Manaaki Whenua
Landcare Research

Agricultural Progress Assessment Farmer Survey Report

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Agricultural Progress Assessment Farmer Survey Report

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Project and Client

The Climate Change Commission (CCC) is required to deliver advice to the government on a proposal currently being developed by the primary industry-government partnership He Waka Eke Noa. The project to develop that advice is called the Agricultural Progress Assessment (APA), and the final report is due by the end of June 2022. One of the roles of the APA project is to understand how ready farmers are for an agricultural emissions pricing scheme, in particular assessing "progress made towards livestock farmers being ready to start complying with reporting and surrender obligations in the [Zero Carbon] Act".

Objectives

Manaaki Whenua – Landcare Research was contracted to implement the survey that would help understand the preparedness of the agricultural sector for a potential emissions pricing mechanism. The audience for the survey will need to include livestock farmers, including dairy and sheep and beef.

Methods

The survey was developed in collaboration with the CCC and consisted of six sections:

- Current planning and reporting, including the use of rural professionals, advisors, and/or consultants
- Awareness of the need to reduce greenhouse gas emissions
- Forest carbon sequestration, i.e. whether farmers already participate in the Emissions Trading Scheme (ETS)
- Measuring carbon emissions on the farm
- Agricultural emissions pricing mechanisms
- Pathways to reduce greenhouse gas (GHG) emissions on the farm.

The respondents were drawn from the 2021 wave of the Survey of Rural Decision Makers (SRDM), allowing us to recruit suitable participants based on both industry and geography. We aimed at obtaining a regionally representative sample of approximately 100 dairy and 100 sheep and beef farmers. The results were analysed graphically and via logistic regression.

Results

We administered the survey in April 2022. The final sample included 97 dairy and 128 sheep and beef farmers from across New Zealand.

Overall, approximately half the respondents use some models or tools for planning or reporting, with dairy farmers and respondents who operate larger farms being more likely to use tools and models. Approximately two-thirds of the respondents report farm

activities to different entities, mostly to Regional Councils and industry and sector bodies. More than three-quarters of farmers use rural professionals for various activities, mostly for on-farm operations and budgeting/tax reporting. However, only one-quarter use rural professionals for GHG reporting.

Approximately half of the participants agree or strongly agree that farmers should undertake measures to reduce on-farm GHG emissions. These attitudes are almost identical between dairy and sheep and beef farmers.

Approximately one-third of the respondents have forests that are eligible to be registered in the ETS. However, only one-tenth of the respondents have fully or partially registered their forests in the ETS. Approximately two-thirds of the respondents have vegetation that is not currently eligible for the ETS and who would like to be able to claim for sequestration. That said, the majority (64%) of all respondents consider ETS registration to be difficult or extremely difficult. Changing the eligibility to cover other forms of vegetation and simplifying the ETS administration/paperwork were the most commonly requested additional actions to help farmers claiming sequestration in the ETS.

Approximately half the respondents calculate GHG emissions on their farms. Dairy farmers, owners and managers of larger farms, respondents with a bachelor's degree, and those who believe that farmers should undertake measures to reduce on-farm GHG emissions are more likely to calculate GHG emissions. The most popular tools for calculating GHG emissions were the Overseer FM, Fonterra, and Beef+Lamb NZ tools. More than half the respondents believe that it is extremely difficult or difficult to calculate GHG emissions on their farms. The most frequently selected reasons not to calculate GHG emissions were that the respondents do not know how to do it themselves and that they will only do it once it becomes a regulatory requirement.

Among the desired features of the emission pricing mechanism, respondents preferred the ability to claim on-farm sequestration, fairness to different farm types, and ease of use for farmers. Only one-third of respondents ranked the ability of a scheme to help drive emissions reductions in their top three features. Nearly two-thirds of respondents thought participating in farm-level emissions pricing would be somewhat difficult or extremely difficult. The most important additional actions to help farmers prepare for farm-level emissions pricing are better information, access to more options for emission reduction, and R&D to develop new mitigation technologies. Slightly more than half of the respondents are in favour of farm-level emission pricing.

Approximately half the respondents believe there are ways to reduce emissions on their farms other than by reducing production. Among those respondents, the pathways suggested most commonly were to improve production efficiency, to use methane inhibitors or vaccines, and to use low emission feeds. The respondents believe that the main barriers preventing them from reducing farm emissions are the cost of reducing production, the unavailability of mitigation technology, and the uncertainty about the impact on the business's bottom line.

1 Introduction

The Climate Change Commission (CCC) is required to deliver advice to the government on a proposal currently being developed by the primary industry-government partnership He Waka Eke Noa. The project to develop that advice is called the Agricultural Progress Assessment (APA), and the final report is due by the end of June 2022.

One of the roles of the APA project is to understand how ready farmers are for an agricultural emissions pricing scheme, in particular assessing "progress made towards livestock farmers being ready to start complying with reporting and surrender obligations in the [Zero Carbon] Act". In order to implement this task, the CCC is engaging in a number of activities, including attending engagement events held by the He Waka Eke Noa, sessions with small groups of farmers from different regions, an online survey of a wide range of farmers, and a small number of case studies with Māori-owned agribusinesses. Manaaki Whenua – Landcare Research was contracted to implement the survey of farmers.

The aim of the survey is to help the Climate Change Commission (CCC) understand the preparedness of the agricultural sector for a potential emissions pricing mechanism, including the following topics:

- General awareness of the need to reduce farm greenhouse gas (GHG) emissions
- Awareness of methods they can use to reduce GHG emissions
- Access to required data and tools for emissions reporting and farm planning
- Any professional support required
- How farmers feel GHG emissions pricing might interact with other farm regulations
- Affordability or administrative burden
- Farmer perspectives on the workability of an emissions pricing mechanism
- Any barriers to participation
- Any additional steps needed to help farmers be ready

The audience for the survey were livestock farmers, including both dairy and sheep and beef farmers. It should represent a range of farmers of different ages, regions, and farm sizes.

2 Methods

To meet the requirements, we drew on our experience conducting the biennial Survey of Rural Decision Makers (SRDM) (Stahlmann-Brown 2021). By re-contacting individuals who completed the 2021 wave of the survey, we were able to recruit suitable participants and to link their responses to this survey to data collected in the SRDM.

We aimed for 200 responses, including 100 dairy and 100 beef and sheep farmers. We selected a regionally representative sample from the database of SRDM participants who agreed to participate in additional surveys.

We drafted the questions and designed the survey in collaboration with the CCC. The survey did not include sociodemographic and farm-related information that was otherwise available from the SRDM. Instead, it consisted of multiple-choice questions focused on knowledge, plans, and actions to demonstrate behaviours and attitudes. The questions were grouped into six sections:

- Current planning and reporting, including the use of rural professionals, advisors, and/or consultants
- Awareness of the need to reduce GHG emissions
- Forest carbon sequestration, i.e. whether farmers already participate in the ETS
- Measuring GHG emissions on the farm
- Agricultural GHG emissions pricing mechanisms
- Pathways to reduce GHG emissions on the farm.

The survey began with current activities on the farm unrelated to GHG emissions, then moved to GHG emissions-related activities, and finally to the readiness for future GHG reduction.

We developed the online survey using the Qualtrics survey platform (www.qualtrics.com), which facilitates the use of "branching" to ensure respondents are only asked relevant questions based on their earlier answers. This means we can ask more detailed questions without extending the time taken for respondents to complete the survey. The survey underwent the rigorous MWLR human ethics committee approval process (social ethics approval number 2122/16) before submission for final approval by the CCC.

Potential respondents were invited to participate in the survey via an emailed invitation that explained its purpose. It was clear that the survey was voluntary and that all responses would be treated confidentially by MWLR. To acknowledge respondents' time, we made a small contribution to charity and offered a prize draw for a $500 supermarket voucher. This approach has yielded very high response rates for the base SRDM. When the survey was open, we responded to any queries from respondents to enhance response rates.

The results were analysed by plotting responses as bar charts and via logistic regression. We also used variables from the SRDM to explain responses via multivariate regression analyses. These variables include the age, gender, ethnicity and education of the survey respondent, respondent location, farm area, and whether the farm also identifies with a secondary industry.

3 Results

3.1 Summary of responses

We administered the survey to a sample of dairy and sheep and beef farmers who participated in the 2021 wave of the SRDM and who agreed to participate in additional surveys. The invitations to participate in the survey were sent to 400 dairy and 400 sheep and beef farmers in four waves from 18 March to 25 March 2022. The survey was closed on 1 April 2022. Out of 237 respondents, 225 completed the survey, including 97 dairy and 128 sheep and beef farmers. The distribution of completed responses by industry and islands of New Zealand is presented in Figure 1.

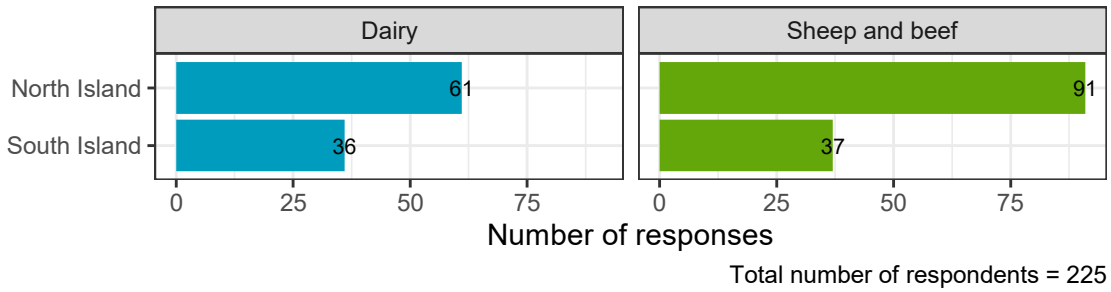

Figure 1. The distribution of completed responses by industry and island of New Zealand.

To demonstrate to what degree the APA survey represents the broader population of farmers, we made several comparisons with the SRDM 2021 sample and compared regional distributions of both samples with the population of dairy and sheep and beef farmers in the 2020 version of Agribase database.

First, we compared distributions of farms by region. There are 2,590, 740, and 97 dairy farms in the Agribase, SRDM, and APA surveys, respectively. There are 33,175, 1,252, and 128 sheep and beef farms in the Agribase, SRDM, and APA surveys, respectively. Figure 2 presents the proportions of farms in each region by survey and by industry. The distributions of farms are generally consistent between datasets and industries, with few exceptions. Dairy farms in the APA survey are overrepresented in the Canterbury region and underrepresented in the Taranaki region. Sheep and beef farms in the APA survey are overrepresented in Manawatu-Whanganui and Wellington regions.

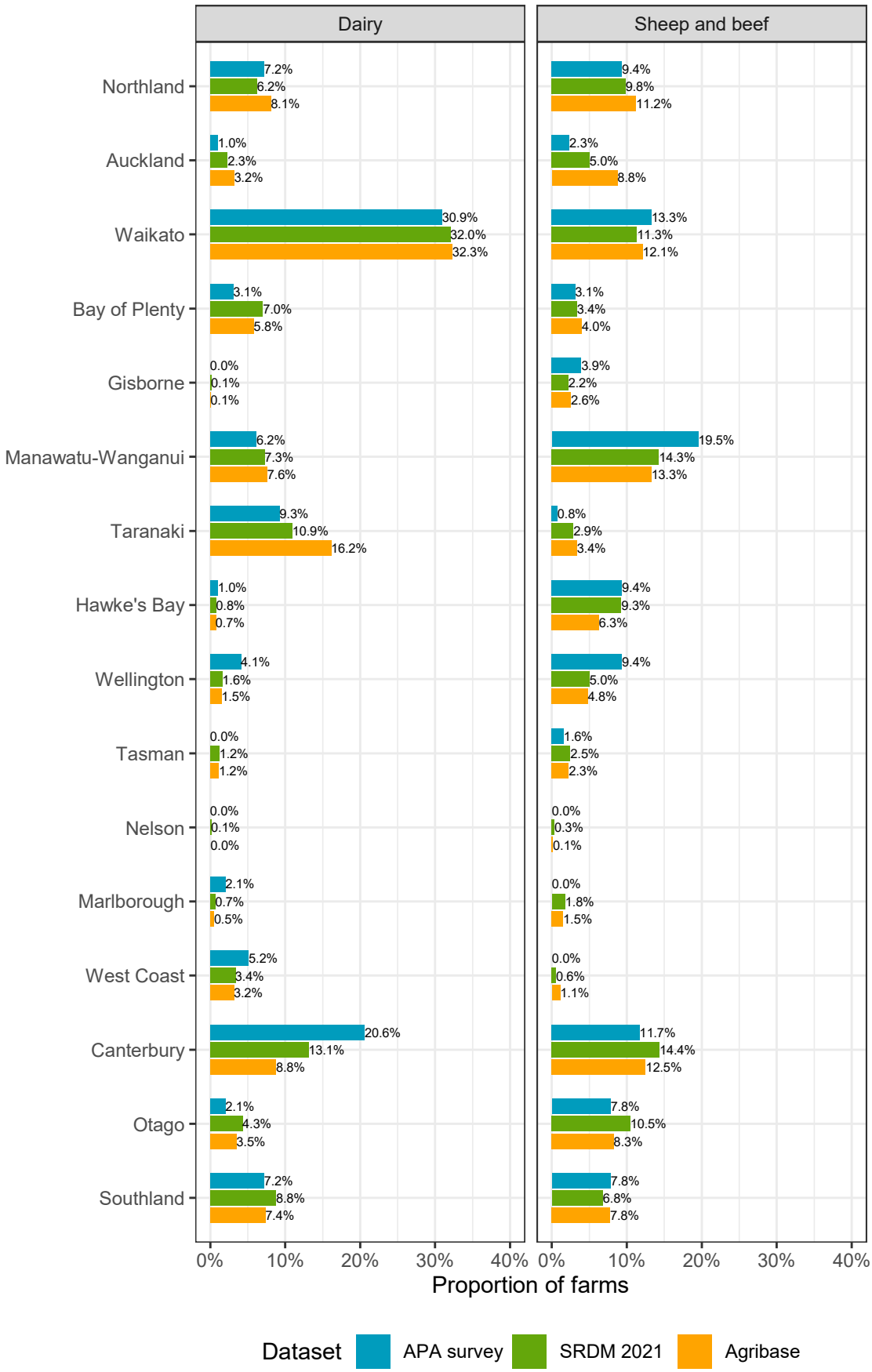

Figure 2. The comparison of distributions of the number of farms by industry and regions between this survey, the SRDM 2021, and the Agribase 2020 database.

Second, we compare descriptive statistics (e.g. age, gender, ethnicity and education level of the respondent, farm area, and secondary industry) between the APA survey sample and SRDM 2021 for dairy and sheep and beef farmers. The comparison is presented in Table 1.

The average ages of the respondents in the APA and SRDM surveys are similar for both dairy and sheep and beef farmers. In the APA survey, the per cent of female respondents is slightly higher among dairy farmers and slightly lower among sheep and beef farmers. The per cent of respondents who identify as Māori is very small (5%) and similar across all samples. The per cent of respondents with a bachelor's degree is higher in the APA survey for both dairy (by 18%) and sheep and beef farmers (by 11%). The average dairy farm area is 14% larger in the APA survey, and the average sheep and beef farm area is 8% smaller in the APA survey than in the SRDM 2021 survey. The prevalence of secondary industry is similar between samples for both dairy and sheep and beef farms.

Even though there are differences between sample means for some variables, the two-sample t-test fails to reject the equality of means for all cases. This means that the differences are not statistically significant, and we assume that the APA survey sample is representative of a larger SDRM 2021 survey.

Table 1. Comparison of selected descriptive statistics of dairy and sheep and beef farmers in the APA survey and the SRDM 2021 survey

Variables	Dairy				Sheep and beef			
	APA survey		SRDM 2021		APA survey		SRDM 2021	
	Average or %	Standard Deviation	Average or %	Standard Deviation	Average or %	Standard Deviation	Average or %	Standard Deviation
Respondent's age (years)	57	12	57	12	61	11	59	12
Respondent's gender (female, 1/0)	30%		28%		20%		24%	
Respondent identifies as Māori (1/0)	5%		6%		4%		5%	
Respondent's education (bachelor or higher, 1/0)	40%		34%		40%		36%	
Farm area (hectares)	377	550	332	427	675	1,990	732	2,569
Farm secondary industry present (1/0)	59%		58%		70%		71%	

Third, we compared the distributions of the continuous variables between the APA survey and the SRDM 2021 survey samples. Figure 3 shows the distributions of the respondent's age variable, and Figure 4 shows the distributions of the farm area variable. The distributions are similar in all cases. The Kolmogorov-Smirnov test fails to detect the difference between the APA survey and SRDM 2021 survey samples for both variables and both industries.

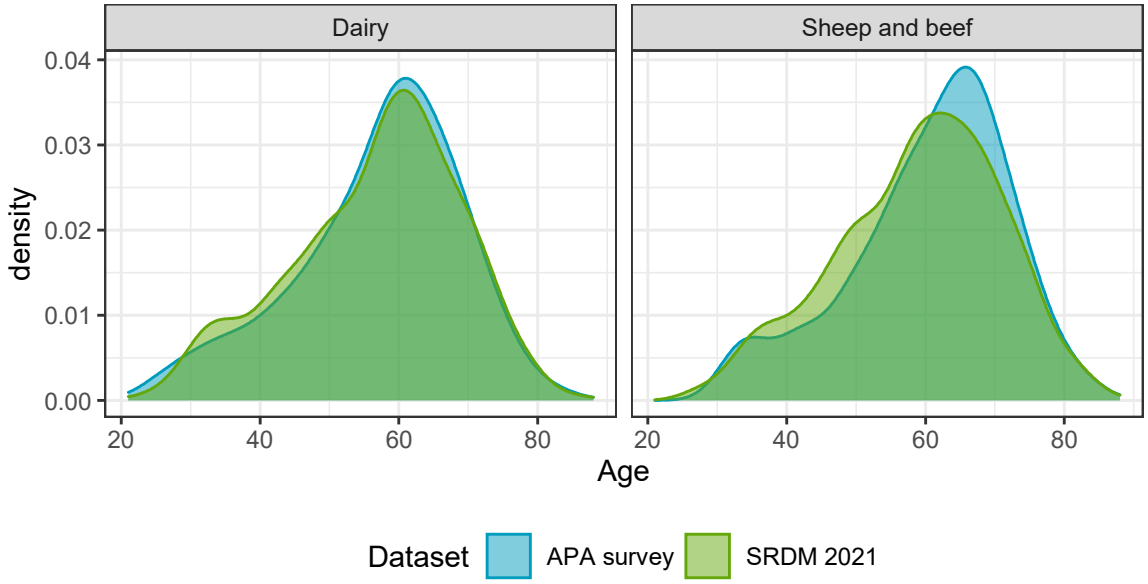

Figure 3. Comparison of the distributions of the age of dairy and sheep and beef farmers in the APA survey and the SRDM 2021 survey.

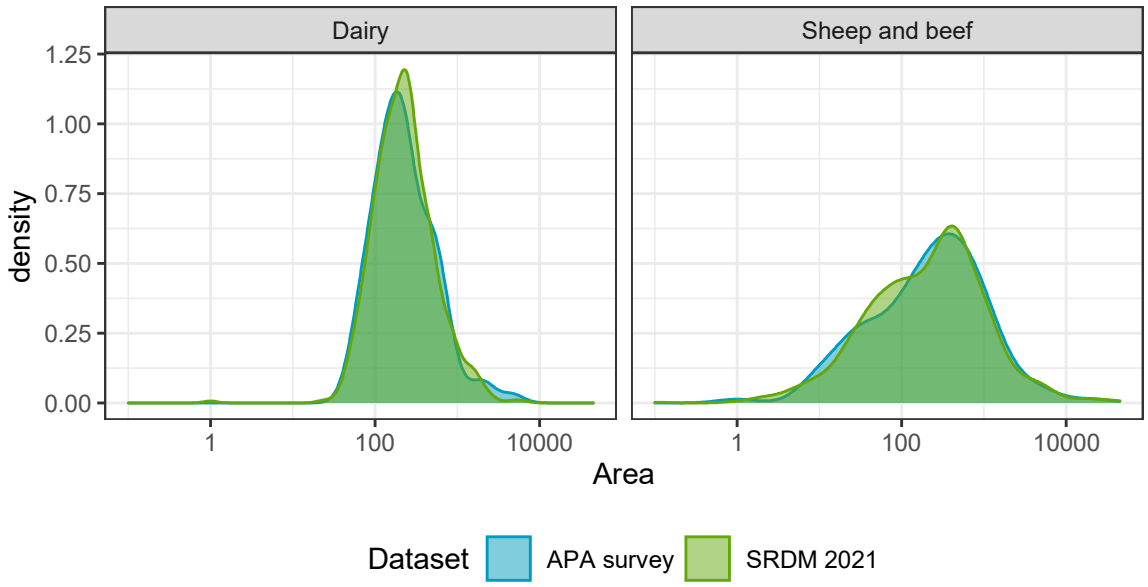

Figure 4. Comparison of the distributions of the area of dairy and sheep and beef farms in the APA survey and the SRDM 2021 survey. The area is shown on a logarithmic scale.

To conclude, the APA survey sample is regionally representative of the population of dairy and sheep and beef farmers. It is similar to a much larger SRDM 2021 survey sample by farmer's age, gender, the proportion of respondents who identify as Māori, education, farm size, and the prevalence of secondary industry. Given the sample size, representativeness, and types of questions, the data can be used to analyse responses using contingent tables or charts. The questions with yes-no or Lickert scale type responses can be analysed using regression such as logit or probit.

Results are organised in subsections following the structure of the survey outlined earlier. Each result is presented as a figure with two panels: aggregate (A) and separately by the industry (B). The bars and the numbers show the proportion of responses within a full sample or by industry. For the questions with yes-no or other questions where a binary outcome can be constructed, we estimated logistics regressions to identify factors associated with these responses. Next, we presented the list of the estimated model with descriptions of dependent variables in Table 2 (Appendix 2) and the estimated marginal effects for all models in Table 3 (Appendix 2). We discussed the results of the models in the relevant subsections following analyses of the charts.

3.2 Planning and Reporting

Q5. Do you currently use a farm model or other tool for farm planning or reporting?

Overall, approximately half (48%) of the respondents use some models or tools for planning or reporting (Fig. 5A). Dairy farmers are more likely to use such models and tools (60%), while sheep and beef farmers are less likely to use models and tools (36%) (Fig. 5B).

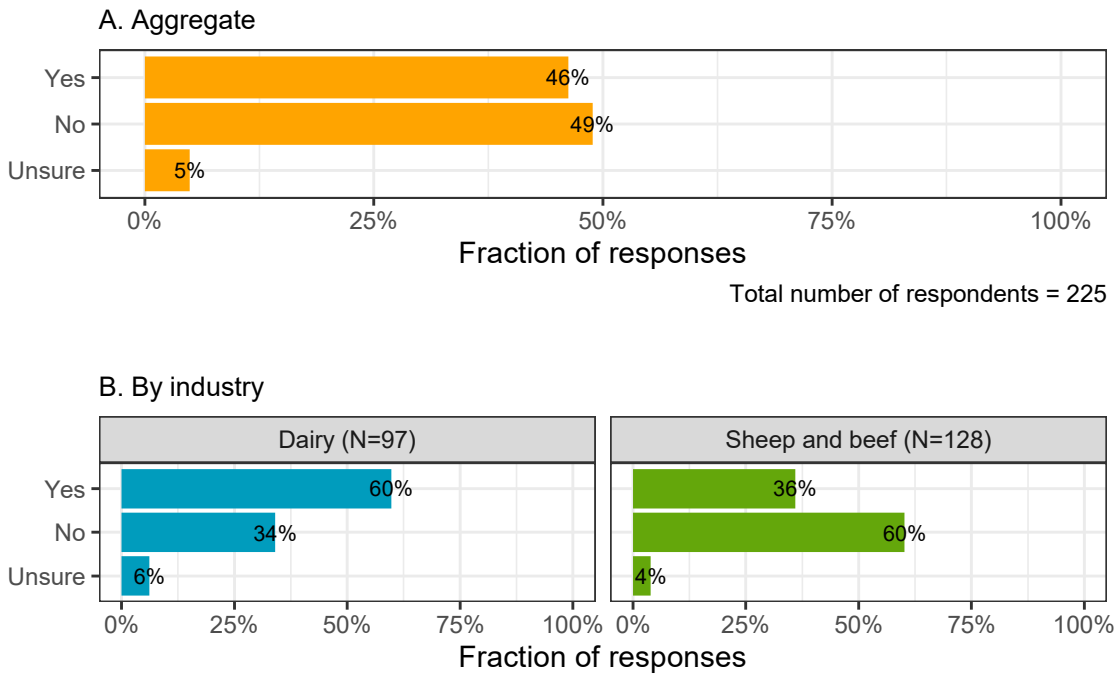

Figure 5. Use farm model or other tools for farm planning or reporting.

The regression analysis results suggest dairy farmers are 24% more likely to use models and tools than sheep and beef farmers (Table 3, model Q5yes in Appendix 2). Furthermore, larger farms are more likely to use models and tools: the probability of use increases by 10% with each 100 ha of the farm area. Other variables are not statistically significant.

Q6. Do you currently report farm activities to any of the following entities? Select all that apply.

Approximately 67% of the respondents report farm activities to different entities, including regional councils, central government, industry, and sector bodies (Fig. 6A). Four per cent of respondents indicated that they report farm activities to other bodies, e.g. various environmental certifications, obtaining fire permits, local council, bank and accountant, and "for myself as an educated person". Dairy farmers are more likely to report activities (89%) than sheep and beef farmers (51%) (Fig. 6B).

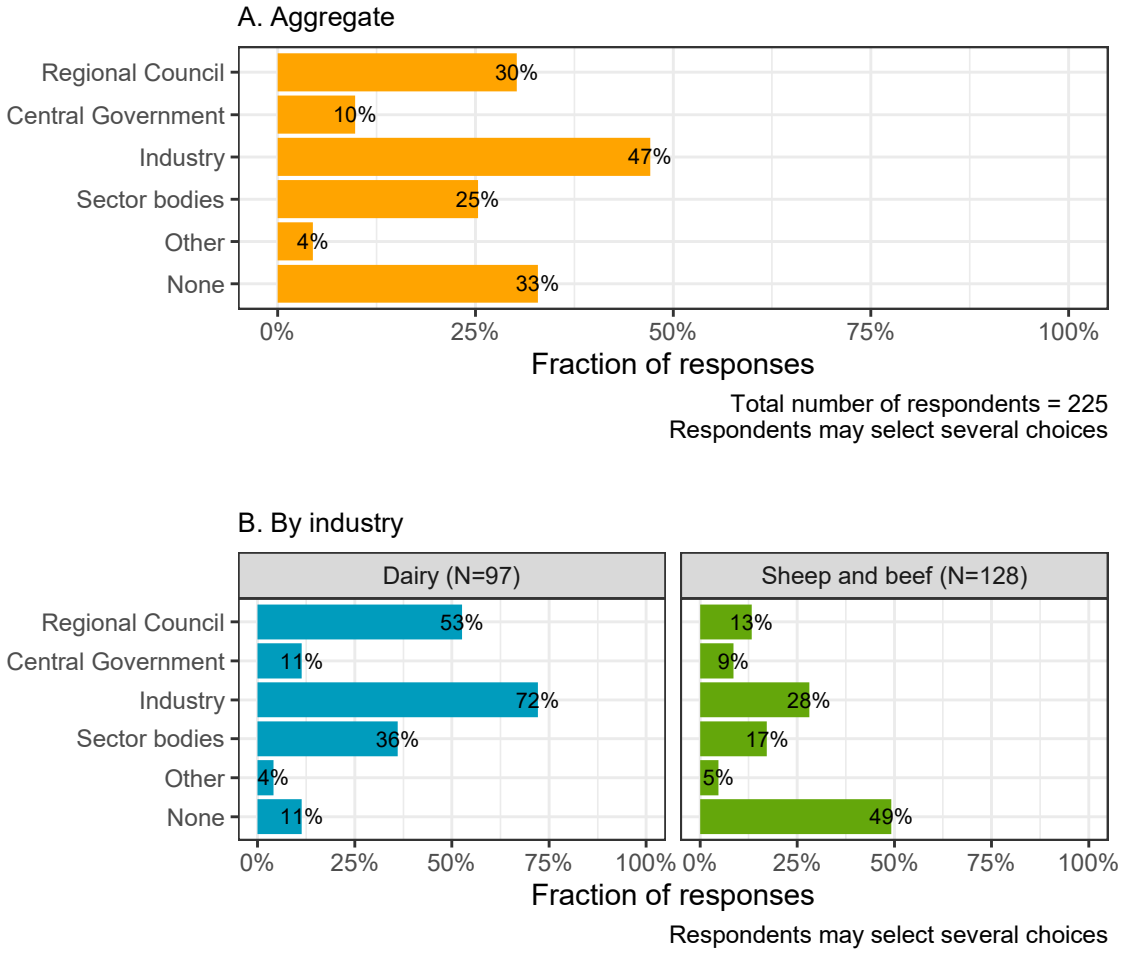

Figure 6. Reporting of farm activities.

The regression analysis results suggest industry and farm area are associated with the probability of reporting activities. Dairy farmers are 36% more likely to report any activities (Table 3 model Q6yes in Appendix 2). In addition, the probability of reporting activities increases by 8% with each 100 ha of the farm area. Other variables are not statistically significant.

Q7. Have you used rural professionals, farm advisors, or consultants for any of the following? Select all that apply.

The majority of farmers (78%) use rural professionals for various activities, most commonly for on-farm operations and budgeting/tax reporting (Fig. 7A). The "Other" category includes planning of retirement, riparian planting, and succession. Dairy farmers are more likely to use rural professionals (88%) than sheep and beef farmers (71%) (Fig. 7B).

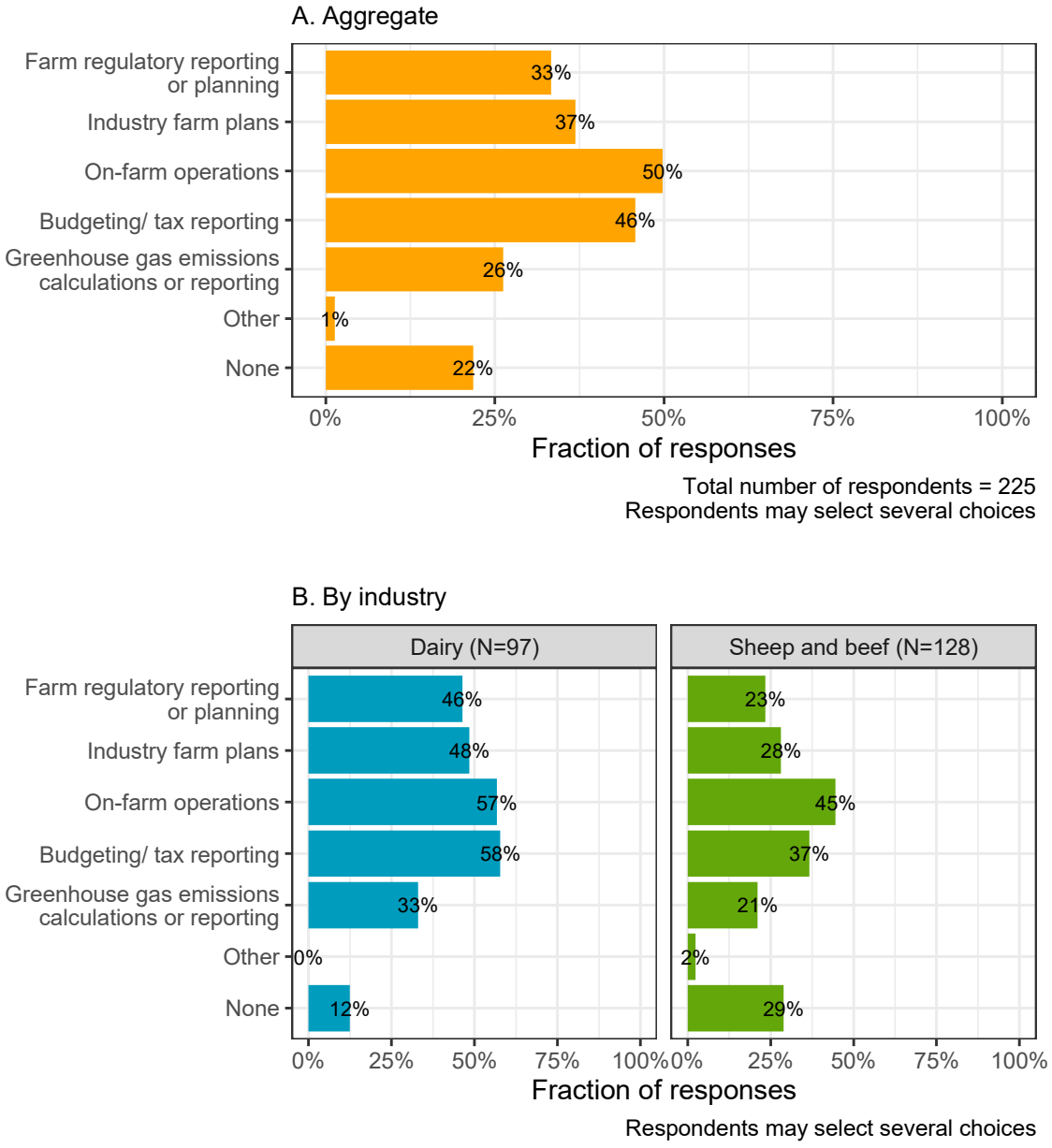

Figure 7. The use of rural professionals, farm advisors, or consultants.

As with the using of tools, using rural professionals is associated with industry and the area of the farm. Dairy farmers are 15% more likely to use rural professionals than sheep and beef farmers (Table 3 model Q7yes in Appendix 2). The probability of using rural professionals increases by 17% with each 100 ha of the farm area. Other variables are not statistically significant.

3.3 Awareness of the need to reduce GHG emissions

Q9 To what extent do you disagree or agree that farmers should undertake measures to reduce on-farm GHG emissions?

Approximately half (46%) of the participants agree or strongly agree that farmers should undertake measures to reduce on-farm GHG emissions (Figure 8A). A further 46% disagree or strongly disagree. These attitudes are almost identical between dairy and sheep and beef farmers (Fig. 8B).

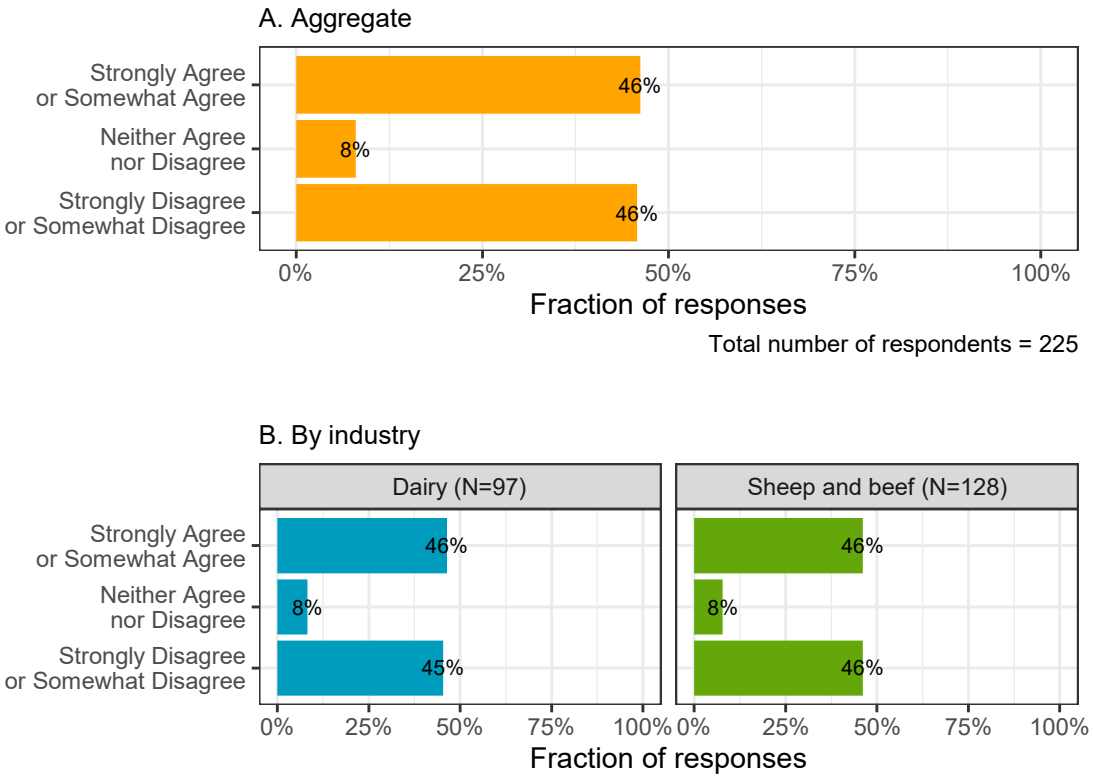

Figure 8. Attitude of farmers undertaking measures to reduce on-farm GHG emissions.

Results of the regression analysis confirm that the attitude that farmers should undertake measures to reduce on-farm GHG emissions is not related to the industry. However, it is associated with age and education (Table 3 model Q9yes in Appendix 2). The probability that a respondent agrees or strongly agrees that farmers should undertake measures to reduce on-farm GHG emissions is reduced by 6% every 10 years of the respondent's age. This probability is 17% lower for the respondents with a bachelor's degree. Other variables are not statistically significant.

3.4 Forest carbon sequestration

Q11. Do you have any forests on your farm that are eligible to be registered or registered in the ETS?

Approximately one-third (35%) of respondents have forests that are eligible to be registered in the ETS (Figure 9A). Of the respondents, 11% have their forests fully or partially registered in the ETS, but 24% have not registered their forests in the ETS. Sheep and beef farmers are approximately twice as likely to have forests that are eligible to be registered in the ETS (44%) than are dairy farmers (24%) (Fig. 9B). Sheep and beef farmers are approximately three times as likely to have their forests fully or partially registered in the ETS (16%) than are dairy farmers (5%).

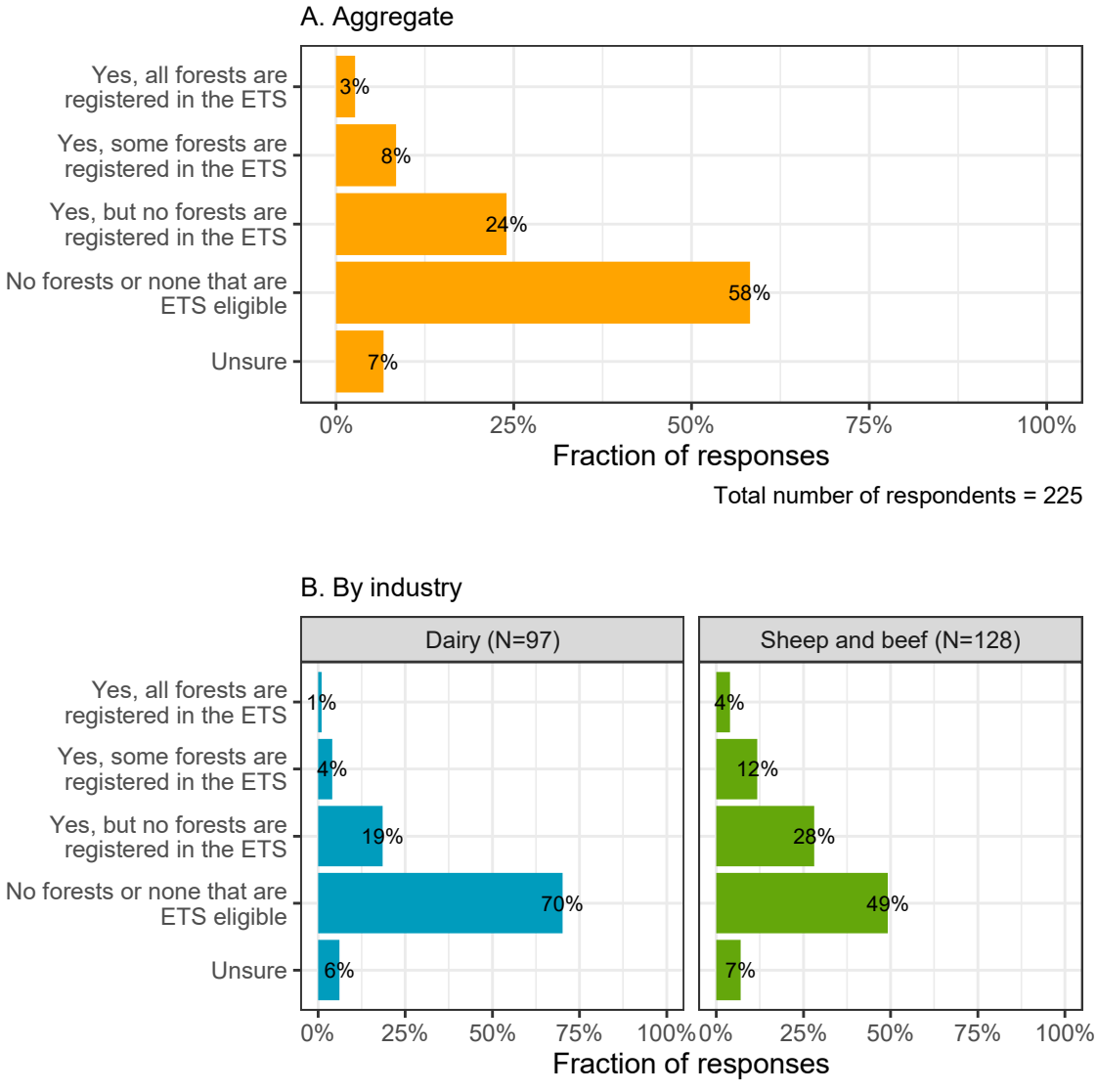

Figure 9. Farm forests eligible to be registered or registered in the ETS.

The regression model confirms that sheep and beef farmers are more likely to have forests that are eligible to be registered in the ETS: the probability is higher by 18% (Table 3, model Q11yes in Appendix 2). Furthermore, larger farms are more likely to have forests that are eligible for the ETS. The probability of having such forests increases by 10% with each 100 ha of the farm area. Other variables are not statistically significant.

Q12. Do you have any other woody vegetation you would like to be able to claim for sequestration that does not meet the standards to be registered in the ETS?

Approximately 2/3 of respondents (68%) have vegetation that is not eligible for the ETS that respondents would like to be able to claim for sequestration (Fig. 10A). Sheep and beef farmers are more likely to have such vegetation (72%) than are dairy farmers (62%) (Fig. 10B). Sheep and beef farmers are also more likely to have larger areas of the vegetation they would like to be able to claim for sequestration (Fig. 11).

Regression analysis suggests that the dairy farmers are 10% less likely to have woody vegetation they would like to be able to claim for the ETS, but the difference is only significant at the 10% level (Table 3, model Q12yes in Appendix 2). On the other hand, the likelihood of having such vegetation increases by 14% for each 100 ha of the farm area. Other variables are not statistically significant.

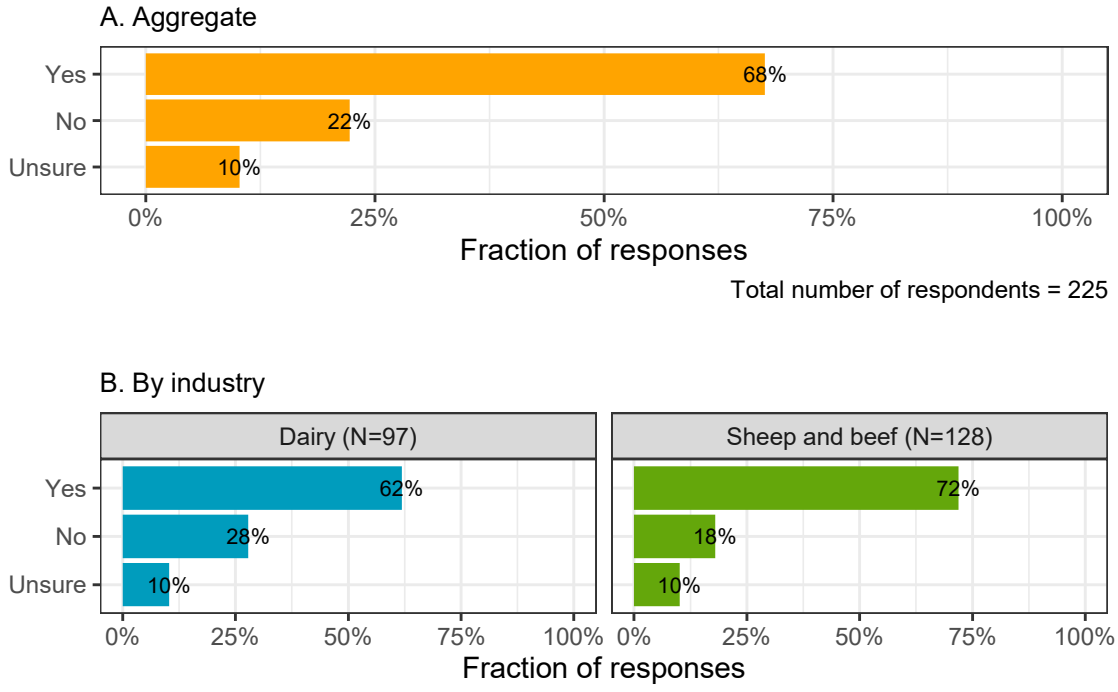

Figure 10. Woody vegetation not eligible for ETS that respondents would like to be able to claim for carbon sequestration.

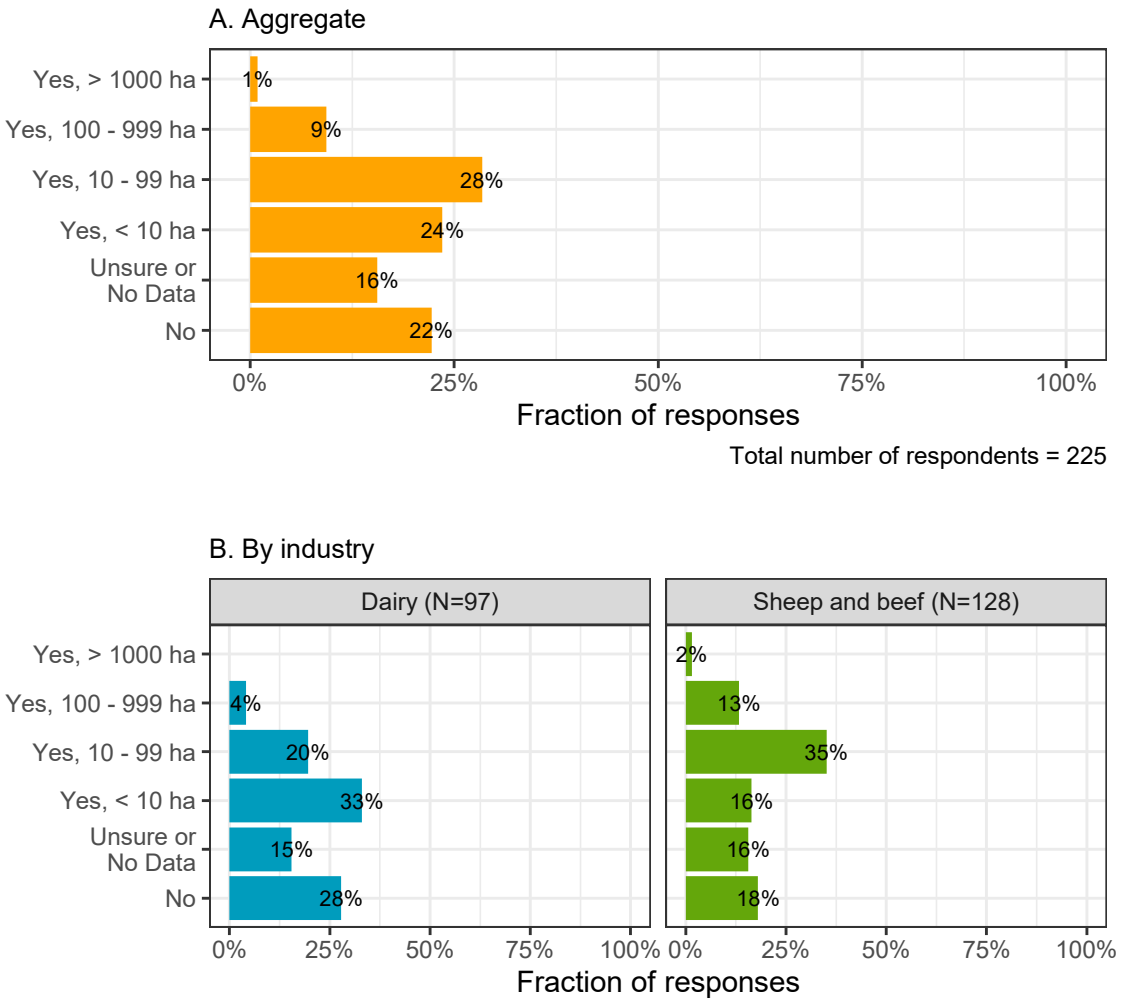

Figure 11. Woody vegetation not eligible for ETS that respondents would like to be able to claim for carbon sequestration (with the breakdown by area).

Q13. How difficult or easy do you personally think it would be to register forests in the ETS? If your forests are already registered in the ETS, please describe how difficult or easy it has been.

The majority of the respondents (64%) believe it is difficult or extremely difficult to register forest for the ETS (Fig. 12A). Only about 4% believe it is easy or extremely easy. There is little difference between dairy farmers and sheep and beef farmers (Fig. 12B). Regression analysis (Table 3, Model Q13easy in Appendix) suggests the attitude of the farmers about how hard or easy it is to register forests in the ETS is not related to the industry or any other factors in our model.

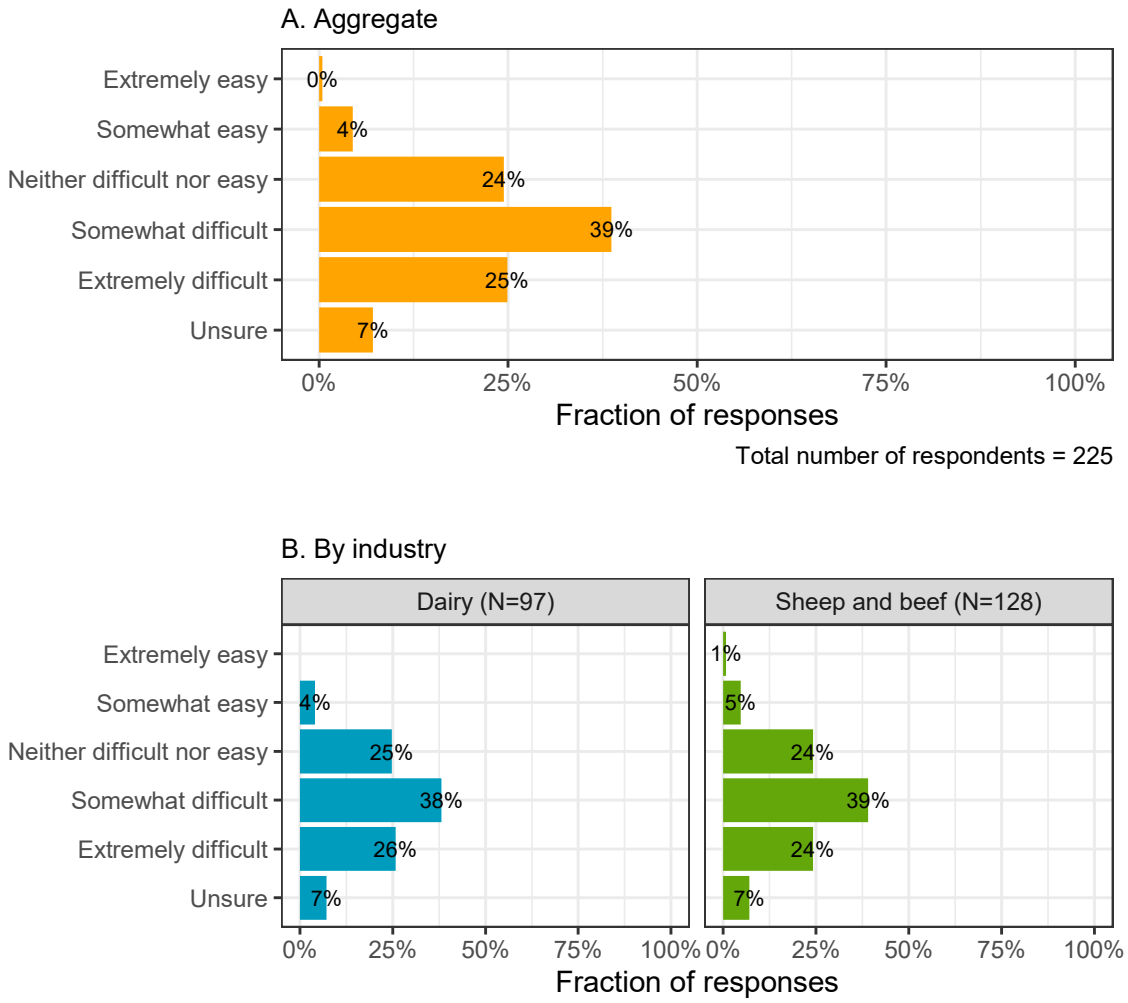

Figure 12. Opinion about the difficulty of registering forests in the ETS.

Q14. What additional actions you think are needed to help you to claim sequestration in the emissions trading scheme? Select up to 3.

The most commonly identified actions to support claiming sequestration in the ETS were to allow registering of vegetation that is not currently eligible (80% of respondents) and simplification of the ETS administration/paperwork (48% of respondents) (Fig. 13A). There is little difference in opinion between dairy farmers and sheep and beef farmers (Fig. 13B).

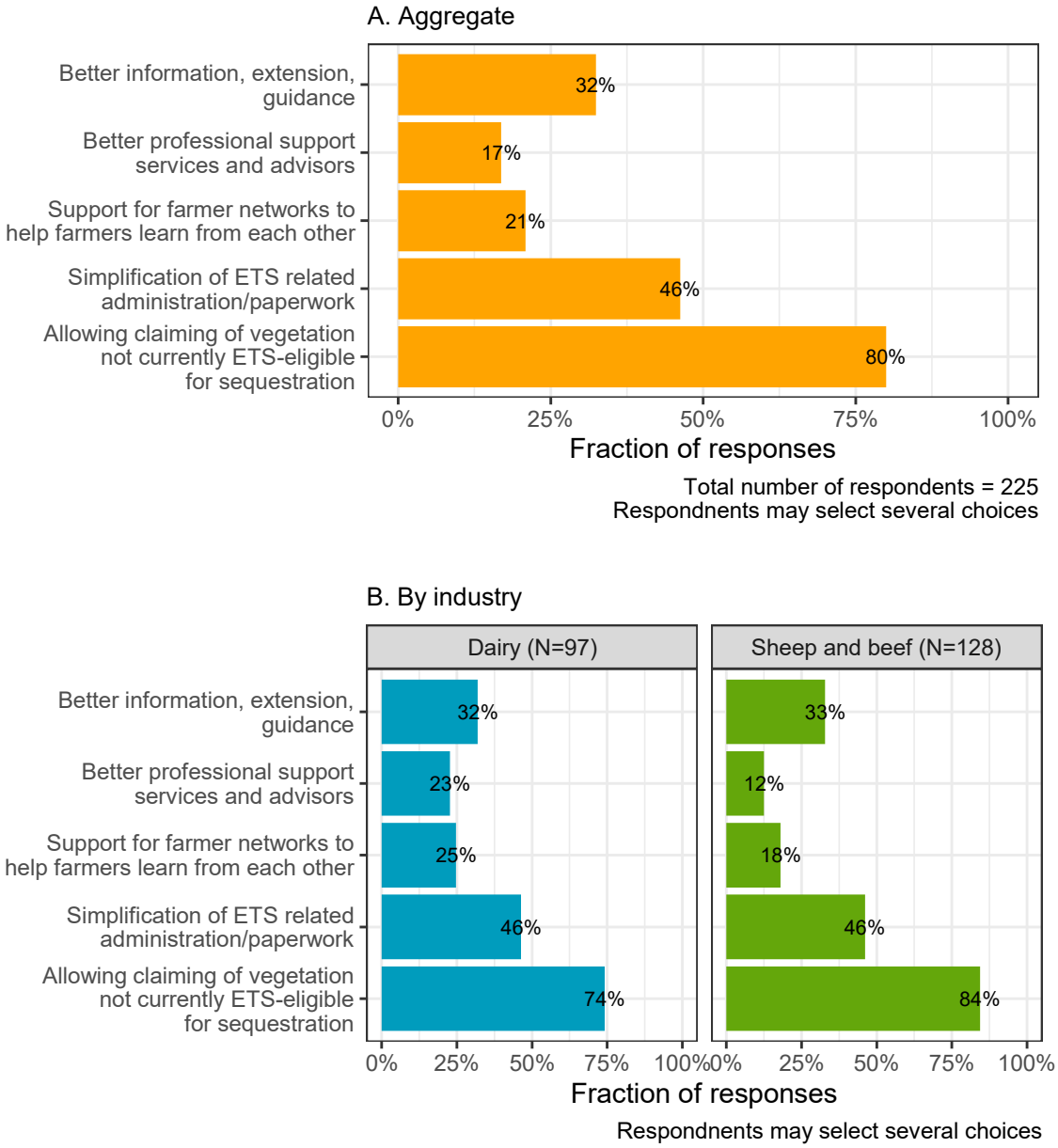

Figure 13. Additional actions that are needed to help to claim sequestration in the ETS.

3.5 Measuring GHG emissions

Q16. Are GHG emissions currently calculated for your farm?

Approximately half of the respondents (48%) calculate GHG emissions on their farms (Fig. 14A). Dairy farmers are more likely to calculate GHG emissions (61%) than sheep and beef farmers (38%) (Fig. 14B).

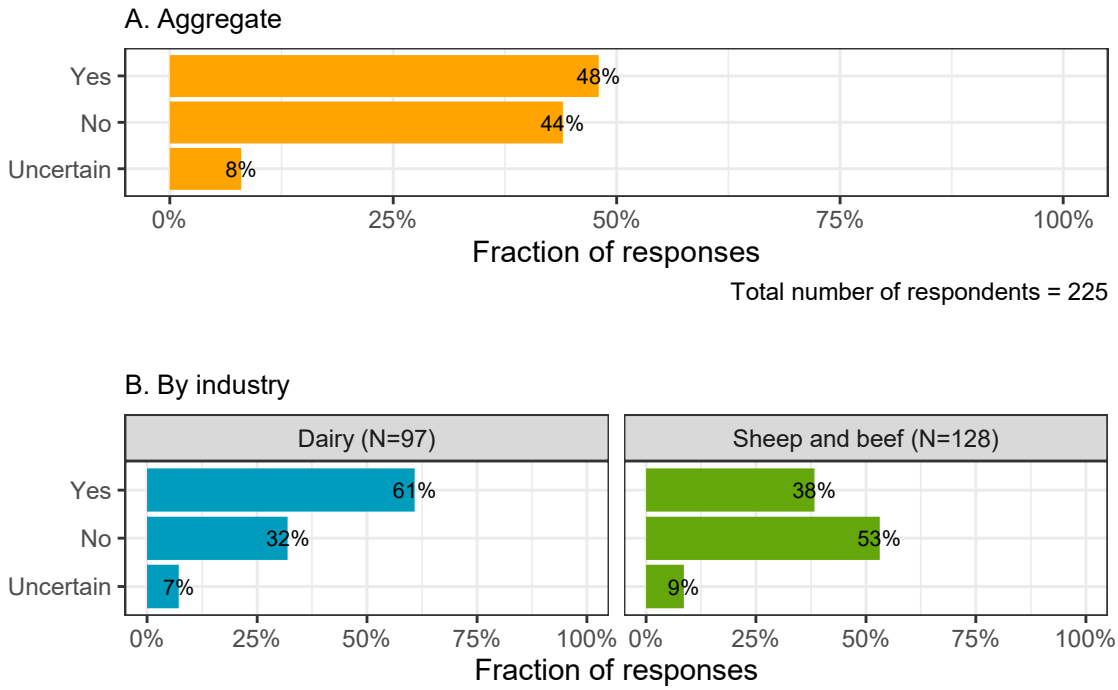

Figure 14. Calculating GHG emissions on the farm.

According to the regression analysis results (Table 3 Model Q16yes in Appendix 2), the probability of calculating GHG emissions on dairy is 16% higher than on sheep and beef farms. Respondents with a bachelor's degree or higher are 18% more likely to calculate GHG emissions on their farms. The probability of calculating GHG emissions increases by 9% for every 100 hectares of the farm area. A respondent who agrees farmers should undertake measures to reduce on-farm GHG emissions is 20% more likely to calculate GHG emissions on the farm. Other variables are not statistically significant.

Q17. Which tools were used to formally calculate GHG emissions on your property?

This question was answered by the respondents that calculated GHG emissions (61% of dairy farmers and 38% of sheep and beef farmers). Farmers were allowed to select multiple tools. The most often used tools are Overseer FM (40%) and the Fonterra (36%) and Beef+Lamb NZ (36%) tools (Figure 15A). Dairy farmers are more likely to use Overseer (51%) and Fonterra tools (66%), and sheep and beef farmers are more likely to use the tool by Beef+Lamb NZ (73%).

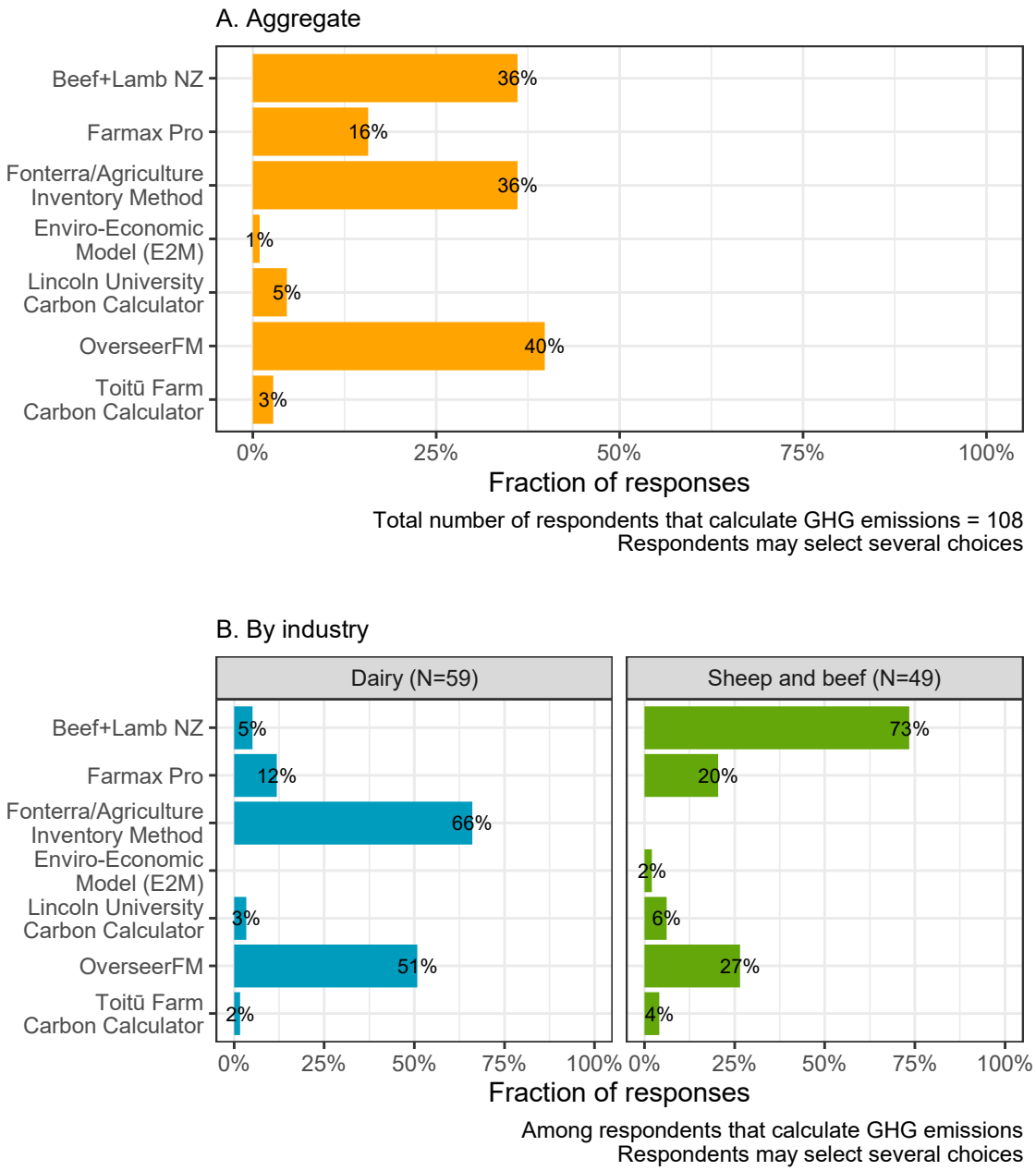

Figure 15. Tools used to calculate GHG emissions on the respondents' farms.

Q18 How difficult or easy do you think it is (or would be) to calculate GHG emissions on your farm?

Approximately 56% of the respondents believe that it is extremely difficult or difficult to calculate GHG emissions on their farms (Fig. 16A). Only about 15% of respondents think it is easy or extremely easy to calculate GHG emissions on their farms. The difference between dairy farmers and sheep and beef farmers is negligible (Fig. 16B). The regression analysis results (Table 3, Model Q18easy in Appendix 2) confirm that the belief about how easy it would be to calculate GHG emissions on the farm is unrelated to industry or any explanatory variable used in the model.

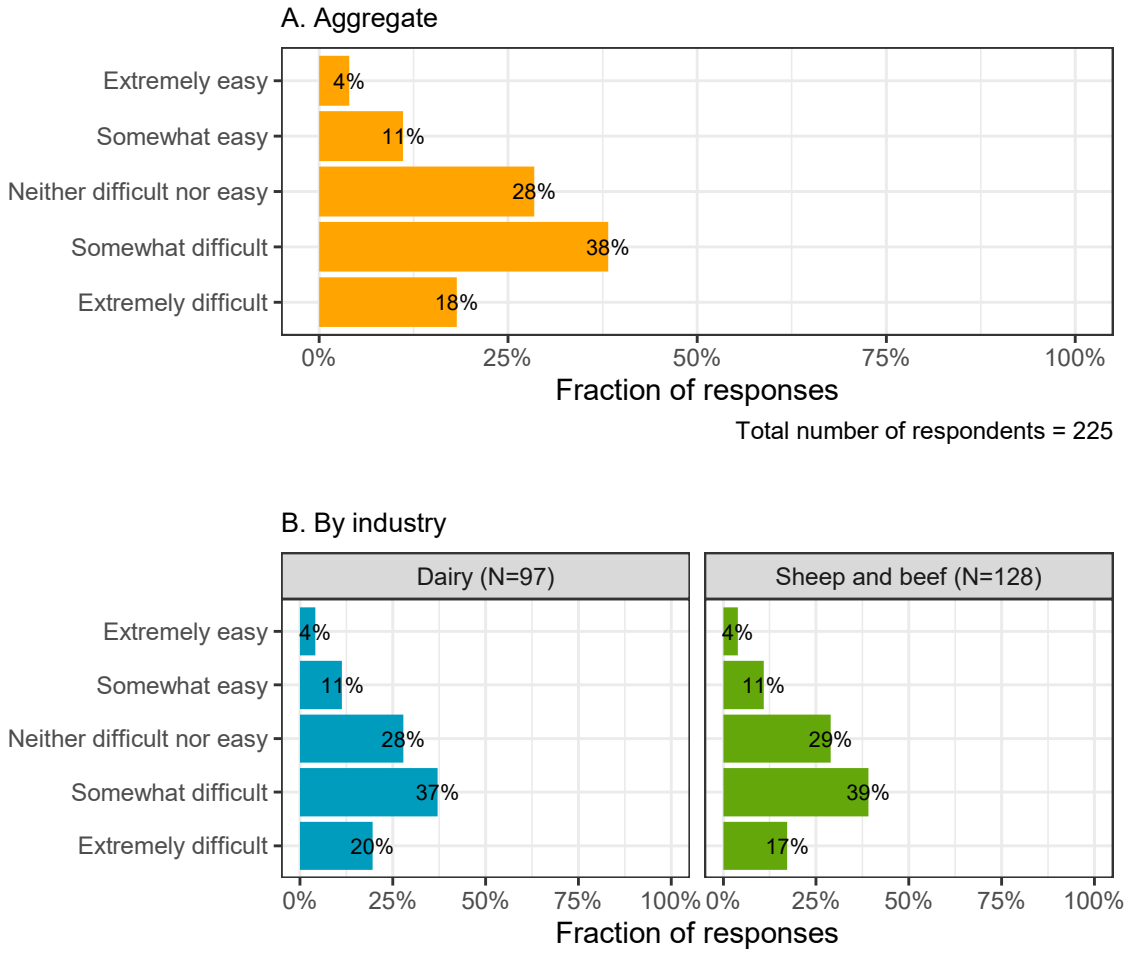

Figure 16. The difficulty in calculating GHG emissions on the respondents' farms.

Q19. Why have not you calculated your GHG emissions? Select 3 main reasons.

This question was asked from respondents that indicated they did not calculate GHG emissions on their farms (44% of respondents). The most frequently selected reasons were that they do not know how to do it themselves (42%) and that they will only do it once it becomes a regulatory requirement (45%) (Fig. 17A). These particular reasons are more prominent in dairy farmers' responses (Fig. 17B). Twenty-three percent of respondents gave other reasons. The list of these reasons is presented in Appendix 3.

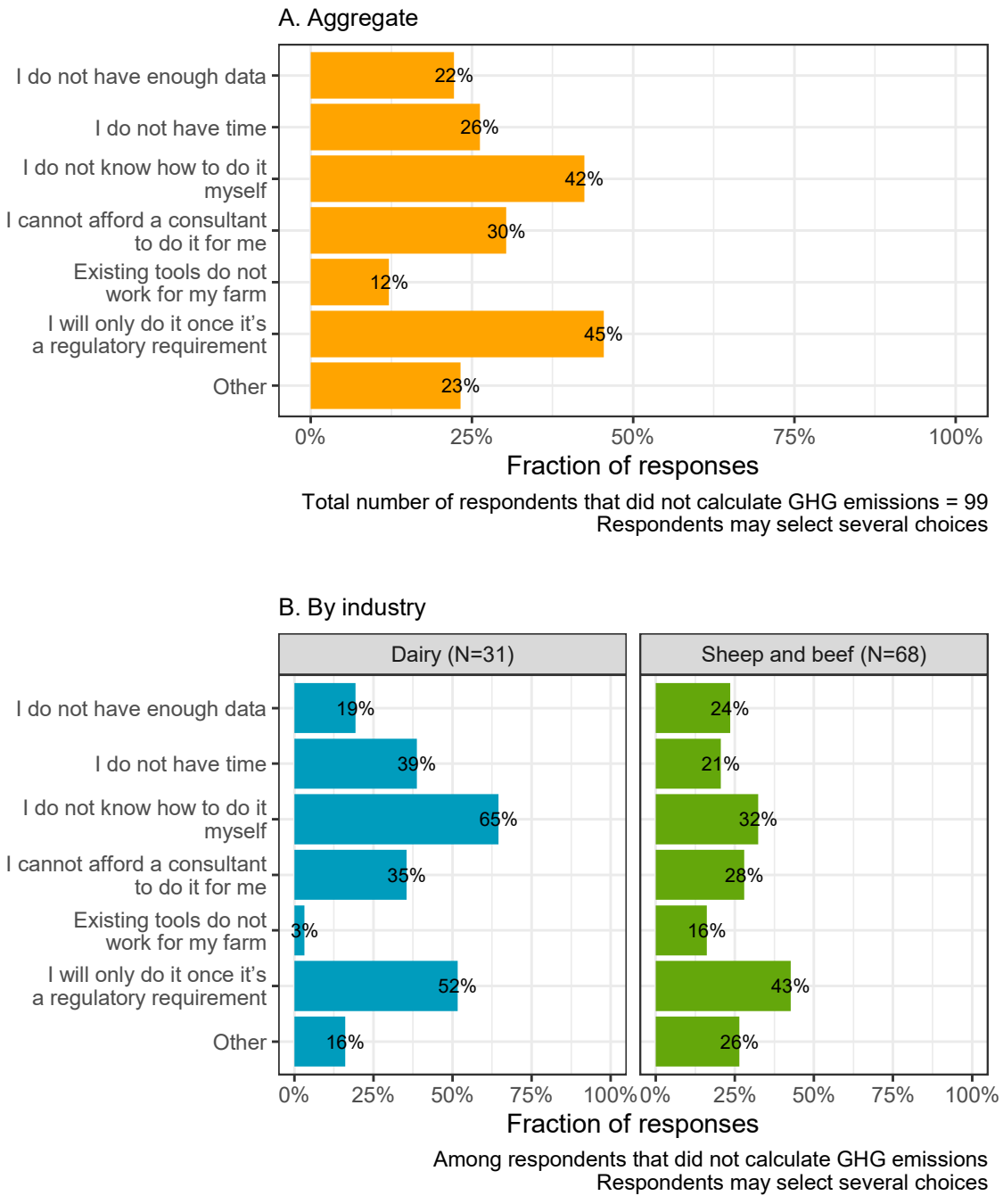

Figure 17. The reason respondents do not calculate GHG emissions on their farms.

3.6 Emissions pricing mechanism

Q21. What features do you consider to be most important for a farm-level emissions pricing mechanism for agriculture? Select up to 3.

Among the potential features of the emission pricing mechanism, the clear priorities among respondents are the ability to claim on-farm sequestration (preferred by 72% of respondents), fairness to different farm types (69%), and ease of use for farmers (64%) (Fig. 18A). Only one-third of respondents ranked the ability of a scheme to help drive emissions reductions in their top three. These preferences are shared by dairy and sheep and beef farmers (Fig. 19B).

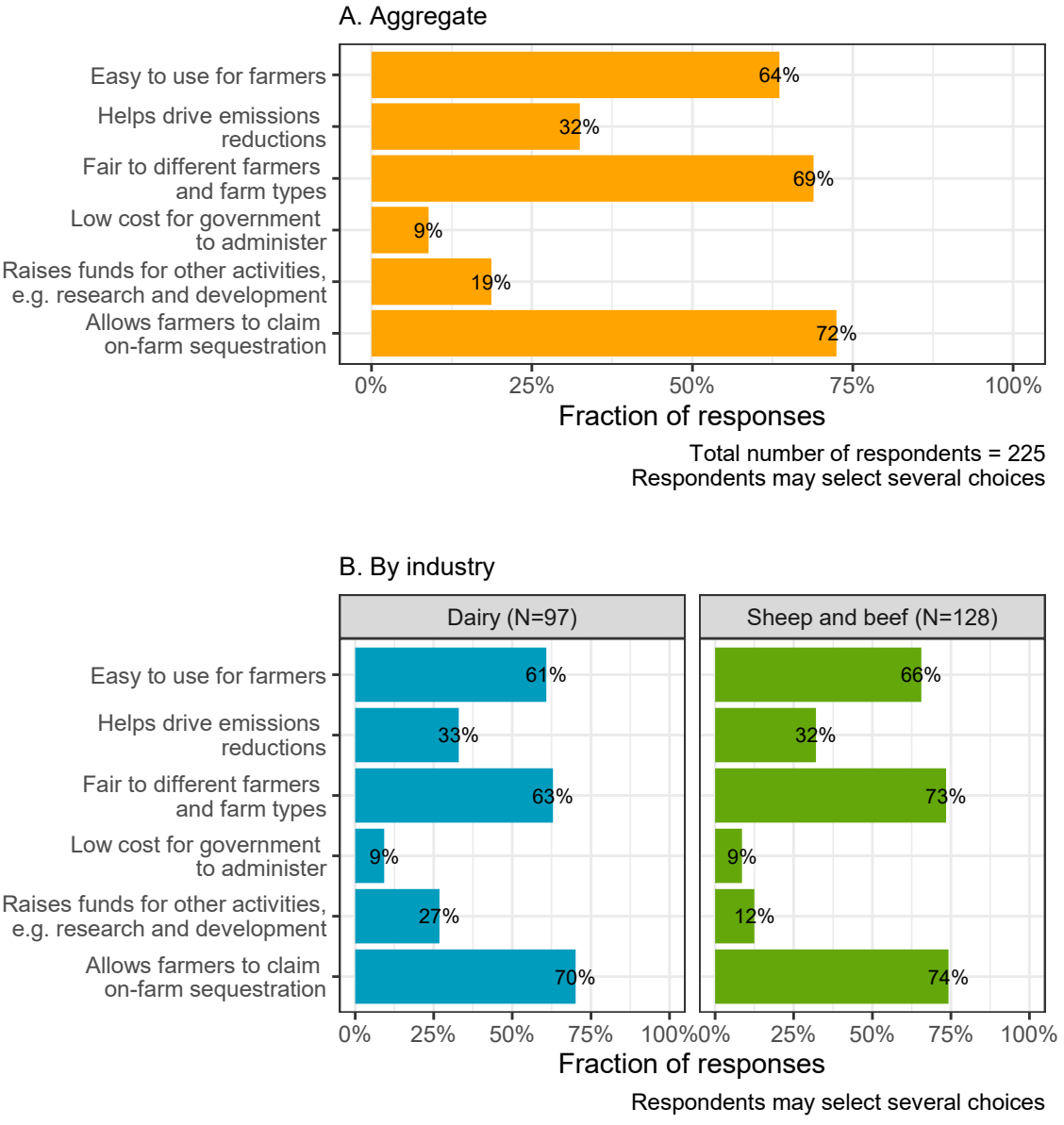

Figure 18. The most important features of a farm-level emissions pricing mechanism in agriculture.

Q22. How difficult or easy do you personally think it would be to participate in farm-level emissions pricing?

Nearly two-thirds of respondents (68%) thought participating in farm-level emissions pricing would be somewhat difficult or extremely difficult (Fig. 19A). About 8% indicated that they thought it would be easy to participate in the farm-level emission pricing. The attitudes do not differ between dairy and sheep and beef farmers (Fig. 19B). The regression analysis results (Table 3, Model Q22easy in Appendix 2) confirm that the belief about how easy it would be to participate in farm-level emissions pricing is unrelated to industry or any explanatory variable used in the model.

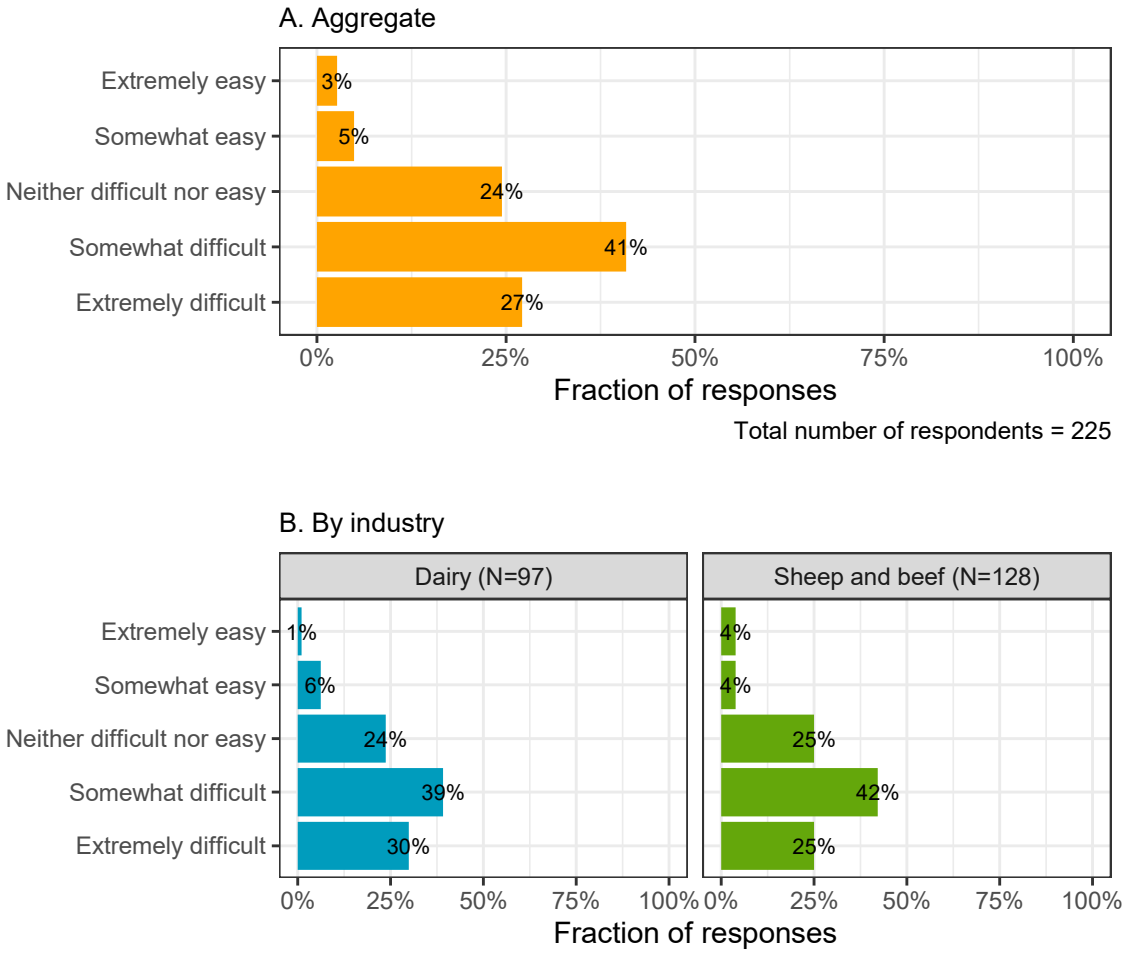

Figure 19. The most important features of a farm-level emissions pricing mechanism in agriculture.

Q23. What additional actions do you think are needed to help farmers be ready for farm-level emissions pricing? Select up to 3.

The most important additional actions to help farmers be ready for farm-level emissions pricing are better information, access to more options for emission reduction, and R&D to develop new mitigation technologies. Each of these was selected by almost half of the

respondents (Fig. 20A). The least selected option is supporting emerging markets for lower emission products. These preferences are mostly consistent across industries (Fig. 20B).

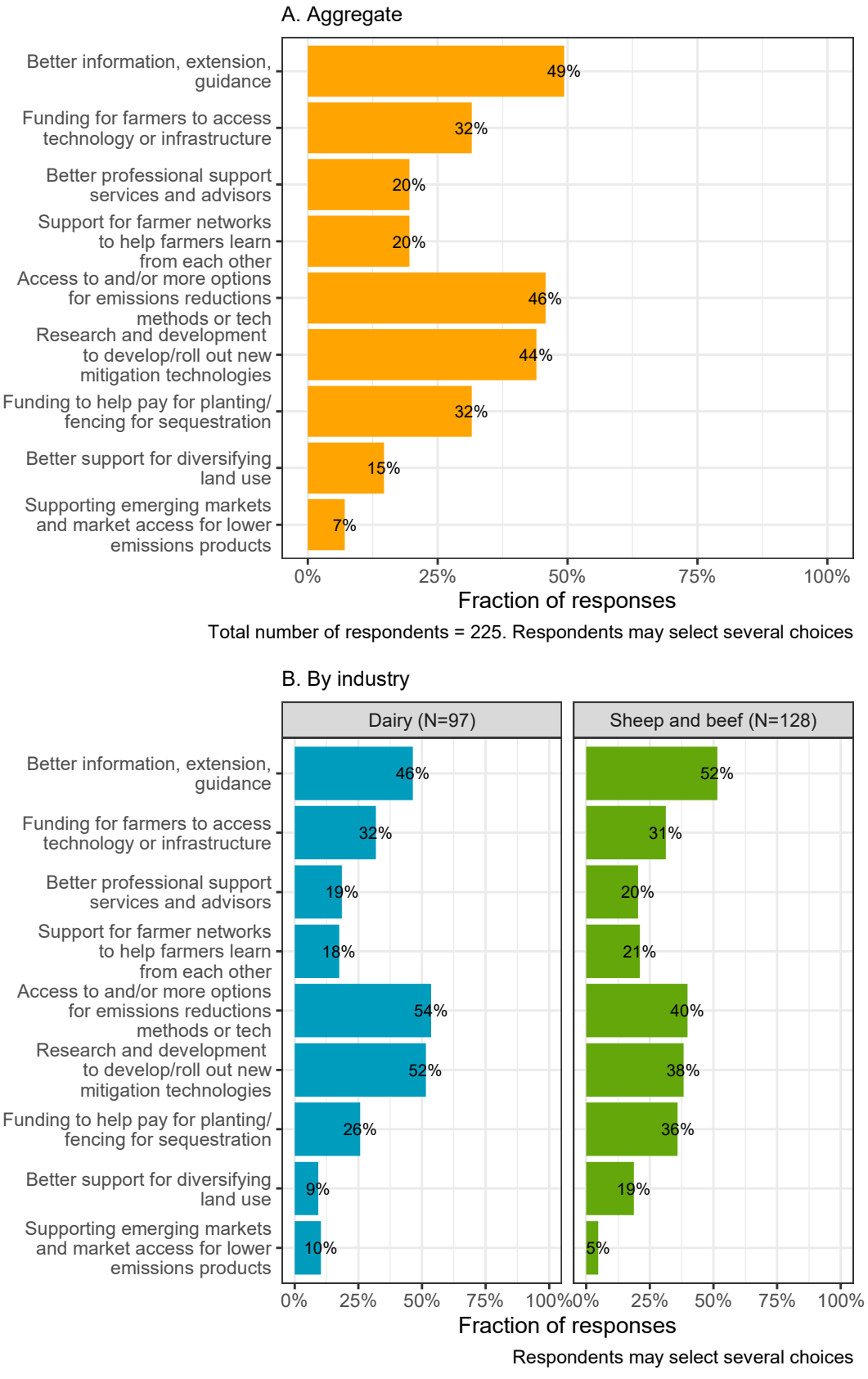

Figure 20. Additional actions needed to help farmers be ready for farm-level emissions pricing (aggregate level).

Q24. At which point in the supply chain should emissions data be collected and costs charged?

Most respondents (55%) favour farm-level emission pricing (Fig. 21A). The attitudes of dairy and sheep and beef farmers are similar (Fig. 21B). This is supported by the regression analysis results (Table 3, Model Q24farm in Appendix 2). On the other hand, the respondents who agree that farmers should undertake measures to reduce on-farm GHG emissions are 14% more likely to prefer farm-level emission pricing. Other variables are not statistically significant.

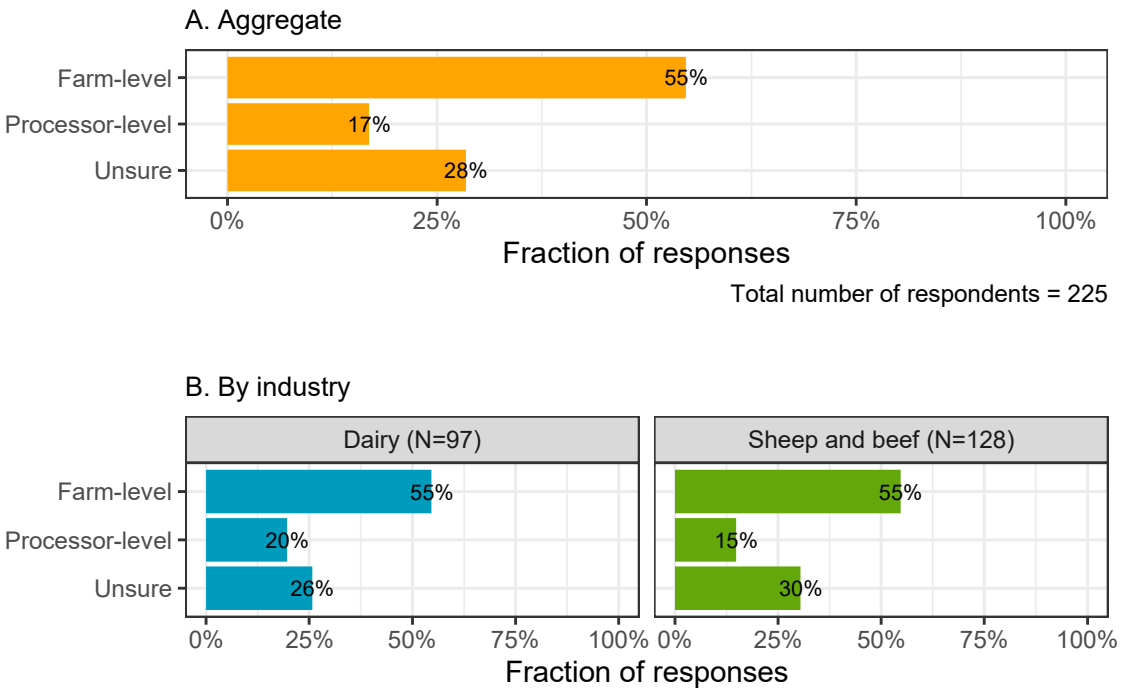

Figure 21. Preference for farm-level vs processor level emission pricing.

3.7 Pathways

Q26. Do you think there are ways to reduce emissions on your farm other than by reducing production?

Approximately half the respondents (51%) believe there are ways to reduce emissions on their farms other than by reducing production (Fig. 22A). Dairy farmers are more likely to share this opinion (59%) than are sheep and beef farmers (45%). There is no difference between the respondents who prefer farm-level or processor-level collecting emissions data and charging costs (Fig. 22C). The two statistically significant variables in the regression analysis are binary variables, indicating that a respondent prefers farm-level emission pricing and processor-level emission pricing. The results suggest that both these groups of respondents are 23% more likely to think there are ways to reduce emissions on their farms than the respondents who are not sure about the point of pricing (Table 3 Model 26yes in Appendix 2). This is consistent with Figure 22C. Other variables are not statistically significant.

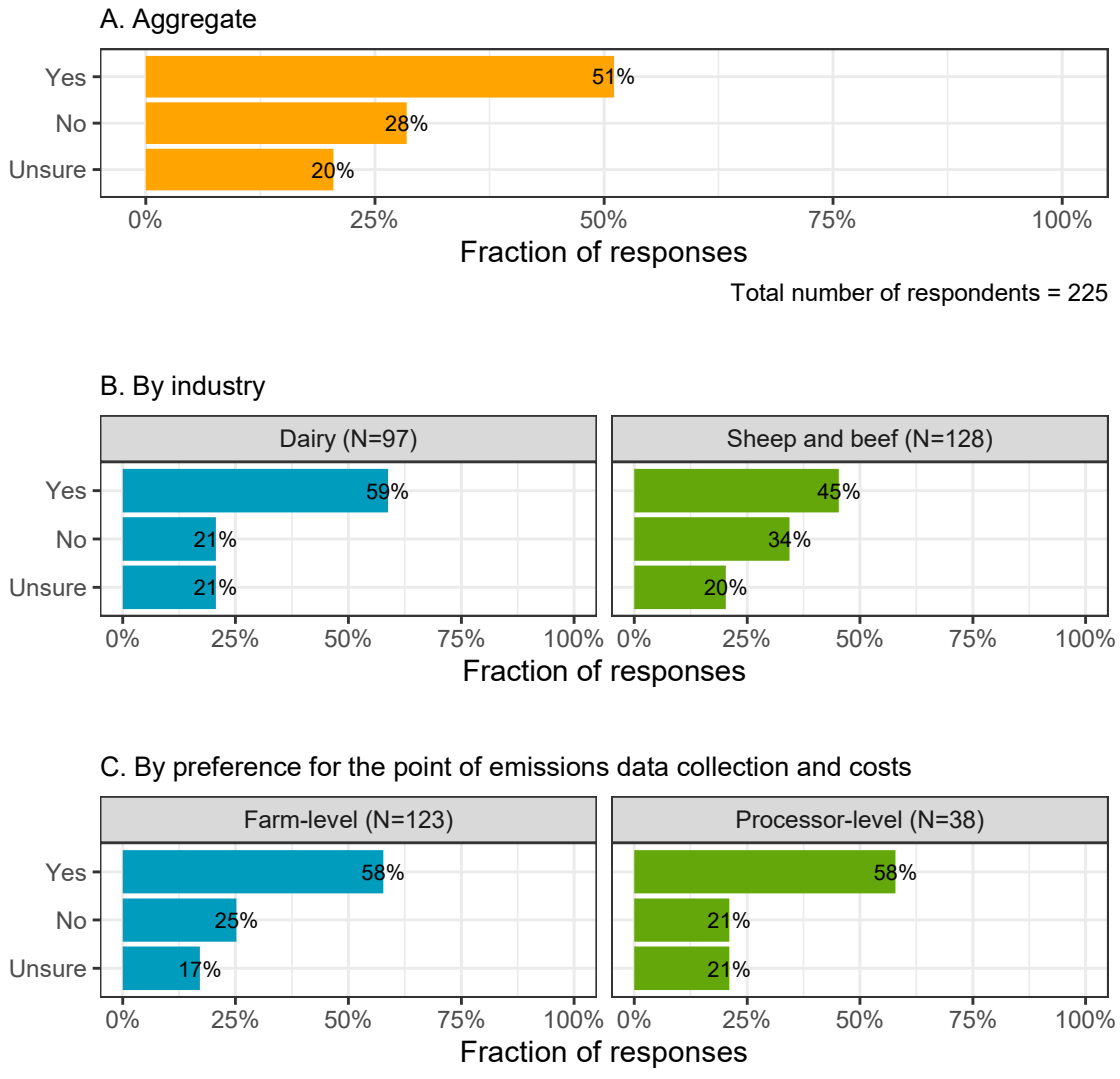

Figure 22. Existence of ways to reduce emissions on your farm other than by reducing production.

Q27. Which GHG emissions reduction actions could you potentially use on your farm?

This question was answered by the respondents who believe there are ways to reduce emissions on their farms other than reducing production (51% of respondents). The most commonly selected items were to improve production efficiency, use methane inhibitors or vaccines, and use low emission feeds (Fig. 23A). Some 21% of respondents gave other actions. The most frequent other actions were planting trees or creating wetlands. We listed these reasons in Appendix 4.

Dairy farmers had solid preferences for the above pathways, while alternative pathways were selected by less than 20% of respondents (Fig. 23B). In contrast, sheep and beef farmers have strong preferences for only one pathway – improving production efficiency, with 47% of respondents selecting this option. Manure management was selected by only 7%, and other pathways were selected by between 22% and 33% of respondents. This suggests no clear dominant methods to reduce GHG emissions for sheep and beef farmers, possibly due to the lack of suitable methods and the heterogeneity of farmers.

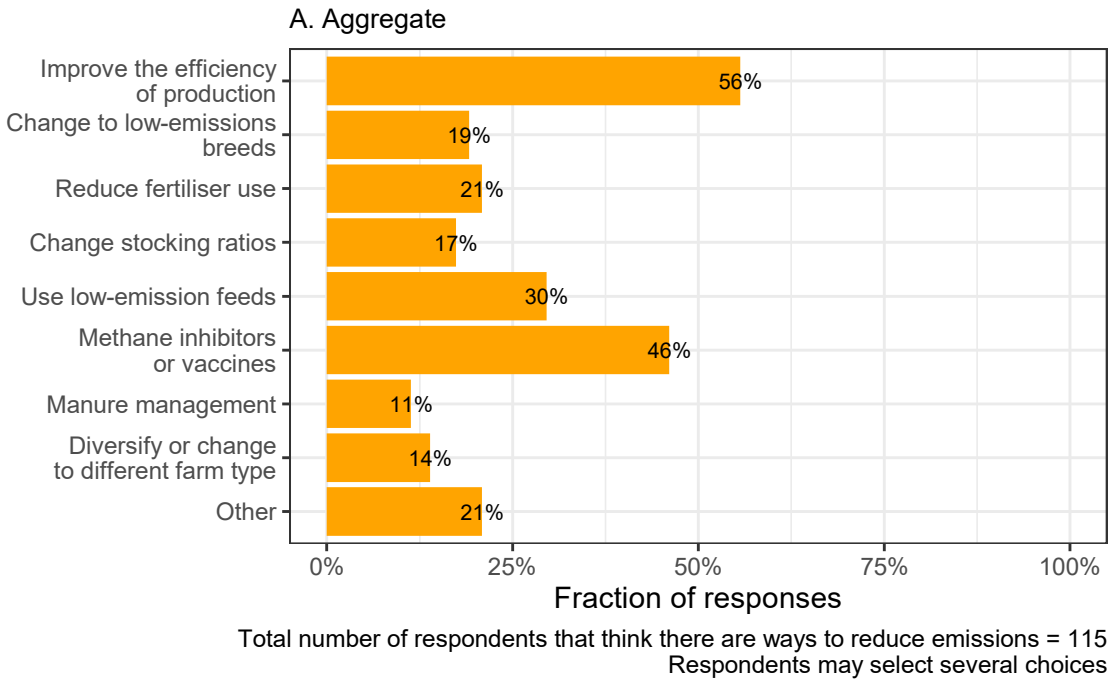

Figure 23. (continued following page) Feasible GHG emissions reduction actions for respondents that think there are ways to reduce emissions.

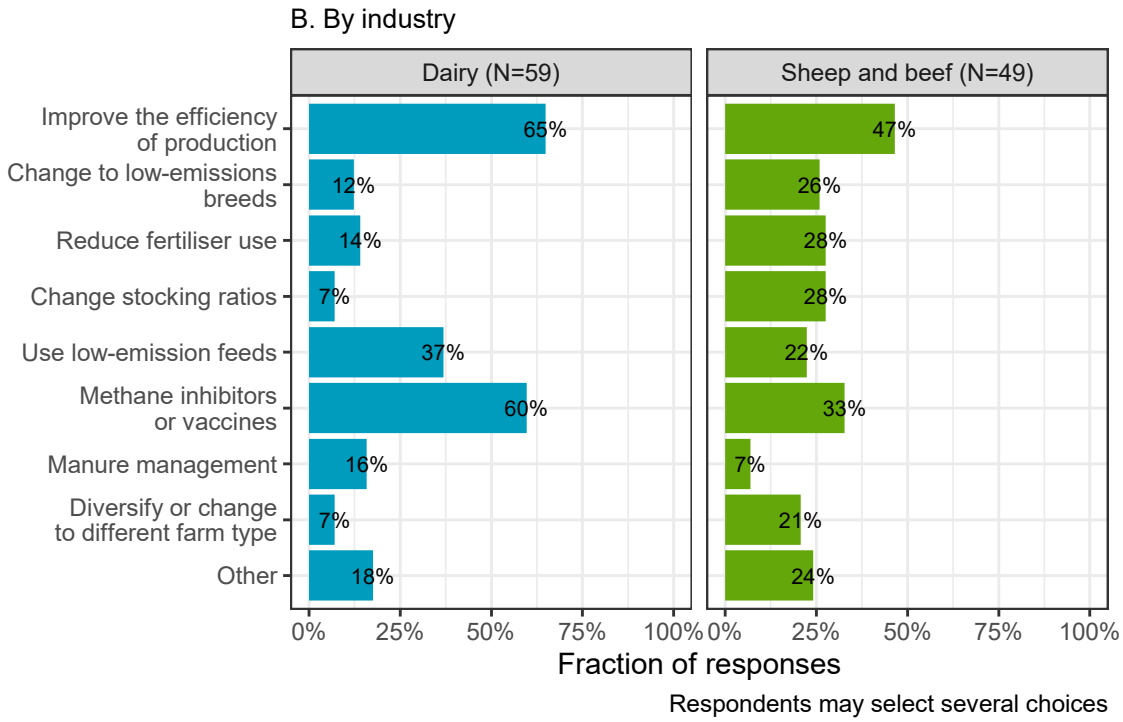

Figure 23. (continued).

We further analysed preferences for GHG emissions reduction actions separately for the respondents who use models and tools and those who do not use them or are not sure, based on the answer to Question 5. In both cases, this is a subset of the respondents that believe there are ways to reduce emissions on their farms.

Among the respondents who use models and tools, the majority of both dairy farmers and sheep and beef farmers selected improving the efficiency of production and methane inhibitors or vaccines. While almost half (49%) of dairy farmers also selected low-emission feeds, only a few sheep and beef farmers (19%) selected this option.

Among the dairy farmers who do not use models and tools, improving the efficiency of production and methane inhibitors or vaccines are still dominant pathways (Fig. 24A). But among sheep and beef farmers not using models and tools, there are no pathways preferred by a majority, and the most popular pathway is reducing fertiliser use (41%) (Fig. 24B).

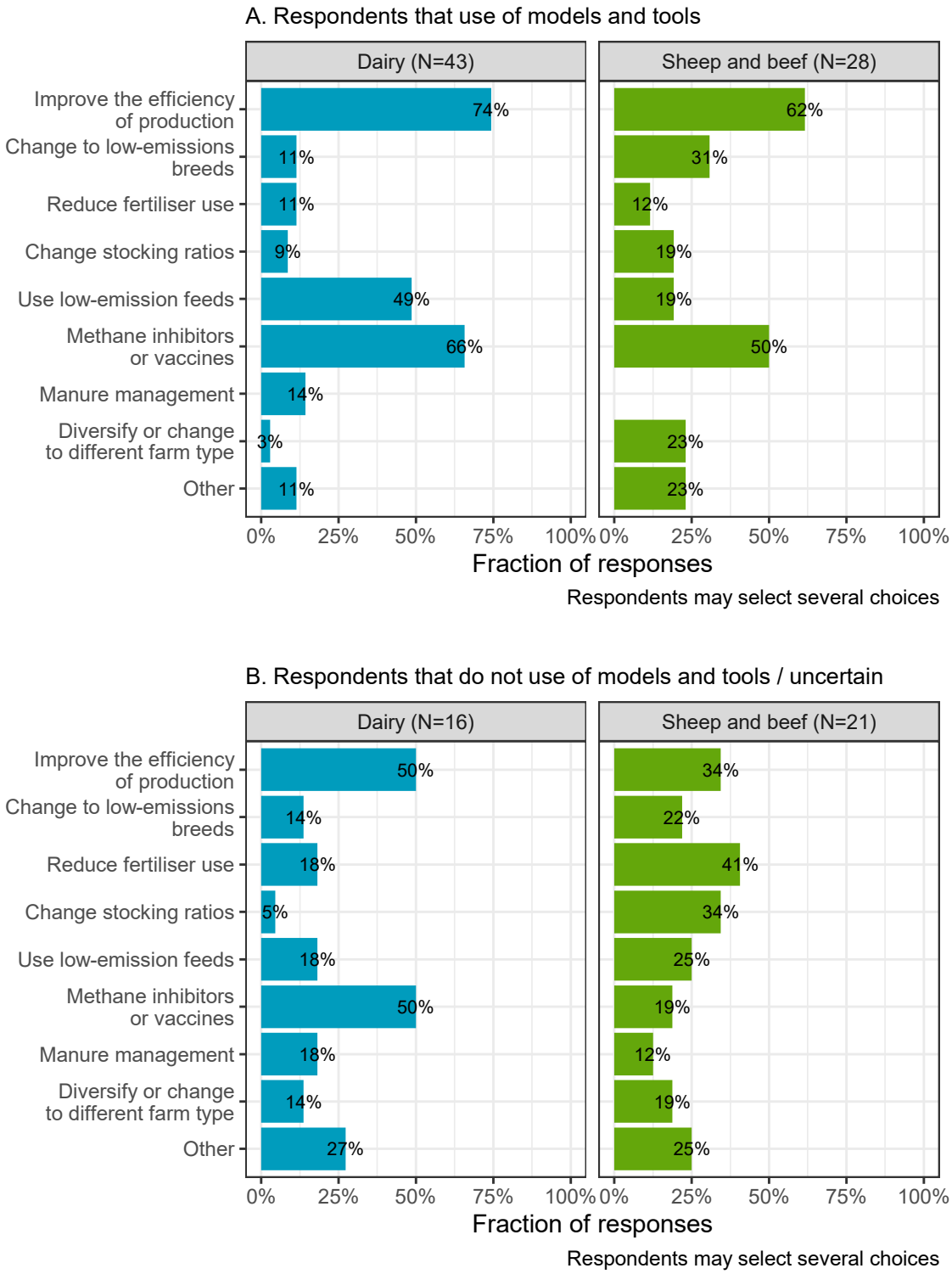

Figure 24. Feasible GHG emissions reduction actions for respondents that think there are ways to reduce emissions (by industry and use of models and tools).

Q28. What are the main barriers preventing you from reducing farm emissions? Select up to 3.

Survey respondents believe the main barriers are the cost of reducing production, the unavailability of mitigation technology, and uncertainty about the impact on the business bottom line (Fig. 24A). Some 27% of respondents identified other barriers; a list of these reasons is presented in Appendix 5.

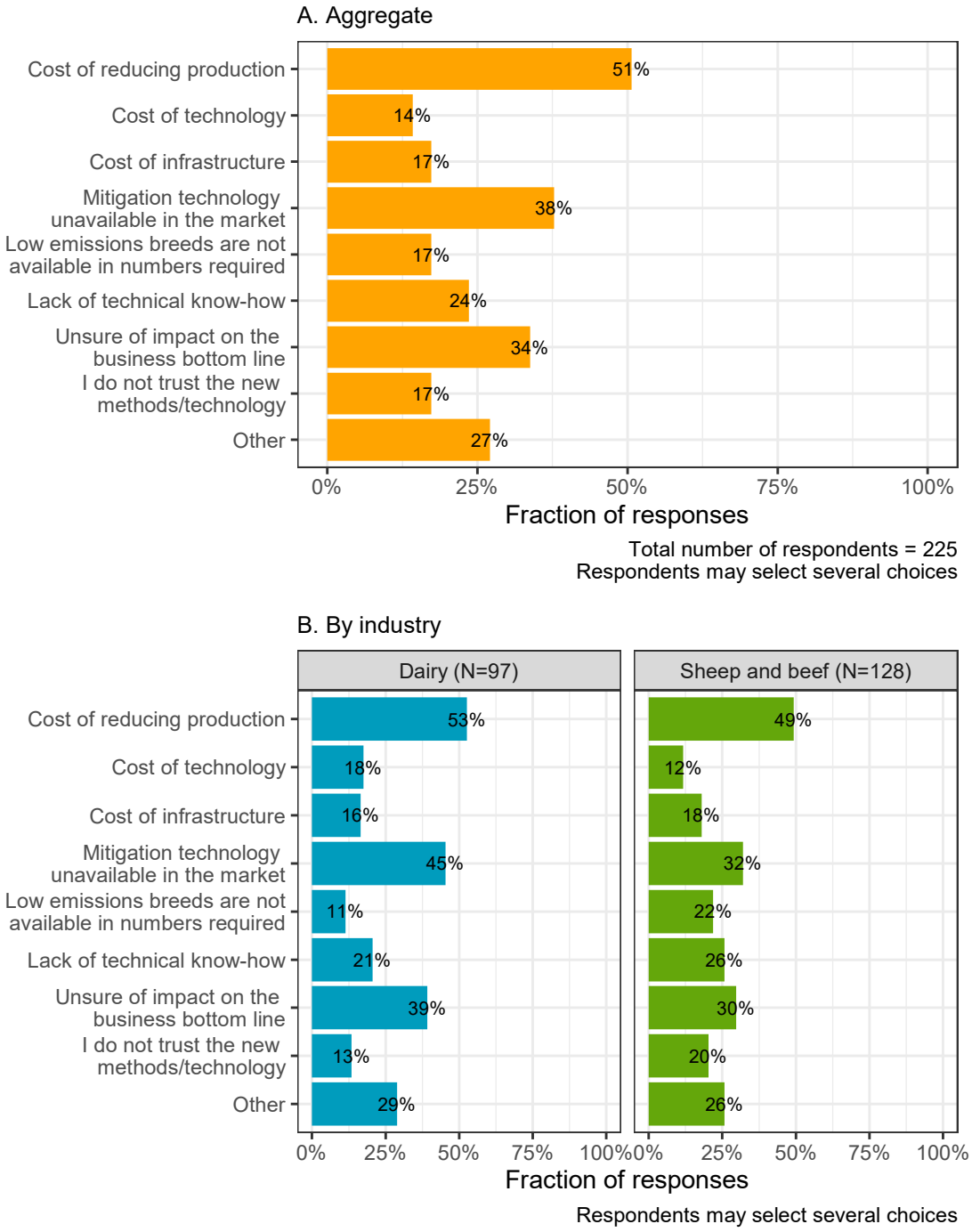

Figure 25. The main barriers that prevent farmers from reducing farm emissions (industry and island level).

Selected choices are similar for dairy farmers and sheep and beef farmers (Fig. 24B). As in the question about GHG emissions reduction actions, three barriers (cost of reducing production, mitigation technology unavailable in the market, and unsure of the impact on the business bottom line) clearly dominate for dairy farmers. Apart from the cost of reducing production (selected most frequently by sheep and beef farmers) and the cost of technology (selected least frequently), the selection of other barriers is evenly distributed among sheep and beef farmers. This may suggest greater heterogeneity of sheep and beef farmers and the absence of the winning technology for GHG emission reductions.

Q29. If you have any additional comments about GHG reduction and the potential role played by NZ farmers, please enter it in the box below.

Some 140 respondents provided additional comments to the survey. They are listed in Appendix 6.

4 Conclusions

This report presents the results of the survey of livestock farmers that would help understand how ready the agricultural sector is for a potential emissions pricing mechanism. The survey was administered in April 2022. The respondents were drawn from the 2021 wave of the SRDM survey. There were 225 responses representative of 97 dairy and 128 sheep and beef farmers across New Zealand.

The main conclusions that may be drawn from the data analysis are:

- Approximately half of the respondents use some models or tools for planning or reporting, approximately two-thirds of the respondents report farm activities to different entities, and more than three-quarters of farmers use rural professionals for various activities. However, only one-quarter use rural professionals for GHG emissions reporting.
- About half of the participants agree or strongly agree that farmers should undertake measures to reduce on-farm GHG emissions. These attitudes are almost identical between dairy and sheep and beef farmers.
- One-third of the respondents have forests that are eligible to be registered in the ETS. However, only one-tenth of the respondents have their forest fully or partially registered in the ETS. The majority (64%) of the respondents believe it is difficult or extremely difficult to register forests for the ETS.
- Approximately two-thirds of the respondents have vegetation that is not eligible for the ETS, but would like to be able to claim for sequestration. Allowing them to register vegetation that is not currently eligible for ETS and the simplification of the ETS administration/paperwork were the most frequently selected actions that would help farmers claim sequestration in the emissions trading scheme.
- About half of the respondents calculate GHG emissions on their farms. This compares with only a quarter of respondents using rural professionals to calculate GHG emissions. The most popular tools for calculating GHG emissions were reported to be Overseer FM model and the Fonterra and Beef+Lamb NZ tools.

- Nevertheless, more than half of the respondents believe it is extremely difficult or difficult to calculate GHG emissions on their farms. The most frequently selected reasons not to calculate GHG emissions were that the respondents do not know how to do it themselves and that they will only do it once it becomes a regulatory requirement.
- The most preferred features of a GHG emission pricing mechanism are the ability to claim on-farm sequestration, fairness to different farm types, and ease to use for farmers. Only one-third of respondents ranked the ability of a scheme to help drive emissions reductions in their top three features of the emission pricing mechanism. Slightly more than half the respondents are in favour of farm-level emission pricing.
- Nearly two-thirds of respondents thought participating in farm-level emissions pricing would be somewhat difficult or extremely difficult. The most important additional actions to help farmers be ready for farm-level emissions pricing are better information, access to more options for emission reduction, and R&D to develop new mitigation technologies. There is a relatively high level of consensus about preferred emission reduction actions among dairy farmers, while opinions of sheep and beef farmers are more evenly spread between possible actions.
- Approximately half the respondents believe there are ways to reduce emissions on their farms other than by reducing production. Among those respondents, the most popular pathways were to improve production efficiency, use methane inhibitors or vaccines, and low emission feeds. The respondents believe the main barriers preventing them from reducing farm emissions are the cost of reducing production, the unavailability of mitigation technology, and the uncertainty about the impact on the business's bottom line. Dairy farmers agree on the three most important barriers, while most sheep and beef farmers agree about one barrier.

5 References

Stahlmann-Brown P 2021. Survey of rural decision makers 2021. DOI: 10.7931/3tcs-wb24

Appendix 1 – Agricultural Progress Assessment Farmer Survey Questionnaire

Q2 Thank you for agreeing to participate in the agricultural emissions farmers readiness survey. The Climate Change Commission has commissioned Manaaki Whenua - Landcare Research to undertake this survey as part of its Agricultural Progress Assessment. It will help understand how ready farmers are for an agricultural emissions pricing scheme. It covers commercial livestock farmers across New Zealand.

Before we begin, a few important notes related to your privacy:

- Data are collected for **research purposes only**. We will not share your personal information.
- Your participation in this survey is **optional**. You can stop the survey at any time.
- Individual results will remain confidential and all data will be stored on password-protected computers. Click here to read our statement on survey privacy and ethics.
- **Anonymized results** will be shared with the Climate Change Commission.

A few notes about how the survey works:

- Click the right arrow to move forward. If you don't see the right arrow, please scroll down.
- You cannot always move backward, so please click carefully.
- The survey is designed to take 10-15 minutes. It saves automatically, so you can come back to it later if you need a break.

To thank you for sharing your time and expertise, we will donate $10 to the NZ Red Cross for each completed survey, up to $1,500 in total. One lucky winner will also receive a $500 supermarket voucher.

Q3 Select **YES** to begin the survey. Then click the **right arrow** at the bottom of the page.

- ○ YES, I'd like to complete the survey. (1)
- ○ NO, I'd rather not do the survey. (2)

Q4 First, we would like to learn about planning, reporting, and use of rural professionals, advisors, or consultants on your farm.

Q5 Do you currently use a farm model or other tool for farm planning or reporting?

- ○ Yes (1)
- ○ No (2)
- ○ Unsure (3)

Q6 Do you currently report farm activities to any of the following entities? Select all that apply.

- ☐ Regional Council (1)
- ☐ Central government (2)
- ☐ Industry (e.g. for Industry Assurance Programme) (3)
- ☐ Sector bodies (e.g. Beef+Lamb NZ, DairyNZ) (4)
- ☐ Other (please specify) (5) _____
- ☐ ⊗None of the above (6)

Q7 Have you used rural professionals, farm advisors, or consultants for any of the following? Select all that apply.

- ☐ Farm regulatory reporting or planning (e.g. for resource consent) (1)
- ☐ Industry farm plans e.g. (industry assurance programme) (2)
- ☐ On-farm operations (3)
- ☐ Budgeting/ tax reporting (4)
- ☐ Greenhouse gas emissions calculations or reporting (7)
- ☐ Other (please specify) (5) _____
- ☐ ⊗None of the above (6)

Q8 In 2019, the NZ Government passed the Zero Carbon Act, which set greenhouse gas (GHG) emission targets. By 2050, biogenic methane emissions must be substantially reduced, and emissions of all other GHGs much reach net zero.

Q9 To what extent do you disagree or agree that farmers should undertake measures to reduce on-farm GHG emissions?

- ○ Strongly disagree (1)
- ○ Disagree somewhat (2)
- ○ Neither agree nor disagree (3)
- ○ Agree somewhat (4)
- ○ Strongly agree (5)

Q10 The New Zealand Emissions Trading Scheme (NZ ETS) was created to reduce emissions of greenhouse gases by putting a price on emissions. It has been New Zealand's main emissions pricing tool to date.

Under the ETS, emitters of greenhouse gases have to surrender carbon credits to the Government. Those who remove greenhouse gases from the atmosphere may earn carbon credits. Carbon credits can be traded on the market.

Carbon dioxide can be removed from the atmosphere by forests of other woody vegetation. By participating in the ETS, farmers may earn credits for the carbon removed from the atmosphere by the ETS-eligible forests.

Q11 Do you have any forests on your farm that are eligible to be registered or registered in the ETS?

- ○ Yes, all forests are registered in the ETS (1)
- ○ Yes, some forests are registered in the ETS (2)
- ○ Yes, but no forests are registered in the ETS (3)
- ○ No forests or none that are ETS eligible (4)
- ○ Unsure (5)

Q12 Do you have any other woody vegetation you would like to be able to claim for sequestration that does not meet standards to be registered in the ETS?
If yes, please specify the approximate number of hectares in the box. Please leave blank if unknown.

- ○ Yes (approximate # of hectares) (1) _____
- ○ No (2)
- ○ Unsure (3)

Q13
How difficult or easy do you personally think it would be to register forests in the ETS? If your forests are already registered in the ETS, please describe how difficult or easy it has been.

- ○ Extremely difficult (1)
- ○ Somewhat difficult (2)
- ○ Neither difficult nor easy (3)
- ○ Somewhat easy (4)
- ○ Extremely easy (5)

Q14 What additional actions you think are needed to help you to claim sequestration in the emissions trading scheme? Select up to 3.

- ☐ Better information, extension, guidance (1)
- ☐ Better professional support services and advisors (3)
- ☐ Support for farmer networks to help farmers learn from each other (4)
- ☐ Simplification of ETS related administration/paperwork (2)
- ☐ Allowing claiming of vegetation not currently ETS-eligible for sequestration (7)

Q15 Emissions from agriculture are legislated to enter the NZ ETS in 2025. The He Waka Eke Noa partnership is developing a proposal for an alternative farm-level pricing scheme outside of the NZ ETS.

A farm-level emissions pricing scheme would likely require farmers to do a range of things, including collecting farm data to calculate emissions, reporting emissions, and paying for any emissions liabilities.

By 31 December 2022, the Government will make a decision about how biological emissions from agriculture will be priced.

This section focuses on calculating GHG emissions.

Q16 Are GHG emissions currently calculated for your farm?

- ○ Yes (1)
- ○ No (2)
- ○ Uncertain (3)

Display This Question:
If Are GHG emissions currently calculated for your farm? = Yes

Q17 Which **tools** were used to formally calculate GHG emissions on your property.
Tick all that apply.

- ☐ AllTec E-CO2 (1)
- ☐ Enviro-Economic Model (E2M) (4)
- ☐ Beef+Lamb NZ (11)
- ☐ Farmax Pro (2)
- ☐ FAR - Productionwise (12)
- ☐ Fonterra/Agriculture Inventory Method (3)
- ☐ HorticultureNZ spreadsheet (5)
- ☐ Lincoln University Carbon Calculator (6)
- ☐ Ministry for the Environment spreadsheet (7)
- ☐ OverseerFM (8)
- ☐ Toitū Farm Carbon Calculator (9)
- ☐ Other (please specify) (10) _____

Q18 How difficult or easy do you think it is (or would be) to calculate GHG emissions on your farm?

- ○ Extremely difficult (1)
- ○ Somewhat difficult (3)
- ○ Neither difficult nor easy (2)
- ○ Somewhat easy (4)
- ○ Extremely easy (5)

Display This Question:
If Are GHG emissions currently calculated for your farm? = No

Q19 Why have not you calculated your GHG emissions? Select 3 main reasons.

- ☐ I do not have enough data (1)
- ☐ I do not have time (2)
- ☐ I do not know how to do it myself (3)
- ☐ I cannot afford a consultant to do it for me (4)
- ☐ Existing tools do not work for my farm (5)
- ☐ I will only do it once it's a regulatory requirement (6)
- ☐ Other (please specify) (7) _____

Q20
This section focuses on how a farm-level emission pricing system might be designed.

Q21 What features do you consider to be most important for a farm-level emissions pricing mechanism for agriculture? Select up to 3.

- ☐ Easy to use for farmers (1)
- ☐ Helps drive emissions reductions (2)
- ☐ Fair to different farmers and farm types (3)
- ☐ Low cost for government to administer (4)
- ☐ Raises funds for other activities, e.g. research and development (5)
- ☐ Allows farmers to claim on-farm sequestration (8)

Q22 How difficult or easy do you personally think it would be to participate in farm-level emissions pricing?

For example, the administrative burden it would create for you in terms of collecting data and reporting for compliance.

- ○ Extremely difficult (1)
- ○ Somewhat difficult (2)
- ○ Neither difficult nor easy (3)
- ○ Somewhat easy (4)
- ○ Extremely easy (5)

Q23 What additional actions do you think are needed to help farmers be ready for farm-level emissions pricing? Select up to 3.

- ☐ Better information, extension, guidance (1)
- ☐ Funding for farmers to access technology or infrastructure (2)
- ☐ Better professional support services and advisors (3)
- ☐ Support for farmer networks to help farmers learn from each other (4)
- ☐ Access to and/or more options for emissions reductions methods or tech (5)
- ☐ Research and development to develop/roll out new mitigation technologies (6)
- ☐ Funding to help pay for planting/ fencing for sequestration (7)
- ☐ Better support for diversifying land use (8)
- ☐ Supporting emerging markets and market access for lower emissions products (9)

Q24 At which point in the supply chain should emissions data be collected and costs charged?

- ○ Farm-level (1)
- ○ Processor-level (2)
- ○ Unsure (3)

Q25 Farm-level GHG emissions may be reduced by improving efficiency, making changes to the way you farm, or decreasing production levels, but also by taking up mitigation options such as low-emissions feeds or supplements, genetics, or methane inhibitors.

Q26 Do you think there are ways to reduce emissions on your farm other than by reducing production?

- ○ Yes (1)
- ○ No (2)
- ○ Unsure (3)

Display This Question:
If Do you think there are ways to reduce emissions on your farm other than by reducing production? = Yes

Q27 Which GHG emissions reduction actions could you potentially use on your farm? Select up to 3.

- ☐ Improve the efficiency of production (5)
- ☐ Change to low-emissions breeds (6)
- ☐ Reduce fertiliser use (7)
- ☐ Change stocking ratios (8)
- ☐ Use low-emission feeds (9)
- ☐ Methane inhibitors or vaccines (10)
- ☐ Manure management (11)
- ☐ Diversify or change to different farm type (12)
- ☐ Other (please specify) (13) _____

Q28 What are the main barriers preventing you from reducing farm emissions? Select up to 3.

- ☐ Cost of reducing production (1)
- ☐ Cost of technology (2)
- ☐ Cost of infrastructure (3)
- ☐ Mitigation technology unavailable in the market (4)
- ☐ Low emissions breeds are not available in numbers required (5)
- ☐ Lack of technical know-how (6)
- ☐ Unsure of impact on the business bottom line (7)
- ☐ I do not trust the new methods/technology (8)
- ☐ Other (please specify) (9) _____

Q29 If you have any additional comments about GHG reduction and potential role played by NZ farmers, please enter it in the box below.

_____
_____
_____
_____
_____

Appendix 2 – Regression analyses of selected responses

To analyse the factors associated with the binary responses or responses that can be converted to binary, we conducted a series of logistic regressions of the survey data. The dependent variables take the value of 1 when a response is "Yes", "Extremely easy or somewhat easy", and 0 otherwise. Table 2 describes the dependent variables for all models. The explanatory variables are industry, island, area, presence of a secondary industry, age, education level, gender, and Māori identity. Table 1 in Section 3.1 lists and provides descriptive statistics of explanatory variables. Additional explanatory variables are responses to questions 6, 16 and 24.

Table 3 contains the marginal effects of the explanatory variables for all regression models. The marginal effect is the change in the dependent variable (for example, the probability of using models and tools on the farm in model Q5yes) for a unit change in the explanatory variable. Asterisks indicate the statistical significance of the marginal effects. The coefficients without asterisks are not statistically significant at the 10% level.

Table 2. Models and dependent variables

Model name	Dependent variable (1/0)	Proportion yes/ easy/ farm level
Q5yes	Use a farm model or other tool for farm planning or reporting	0.47
Q6yes	report farm activities to any entity	0.67
Q7yes	Used rural professionals, farm advisors, or consultants for any activity	0.79
Q9yes	Strongly agree or agree that farmers should undertake measures to reduce on-farm GHG emissions	0.23
Q11yes	Have any forests on the farm that are eligible to be registered or registered in the ETS	0.34
Q12yes	Have other woody vegetation that does not meet the standards to be registered in the ETS	0.67
Q13easy	It is (or would be) easy to register forests in the ETS	0.05
Q16yes	GHG emissions are currently calculated for the farm	0.49
Q18easy	It is (or would be) easy to calculate GHG emissions on the farm	0.05
Q22easy	It would be easy to participate in farm-level emissions pricing	0.08
Q24farm	Prefer for emissions data be collected and costs charged at farm level	0.55
Q26yes	There are ways to reduce emissions on the farm other than by reducing production	0.51

Table 3. Factors explaining the use of farm model or other tools for farm planning or reporting: results of logistic regression

Variables	Models											
	Q5yes	Q6yes	Q7yes	Q9yes	Q11yes	Q12yes	Q13easy	Q16yes	Q18easy	Q22easy	Q24farm	Q26yes
Dairy (1/0)	0.236***	0.363***	0.152***	–0.086	–0.179***	–0.107*	–0.014	0.159**	–0.02	–0.032	–0.069	0.067
North Island (1/0)	–0.073	–0.094	0.013	–0.033	0.097	0.032	–0.048	0.092	–0.047	0.011	0.052	–0.074
Area, 100 ha	0.096***	0.084***	0.171***	–0.059	0.096***	0.135***	0	0.088***	–0.003	–0.016	0.039	–0.021
Secondary Industry (1/0)	0.09	–0.01	0.086*	0.051	0.089	0.011	–0.002	0.025	–0.002	–0.027	–0.115	–0.012
Age, 10 years	-0.019	–0.009	0.012	–0.062***	–0.007	0.014	0.015	0.011	0.016	–0.015	0	–0.004
Bachelor and higher degree (1/0)	0.027	0.018	0.099*	–0.170***	–0.091	0.054	0.018	0.180***	0.016	–0.005	–0.011	0.038
Female (1/0)	–0.049	–0.071	–0.105*	0.036	–0.031	–0.015	–0.012	–0.053	–0.011	0.046	–0.027	0.012
Māori (1/0)	–0.022	0.254	0.108	–0.171	–0.038	0.118	0.046	0.152	0.039	–1.061	0.085	0.01
Should act to reduce emissions (1/0)								0.204***	0.01	0.029	0.141*	0.108
Calculate GHG (1/0)									0.012			
Farm-level pricing (1/0)												0.225***
Processor level pricing (1/0)												0.234**
Number of Observations	221	221	221	221	221	221	221	221	221	221	221	221
AIC	275.5	241	206.1	236.7	260.1	282.9	100.6	274.4	104.3	134.9	316	316.6

Statistical significance: ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Appendix 3 – Other reasons given why respondents have not calculated their GHG emissions (Q19)

Industry	Reason
Dairy	Because farming is f...ing neutral. The idiots running this do not understand the Year 9 science, the carbon cycle
Dairy	Government needs to inform us of the numbers first rather than farmers producing them. Otherwise those that have already decreased will be nailed again with a new requirement to reduce therefore punishing them for been proactive.
Dairy	I don't believe agriculture is where they should be focusing they efforts it should be something all humans do like use cars or make rubbish
Dairy	Other priorities.
Dairy	We need templates to help us
Sheep and beef	farm is for sale, ive had a guts full of all this shit
Sheep and beef	Haven't needed to do it yet. Potentially becoming part of farm quality assurance programs. Also don't trust the science and methodology used for the current system
Sheep and beef	havent wanted to do it yet
Sheep and beef	I am agnostic to the dire effects predicted for a rise in ghg
Sheep and beef	I am in the process of inputting last years data to the Beef and Lamb Calculator
Sheep and beef	I don't believe my herd has any substancial greenhouse emissions. the amount of CO2 my machinery produces would covered by the o2 produced by our many native and exotic trees planted 50 odd years ago before this GHG crap became sensationalist.
Sheep and beef	I have only just purchased the farm
Sheep and beef	I know my number
Sheep and beef	It is a pointless exercise untill all trees and grasses are included as being able to sequest carbon.
Sheep and beef	Let me explain my cynicism: An IDIOT (helen clark) began the ETS; corruption to allow the emitters get off the hook. Is the HWEN any better?
Sheep and beef	Not required due to size of farm but will do out of interest.
Sheep and beef	Small farm, low inputs and emissions, no regulatory requirement
Sheep and beef	The level of emissions from NZ farming doesn't register on the world level.
Sheep and beef	We are not very skilled on the computor and found it difficult to do for our farm which has alot of scattered scrubland
Sheep and beef	We are sick of being lumbered with more and more regulatory paperwork to do for no benefit to anyone.
Sheep and beef	We believe we have a fully sustainable operation with a large proportion of native vegetation and modest stock numbers
Sheep and beef	we have calculated using beef and lamb new model
Sheep and beef	We have recently bought a new farm so trying to figure out what stock we can run on the new property so we can put numbers into the calculator accurately

Appendix 4 – Other responses given about GHG emissions reduction actions could you potentially use on your farm (Q27)

Industry	Response
Dairy	Retire
Dairy	Sell the f***r.
Sheep and beef	Change of Government
Sheep and beef	Farm is already Carbon Negative. So will be intensifying until reach carbon zero if I am not compensated for being Carbon Negative
Sheep and beef	forestry
Sheep and beef	Grazing Management to lower protein and sequester soil carbon
Sheep and beef	Less cattle more sheep (unsure if ratio above refers to cattle/sheep ratio or stocking density i.e. per Ha)
Sheep and beef	More planting of native species in retiring land/along creeks etc.
Sheep and beef	More trees
Sheep and beef	More wetlands
Sheep and beef	my main concern is water course contamination not atmospheric.
Sheep and beef	native trees
Sheep and beef	plant more trees
Sheep and beef	using biochar to store carbon
Sheep and beef	We are always trying to produce more product with less imputs, have been every year the whole time we have farmed. To expect us to Dail back production to decrease our ghg numbers is madness as we are already the most efficient producers in the world. What I don't produce here, means someone on the other side of the world will have to produce at a higher carbon footprint. We all live in the same room.
Sheep and beef	We have made significant changes to our farming practices over the past 20 years to practices that are in alignment with natural processes. These reduce the carbon emmisions significantly and we hold concerns that there will not be recognition for these changes.

Appendix 5 – Other responses given about the main barriers preventing you from reducing farm emissions (Q28)

Industry	Barriers preventing you from reducing farm emissions
Dairy	Taxing farmers to set up a giant bureacracy is never going to change the climate. Dump the whole thing
Dairy	A one to two degree rise in temp and increased co2 is an advantage for the West Coast of the south island as I will grow more grass or could diversify into other crops.
Dairy	All practible steps have been taken. Read report from Matt Burgess Senior economist at NZ Initiative. we are on track without further reductions.
Dairy	And do not trust the science behind it as have seen standards change goals changed in the past for other farm compliance
Dairy	Financial restraint
Dairy	Have already done a lot of these
Dairy	Have already made many changes
Dairy	I already run a low stocking rate with no N P K fertilisers. My figures for Nitrogen loss are in the mines now.
Dairy	I am already keeping emissions super low and am not likely to be recognised for it!
Dairy	I do not trust the calculations that say GHG from farming is as big of a contributor to the problem. Greater problem coming from use of fossil fuels whose users are not carrying the responsibility as proportionally as farming due to the closed loop nature of farming GHG's
Dairy	I dont believe farm emissions are an issue
Dairy	I have already attempted to reduce by GHG profile and am concerned that blanket regulation will further punish me despite my previous efforts
Dairy	I have already lowerwed my stocking rate to a level I feel is relevant
Dairy	I have my emissions very low
Dairy	It is still not clear and lots of inknowns around ag emissions. Carbon in soil, grass sequestation, methane life in the atmosphere. Not very motivating when picture unclear.
Dairy	lack of information around best methods for my business, I,e most effective practises
Dairy	Lack of methods of measuring the difference between operation management on similar farm systems. Use of blunt measuring for on farm measuring. And the effects on the bottom line to our business unless we can capitalise on our efforts in overseas markets with our lower emissions products
Dairy	Lack of transparency from industry and Govt bodies around frameworks and accountancy methods
Dairy	The devil is in the detail and at this point detail is lacking. Why beat up NZ farmers that are all ready the best
Dairy	The pointlessness of it all.
Dairy	the unfairness of it all. It is just a government driven way of taxing farmers to please the UN. No real science behind it
Dairy	there are other countries that need to reduce emmisiions than small fry NZ
Dairy	Unsure of farm future, retiring 10 ha of paddock to native trees would take several years before eligible for ETS credits. Will I still be here at that time?
Dairy	Unsure of what the rules will be so don't want to make changes until we're 100% sure

Industry	Barriers preventing you from reducing farm emissions
Dairy	until made law will not waste time on this ridiculous procedure. Would sooner sell the farm than have to deal with this rubbish, money making scheme
Dairy	We've already done some of the actions listed above.
Dairy	We are currently trying very hard in this space.
Dairy	We are doing alot of the things now eg lower cow numbers, using different crops with lower emmissions, so what more can we do????
Sheep and beef	All animal emmissions should be exempt from any tax or regulations. These are natural emissions and not produced by burning carbon. I will not agree with any form of tax on these
Sheep and beef	all this acheives nothing unless there is a worldwide agreement,for me NOW it is all crapp
Sheep and beef	Already Carbon Negative, so no incentive
Sheep and beef	Already run an incredibly efficient system equal too or better than any other in the world. Why would I stop producing here to have the same food produced more inefficently elsewhere in the world. Let me claim for my established trees and I am carbon neutral/negative
Sheep and beef	Am doing so but takes time
Sheep and beef	As stated above.
Sheep and beef	At 65 some of these things are way out of our expertise range. We are just farmers not computer of technical people
Sheep and beef	Consistency in emissions measurement and regulation around it. Ensure the the outcome is targeted not just ideological
Sheep and beef	Firstly I do not undertsand why the focus on emmissions? Where does the CO2 and methane in cows come from? My understnding iis that it comes from the grass they eat? and that grass gets its carbon from where? so beef farming is a sustainable cycle unlike fossil fuels used by vehicles and airoplanes. Why are he emmo=sissions from the two considered similar?
Sheep and beef	I already run a very low emission system.
Sheep and beef	I Don't support the governments approach to this whole concept
Sheep and beef	I don't use any supplementary feed or fertilizer. I have no land that can be regrassed or cropped. There is nothing much that I could change. Stocking rate already low and farm covered with native trees
Sheep and beef	I have already made large reductions so going further will effect business sustainability
Sheep and beef	I honestly believe the whole idea is rubbish
Sheep and beef	I view GHG mitigation as another tax on food producers .
Sheep and beef	lack of practical support through funding for projects
Sheep and beef	no reason to change when there is no mandate to change.
Sheep and beef	Not many live options yet
Sheep and beef	Not sure how to go about it
Sheep and beef	Opinion, Why should farmers be reducing when people in town drive everywhere or businesses dont get a Emissions charge for business vehicles or other outputs. Farmers already take of the land and produce efficiently. The facts are overlooked for government purpose.

Industry	Barriers preventing you from reducing farm emissions
Sheep and beef	Our farm is under ONL category o we are limited in changing land use and land cover (so planting forest is restricted) We ahve already dropped stock numbers significantly so will not be able to reduce tsock any more without major impact on income...Running an extensive sheepperation additives to feed is not going to be useful as we only graze paddocks and no feedlots
Sheep and beef	Science takes time. Our pasture breeders are gaining 1-2% production increases per year with the same inputs. This in 20 years time we will be 20% more efficient. It takes time, and science will get us there.
Sheep and beef	Tell the politicians and bureaucrats to get stuffed
Sheep and beef	The genuine market led incentive from customers of my products to purchase because they are lower emissions products and makes financial sense to reduce emissions
Sheep and beef	the ipcc says reducing carbon should not be at the expense of reducing food production.
Sheep and beef	There are no realistic options.
Sheep and beef	Time lag and lack of agreed protocol for soil carbon
Sheep and beef	Total lack of proven viable options and excessively bureacratic, and unscientific ETS
Sheep and beef	we already according to the GHG calculator are very near carbon neutral, we are low intensive and stocking rate and have spent money and time in tree planting over our farm
Sheep and beef	We are already efficient producers compared to the rest of the world but we will still be penalized. We have reduced emissions already with out a meaningless or non behaviour changing TAX.
Sheep and beef	We are reducing emissions
Sheep and beef	We have already made many changes and are at a loss to see what else can be changed without closing up shop and selling the land for housing
Sheep and beef	What about looking what we are already doing!

Appendix 6 – Additional comments about GHG reduction and potential role played by NZ farmers filled by the respondents (Q29).

Industry	Comment
Sheep and beef	We need recognition for efforts and changes that have already been made. For some they have been implementing these changes for many years through changing farm systems, plantings etc
Sheep and beef	Essentially I think it is a futile effort with little or no measurable impact in terms of the global picture. It is in my view simply "virtue signalling" by the current administration. There is no accurate scientific information to confirm agricultural emissions (apart from fossil fuels) contributes to GHG levels at all.
Sheep and beef	Why not take a world view of a world problem and how and what we produce. Instead of "We are evil and must be punished!" why not "NZ farmers are awesome, the most efficient and must be praised!". The current proposals for NZ farming wont help global warming in fact every kg of protein substituted by an overseas producer will result in 12-15% increase in emissions'. This is dumb green washing and uninformed political grand standing and certainly wont help reduce "GOBAL" emissions
Sheep and beef	There is no way to currently acknowledge/reward those of us who are already working hard on this, have recently retired land areas, and run farms without bringing in feed etc. Also no recognition (financially or otherwise) for organic or regenerative systems like ours, which is frustrating, as we see other farmers claiming carbon credits yet they also use 'bad' fertilisers, import feed etc. Really hard to stay positive when these imbalances are active. Regards.
Dairy	The council has just done the annual effluent inspection and discussed the new Fresh water regulations. What they expect me to fence is ridiculous and wont be done. Too stupid to entertain !
Sheep and beef	There is a lack of on farm current credible published research around green house gas cycles on farm and how these can be manipulated to please the policy makers. I.e farmers will be put out of business within a generation if there is no major changes to the policy or a new technology not yet available. What is currently proposed is unworkable in the long term.
Dairy	For many years we have planted larger growing trees on our farm we would really like to be able to offset the benefit these may give, against some of our greenhouse gas emmissions. It would also encourage others to plant more trees as shade/shelter [as compared to forest blocks] if extra benefits where availiable.
Sheep and beef	It seems to me that, yet again, primary producers are paying most the cost. How about the end user contributing as well in some way? Yes, it's easier to hit PP because there are less of them and they tend shut up and get on with it but as a people, we are all contributing to the present situation. Also, pasture, crops, etc are sequestering but no allowance is made for this in any calculations thus far.
Dairy	Rather than reduce on farm production which is bad for farmers & bad for our economy. Look at other NZ industry & transport. More importantly get India, China, Russia & America to reduce their GHG because compared to NZ farming we are a tiny fraction of the pollution
Sheep and beef	At no time have you asked what we have done and what agricultural technologies are we already using. There seems to be a belief we are behind the game when I believe we are leading the changes. We are not buying forests to offset our emissions like corporate companies(air new zealand, warehouse). We are making changes and using technologies that truly making a difference. There great examples of farmers doing great things like they have done for generations.

Industry	Comment
Sheep and beef	Future production increases will all involve increased GHG production. We must start managing stock numbers down now.
Sheep and beef	Regen farming
Sheep and beef	With a high percentage of land held by farmers and DOC [95%]. it would not be hard to concentrate on emissons generated by the industrial sites which could be less than 1% of land. Too many busines's are claiming 'carbon neutral' status with trucks delivering their goods
Dairy	GHG from cows eating grass in a paddock is recycling carbon already in the environment. While farmers can take some mitigation steps, there needs to be a reduction in fossil fuel use. Cutting stock production and stock numbers in New Zealand has the potential to raise GHG from other, less efficient, countries.
Dairy	as my farm is flat to easy and intensive I have invested off farm in afforestation and carbon sequestration investment as a offset-hedge
Sheep and beef	Please take heed of the Paris agreement that states that food production must not be reduced .The global population is growing , demand for protein is growing, and NZ still produces good food with a very low footprint (esp now that Ukraine is at war there will be less cropping coming from that country which will impact Europe). If NZ reduces food production...(.by both less stock on farms as well as les farms due to the number of farms now being planted in monoculture of pines) then more food will need to produced by agricultural systems which have a higher carbon footprint. NZ may look good but the big picture is that globally there are more emissions so the problem is exacerbated. This issue is a very important one to us. The "feel good" factor can not trump reality. Because we farm land that is in an ONL we can not plant trees so the best thing that we could do is go in partnership with other farmers and buy a block of land to plant pines on so we can count that as sequestration. If many farmers take that option (as I think intensive dairy operations will do as they are limited in ability to plant trees on productive land) that is also going to increase the problem we already face of losing productive sheep/beef farms. We would never make this choice even if it was the sensible thing to do as I could not live with myself making such an environmentally and socially negative impact
Sheep and beef	Mitigation options are costly so farmers need to be able to be profitable to pay for the transition. Too many costly regulations will let to an exodus to urban areas and transfer of GHG emissions to urban areas where potential for designing circular environmental systems are more limited than in rural areas.
Sheep and beef	We only have shelter belts and the odd trees dotted around for shade on our farm and have found it extremely hard to get even these established. Droughts have caused money wasted on plantings that have not survived, let alone the effort and time spent putting them in.
Sheep and beef	Please understand the profile of low intensity/extensive sheep and beef farming in relation GHG emmissions. Approx 90-97% of emissions come from livestock. i.e a few less hours on the tractor or a few less tonnes of N are absolutely meaningless in changing the profile of emissions. In the case of N - very little used anyway. If every emission is accounted for every piece of sequestration must be accounted for. I.e non ETS eligible vegetation- including soil
Sheep and beef	If GHG reduction is distilled down to little more than a tax, the danger is that farmers will fund this by increasing production because as price takers we have very few options. The result may be that the very thing we all need to happen (GHG reduction) will in fact not happen and get worse. A carrot will be much more effective than a stick in this case. A stick may get farmers actions to change but in the wrong direction. A carrot will lead them in the precise direction required.

Industry	Comment
Dairy	Make sure any costs loaded on to farmers is paid for by the consumer. So all NZers share the load
Sheep and beef	There are lots of questions about pricing and how the government will use this to drive a change direction. There seems to be plenty of tools coming on board which will help reduce emissions. The hardest hit are likely to be the extensive low intensity farmers.
Sheep and beef	GHG that are a result of animals living is a natural emission that the Earth is designed to cope with. The GHG that should be taxed are those created by burning oil and coal. These are the problem and this is recognised in the Paris accord which states that any measures should not impact on food production. I am happy to pay tax towards my use of these resources. I consider it a breach of faith and down right deceitful of our politicians to attempt to tax us in this way. I note that it is only NZ which is considering this type of tax on animals and arises because we are very efficient at producing food and our use of carbon fuels is much lower than most countries.
Dairy	The world has reached a tipping point in being able to feed itself. The natural aspect (grass fed with animals grazing) of NZ's production, against overseas feedlots with imported feedstuff needs to be enhanced. Through policy & regulations that punish NZ's natural, closed loop, system our country will be forced to produce less. The world still needs to eat so the demand created by less production from NZ will be filled by overseas production systems that are more detrimental to the globe & produce more GHG (from fossil fuel) per kg production
Sheep and beef	High emitters should pay higher price. Fossil fuel emissions should be focussed on more than biogenic methane
Dairy	The whole GHG is no more than a political football With the current Government sucking up to the Green Party to aid in re-election. By Taxing farmers yes Taxing its not a levy we will increase food to all New Zealand house holds. Farmers have achieved a lot already that is not recognised and will do more yet, Taxing removes money to spend on farm to put towards improvements, especially with $100million wasted on admin, which with a government department will blow out big time. Let our own industry bodies ie: DairyNZ & Beef & Lamb who already collect a levy to do the R&M
Dairy	NZ farming are the lowest emitters in the world. Why should we be forced to push production overseas where the footprint is higher resulting in more emissions instead of less? If farmers in NZ were allowed to take the sequestering in to account from the way we farm(rotational gracing) and all our plantings, farmers should be paid carbon credits. US research has proven this and so did Beef and Lamb. This however doesn't suit the government so it was promptly decided that vegetation under 5 meters could count . How can that be fair and accurate? Just proves this is just a way to tax farmers, who already through our hard work provides the most income for this country. No matter what the science says the government is hellbend on destroying farming in NZ and cover the country in pine trees to make carbon credits for the real polluters! Just crazy. Go Groundswell!
Sheep and beef	In the world something like 25000 people die each week from starvation. Do these people that are driving this not have any morals or compassion??? I do totally agree with reducing GHG but not organic GHGs at the cost of human lives.
Dairy	again i say read report from Matt Burgess Senior Economist at NZ Inititive. States we are on target. Doing more will achieve nothing. We are already leading in our Agriculture sector, yet Government and Greens want to ram it down our throat. Ultimately, the increase costs will flow down the food chain, and the poverty, health and mental health crisis will only deepen. The old saying ... Dont bite the hand that feeds you.
Sheep and beef	reducing food production in nz will result in more production in overseas countries that emit more ghg per unit of food produced.

Industry	Comment
Sheep and beef	N/a
Dairy	There shouldn't be any GHG reduction at all. Reducing numbers will force many more farms out of business. Thousands of cows will be sent to slaughter, a huge waste of productive sound cows. Very sad animal welfare wise.
Sheep and beef	Do not handicap NZ farming and so NZ by forcing stocking rate declines and reductions in production to make just NZ numbers look good . This will lead to leakage and ultimately worse global outcomes. It is a global problem . Use science and facts to make decisons not emotion and bull dust. Publicity should be fact checked.
Sheep and beef	as a sheep an beef farmer, our industry has already reduced its numbers by millions of animals ,but have not been reconized for it , an now are being asked to subsidise the dairy industry as their numbers have gone up,on top of other industries being able to plant pines on sheep farms an carry on emitting ghg with no change in behavior or out come
Dairy	Clear goals need to be set and the reductions should include the NET GHG emissions thereby including ALL sequestration that goes on, i.e the sequestration that is included in the growth of the animal feed (pasture etc)
Dairy	I am AGAINST both hwen (what the hell does that mean?) options, and farmers should be leading the charge against the oprinciples of the ETS. There is no credit for other trees and for grass because those bloody bureaucrats think it is "too difficult to calculate", so just tax the farmers (you know, the idiots who produce the food everyone eats) into oblivion
Dairy	Farmer GHG levies should fund targeted mitigations. Forests should only be available to offset agricultural emissions
Dairy	Really concerned lowering output in NZ to potentially reduce GHG. Then the shortfall in product being replaced by higher emitting overseas producers. Would also like to see GHG paid for by end user similar to what happens to fuel. It would put us on a more level playing field with higher emitting countries who are not putting food production in their ETS schemes (if they even have one) It would also recognise the food production:population ratio that makes farming such a large part of our emissions in NZ
Sheep and beef	Some need to be honest and acknowledge that they can do better, just as the government and rest of the world need to acknowledge that food NOT produced in NZ will be produced elsewhere with a higher carbon footprint
Sheep and beef	We find disappointing the position taken by Industry that NZ soils are unable to either sequester or volatilise carbon. This is an internationally unique stance and in conflict with pedogenisis that recognises all soils are in a state of flux and influenced by practices on that soil.
Dairy	If NZ farmers reduce production some other country will take its place on the world food market at a much high green house gas emission. More priority should be given to finding ways to reduce emission gasses (vaccinations, food additives etc) before introducing a tax. Hopefully the population of NZ will be happy to pay an extra cost for their dairy and meat supplies as a result of this tax.
Dairy	The information gathered to reach targets is very subjective, major reason people put these initiatives in the too hard basket
Sheep and beef	Make it fair - allow farmers to benefit from existing plants and trees Also - where is the 2nd installment for pre 1990 pines that the govt promised?
Sheep and beef	we produce methane mainly. This has not gone up..... more thinking is required
Sheep and beef	No

Industry	Comment
Sheep and beef	add grass and crops to the picture
Dairy	Stop taking from the farmers when the biggest problem is the city's. It is to easy for the governments to take from and blame the agriculture
Sheep and beef	GHG reduction for farming is impossible. All it will produce is a tax on farming and a reduction in profits and viability. Paris accord said not to touch food production. NZ is already the most efficient in the world. Concentrate on the real causes and over population and excessive wasteful consumption. Farmers are not the problem.
Sheep and beef	I see the creep of afforestation in my area (nearly 40 thousand acres now) all in radiata , unmanaged with no fire breaks and water supply suitable to fight a big event which will happen. Internal forest access between poor to non existent in the next ten years. We seem to forget the fire events and the issues involved with fighting them especially when the planting is pure growth and subsequently composting. What calculation do have for GHG emission as produced by large fires?
Dairy	Farm emissions have been static or rising very slowly since the 1990s. Methane levels from ag in the atmosphere are not rising like the amount that CO2 from hydrocarbons is increasing. Farm emissions should not be treated like CO2 from hydrocarbons. Any GHG proposal should be fair to farmers and recognise it is totally different to sucking oil out of the ground.
Sheep and beef	I favour the view of Kieth Woodford (Farmers Weekly, Page 25, 14 Mar 2022) where he says that He Waka Eke Now (and the government decision) should focus on Methane and Nitrous oxide and handle anything to do with carbon sequestration within the ETS rather than have it muddy the waters in reduction of the key agricultural greenhouse gasses.
Dairy	More research needs to be done into sequestration of CO2 into the soil and the amount of sequestration from shade or shelter trees. I observe most dairy farms have basically no trees. Shade and fence line shelter trees could play a major part in animal welfare as well as sequestration and will have only a positive impact on production. These trees could be deciduous and grown at little cost
Sheep and beef	We will not buy into GHG reductions purely to meet arbitrary targets if it will result in the shifting of our production to some other country with poorer emissions footprint to produce the same product. We do what we do with the lowest footprint already, so unless this can be done without reducing productivity, it should not be done at all.
Dairy	When is the source of carbon emitted by livestock going to be included in the calculations? Currently only the negative (emmisions) are counted not the the positive (carbon sequestered in growing the feed). Livestock do not simply create carbon emissions for "thin air".
Sheep and beef	Im anti because farmers are being targeted
Sheep and beef	We pay levies to groups such as Beef and Lamb or Federated Farmers who have decided farmers are on board with ETS. Once again farmers have been railroaded into something they dont agree on.
Sheep and beef	We have been sold a lemon by the current communist government.
Dairy	I am a reluctant and skeptical participant in any government mandated farm scheme. History would say this is well warranted. Wellington and unfortunately many academics seem to have zero idea of the practical and ongoing impacts these schemes have on farm. Grandiose ideas not rooted in reality. These plans come with little, or no practical advise on how we are supposed to actually achieve often fanciful targets. Schemes that never acknowledge that the 50000 farms in New Zealand are actually ALL different from each other. Schemes that don't realise or don't acknowledge that farming may require decades to change. NO, not because we are backward, inbred, redneck hillbillies, but are people trying to manipulate complex biological systems which takes time, often decades to change meaningfully.

Industry	Comment
	I believe there is to much focus on producers of GHG and not enough focus on consumers. Our part as farmers is to produce quality food with the best GHG profile possible, but it must be profitable. Consumers need to be more aware of the actual GHG costs of what they consume. At present the media portrayal is that farmers are responsible for 50% of emissions so farmers can fix it. There is little context, this is the whole story. There is no link between what consumers consume and the environment cost of that consumption. Consumers don't and won't care about GHG/ha, transport emissions, country emission profiles, methane v CO2 v nitros oxide until it is personal for them, and probably not until it is visibly expensive. Maybe consumers need a daily prompts or daily cost reminders. "X" cents/kg of beef/spinach is your financial contribution or environmental cost of eating your dinner tonight. All displayed beside the price of each item in the supermarket. In this "Team of 5 million", farmers do acknowledge that farming methods will have to evolve, but I'm left wondering what the other 4.95 million team members are doing and when they're going to get in the game.
Sheep and beef	I my view the role of methane as a long term GHG is very researched and what limited information is v poorly circulated/distributed. It looks like the NZ government has taken the easy out to hit back at easily targeted potential source of GHG. There is no avenue to get credit for carbon sequestration that isn't part of an established plantation. There is significant amount of other plantings on most farms. Nothing appears to come from the B&L nz sponsored work looking at the GHC contributions of NZ drystock farmers
Dairy	Methane from livestock does not increase GHG in a stable production environment
Dairy	This whole methane rort needs to be booted to touch. Sick of so called green politicians trying to put us out of business. We pay enough tax allready to keep funding research so that we can quietly continue towards best practice whatever that may be. The bureacracy proposed by hwen will strangle productivity and profitability. Too many people and organisations are on the gravy train and I include a big hunk of the public service, Dairy NZ, Beef and Lamb, Federated Farmers, Ag processing companies, right down to all the small consultancy companies that make a living off this monster. It is no wonder that productivity in NZ is going backwards when so much resource is wasted by politicians with socialist agendas.25 years ago I listened to a speech at a Lincoln graduation by Dr Jock Ellison and he noted that of the folk graduating on that day it was ironic that half of the graduates would end up in the productive sector and the other half in a monitoring, regulatory role keeping a close eye on those people doing and producing stuff. He probably underestimated the percentage that are hangers on. Where will it end ?? Communism and state farms ??
Dairy	Please give the farmers a break! I know the meaning of carbon footprint, and it has methane factored in to it . Each man, woman and child has a carbon footprint of 10 tons per person (Total per person inclusive of the agriculture sector18 tons) Our cows, 450 of the dairy team of five million, have a carbon footprint of 3 tons each WHEN is each man, woman and child going to be expected to know their number, execute mitigation and pay carbon tax? The world average footprint per person is HALF that of NZ people?? WHEN is NZ going to stop waiting for farmers to 'do something about it' , and start looking at their own lifestyles of over processing, packaging, transporting, burning fuel for recreation, overseas trips. I do believe farmers have something to contribute by reducing or eliminating nitrogen fertiliser and streamlining their stock efficiency but feel dismay when i see Dairy NZ conducting meetings to persuade farmers across the line when they will be the recipient of millions of the carbon tax revenue. They are misleading us about carbon sequestration, saying its not real when overseas farmers are counting it, leading a belief about inhibitors within the digestive system and genetic gains when they have no idea

Industry	Comment
	about investment vs. real gains. I trust no one but myself and my own private research. I will continue to live as I do and farm as I do (organic certified) because like our cows, my personal foot print is 3 tons!
Sheep and beef	No Comment
Sheep and beef	Gordon Campbell (website Wherewolf) discussed (2021) coastal shipping; totally feasible. Any chance of any action by James Shaw or Jacinda? Many options for reducing CO2. Buy thousands of electric buses, run them for free & frequently all over cities and past supermarkets; best way to reduce vehicle CO2, best way to resolve some inequality; much cheaper than stupid light rail. Where is the leadership from any politician; red, blue, yellow, black. They are totally ignorant. Methane by animals never builds up.
Sheep and beef	Farming should not be in the scheme at all. We are the people who create New Zealand's wealth and our emissions are negligible compared to other countries. Should concentrate on them to start with.
Dairy	Imposing a Tax through pricing emissions is counter productive and counter intuitive to the way NZ farmers address challenges (such as lowering our emissions profile). Incentivising uptake of technology (as it becomes available) would be the smartest and quickest method of achieving some reduction. Most farmers are now finding out our emissions profile and will look for ways to adapt and manage for less leakage (emission/leakage) as part of our core business focus on EBIT. This is the incentive I talk about. To move forward and demonstrate commitment many farmers I talk with would support funding a dedicated research/adaptation fund to demonstrate our commitment. This option would not penalise farmers, nor spend significant sums on Audit Trails etc, nor waste tax on Administration. The dedicated fund could be a Levy Type fund voted in by farmers/growers. Thus owning the results. The results /technologies where emission reductions can be achieved would be readily taken up (as NZ farmers have and currently demonstrated as World leading early adapters) Pricing emissions is fraught with error and will make no difference to our emissions profile. Providing reliable science/mitigation strategies would be far smarter and World leading. I hope the Commission has the Strength of Vision to support this concept and ensure that New Zealand Food producers are not penalised nor lose our World leading efficiency status.
Sheep and beef	ghg reduction is a pure political decision based on poor modeling and emotion installed in the population. i accept the modeling that the world population will peak around 9 billion and then reduce dramatically. with the current trends to lower missions in technology we will achieve GHG reduction naturally.
Dairy	We are wasting our time for little global effect to massage Mr. Shaw's ego. The parasites (advisors,consultants will be all over this like maggots on a chop) will be coining it.
Sheep and beef	What part of the Parris accord did the government read, clearly not the part that states reducing GHG emissions but not at the cost of food production.
Sheep and beef	Need to incentivise rather than penalise. Feel issue is more the quantity of feed consumed rather than no's of animals carried.
Sheep and beef	as noted above beef farming is a natural cycle where grass grown has removed CO2 from the atmosphere If forced then we would stop farming and subdivide the property for housing as have most farms in our neighbourhood I have to say the primary industry in New Zealand is food production. The world is losing its productive farm land and its population is growing at an uncontrollable rate. We seem to be adding to that unsustainable vision with a growing population and reduction in food production with higher prices for food going to be needed to pay for

Industry	Comment
	the costs of production. Perhaps the answer is to convert to growing carbon credits which no one can eat but would give us a better return over the remains of our life
Sheep and beef	feel that too much emphasis has been made on especially beef and sheep farming practices and there has been a a very simplistic one size fits all approach. GHG reduction should be applied to all NZers not just one specific industry
Sheep and beef	what about some consideration and assessment of figures which include the effects that pasture production has on reducing GHG. It seems to me that the powers that be do not really understand the economic benefits that NZ gets from animal [particularly ruminants] production. It is almost like the Greens in particular think that cows are NZs enemies!! If cows were eliminated, where would the overseas funds come from ???? And what are other countries where animal GHGs are being produced at greater levels than in NZ being asked to do?? We only have about 9 million cattle, Brazil has more than 150 million!! The EU has huge impacts on GHG too, and what if anything are their farmers doing ?? It seems to me to be political nonsense as I believe NZ already has systems in place to reduce our "bad" environmental effects.
Dairy	The easy way is to reduce fert use& stocking rate BUT THAT WOULD MEAN OTHER, OVERSEAS, HIGHER GHG PRODUCERS WOULD INCREASE PRODUCTION RESULTING IN MORE GLOBAL GHG EMISSIONS. AND IT WOULD AFFECT THE NZ ECONOMY REDUCING THE QUALITY OF LIFE OF ALL OF NEW ZEALANDER'S! Some politicians either don't know this, cannot understand it, or simply deny it, saying its not true. DAIRY NZ has not helped, being quoted as saying "Some farmers would make more money by reducing stocking rates". No doubt that's true BUT their own figures showed that the vast majority would lose money!
Sheep and beef	It is vital that there needs to more input from NZ Farmers, making the rules and regulations around GHG's. At the moment most of the talking and decisions are coming out of Govt, Wellington, some braindead ideas are so far from reality, is what will slow the all concept down. Go to the farmers, producers FIRST, they are at the CoalFace, there is so much information and ideas there. But these numbskulls in Wellington think they know best. Farmers are are always willing to grab proven Tech and Science research to produce a more sustainable product which is environmental friendly. Further more, there seems to be an answer for GHG and lots of equations to get that answer, but how and what and who produced the answer? Was this answer produced for or by our NZ Farmers, Producers, or for or by overseas Scientists or Regulators, bought here and applied to NZ Farmers?
Dairy	The role of agriculture in terms of economic output for NZ and the story of our Global GHG output needs to be better portrayed. While we trade significant amounts of protein at a low Global footprint and per kg/product. We must continue to progress. However, the speed of transitions the ambitious nature of targets set by the Govt is faster than the ability transition. Farmers are willing to change and have buy into the process. We are however wanting pragmatism and credible science/outcomes that will help on farm practices and frameworks that help farmers achieve the best outcome. For the economy and for the longevity of the environment and industry
Sheep and beef	Measure my emissions per capita of the number of people I feed Stop punishing me for producing food and income for myself and nzinc
Dairy	I am disappointed that this survey is assuming that farmers have done nothing to reduce their emissions already.

Industry	Comment
Dairy	GHG reduction needs to be considered from a global perspective. The world needs food and NZ is very good at producing it with a lower GHG production per Kg of food produced than other countries. Nz needs credit for it's GHG production efficiency.
Dairy	Yes, the unintended consequences that will evolve from some strategies and the impact on rural communities. Lower stocking rates in some cases will lead to risks of weed burden, job losses, increased food costs, animal welfare in droughts. I don't believe that policy makers truly understand this recommendation.
Sheep and beef	Have major concerns regarding productive farmland been sold tto be used to plant trees that are only to profit from Carbon credits.
Sheep and beef	Back sound science. Hard to get farmers engaged when there is no reference to pastoral sequestration. And you only take into account a few trees since 2008. All the calculators come up with different answers, so feels like a joke. I've got way better things to do than spending days chasing shadows
Dairy	Too much emphasis on Rumenant emmissions, Cost benifit ratio too high eg a lot of effort for little gain to climate outcome. Hugely more effective outcome to concentrate on pastural and forrest soil carbon storage. We are looking kind of dumb at the moment participating to create an appearance of doing something to help, but not really
Sheep and beef	There was a press release from Australia today implying carbon pricing is a rort. I agree. I can not trust a system where the price of carbon units is shunted around by commercial or political whim. Second, my handheld analyser indicates CO2 at pasture level is far lower than the 400ppm doomsday predictors maintain. Where is your evidence? Second, repeating "extinction rebellion" into the device shoots the CO2ppm up to 3000ppm no problem. I hope farming isnt being made a scapegoat for everyone else's transgressions. An associate with a similar device reports the CH4 emanating from a swamp on her farm puts a different perspective on her attributed livestock emissions. Eventually, I'll have to do what I'm told, but personally I think ETS and HWEN are a crock. What's really being promulgated is a replacement of farm animals to create space for humans and their grandchildren to keep breathing.
Dairy	Farm level pricing is the best option and most Dairy operators have the information available to go with this option. Perhaps parts of the sector could be on processor level levys and others on farm level.
Sheep and beef	Totally disagree with HWEN. So long as polluters can offset by planting pines, we are way off the right track and I will not support it or become involved. It is a money shifting scheme and has little to do with the environment
Dairy	I personally believe what we think we are going to achieve will be a waste of time as you have other countries like china India Russia and USA who emissions will not alter in fact I believe will increase
Dairy	We need to get this sorted.
Sheep and beef	Would like to know how cities and high industry areas are doing their bit as the burden seems to be on farmers. I think I probably have at least two trees to every R2 c0w and only use lime for fertaliser. what more is expected.
Sheep and beef	At the end of the day, we will all have to do what the Government tells us to do, no matter the extra burden financially and time wise it will put on farmers for no tangible result
Dairy	Individual farmers efforts need to be rewarded, as many farmers are already talking of holding their production/output levels and relying on others in the industry to reduce emissions. There currently appears to be very limited options that won't impact

Industry	Comment
	production, and those available will be more suitable for higher emission systems unfortunately. I currently operate a very traditional system 1 dairy farm and have extensive native bush and riparian areas, none of which are currently appreciated. More needs to be made of the cyclical and short life of biogenic methane I feel.
Sheep and beef	We must look at the bigger picture rather than the micro environment of NZ. The true issue is release of locked up "carbon" i.e. burning coal, oil etc. I'd also like to be able to easily access data on how the emissions are calculated, I believe this might build some confidence that the system is robust. For example is any consideration given to how an animal obtains "carbon" to emit, it doesn't come for free it is absorbed from the same atmosphere by the plants they eat.
Dairy	Pain in the backside
Sheep and beef	This issue is currently a dogs breakfast it is being rushed through with minimal farmer engagement unless you are one who sits on line. A very limited number of farmers. Get some demo farms out there that can lead the process get the system right and remove the bloody bureacrates with agendas, Taking a couple of years to get this issue right and workable will not make any difference to the end goal of saving the bloody planet!!
Sheep and beef	The biogenic methane narrative is tentative as: 1) Forests and wetlands produce as much as grasslands, globally. For reasons only understood by the IPCC, only grassland sources are man made. It does however make land use changes questionable. 2) Transpiring green pastures are a rich source of hydroxyl radicals which oxidise methane. Some sources claim up to 10* the methane from the grazing ruminants. 3) Anyway under the split gas approach if livestock numbers are constant there can be no additional warming even under the existing flawed accounting methods. 4) Lastly the big picture. If ruminants cause global warming then so do grasslands as this ecosystem cannot exist without them. Nearly half the world's land area is grassland. Some of the most diverse and vibrant land based ecologies. Yet in the climate change context we are told to believe that 40 million years ago God made a mistake.
Sheep and beef	NZ farming has a minimal effect on GHG emissions as Methane is a natural part of Earths environment and it always has been. What isn't a natural part is the burning of Fossil Fuels and all sorts of other human activity in the last 2-300 years which is the real problem.
Dairy	I would like to see some NZ research on NZ dairy breeds efficiency. It seems to me everyone thinks a switch to smaller framed jersey cattle is the answer disregarding the fact that this will actually drive up stocking rates for a lot of farms. There must be some size efficiencies to be had per animal. Also, I think there has to be a real shift in beef production in NZ if we are to genuinely make agriculture more efficient. This is just my personal opinion, but it absolutely makes sense to utilise the dairy industry biproduct of Dairy Beef rather than having thousands of additional beef cows/heifers on the ground acting merely as incubators. Heavy tillage by all farmers needs some serious attention directed towards it. It often feels to me that dairy is the low hanging fruit in this whole dilemma yet real change needs to be a concerted effort by all parties.
Dairy	Accuracy in terms of actual GHG production not just back calculation off feed intakes would be useful. Technologies needs to be available to reduce GHG other wise it's just a tax on production if no alternatives. All on farm sequestration needs to be considered not just those that are easy to measure and quantify

Industry	Comment
Sheep and beef	.
Sheep and beef	Need support so farmers can understand better there different farming systems
Sheep and beef	I will not be participating in any of this nonsense.
Sheep and beef	If the reduction of GHG's is actually the goal, farmers have to be incentivised ($). GHG's also have to be accurately calculated and take into account pastures, crops, carbon levels in soil and forestry/bush not eligible under the ETS.
Dairy	Regonition of what farmers have done already needs to be taken in to account
Sheep and beef	Attention & research funds must be given to the potential of regenerative farming techniques to sequester carbon long term in our soils. Coupled with reduced need for fertiliser this could be the way forward for pastoral farmers, as long as they are supported with education & right financial incentives. This is not to mention the role that healthy pasture might play in photo oxidising biogenic methane, meaning our methane Â«Â emissionsÂ Â» would in fact be negative. Thanks :-)
Sheep and beef	Any method of managing GHG should be at farm level, reward farm innovation and land use change
Sheep and beef	NZ has lower stock numbers than 1990 so in theory are already at net 0 methane etc. we are the most efficient pastoral farmers in the world and yet we are being asked to do more. The current Nz ets allows for 100% offsetting of emissions so people can pay and don't change their behaviour. The UN climate change mitigation plan states that food production can't be impacted by climate change mitigation and yet farms are getting destocked to be planted in pine trees. Reduced meat production because of the destocking.
Sheep and beef	farming has to be kept a viable business, you cant keep taxing us
Dairy	I am really frustrated that we have large amounts of regenerating native on the farm that is laying down carbon and we cannot claim it in any way. It is crazy
Dairy	We must be careful not to increase our product intensity or reduce production and have it increased overseas with high intensity.
Sheep and beef	I have not seen any model that accurately calculates total net green house gas emissions, nor have I seen any effective methods to alter green house gas emissions other than reducing production. Reducing production would not be a prudent option for a large scale extensive operation with low inputs
Dairy	NZ has one of the lowest emissions, we should helping countries with the Highest emissions , far better return on investment.
Sheep and beef	Farmers no doubt contribute, at the moment a lot of sequestration they contribute is not recognised EG Pasture wet lands scrub etc. All sectors of society should be treated equally.
Dairy	Why would you want to do anything that risks lowering food production when events like the Ukraine can have such a massive effect on world food supply.
Dairy	its hard to do as it seems we the farmers are the only target for ghg reduction
Dairy	conversation needs to be about warming impact not emissions reduction. Farmers know methane as biggest GHG on pastoral farms is a cycle (even with short term warming) and by and large is stable in NZ, so see themselves being the sacrificial cow for slow or no reduction in fossil carbon sources and adding to total CO2 in atmosphere
Sheep and beef	It must be tailored for each farm, regardless of size, to make it fair.
Dairy	This is being rushed And being pushed onto farmers at a busy time. More practical mitigation options need to be avaliable for reductions to be practical

Industry	Comment
Dairy	Its absolutely rubbish! Some farmers need to be reigned in but other do a good job and i hate having to pay for something you cannot see
Sheep and beef	Biogenic methane should not be part of the ETS. Reducing food production in NZ will only cause an increase in production elsewhere in the world by less efficient food producers that are not carbon taxed. this whole system is flawed.
Dairy	All the extra work required to gather data is making it to hard for older farmers such as myself
Sheep and beef	Worried that farmers will be forced into changing practices and having to pay for their production that has a very small effect on the world's pollution levels. And what if these actions don't work, what will we have to pay then? Farmers are the easy target.
Sheep and beef	carbon credits etc. are legalised crime-organisations buying units so that they can continue to pollute the atmosphere with no benefit to the world
Sheep and beef	The Paris accord clearly stated that reducing emissions must not come at the expense of reduced food production !!!!
Dairy	I think every ha of grass and other crop that use up carbon should be included in credits and also every single tree on a farm.
Sheep and beef	Too many questions above require answers without the very necessary qualification. I have not yet seen a peer reviewed, in-depth, assessment of the financial impact of reduced export earnings from the primary sector consequent to the imposition GHG reduction proposals.
Sheep and beef	As long as it is driven by politicians so no one will trust it.
Dairy	Many of us have been involved in reducing emissions and fertilisers for a number of years already The science is very slow to assist as time and funding are key factors
Dairy	This is a tax and needs to be recinded. No other country has food production in their ets. Why us. Our clean electricity generation puts the focus on agriculture as our largest emitter telling a misleading story
Sheep and beef	there is conflicting science about grassland sequestration of ghg and the types of ghg and their effects in the total environment. Methane produced in a pastoral farming system is in a short term cycle and hard to actually measure how much is absorbed by the plants the animal is grazing. It is easy to measure in a closed system with the bags on animals heads etc, but with 100 ewes on 10 ha of grass and clover with a hedge around and scattered vegetation like much of nz farming, how much methane is released to the atmosphere? for how long? grass land sequestration i am told is not eligible to claim as the % of carbon in the soil does not change. On my farm in paddocks i have been direct drilling (zero till) and importing feed i can see an increase in total top soil. this increase can be seen by digging a post hole. if i put on 3 tonne of lime to the ha i cannot measure how much goes on per m2, there is that little, so if my grassland paddocks are increasing their topsoil noticeably year on year why is that not claimable? is it too hard to measure, while a sheep's burp is measurable? are we comparing and taxing our grass based system with the housed systems from overseas
Sheep and beef	grass land should included in things that soak up carbon
Sheep and beef	I think that our NZ farmers feed a growing population and that we are going to need all the production we can get to continue to feed them. If NZ farmers reduce production this will be replaced by another country who is unlikely to produce meat as efficiently as we do.

Industry	Comment
Dairy	We won't be making changes to our farm operation until we have all the rules and regulations in front of us. It would be good to be proactive but with little to guide us at this point we don't know what to focus on.
Sheep and beef	would like to think it would be effective rather than just politically correct; won't make the farm unprofitable and won't result in reducing world food supplies so many starve
Sheep and beef	There is not enough interaction with sheep and beef farmers.
Sheep and beef	No point in reducing production in NZ to have to increased offshore by less efficient farming practices. Need to take a world approach to food production. No point in taxing to create a slush fund with no clear goals or idea of what money will be spent on. Farming is a business not a hobby, done to produce a product, surely end consumer should pay for mitigation costs. Maybe should put a tax on food & use it for research instead of HWEN proposals or ETS. We have a lot of native bush & trees that would be sequestering far more than is emitted but can't claim for some of it which is unfair. Calculators not good enough to give an accurate net GHG emission figure from what I can see. No excess profit generated by the farm for fencing required. Farm not suitable for any other use other than traditional beef so no migitation - can't use crops for feeding animals, not profitable to retire more land for trees, can't afford to anyway, already very low input. No consideration given to overall picture at present.
Dairy	It will be important for this to be farm by farm. If you compare my figures with my daughters figures on their high performance farm there is no way a blanket one fits rule all would be fair.
Dairy	If you change what the farmer is doing you will change a small % of the population habits and effect the economy hugely. If you do something that everyone does that's 5 million plus visitors doing a collective activity everyday. I can do my reductions on farm sell cows kill my bottom line and business that supports my community and then just one collective group can undo all my years of hard work in a few minutes. Govt needs to think big picture not just green or simple answer actually look after the environment as Farmers do ever day as that's our home!!!!!
Dairy	The Carbon cycle which goes on with grass grown and eaten by livestock and recycle of waste should be counted. It should not be just about trees. Grass grows via photosyntesis a process of taking in carbon dioxide so surely some recognition of this is needed. Also as a sharemilker we cannot just grow trees! just get charged
Sheep and beef	Biogenic methane must be excluded. Biogenic methane cannot add to greenhouse effect.
Dairy	Low production (family) dairy farm, with low inputs and outputs (and lower than average GHG emissions I hope). Under the expected increase in ETS credits per tonne carbon, this farm will be more economic growing trees. I think it it absolutely crazy for NZ to grow trees so we can keep driving cars using fossil fuels. Someone has asked the wrong question. And this process is just so $%^&*# up.