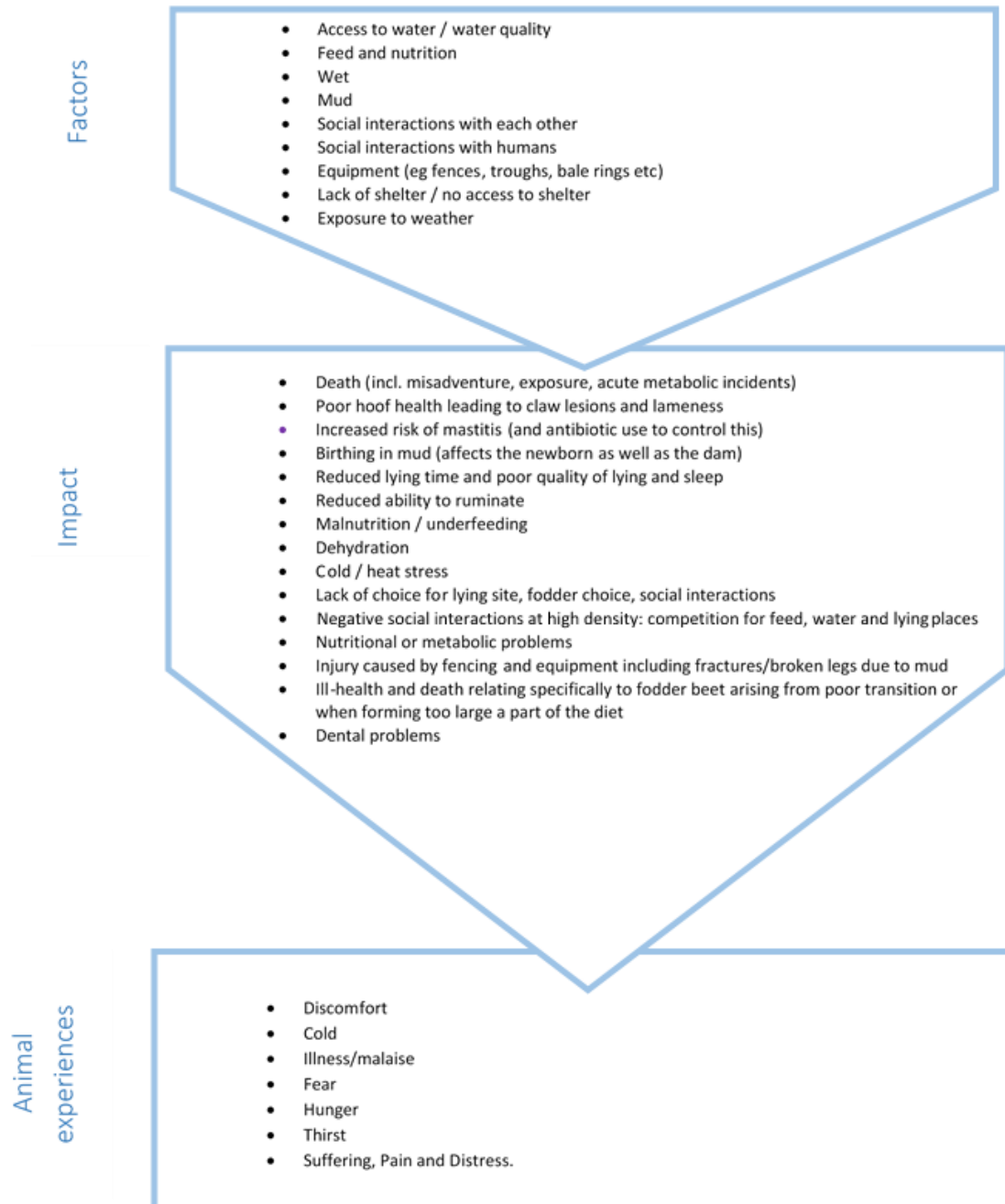


Figure: Features of winter grazing, impacts on animal welfare, and effects on animal experiences

Some alternatives to winter grazing can also cause animal welfare problems. For example, animals kept outdoors at lower stocking densities may still face issues relating to shelter and exposure as well as nutritional issues and issues around water availability. Off-paddock and indoor systems can face issues such as negative social behaviour and injury from equipment and increased risk of diseases<sup>6</sup>. Indoor housing of large numbers of cows at high densities has also been seen negatively by the public in New Zealand and overseas previously.

Intensive winter grazing also has impacts on soil and environmental management, but these were not our focus. Further information and reviews of these issues can be found in recent reports and publications<sup>7</sup>.

*Recommendation 2: Work is needed to establish baseline animal welfare performance of intensive winter grazing systems in order to monitor the progress of improvements.*

### Barriers to adopting improved animal welfare practice

We reviewed an initial process map (attached as Appendix A), reviewed what advice is already available and educational initiatives underway (attached as Appendix B), and listened to a range of speakers in order to identify why there appears to be a diverse and at times conflicting range of advice available and why poor practice continues.

Some barriers to farmers and others adopting improved animal welfare practices are clear, and we identified a number of them from our work and from speakers to the Taskforce. However, the barriers need to be more clearly understood and should be identified as part of the implementation work for these recommendations. We note that this approach is being taken to address the provision of shelter (or lack of shelter) in pastoral livestock farming in New Zealand, with the first step being the conclusion of a survey on barriers to adoption of shelter<sup>8</sup>.

*Recommendation 3: Work is needed urgently to better utilise and expand on our knowledge of barriers to adopting improved animal welfare practices.*

The identified barriers can be sorted into fundamental barriers that require more significant system and practice change to address, and technical barriers that can be changed through a change in practice or adoption of equipment or technology that already exists. Technical barriers include things like lack of staff training, leaving inexperienced staff in charge when away from the farm, farm topography limitations, and lending criteria from banks, which may directly affect decision making and are not detailed here.

**Firstly, it is clear to us that animal welfare is not sufficiently prioritised, by anyone along the supply chain: we see this as the key barrier to adopting good or improved practice.**

For example, some dairy farm owners do not own or manage the livestock on their farm and become further removed from animal welfare issues during winter grazing when the livestock owner sends these animals to a grazier, current grazier contracts are silent on animal welfare, seed merchants

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<sup>6</sup> See for example, Verkerk et al, 2011 (dairy housing); Carpoprese, 2008 (sheep), and Pollard & Littlejohn, 1998 (deer).

<sup>7</sup> See for example recent work by Laurenson et al, 2018, van der Weerden et al, 2018, and Monaghan et al, 2017.

<sup>8</sup> See Fisher et al, 2019.

don't consider animal welfare in cropping advice and financiers don't appear to understand the potential animal welfare consequences of intensive winter grazing practices.

Secondly, there is not an agreed set of standards among farmers for good animal welfare practice, and what some consider good practice is still exposing animals to poor welfare states and is completely unacceptable to the public from an animal welfare perspective. The widespread prevalence of poor intensive winter grazing practices leads to people 'walking past' or being desensitized to poor practice and considering it as normal. This is unacceptable. Also meeting good environmental management practice will not ensure adequate animal welfare. Change will require a culture shift among those who may not understand that their current practices are not acceptable from an animal welfare perspective.

For those who *do* understand the need to evolve their practices to improve animal welfare, there remain issues around lack of access to guidance and other available support to make the required changes. Most interactions with farmers aren't considering animal welfare – there seem to be many opportunities for rural professionals to agree and share, or support, improved practice, and these are not being taken.

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*“The issue is a disconnect, with all farmers not having access to, or following, guidance and other support that is available,”*  
Farm consultant.

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Whether or not they are animal welfare experts, we consider everyone can take a role in this, and can and should take advice from animal welfare experts if they are uncertain. This approach is common practice with other farm management decisions such as farm environment planning, cropping, choice of fertilizers, etc, but has not permeated through to include seeking proactive animal welfare advice (and planning) around winter grazing.

*Recommendation 4: A detailed whole-of-supply-chain process map needs to be finalised, and gaps in information transfer identified and rectified so everyone understands the role that they have to play in improving animal welfare.*

A third area that is preventing progress is related to education, compliance and enforcement. Compliance and enforcement rely on detection of problems, and the use of educational and compliance tools (e.g. educational visits, infringements, notices that direct an action to ensure compliance, with prosecution as an absolute last resort). Detection and reporting of poor performance does not appear to be happening to any great degree. It may be hindered by parties feeling uncomfortable, lack of understanding that complaints are anonymous, unwillingness to report on clients or neighbours, or not knowing how to or when they should report what they see, along with poor animal welfare practice being 'normalised'.

We also consider that: 1) not all compliance tools available are being used, 2) enforcement activity is hindered by a lack of clear, enforceable rules and further tools are needed. Codes of welfare are not aligned with emerging scientific understandings of sentience. There are no enforceable regulations that directly address access to water, shelter and requirements for lying, depth of mud, and proper nutrition when winter grazing.

There is also a range of issues relating to a lack of willingness to accept accountability for the poor animal welfare outcomes of intensive winter grazing throughout the system, from financial institutions, seed merchants (who advise on crop choice), supply and advisory services, rural contracting and support services, graziers, veterinarians, and at the farm management and governance level.

Finally, there seems to be a general feeling amongst farmers of a lack of autonomy, and a lack of recognition that they have the ability and the tools to address this problem. We accordingly identify steps below to ensure that farmers are involved in and driving positive change<sup>9</sup>.

## Principles for progress

Given the problem and the identified barriers, we consider that four key principles are needed to improve animal welfare in intensive winter grazing, and we have grouped our proposed solutions and recommendations around them:

1. Animals are sentient and their welfare matters
2. The right tools for education, compliance and enforcement
3. Everyone has a responsibility and role in improving animal welfare
4. Long-term continuous improvement to ensure social licence

These principles provide the central tenets to achieve our:

**Ambition** (*what we want to see*): Good animal health/welfare and environmental health, which, if supported in the right way, will enhance the wellbeing of farmers and their communities.

**Outcome** (*this will happen by*): All farmers meeting or exceeding animal welfare good practice.

**Objective** (*to make this happen, we will*): Propose mitigations for short, medium and long-term, evidence-based animal welfare improvement to support behaviour change so that all farmers comply with animal welfare requirements.

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*“Cows can handle a lot, but in some ways this hasn’t done them any favours, and just because they are stoic doesn’t mean their welfare isn’t affected. We need to remember the cow underneath,”* Animal welfare scientist.

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## Solutions

### *Animal welfare matters*

Firstly, and most importantly, is the acknowledgement that animals are sentient and their welfare matters. More work is needed so that everyone involved – from farmers, to rural professionals, to regulators – understands the ‘cowness of a cow’ or ‘sheepness of a sheep’, that is, to remember (and to learn, where there are gaps in understanding) the essential nature of cows, sheep and deer and to help animal owners take this into account when determining their winter grazing systems.

Certain issues are clear cut and change can happen over the short term. Some things should **never** happen and action must be taken immediately to prevent them:

- Animals giving birth on mud
- Avoidable deaths in adverse weather events
- Mass mortality events on winter grazing systems<sup>10</sup>.

The issues above have a range of poor animal welfare outcomes that arise before they actually come about (e.g. subclinical disease), and that also needs to be addressed.

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<sup>9</sup> See Blair et al, 2013, and also Meijboom & Stafleu 2016 for academic support on this point.

<sup>10</sup>Including animals that escape from breaks and eat too much crop, and animals that are not properly transitioned onto crop from pasture.

Equally, there are some things that should **always** happen, and action must be taken immediately to ensure they do happen:

- Provision for animals to lie comfortably (on a soft dry substrate) for as long as they want to
- Ability to readily move animals to shelter/dry land in adverse weather before harm occurs
- Continuous convenient access to fresh, clean water
- Access to an adequately balanced diet, including appropriate supplementary feeding for animals on fodder beet and other crops, that keeps animals warm and doesn't cause acute or chronic malnutrition and metabolic problems.

*Recommendation 5: Primary sector organisations, with support from rural professionals and government, support farmers to immediately stop or start the actions identified above.*

These actions are absolute bottom lines (i.e. we think they are at or below legal minimum standards in codes of welfare); further actions are needed to get above this point and farmers will need to be aiming higher than bottom lines to avoid future problems.

To progress animal welfare above the minimum and mainstream good animal welfare practice, animal welfare needs to be taken into account as part of all farm management decisions, beginning with planning before the winter season begins and before crops are planted. This can support a number of mitigations over the medium term, such as running smaller mobs split according to birthing date and body condition, or better calculation of crop yield to determine stocking density, as well as choice of crop.

It should be noted that further increases in dry matter per hectare (including by the addition of supplement) may conflict with good animal welfare practice. Some farms have already moved well beyond this point, as a result of excessive dry matter yields of some crops.

There are resources and training available from sector organisations to support good planning<sup>11</sup> and some better planning can begin immediately to reduce the likelihood of welfare harm next winter, particularly making use of the farm environment planning processes.

*Recommendation 6: Animal welfare considerations must be part of farm planning alongside environmental management.*

#### *The right tools for education, compliance and enforcement*

We need to ensure that there are tools to support compliance – from educational approaches to supporting voluntary compliance, through to effective enforcement.

This should start with education – educating people that animals are sentient and their welfare matters is the first priority. Connecting people with the same messaging along the supply chain (graziers, product supply, rural contractors, rural professionals) will reinforce the support and advice available and help ensure the desired behaviours. Where good behaviour is being modelled, we encourage peer-to-peer support to help all farmers meet agreed good practice. We support the MPI-industry work programme that is underway to communicate good practice through rural press, broadcast and social media<sup>12</sup>.

<sup>11</sup> [Beef + Lamb](#), [DairyNZ](#) and [DINZ](#) and see Appendix B.

<sup>12</sup> Media releases and winter grazing information is [linked here](#).

There should be a clear set of animal welfare benchmarks for all people caring for livestock within intensive winter grazing operations, and strong, enforceable rules. Regulators need to set and operate against clear bottom lines, and make sure that they are met. This means:

In the short term,

- Ensure animal welfare inspectors have everything they need to use the enforcement tools that are currently available under the legislation (eg checklists, measurable performance indicators for animal welfare, training and support for a range of compliance tools including compliance / section 130 notices);
- Provide a proactive compliance campaign that would accelerate effective change, where animal welfare and environmental regulators work alongside each other (including by referral between agencies) to detect and address poor practices;
- Prioritise complaints about animal welfare for livestock in mud, without shelter, and without clean water or adequate feed; and
- Clearly signal intentions regarding medium term actions through communications.

In the medium term,

- Lift standards of animal welfare outcomes in the codes of welfare and ensure specific standards are included to address known problems around food, water, mud, lying times (amount of lying and quality of lying) and shelter provision in relation to intensive winter grazing;
- Introduce new animal welfare regulations to set clear, directly enforceable bottom lines for intensive winter grazing and enhance the toolkit available for animal welfare inspectors;
- Conduct active surveillance to detect potential problems before they escalate; and
- Better support protected disclosure including anonymity of complainants.

There needs to be better detection and reporting of incidents and a mechanism for ensuring reports are referred to the appropriate regulator (councils, MPI, SPCA). The DairyNZ Early Response Service seems to work well in the dairy sector, and work to expand this to other sectors (deer, sheep, beef cattle) is encouraged and must be well-supported by the sectors to ensure their success.

Detection would be supported by a greater awareness of the animal welfare impacts of poorly-managed winter grazing. MPI should make animal welfare compliance statistics more accessible and specific, so that people can see the true extent of problems arising in intensive winter grazing and track progress.

*Recommendation 7: The Ministry for Primary Industries should take steps to implement these intensive winter grazing steps immediately, in order to drive change for next winter.*

#### *Everyone has a responsibility and a role*

Each individual and group who has an involvement in intensive winter grazing practices – from owners, to farmers, contractors, graziers, veterinarians and regulators – needs to have a clear understanding of their role and responsibilities and their potential or actual negative impacts on animal welfare. We need to identify gaps to determine who can do more. It will be important to make better and earlier decisions to ensure animal welfare considerations are included in paddock selection and alternative farming systems.



There should be clear accountability throughout the management/governance chain. Second or third parties (for example corporate owners and absentee owners) need to be aware of their responsibilities and be part of the plan (for example, a grazier should have an intensive winter grazing plan in place with the animal owner and the local council that includes animal welfare considerations).

*Recommendation 8: Participants in the supply chain should identify practical options to adapt support tools, such as contract templates, to incorporate animal welfare obligations and expectations.*

*It's a long game, society expects continuous improvement of animal welfare*

We have heard from farmers that we need to set clear goalposts. We acknowledge this and endeavour to meet this expectation, but we also understand that societal expectations change over time. Although there is an imperative for addressing critical failures in the short term, it will be equally important to keep the strategic end goal in mind.

**The end goal for animal welfare is that everyone understands and accepts that there will always be a demand for better animal welfare.**

While identifying specific mitigations in the interim, we also need to ensure we are heading in the right direction overall.

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*“Be careful about pushing to solutions that bring problems – some alternatives can cause problems and get tagged as factory farming... It's important not to overreact or have a rapid response to the problem that is not well thought out.” Southland farmer representative.*

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Future farming and farming systems need to be developed to avoid negative, and fulfil positive, animal welfare states. There is obviously a need to develop and test farming systems that support improved pastoral farming. Any replacement systems for winter grazing systems will need to create better animal welfare outcomes (or, some argue, at least not worsen). We have not recommended the adoption of off-paddock or housing systems, although these may be part of the future mix for pastoral farming in New Zealand.

There are welfare compromises that can be inherent with these systems unless they are expertly managed and are able to meet the ‘needs’ and ‘wants’ of the animals (see references above).

We recognise and support the important considerations that are needed to improve our ability to match land use to land suitability, and which are being progressed via programmes within the Our Land & Water National Science Challenge<sup>13</sup>. Solutions are different for every farm. Better understanding of the problem is essential, particularly for those poorest performers, to determine if it is a better investment to address the bottom end than it is to lift the middle and top end i.e. step up or step out. There is also an expectation that if we correctly match land use to land suitability that animal welfare will also improve.

While our focus is animal welfare, this is very much a ‘One Welfare’ issue and we acknowledge that animal, human and environmental health and wellbeing are intertwined. We think that where

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<sup>13</sup> The Our Land and Water National Science Challenge Future Landscapes programme uses the concept of ‘land use suitability’ to describe “not just the land’s capability to grow a product, but also consider impacts on soil and waterways, and economic, social and cultural outcomes”; website linked [here](#).

animal welfare requirements cannot be met, despite good environmental management, then something needs to change. We encourage research and extension activities that support the development of farming systems that meet all outcomes (animal, human and environmental).

Finally, animal welfare lies at the core of farmers' businesses. It follows that animal welfare needs to be at the forefront of the considerations taken by everyone associated with supporting and advising farmers, including financial advisers and planners. We encourage research that is testing the current thinking that more production always results in greater profit<sup>14</sup>.

## Investment and commitment needed from industry and government

Clearly, and most importantly, coordinated leadership is required from government, industry and sector leaders. There must be greater on-the-ground presence from both industry and government (MPI) to support farmers and to implement and enforce animal welfare compliance across the whole sector. Councils will also need to be more proactive in their monitoring of environmental compliance and recognise the link between environmental requirements and animal welfare.

### *Leadership to ensure progress*

In our discussions, the Taskforce has identified a lack of collective, co-ordinated and proactive primary sector and central government leadership on animal welfare to provide oversight and direction while encouraging greater production. We do not have a proposed solution for this, but recognise it will be essential to drive progress on this and other animal welfare problems that are inherent in some farming systems.

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*"Poor animal welfare is a cost to our business and a cost to our communities... we need our leaders to step up, pull together and coordinate action to address this issue," Southland farmer.*

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### *Understanding the problem and supporting change*

Better and more extensive mapping is required in order to better understand the extent of the intensive winter grazing problem and inform the potential solutions.

We can already see, however, that environmental and farm systems research that is underway should have animal welfare metrics included, to leverage off existing investments and trial ways of building animal welfare into decision making and good practice. Our stocktake lists key research projects that are underway (Appendix B).

In terms of extension, farmer innovation and extension to support farmers has already been identified for more investment in New Zealand. Animal welfare should be part of the mix in this work. This includes community of practice R & D operating under regional development and extension programmes, and other initiatives, such as the Southern Dairy Hub.

We also see some specific opportunities for research and development:

- Technology (IT, mapping etc) to help farmers with planning and paddock selection e.g. Pamu risk assessment system and phone app, mapping opportunities leveraging off current mapping in some regions, sediment loss risk modelling;

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<sup>14</sup> See for example Anderson and Ridler, 2010; Hurley et al, 2013; Pellow, 2017; We heard speakers that supported alternative economic models where increased productivity is not necessary for increased profitability, and think this should be explored as a means of prioritising animal welfare in farming business decisions.

- Understanding human behaviour regarding winter grazing practices eg motivators, farming values, barriers to change;
- Innovative technology and more objective metrics for animal welfare assessment on farm<sup>15</sup>; and
- Alternative farming systems developed on research farms should be worked up to real-life farms, and case studies made of farms that have already trialled new farming systems.

*Recommendation 9: The identified opportunities listed in the Taskforce stocktake document for research and extension that are underway, incorporate animal welfare performance measures.*

## A plan for implementation

### *An action group to progress recommendations*

Successful implementation will require a participatory approach, with government and industry working together to shape farmer behaviour and practices. We consider an action group, similar to the Bobby Calf Action Group that was addressed to accelerate welfare improvements in the bobby calf supply chain, will be the best way to achieve this. While this could be based on existing groups, it is essential that this action group focuses on good animal welfare outcomes and is not simply supporting ‘business as usual’ such as current intensive winter grazing practices. To ensure the action group sets the right priorities and achieves progress, we suggest some task force members could be participants.

The action group should get feedback from sectors on animal welfare performance, to monitor implementation.

Given the timeframe in which the proposed solutions were developed, it will be necessary to ‘road test’ different options, using design thinking and applying behaviour change modelling, to identify the best use of resources to achieve practice change.

Actions need to be prioritised according to the short-term and medium-term groupings we use in this report.

*Recommendation 10: A pan-sector intensive winter grazing action group needs to be established to implement the recommendations in this report, using a behaviour change modelling approach to identify practical mitigations and make the best use of resources.*

### *Farmers and farmer-led change*

We propose making use of regional pan-sector farmer and rural professional leaders, such as veterinarians and farm advisers, to feed into this work and to help with messaging back to farmers, which will both provide a channel to receive ‘grass roots’ feedback, and make use of their expertise and connections to achieve change.

### *The need to communicate in new ways*

Thought should be given to alternative innovative means of communication and information transfer, including, social media. In this way we can ensure content will reach the people actually working with the animals, not only the farm owners.

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<sup>15</sup> See Barrell 2019 for a recent review.

## Measuring progress

We recommend that MPI undertake review and assessment of the complaints received this winter 2019, what the MPI response was in each case and what MPI can learn for a more proactive response approach in 2020. We suggest that MPI establishes the action group immediately to assign a lead for each recommendation. MPI will need to report back to the Minister following its debrief of winter 2019, and we suggest that the action group publishes at least quarterly reports after this.

*Recommendation 11: Ministry for Primary Industries to lead a debrief of winter 2019 and assess progress against the Taskforce recommendations, for the Taskforce to report back to the Minister by February 2020.*

## Milestones

By next winter 2020, we expect:

- References to animal welfare are included in all new guidance and extension material, contracts, and all other documents across the supply chain (including advertising). This material would acknowledge that animals are sentient and convey an understanding of what this means in order to improve animal welfare. We believe this recognition is one of the most important first steps that will drive behaviour change.
- Farmers will understand that having animals in poor grazing conditions is unacceptable, as shown by an increase in reporting including self-referral to response/support services, and greater uptake of training opportunities <sup>16</sup>.
- Farmers will have the tools and knowledge they need to understand and meet their animal welfare responsibilities.
- Government will have a better understanding of the nature of the problem to inform the longer term approach, through completion of the process mapping as a first step in the behaviour change approach that is recommended above.

By winter 2021, additional compliance tools and animal welfare regulations specifically addressing intensive winter grazing will be in place, and cropping practices will be adjusted. Cases of livestock in unacceptable conditions in winter grazing will be monitored and referred to compliance authorities when they are seen. Poor intensive winter grazing practices will not be accepted, which will also drive reporting to the regulators. Poor intensive winter grazing will instead be the exception.

In the longer term, we expect to see that all animal health and welfare requirements are met on all winter grazing systems.

## Summary of recommendations

1. Work is needed to understand and mitigate the long-term animal welfare consequences of intensive winter grazing practices.
2. Work is needed to establish baseline animal welfare performance of intensive winter grazing systems in order to monitor the progress of improvements.

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<sup>16</sup> A better and formalised reporting and monitoring system may result in a higher profile for intensive winter grazing animal welfare problems even though the problem is being addressed and is improving.

3. Work is needed urgently to better utilise and expand on our knowledge of barriers to adopting improved animal welfare practices.
4. A detailed whole-of-supply-chain process map needs to be finalised, and gaps in information transfer identified and rectified so everyone understands the role that they have to play in improving animal welfare.
5. Primary sector organisations, with support from rural professionals and government, support farmers to immediately stop or start the actions identified above.
6. Animal welfare considerations must be part of farm planning alongside environmental management.
7. The Ministry for Primary Industries should take steps to implement these intensive winter grazing steps immediately, in order to drive change for next winter.
8. Participants in the supply chain should identify practical options to adapt support tools, such as contract templates, to incorporate animal welfare obligations and expectations.
9. The identified opportunities listed in the Taskforce stocktake document for research and extension that are underway, incorporate animal welfare performance measures.
10. A pan-sector intensive winter grazing action group needs to be established to implement the recommendations in this report, using a behaviour change modelling approach to identify practical mitigations and make the best use of resources.
11. Ministry for Primary Industries to lead a debrief of winter 2019 and assess progress against the Taskforce recommendations, for the Taskforce to report back to the Minister by February 2020.

## References

- Anderson, W.J. and Ridler, B.J., 2010. The effect of increasing per cow production and changing herd structure on economic and environmental outcomes within a farm system using optimal resource allocation. *Proceedings of the 4<sup>th</sup> Australasian Dairy Science Symposium*, 215-220.
- Barrell, G.K., 2019. An Appraisal of Methods for Measuring Welfare of Grazing Ruminants. *Front. Vet. Sci.* 6:289. doi: 10.3389/fvets.2019.00289 <https://www.frontiersin.org/articles/10.3389/fvets.2019.00289/full>
- Blair, H.T., Sewell, A., Ra, C., Kemp, P.D., Wood, B., Gray, D.I., Morris, S.T., Aw, G., Cm, L., Ridler, A., Re, H., Kenyon, P.R., & Villalobos, N.L., 2013. Understanding how farmers learn. *Proceedings of the Association for the Advancement of Animal Breeding and Genetics*. 20:1-5.
- Boissy, A. & Lee, C., 2014. How assessing relationships between emotions and cognition can improve farm animal welfare *Revue scientifique et technique-Office International des Epizooties* 33 (1), 103-110. <https://pdfs.semanticscholar.org/9c7d/dba74c86c041474a6940f2bc14f2454e7dab.pdf>
- Caroprese, M., 2008, Sheep housing and welfare. *Small Ruminant Research* 76(1–2):21-25. <https://doi.org/10.1016/j.smallrumres.2007.12.015>
- Chen, J.M., Stull, C.L., Ledgerwood, D.M., Tucker, C.B., 2017. Muddy conditions reduce hygiene and lying time in dairy cattle and increase time spent on concrete. *Journal of Dairy Science* 100(3): 2090-2103 <https://doi.org/10.3168/jds.2016-11972>
- Cooper, M.D., Arney, D.R. and Phillips, C.J.C. 2008. The effect of temporary deprivation of lying and feeding on the behaviour and production of lactating dairy cows. *Animal* 2(2): 275-283. DOI: <https://doi.org/10.1017/S1751731107001164>
- Ede, T., Lecorps, B., von Keyserlingk, M.A.G., & Weary, D.M., 2019. Symposium review: Scientific assessment of affective states in dairy cattle. *Journal of Dairy Science*. 102:10677–10694.
- Fisher, M.W., Stockwell, W., Hastings, A., Brannigan, J.I.E., Lyons, C.E., Timmer-Arends, P., 2019. Barriers to the adoption of animal welfare standards: shelter on pastoral farm. *New Zealand Journal of Animal Science and Production* 79:37-42. <http://www.nzsap.org/system/files/proceedings/barriers-adoption-animal-welfare-standards-shelter-pastoral-farms.pdf>
- Hurley, E., Trafford, G., Dooley, E., Anderson, W., 2013. The Usefulness and Efficacy of Linear Programming Models as Farm Management Tools, report to DairyNZ. <https://researcharchive.lincoln.ac.nz/bitstream/handle/10182/9563/The%20Usefulness%20and%20Efficacy%20of%20Linear%20Programming%20Models...pdf?sequence=1&isAllowed=y>
- Laurenson, S., Wall, A., Monaghan, R.M. and Orchiston, T.S. 2018. Sediment losses from intensively grazed forage crops in New Zealand. *AgResearch Client Report RE450/2018/044 to Environment Canterbury*. 60p.
- Monaghan, R.M., Laurenson, S., Dalley, D.E. & Orchiston, T.S. 2017. Grazing strategies for reducing contaminant losses to water from forage crop fields grazed by cattle during winter. *New Zealand Journal of Agricultural Research* 60(3): 333-348.
- Mellor, D.J., 2012. Animal emotions, behaviour and the promotion of positive welfare states. *New Zealand Veterinary Journal* 60(1):1-8. doi: 10.1080/00480169.2011.619047
- Meijboom, F.L.B, Stafleu, F.R., 2016. Farming ethics in practice: from freedom to professional moral autonomy for farmers. *Agriculture & Human Values* 33:403-414. <https://doi.org/10.1007/s10460-015-9641-8>.
- Pellow, R., 2017. Applying Pastoral 21 Farmler Research to a Whole Farm – Results from Lincoln University Dairy Farm. In: *Science and policy: nutrient management challenges for the next generation*. (Eds L. D. Currie and M. J. Hedley). <http://flrc.massey.ac.nz/publications.html>. Occasional Report No. 30. Fertilizer and Lime Research Centre, Massey University, Palmerston North, New Zealand. 10 pages. [http://flrc.massey.ac.nz/workshops/17/Manuscripts/Paper\\_Pellow\\_2017.pdf](http://flrc.massey.ac.nz/workshops/17/Manuscripts/Paper_Pellow_2017.pdf)

Phythian, C.J., Michalopouloub, E., Cripps, P.J., Duncan, J.S., Wemelsfelder, F., 2016. On-farm qualitative behaviour assessment in sheep: Repeated measurements across time, and association with physical indicators of flock health and welfare. *Applied Animal Behaviour Science* 175: 23-31.

<https://doi.org/10.1016/j.applanim.2015.11.013>

Pollard, J.C., Wilson, P.J., 2002. Welfare of farmed deer in New Zealand. 1. Management practices. *New Zealand Veterinary Journal* 50(6):214-220. DOI: [10.1080/00480169.2002.36316](https://doi.org/10.1080/00480169.2002.36316)

Pollard, J.C., Littlejohn, R.P., 1998. Effects of winter housing, exercise, and dietary treatments on the behaviour and welfare of red deer (*Cervus elaphus*). *Animal Welfare*, 7: 45–56.

Stephens, T., 2018. How can farmers keep nutrients out of water? Nuffield Scholar report, November 2018:

<https://www.nuffieldinternational.org/live/Report/UK/2017/tim-stephens>

Verkerk, G.V., 2011. Animal welfare risk assessment: off-pasture management systems in the New Zealand dairy industry, (2010 – 11983), MAF Technical Paper No: 2011/100. ISBN 978-0-478-38759-9 (online), ISSN 2230-2794 (online).

van der Weerden, T., Beukes, P., De Klein, C., Hutchinson, K., Farrell, L., Stormink, T., Romera, A., Dalley, D., Monaghan, R., Chapman, D., Macdonald, K., Dynes, R. 2018. The Effects of System Changes in Grazed Dairy Farmlet Trials on Greenhouse Gas Emissions. *Animals* 8: 234.

## Appendix A: Winter Grazing Process: What we think farmers do – assumptions and gaps





## Appendix B: Stocktake of winter grazing information

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## Facts and figures

### Forage brassicas – hectares sown for the year ended 30 June 2018

Region	Forage brassicas (Hectares during the year ended 30 June 2018)	Region	Forage brassicas (Hectares during the year ended 30 June 2018)
Northland Region	2225	Wellington Region	6357
Auckland Region	724	West Coast Region	3480
Waikato Region	15368	<b>Canterbury Region</b>	<b>77133</b>
Bay of Plenty Region	2850	<b>Otago Region</b>	<b>52860</b>
Gisborne Region	1458	<b>Southland Region</b>	<b>43658</b>
Hawke's Bay Region	10716	Tasman Region	1379
Taranaki Region	3923	Nelson Region	3
Manawatu-Wanganui Region	16168	Marlborough Region	1574
<b>Total New Zealand</b>			<b>239,875</b>

Source: StatsNZ Agriculture Production Survey 2018. *Unclear from the StatsNZ report if this includes summer brassicas, or fodderbeet.*

## WINTER GRAZING IN NZ

Proprietary Seed Market Size - Hectares								
Region	Permanent Pasture	Italian	Annual	Lucerne	Brassica	Maize	Maize - bags	Fodder Beet
Northland	9,000	3,000	5,500		2,000	8,000	9,900	100
Waikato	31,000	7,000	22,500	250	6,000	31,500	39,000	500
Bay of Plenty / King Country	23,000	8,000	7,000	650	19,000	6,300	7,850	1,000
Taranaki / Manawatu	21,000	3,500	4,500	200	21,500	15,000	18,500	1,500
Wairarapa / East Coast / Hawkes Bay	32,000	12,500	15,000	1,650	47,000	10,000	12,500	2,000
Tasman	7,000	2,000	750	600	6,500	500	650	1,500
Canterbury	51,000	16,000	5,500	2,900	73,000	6,500	9,000	28,000
Otago	21,000	6,000	3,000	3,400	40,000			9,000
Southland	36,000	4,500	2,000	650	120,000			20,000
<b>Total Hectares</b>	<b>231,000</b>	<b>62,500</b>	<b>65,750</b>	<b>10,300</b>	<b>335,000</b>	<b>77,800</b>	<b>97,400</b>	<b>63,600</b>

Source: PGG Wrightson provided this table to the Winter Grazing Taskforce 12 September 2019. Figures are based on information from PGG Wrightson, as well as data provided to PGG from other agronomy companies in NZ. The information has not been verified.

## Guidance for farmers

Beef + Lamb NZ	<p>Main landing page: <a href="https://beeflambnz.com/wintergrazing">https://beeflambnz.com/wintergrazing</a></p> <p><a href="#">Winter forage crops: management before grazing (PDF)</a>  <a href="#">Winter forage crops: management during grazing (PDF)</a>  <a href="#">Winter forage crops: management after grazing (PDF)</a>  <a href="#">Ten top tips for winter grazing of crops (PDF)</a>  <a href="#">Feeding fodder beet to pregnant ewes (PDF)</a></p> <p><a href="#">Management practices for forage brassicas (2009) (PDF)</a></p> <p><a href="#">Video: Strategic grazing of winter crops</a>  <a href="#">Video: Best practice winter feeding cattle</a>  <a href="#">Podcast: Jim Gibbs – making the most of fodder beet</a></p>
DairyNZ	<p>Main landing page: <a href="https://www.dairynz.co.nz/feed/crops/wintering-cows-on-crops/">https://www.dairynz.co.nz/feed/crops/wintering-cows-on-crops/</a></p> <p><a href="#">South Island Dairy Event Proceedings 2019</a>  See <i>Winning at Wintering</i> on page 31 for an overview of past research, and current good management practice advice.</p> <p>Wintering cows on crop webpages</p> <ul style="list-style-type: none"> <li>• <a href="#">Paddock selection</a></li> <li>• <a href="#">Crop establishment</a></li> <li>• <a href="#">Winter crop management</a> – includes info on lying times, body condition and grazing slopes</li> <li>• <a href="#">Swedes</a> – includes info about HT swedes</li> <li>• <a href="#">Wintering on fodder beet</a></li> </ul> <p><a href="#">Wintering on crops in the South Island (PDF)</a></p>
Deer Industry NZ	<p>Webpages  <a href="#">Wintering feed systems</a>  <a href="#">Fodder beet</a></p> <p>The Advance Party P2P website has data on numerous wintering systems and trials  <a href="https://ap.org.nz/projects">https://ap.org.nz/projects</a></p>
Environment Southland	<p><a href="#">Intensive winter grazing (PDF)</a> – new rules for winter 2019</p>
MPI	<p>Codes of welfare – sheep and beef cattle, dairy cattle, and deer  <a href="http://www.mpi.govt.nz/welfarecodes">www.mpi.govt.nz/welfarecodes</a></p> <p>Wintering webpage <a href="http://www.mpi.govt.nz/wintering">www.mpi.govt.nz/wintering</a></p>

## Research and extension

DairyNZ	<ul style="list-style-type: none"> <li>• <b>Southern Wintering 2020</b> (DairyNZ)- Focuses on increasing the adoption of good winter management practices specifically in the Southland/Otago Region</li> <li>• <b>Aparima project</b> (DairyNZ and Beef+Lamb NZ) – main objective is to achieve the rapid adoption of Good Farming Practice in the catchment by 2022 and to understand current practise and possible impacts/ mitigations on the Aparima catchment.</li> <li>• <b>Southern Dairy Hub Farm Systems project</b> (DairyNZ and AgResearch) - Focuses on testing future dairy systems based on winter grazed crops with reduced environmental impact. Measurement of N leaching from kale, fodder beet and pasture. Demonstration of variable width riparian buffers.</li> <li>• <b>Southern Dairy Hub participatory research project</b> (DairyNZ, AgRsearch, MPI SF&amp;FF) - Focuses on profiling environmental mitigation options for N, P, sediment and greenhouse gases and enhanced farmer-led adoption.</li> <li>• <b>Winter Infrastructure</b> (DairyNZ, AGMARDT, Blinc) - Focuses on co-design of future off-paddock wintering systems with rural advisors and farmers, based on international research.</li> </ul>
Beef+Lamb NZ	<p><b>Pan Sector Intensive Winter Grazing</b> - Project group led by Matt Ward of Beef and Lamb NZ.</p> <p>B+LNZ ran a series of cross sector Industry workshops on Intensive Grazing Management, over the later part of 2018 and the early part of 2019. The intent of the workshops was to bring together agricultural experts and industry leaders to explore synergies and differences in positions relating to those activities associated with the intensive grazing of animals, either on crop, as break fed on pasture, or associated with the majority of feed being bought in. To develop collaborative policy solutions, and to build ongoing farmer extension support services and guidance.</p> <p>This group was comprised of representatives of Sheep, Beef and Dairy farmers as well as representatives from NZVA; DNZ; Fonterra; Federated Farmers; Fertiliser companies; Regional Councils; Seed retailers; Agronomists; MPI and MfE. The group worked on definitions for Intensive grazing activities, developed a prototype effects-based matrix and some minimum bottom lines around practice standards that included animal welfare, and put these in to a policy document.</p>

MPI Commissioned shelter research	<ul style="list-style-type: none"> <li>• Expectations of pastoral animal shelter among farmers, stakeholders and the general public</li> <li>• Summary report: Barriers to the adoption of animal welfare standards – shelter on pastoral farms</li> </ul> <p>Both reports can be accessed at <a href="http://www.mpi.govt.nz/shelter">www.mpi.govt.nz/shelter</a></p>
Ministry for the Environment commissioned research	<p>MfE commissioned Manaaki Whenua – Landcare Research to map the location, extent and severity of winter forage cropping and intensive grazing on New Zealand agricultural hill country (slope greater than 7 degrees) over the 2018 winter season using archival satellite imagery. The results were produced at paddock scale in GIS-polygon format.</p> <p>The work was carried out between January and May 2019.</p>
AgResearch Paper	<p><a href="#">Developing a low cost portable winter standoff pad system, Jane Chrystal</a></p>
Environment Southland	<p>A Focus Activity Farm Plan is an environmental plan that provides farm-specific good management practice advice and recommendations for your property.</p> <p>A range of good management practices may be recommended, but mainly the plan will concentrate on:</p> <ul style="list-style-type: none"> <li>• Nutrient management</li> <li>• Winter grazing</li> <li>• Riparian management</li> </ul> <p>Read the <a href="#">2019 FAFP Evaluation report.pdf</a>. Highlights are:</p> <ul style="list-style-type: none"> <li>• At time of report, 650 Focus Activity Farm Plans had been completed (as of 20/8/19 902 plans have been completed) across a mix of farming type</li> <li>• At least 80% of all farmers with plans are implementing at least one of the wintering good management practices, and 30% are implementing all wintering good management practices. The good management practices we promote are paddock selection, grazing direction, and cultivation around waterways/critical source areas</li> </ul>

Sustainable Farming Fund/ Sustainable Food & Fibre Futures Funded Projects

<http://mpiportal.force.com/public/SFFPublicPortal> SFF Projects Data Base

Green= in progress

Blue= complete

<p>Sustainable Food &amp; Fibre Futures</p>	<p><b>SFF 405897</b> Understanding the impacts of sheep winter grazing.                  Start Date: 1 July 2019 End Date: 30 June 2022</p> <p>Project Manager: Craig Simpson, NZ Landcare Trust                  Email: <a href="mailto:craig.simpson@landcare.org.nz">craig.simpson@landcare.org.nz</a></p> <p><b>Description:</b>                  The project will quantify nutrient, sediment and faecal losses from sheep winter crop grazing – project includes a comprehensive extension programme</p> <p><b>Problem or Opportunity:</b>                  The opportunity is to understand the significance of contaminant losses and the effectiveness of good management practices for sheep wintering, which will support and enable industry, regulatory authorities and most importantly farmers to make evidence informed land management decisions. Recent Literature reviews, discussions with farmers, the Southern Wintering Systems project (Farmer Reference Group, DairyNZ), and Water and Land 2020 &amp; Beyond (Steering Group, Environment Southland) have all highlighted the gap in knowledge around the effects of sheep wintering.</p> <p>Winter grazing of fodder crops such as swedes, turnips and kale is a common practice in Southland and Otago with an estimated 30,000ha of crop grown in the Southland region alone to support the sheep and beef sector (Ledgard 2013). The activity is used to supplement and conserve on- farm pasture resources over the wintertime when pasture growth rates are restricted and the risk of damage to soil structure is high. Grazing animals on winter forage crops is seen as a key driver of the economic viability of farming in the Southern South Island but there is rising concern that this practice is not environmentally sustainable. The findings of the study and subsequent extension programme will be highly relevant to sheep wintering practices throughout New Zealand.</p>
<p><b>SFF 405512</b></p> <p>Making Fodder beet sustainable</p>	<p><b>Making Fodder Beet Sustainable for Dairy Cattle</b></p> <p>Start Date: 01/07/2018                  End Date: 30/06/2021</p> <p><b>South Island Dairying Development Centre (SIDDC)</b>                  Dawn Dalley, Project Manager, Dairy NZ</p> <p>High yields, competitive costs, consistent quality, high cow intakes with better condition at calving, and emerging environmental benefits make fodder beet (FB) a</p>

	<p>game-changer in dairy systems. However, these benefits are jeopardised by animal health and welfare issues associated with FB feeding. If not addressed, this will cause a decline in FB use, increasing cost, workload, and farmer stress, and could negatively impact the social licence to farm.</p> <p>This project will bring new confidence to FB feeding through mitigating against these risks by:</p> <p>(1) understanding macro nutrient interactions in FB feeding systems,  (2) developing decision-support tools to identify when animal health issues may occur, and  (3) Implementing tools for supplementary feeding strategies. Farmers will innovate through use of tools and knowledge from this project to optimise FB feeding, so that it remains a sustainable crop for dairy systems, capitalising on FB's environmental and productivity benefits while meeting animal welfare obligations.</p> <p>Currently, in the South Island, 79% of Canterbury/North Otago and 58% of South Otago/Southland farms feed FB, so approximately 650 farms (417,000 cows) have significant issues arising from FB feeding</p> <p>The challenges with the increase in metabolic and animal health issues with FB feeding are that it affects the ability to meet animal welfare standards, impacts on all facets of animal performance, and it is an expensive problem to treat.</p>
<p><b>SFF 401501</b></p> <p>Good management practices for intensive winter dairy grazing on arable farms</p>	<p>Good management practices for intensive winter dairy grazing on arable farms</p> <p>Foundation for Arable Research (FAR)  Contact: Diana Mathers, <a href="mailto:mathersd@far.org.nz">mathersd@far.org.nz</a>  Phone: 06 8779 435</p> <p>Final Report back: July 2015</p> <p>There were three major objectives of the project:</p> <p>1) Obtain a good understanding of the regional environmental risks associated with winter grazing on arable land and develop a risk framework for farmers to decide if the level of risk is acceptable.</p> <p>The development of the grazing environmental risk framework will enable farmers to assess their own on farm risks from grazing and decide whether the risk is acceptable. Farmer interviews, discussions, and on-farm measurements along with a literature review helped to identify and better understand environmental risks from winter grazing on arable land. The information was used to develop the risk assessment framework to help farmers decide what risks they are dealing with and if winter grazing will be sustainable in their system.</p> <p>2) Develop and distribute a list of management practices to enable arable farmers to continue with dairy grazing without negative impacts to their farms through soil degradation and nutrient losses.</p>

	<p>The list of management practices was also developed as a result of the interviews, discussions, and literature review. It is being used to help farmers create Farm Environment Plans to show how they manage risks or see how they could potentially improve their management of winter grazing.</p> <p>3) Identify gaps in our understanding of potential yield loss to the subsequent crop and environmental risk and associated remedial management practices to inform trials in the new MBIE forages programme.</p> <p><b>Findings</b> Arable farmers generally have a good understanding of how crop rotation and cultivation practices impact on soil quality.</p> <p>The vast majority of the farmers involved in this project had very similar outlooks on crop rotation when using winter grazing crops. Only two of the farms that were intensively grazing (South Island farms) were consecutively cropping with forage crops (beet-beet or kale-kale). These farmers were both cropping on lighter soils in areas that had been designated for forage crops. The remaining farmers were all following the grazed crop as quickly as possible with a spring cereal (most commonly barley) that can hopefully recover some of the nutrients. On these farms, the grazed crop is used as a break crop within their rotations to help break pest and disease cycles and to get some cash flow at the same time. They then allow that paddock to recover from any physical damages, with the length between crops depending on soil type. On all farms, cultivation only occurred when soil moisture was sufficiently low enough to work without further damage.</p> <p>In other sectors, winter grazing crops are commonly used as a break crop for regressing pasture. This is a reasonable option, though a cereal immediately following the crop would likely be more effective at utilising nutrients and recovering soil quality before sowing grass. However, a number of farmers have designated winter crop paddocks or have runoff blocks exclusively producing winter forage with little thought for crop rotation implications. In addition to sustained soil damage (which can result in yield loss), consecutive cropping increases the incidence of pests, diseases, and weed issues. These risks are much better understood in the arable sector. Discussions with DairyNZ and Beef and Lamb extension specialists has revealed this and they hope to be able to pass along some of the messages of crop rotation to their farmers.</p> <p>The impacts on the profitability of the farm system cannot be assessed on the winter grazing crop alone.</p>
<p><b>C07/013</b> Grazing strategies and standoff use to minimise nitrogen derived</p>	<p>Applicant Group Name: Stand-off Facility User Group Email: jenny.jago@dairynz.co.nz Project Contact Name: Jenny Jago Contracted Party: THE PROPRIETORS OF ARAI MATAWA</p>



emissions from dairy farms	This project aims to reduce the nitrogen-derived emissions from dairy farms by developing alternative grazing and herd management strategies to reduce the direct deposits of urine on farmland, develop these into guidelines and undertake extension of these to dairy farmers.
<b>Sustainable Dairy Grazing</b>  SFF 401514	<p>Dairy grazing development group  Email: jkerslake@abacusbio.co.nz  Project Contact Name: Jo Kerslake  Phone: 03 477 6375  Contracted Party: Abacusbio Limited</p> <p><b>Project Summary</b>  The purpose of this project is to ensure the future success and profitability of dairy support systems. To achieve this we intend to firstly understand what a successful dairy grazing business looks like, secondly, determine what resources are available to help sustain a successful business, thirdly, identify the strengths and weaknesses of each resource and identify knowledge gaps and lastly to develop, in conjunction with both B+LNZ and DairyNZ, dairy grazing “knowledge transfer packages” that will help farmers make informed decisions that best suit their farm resources and goals. We do not intend to “reinvent the wheel” in terms of knowledge creation, instead we will determine information requirements from farmers, understand what resources are available, and work in conjunction with DairyNZ and B+LNZ to further develop current resources, and help co-ordinate and disseminate a “decision support” framework to the dairy grazing community.</p>
<b>L09/028</b> Comparison of winter feeding systems in Canterbury	<p>Applicant Group Name: Canterbury Dairy Brassica Project Group and Lincoln University Agriculture and Life Sciences Division  Email: marvin.pangborn@lincoln.ac.nz  Project Contact Name: Marvin Pangborn  Phone: 03 325 3839  Contracted Party: Lincoln University</p> <p>The wintering of dairy cows on brassicas (Kale) is routine in the South Island. However, there is debate in the industry on the merit of the practice: both the impact and value, yet almost no research has been conducted. Environmental concerns about kale in the absence of research centre on the impact of large cows on small areas in the wet winter months - e.g. effluent, leaching and soil damage. Nevertheless, its quality and versatility as a feed maintained its industry value. Recent industry surveys have demonstrated some concerns that cows may produce less if wintered on brassica compared with pastures. The first dairy brassica research (FRST 2007 Agronomy project) showed the field utilisation (5) of kale is high, while a preliminary Lincoln rumen study suggested a far lower true nutritive value than has been assumed. Therefore the value of Kale is now of increasing interest. This project is a pilot trial which will compare the effects of the wintering cows on kale vs. pasture.</p>
<b>11/034</b>	<p>Applicant Group Name: Lincoln University Dairy Farm Business Advisory Group: South Island Dairying Development Centre  Email: ron.pellow@siddc.org.nz</p>

<p>Forage Footprints in Dairy Wintering in Canterbury</p>	<p>Project Contact Name: Ron Pellow Contracted Party: Lincoln University Complete</p> <p><b>Project Summary</b></p> <p>During winter, especially in the South Island where soils are heavier and conditions often wet, grazing can be a risk to the environment. Increasing demand for winter feed for dairy cattle can increase that risk as soil quality declines and nutrients are lost to surface and ground waters. In some cases, nutrients can become very concentrated in run off from excretion in confined feeding areas. This project will generate key data for calculating the impacts of different winter feeding systems. We will monitor the costs of whole farm inputs when paddocks are grazed or conserved to deliver the total feed requirement of herds. We will also put a value on the feed footprint of particular practices. By investigating the practical and economic benefits of options such as grazed forage, crop silage and supplements this project will help to address environmental concerns about winter feeding.</p>
<p><b>L12/082</b></p> <p>Scoping study on clinical mastitis incidence in wintering farm systems</p>	<p>Applicant Group Name: Wintering facilities interest group Email: delphine.rapp@agresearch.co.nz Project Contact Name: Delphine Rapp Contracted Party: AgResearch Limited Complete</p> <p>The project aims to provide a foundation for developing recommendations that improve mastitis control programs under new and emerging management systems for New Zealand.</p>
<p><b>10/027</b></p> <p>Winter Management Transformation Farms</p>	<p>Applicant Group Name: Southern South Island Wintering Group Email: dawn.dalley@dairynz.co.nz Project Contact Name: Dawn Dalley Phone:03 3253695 Contracted Party: Dairy NZ Limited</p> <p>The key outcome from this project is to: Increase adoption of wintering systems in the southern South Island that reduce the environmental impact, are cost effective, practical to implement and meet animal welfare requirements while providing reliable sources of high quality feed.</p>
<p><b>SFF 404915</b></p> <p>Agronomic Solutions for Fodder Beet</p>	<p>Agronomic Solutions for Fodder Beet</p> <p>Applicant Group Name: Fodder Beet Agronomy Group Email: sarah.bromley@plantandfood.co.nz Project Contact Name: Sarah Bromley Phone: 03 325 9644 Contracted Party: The New Zealand Institute for Plant and Food Research Limited</p> <p><b>Project Summary</b></p> <p>This project will provide overdue on-farm research and extension to enable NZ farmers to produce more reliable and better yielding fodder beet crops, leading to higher whole-farm profitability within acceptable environmental limits. The work is needed given the rapid rise in fodder beet production as a supplementary feed crop for livestock throughout NZ and current gaps in</p>

	<p>understanding around best management practices (BMPs) to grow them. These gaps result in low adoption rates, variable yield outcomes and ultimately lower profitability.</p> <p>Throughout the project we will hold on-farm field days and use proven extension pathways to communicate findings to farmers and industry.</p> <p>Existing knowledge and new discoveries from this project will be packaged into a fodder beet 'Best Management Production Guide'. The guide will provide clear and validated solutions to agronomic issues causing suboptimal yield. The guide will be readily available as a booklet and published electronically via relevant industry websites.</p>
<p><b>AGR30737</b></p> <p>Sustainable Land Management And Climate Change Research</p> <p>Brassicas - a win-win option for GHG mitigation and animal productivity</p>	<p>Title: Brassicas - a win-win option for GHG mitigation and animal productivity Legal Entity: AgResearch Limited</p> <p>This project will assess the mitigation potential of forage brassicas in terms of non-carbon dioxide (i.e. methane and nitrous oxide) greenhouse gas (GHG) emissions at the farm scale. This project will also demonstrate that the mitigation of GHG can be achieved without compromising animal productivity. We will generate information that can be used to help determine the net impact of a forage brassica crop on GHG emissions at the farm scale, thereby enabling a mitigation option that can be included in the national GHG inventory. This work will link with allied proposals aimed at developing full carbon footprints from supplementary feeds commonly used in NZ.</p> <p>This research will produce benefits in the form of an experimental demonstration of the mitigation potential of forage brassica crops, including emissions of enteric methane and nitrous oxide from the soil. Brassicas are the largest forage crop grown in NZ, with an estimated 1.8 M t dry matter (DM) ingested annually by NZ ruminants. Thus, this project will generate data on a crop of agricultural importance in NZ with potential to mitigate farm-scale GHG emissions by up to 20-25% by 2015.</p> <p>To generate the required data we will first conduct farmlet scale experiments with growing sheep to confirm the reduction in methane and nitrous oxide emissions previously measured under controlled conditions using respiration and static soil chambers, respectively. Secondly, we will investigate if the potential methane and nitrous oxide reductions recorded from winter forage brassicas are observed when sheep consume summer brassicas. Finally, we will address whether any mitigation potential of forage brassicas are observed in cattle as well as sheep. To date, most of the research on GHG mitigation strategies has been compartmentalised to target either one of the two major agricultural GHGs. Our proposed project will measure both methane and nitrous oxide emissions from brassica and ryegrass/white clover grazing systems, enabling the development of whole system GHG mitigation solutions. Another benefit of this research programme is the potential to recognise a GHG mitigation option already widely adopted by farmers, thus providing a win-win scenario in terms of productivity and environmental impact for a crop of increasing relevance in NZ pastoral systems.</p>
<p><b>08/016</b></p>	<p>Applicant Group Name: Waimate West Demonstration Farm Trust Email:jclough@pggwrightson.co.nz</p>

<p><b>Integrating sustainable high yielding crops into dairying</b></p>	<p>Project Contact Name: Joe Clough Contracted Party: Waimate West Demonstration Farm Trust</p> <p><b>Project Summary</b></p> <p>The project is to demonstrate and evaluate the viability, profitability and sustainability of integrating high yielding forage crops into the dairy milking platform system. The project being carried out at the Waimate West Demonstration Farm.</p> <p>This involves two farmlets. One farmlet with 10% of the area established in high yielding crops, being compared to a farmlet with the traditional all grassed farming milking platform system.</p>
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## Productive and Sustainable Land Use Programme

Budget 2019 funded the Sustainable Land Use package to deliver the Government’s goals for freshwater, climate change, and for the land-based sectors. This funding included the Productive and Sustainable Land Use (PSLU) package to support the primary industry sector to transition to more productive and sustainable land practices.

The Productive and Sustainable Land Use (PSLU) package aims to support the on farm changes required to deliver greater sustainability in land use practices, by delivering greater value and improved environmental outcomes.

It has a strong focus on providing practical information and support to help land owners, businesses and Maori to decide the best course of action on their farm to boost productivity and improve the health of our environment.

<b>PSLU Work Programme</b>	<b>Initiative with Potential Winter Grazing Application</b>
Data and Monitoring	<ul style="list-style-type: none"> <li>• Building capability and the update of Overseer</li> <li>• Improving farm emissions data, discharge monitoring and benchmarking</li> <li>• Providing a stronger evidence base for on farm discharges and emissions and helps measure performance relative to their peers.</li> </ul>
Strengthening Decision Tools	<ul style="list-style-type: none"> <li>• Upgrading support tools such as Overseer so farmers and their advisors can examine nutrient use, transfers and losses within the farming system.</li> </ul>
On-Farm Support	<ul style="list-style-type: none"> <li>• Improved access for farmers to direct on-the-ground support needed to lift their environmental and economic sustainability</li> <li>• Part of this support involves extension services. This is a farmer-led, farmer-focused approach to support sustainable land use decisions and improve economic, environmental and well-being outcomes for farmers and their communities.</li> <li>• The central part of the extension services programme is partnering with farmers, regional stakeholders and agricultural professionals to ensure services are relevant to the needs and priorities of local communities.</li> </ul>
Maori Agribusiness Support	<ul style="list-style-type: none"> <li>• The Māori Agribusiness Extension (MABx) programme aims to help trustees of Māori land or agribusiness connect with others and get the information they need to confidently undertake change. MABx focuses on providing shared, group learning to explore sustainable development or system changes. Delivery of outcomes will have strong environmental and economic outputs.</li> </ul>
Primary Industries Advisory Services Development	<ul style="list-style-type: none"> <li>• The Primary Industry Advisory Services (PIAS) project will partner with producers, primary industry advisors, industry and relevant organisations to support and strengthen the advisory services system so it is better placed to respond to current and future challenges. Strengthening the PIAS system will occur through increasing the capability, capacity, and demographic diversity of the primary industries.</li> </ul>

## Environmental Projects with Possible Impacts on Winter Grazing

Green= in progress

Blue= complete

<p><b>SFF405492</b></p> <p>Catch Crop to reduce Nitrate Leaching</p>	<p>SFF405492</p> <p>Catch Crop to reduce Nitrate Leaching    Catch crops to reduce nitrate leaching</p> <p>Start Date: 01/07/2018 End Date: 31/07/2021</p> <p>Catch crop development group Peter Carey, Land research services ltd, Project Manager 027 635 6659 , peter@lrs.nz</p> <p>This project is a farmer-led initiative to develop and demonstrate the use of catch crops in winter forage grazing rotations as a means to lower their nitrate leaching footprint. Using catch crops successfully will not only reduce nitrate leaching losses but increase N use efficiency and feed production on farm.</p> <p>Winter forage grazing is recognised as a major contributor to a dairy catchment's N leaching losses. If these low-cost winter feed systems are to be preserved, in the face of nutrient regulation, then they need to demonstrate a reduction in nitrate leaching. The use of catch crops is recognised as a potential tool to help reduce farmers' nitrate leaching losses but without good guidelines, the successful adoption of such technology is likely to be haphazard and with variable outcomes.</p> <p>Throughout the project there will be on-farm field days to share results with farmers and the use of established extension pathways to communicate findings to farmers via industry organisations.</p> <p>The data and results from three years of on-farm trials will allow the development of good practice guidelines around the use of catch crops in winter forage grazing rotations.</p> <p>This will advise farmers on the use of catch crops on a range of soil types and climates present in the Canterbury and Southland regions. The data will also be made available for a future update of OVERSEER® to improve predictive nitrate leaching estimates under winter forage grazing when a catch crop is used.</p>
<p><b>SFF 405686,</b> Good Management Practices for Cropping Setbacks</p>	<p>Proposed Start date: 01/07/2018 Proposed End date: 30/06/2021 Group: Effective Setbacks Initiative</p> <p>Good Management Practices for Cropping Setbacks Effective Setbacks Initiative Determining effective use of setbacks on cultivated land with varying slopes to mitigate sediment and phosphorus loss to waterways.</p>

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<p><b>SFF 405583</b></p> <p>Reducing Sediment Loss from Winter Crops</p>	<p>Reducing Sediment Loss from Winter Crops</p> <p>Proposed Start date: 01/07/2018 Proposed End date: 30/05/2021</p> <p>Contact: Lochie MacGillivray, AgFirst Project Manager, 06 872 7070, lochie.macgillivray @agfirst.co.nz</p> <p>Typically winter forage crops are grazed off by livestock and then left fallow until spring. Catch crop refers to a short term crop that is established before, during or after a winter crop is first grazed off and before the next main crop or new pasture is established.</p> <p>A catch crop would cover the whole area grazed after each break (and leaving the ground bare) and requires repeated sowings as new ground is progressively grazed off. The term catch crop was first used by New Zealand Plant and Food Research Ltd as a term to define a crop sown after grazing that captures surplus soil nutrients that could</p>

	<p>otherwise be lost to leaching but in this project's case a catch crop refers to catching sediment.</p> <p>This project will evaluate a range of catch crop species and establishment techniques to reduce sediment and surface flow losses following the winter grazing of forage crops. The initial focus is on hill country in Hawkes Bay but the systems developed will provide spill-over benefits to all farming regions and terrains nationally. Catch crops are seen as a practical solution to reduce sediment losses by reducing the amount of bare ground and thereby reducing runoff and sediment loss. Catch crops physically hold the soil, trap any surface flow and help with soil aeration and structure, thus reducing soil movement, sediment and nutrient loss.</p>
<p><b>11/010</b></p> <p>Integrating Winter forage crops versus pasture: managing the environmental risk</p>	<p>Applicant Group Name: Maori Trust and Incorporated dairy farms located on pumice soils in the Upper Waikato catchment  Email: andy.wairarapa@gmail.com  Project Contact Name: Andy MacLeod  Contracted Party: AgResearch Limited</p> <p><b>Project Summary</b>  The objective of this project is to develop sound management strategies and to increase production and profit whilst reducing the environmental impact of the winter forage/pasture renewal process within the overall Dairy and Dairy Support systems.  Project Updates</p>
<p><b>SFF 405483</b></p> <p>Dairying in a Variable Climate</p>	<p>Dairying in a Variable Climate  Start date: 1/07/2018  End date: 30/6/2021</p> <p><b>Northland Dairy Development Trust</b>  Contact: Chris Boom (Project Manager) 09 437 6677, chris.boom@agfirst.co.nz</p> <p>With climate change, rainfall in many regions of New Zealand is predicted to become more variable, increasing the variability in annual and seasonal pasture supply. Farmers have become increasingly reliant on palm kernel expeller (PKE), a relatively inexpensive and readily available feed source which has greatly assisted in managing the variability in pasture supply within and between years.</p> <p>However, its use affects the processability of the milk and increases the costs of processing. From June 2018, Fonterra will introduce financial penalties for farmers supplying milk that exceeds acceptable fat evaluation index (FEI) levels, which will constrain the amount of PKE that can be fed to lactating dairy cows. A current project run by the Northland Dairy Development Trust (NDDT) has been investigating different approaches to reduce farmers' reliance on PKE. Although crops provided high quality feed during summer and autumn, they are expensive resulting in lower profits and increased soil treading damage by stock and the environmental footprint of the farm.</p>



	<p>With the introduction of the FEI, farmers have an immediate need to understand options to ensure that they can manage their farms profitably and sustainably.</p> <p>This project will conduct a farm systems experiment that will measure the economic and environmental impacts of three different management strategies for producing milk within a variable climate and the constraints of milk FEI: a Pasture-Only system; a system that utilises other purchased feeds in addition to PKE constrained by milk FEI; and, a system that can only purchase PKE (no other imported feeds), but will define novel ways to use the PKE to maintain milk production from the farm whilst staying within acceptable milk FEI levels.</p> <p>The data collected will allow us to Sustainable Farming Fund Round examine the effects of these systems on milk production, profitability, environmental sustainability, cow welfare, labour, and capital requirements. This project will assist farmers in developing more profitable, less vulnerable, and lower impact farming systems.</p>
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