AgriTechNZ

BENCHMARKING DIGITAL ADOPTION ACROSS THE PRIMARY SECTOR: METHOD OVERVIEW

September 2021

Quantitative Method Overview

This research project is a standardised pan-agricultural survey to understand the level of adoption and the factors affecting adoption at the sub-sector level. The design of this survey will ensure it is a both repeatable and statistically sound platform.

Feedback at the workshops with partners has helped refine the design of this survey, including:

- The primary method will be telephone surveys This is because:
    - We can offer to send an online link via email to those contacted by phone and unwilling to take part. This will help reduce non-response rates.
    - A reliable and complete email database is not available so sampling error for an online survey will be too high. Non-response error will also be high and the risk that the sample will be skewed and unrepresentative is significant.
    - Calls to both landline and cellphone numbers will be conducted
- With this approach, the best sampling approach is a stratified random sample
    - Stratified random sampling divides the whole population (farmers and growers) into small sub-groups (farm types) and then applies simple random sampling within each sub group.
    - Quotas will be created for different farm types in line with the latest Agricultural Production Statistics. The total sample will be split evenly by region.
    - This approach will ensure that the composition of the sample mirrors that of the sector.
- The primary database used for the sample frame will be Research First's farm and rural database
    - This database is updated quarterly as a minimum and is a robust database.
    - Any residual sampling error will be reduced where we can access contacts through the partners. At this stage, this will potentially be via LIC and HortNZ, though access is to be confirmed.
- The telephone survey will be 15 minutes in duration and include questions to understand the level of adoption and farm demographics.
    - 15 minutes remains the recommended length to maintain data quality, reduce response burden and non-response error.
- Data collection is scheduled for October / November.
- The recommended sample size is 1,000 respondents.
    - The following tables show the margins of error that would be associated with the recommended sample size of 1,000.
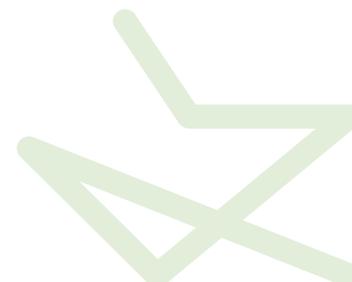
- ○ Margins of error (or confidence intervals) are calculated at the 95% confidence level. The data tells us that for a sample size of 1,000 farmers and growers the maximum margin of error on the data will be +/-3%; if 50% of the farmers in the sample pick an answer, we can be 95% 'sure' that, had we asked the question of all farmers, then between 47% and 53% would have picked that answer.
- ○ Reducing the sample below 1,000 will risk the reliability of conclusions that could be drawn at a sub-group level and will not provide the sound baseline needed for a good longitudinal study.

Figure 1: Proposed sample sizes and associated error margins at the 95% confidence level

	Farm Count	%	Sample size at 1000 interviews	Maximum margin of error
Dairy	10,479	21.8%	233	+/-6.4%
Beef	11,325	23.5%	252	+/-6.1%
Horticulture	5,805	12.1%	129	+/-8.5%
Sheep & Beef	5,364	11.1%	119	+/-8.9%
Sheep	5,070	10.5%	113	+/-9.1%
Cropping	2,823	5.9%	63	+/-12.2%
Viticulture	1,206	2.5%	27	+/-18.7%
Horse	1,161	2.4%	26	+/-19.0%
Deer	714	1.5%	16	+/-24.2%
Poultry	171	0.4%	4	+/-48.6%
Piggery	105	0.2%	2	+/-69.0%
Other	672	1.4%	15	+/-25.0%
Total	**44,895**		**1000**	**+/-3%**
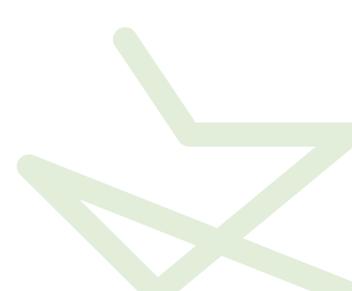
Qualitative Method Overview

The scope of the project has been increased with the addition of a qualitative component. This provides two significant advantages:

- The qualitative module enables the deep dive into why the data is telling us what it is. The module will uncover the drivers behind the numbers, adding value to the survey work by providing the 'why' and clear direction for what could activate change[1].

- It allows an extension to cover industry attitudes to data sharing in more detail. The information needs in this area are in the discovery (or exploratory) stage and, whilst covered to some degree in the large scale survey, are more suited to a deep-dive approach.

The exact design of this component will, in part, fall out of the analysis stage. Once we can see what the figures are telling us, we can identify which types of farmers (e.g., champions or challengers) it would be useful to follow up with.

The solution is scalable, and the design is flexible. Qualitative approaches engage with fewer research participants in more detail than quantitative approaches. The scale of the module and the number of participants engaged should however still be appropriate to have sufficient reach to identify the differences by e.g., region or farmer type.

The value of this stage is achieved in being able to build a conversation with the interviewee, rather than a simple Q&A approach. Interview will cover the key information areas in line with the project scope but will be deliberately dynamic. The guide will be adjusted and refined during conversation, allowing the verification of concepts as they are defined by farmers. This allows different avenues to be followed and the approach is better able to identify perceptions and needs.

We recommend maintaining flexibility in design to account for the farmers' engagement preferences and for information needs.

- **On farm interviews** – normally used when engagement is lower, or when the topic of conversation would benefit from more sensitive handling and a rapport being built up quickly. In this case it would be those with low tech take up and significant barriers to data sharing.

  The format of discussion will be informal. Based on past experience, these interviews work well with a more active design e.g., a walk around of the farm creates visual prompts to guide discussion. The format is flexible though and can be adjusted on the day to best suit how each person would prefer to engage. Each interview will be approximately an hour in length.

- **Semi-structured Telephone in-depth interviews** – normally used for thought leaders and other key stakeholders e.g., management companies, PHO, grower syndicates, catchment group leads, network representatives.

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[1] Whereas the survey will benchmark adoption and monitor the prevalence of different attitudes and perceptions
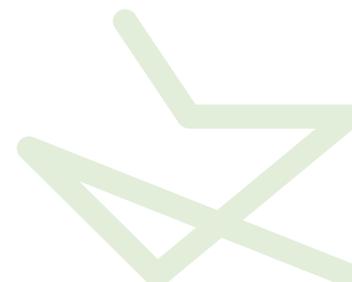
This method would likely be suited to those championing tech uptake or driving data sharing amongst their peers.

Telephone interviews are suitable for this group and achieve cost and time efficiencies as well as ensuring the research adds minimal burden to the respondent's schedule. In-depth interviews are ideally 40 minutes in length and are better suited for this group of respondents that are likely to be i. time poor and ii. potentially diverse in interest areas so less suited to focus group format.

- **Focus groups recruited to a profile**. The moderator will build a rapport between participants, so they are able to bounce ideas off each other and better articulate their needs. This is an efficient way to tap into the thinking of 8 farmers in a 1.5-hour session. To provide a hook, or additional incentive to attend, we would recommend that the groups are conducted at a venue that the participants would be keen to visit e.g., we have conducted previous successful projects with farmers at demonstration farms.

Figure 2: Example project method structured by region

12 on farm interviews in 3 regions e.g.,

- Canterbury
- Tauranga area including Waikato
- Southland

3 focus groups in 3 regions e.g.,

- Otago
- Canterbury
- Taranaki

10 telephone interviews

Figure 3: Example project method structured by farm type

Dairy: 10 interviews		
Horticulture: 10 interviews	Mix of on-farm and phone interviews tailored to respondent type	Regions tailored to sector information requirements. On-farm interviews will be limited to 3 regions to keep costs reasonable.
Arable: 6 interviews		
Sheep and beef, Sheep, Beef: 4 interviews per farm type		