

SUSTAINABLE VEGETABLE SYSTEMS.

Vegetable Grower Baseline Survey.
Final Results.



Ministry for Primary Industries
Manatū Ahu Matua



**BACKGROUND,
CONTEXT AND
OBJECTIVES.**

PAGE 3

**KEY INSIGHT
SUMMARY.**

PAGE 5

**ATTITUDES TOWARDS
NITROGEN LOSS.**

PAGE 6

SOIL TESTING.

PAGE 11

**MANAGEMENT OF
NITROGEN LOSS.**

PAGE 15

APPENDIX.

PAGE 24



Background and Context.

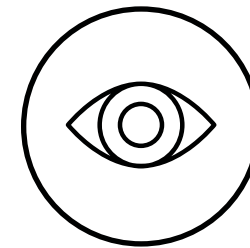
The Sustainable Vegetable Systems (SVS) project, is an MPI and industry funded project led by Potatoes New Zealand (PNZ) in collaboration with Vegetable Research & Innovation (VR&I) and Horticulture NZ. SVS is seeking to survey vegetable growers on their nutrient management.

SVS is a multi-workstream national project aimed at providing the data and subsequent modelling of vegetable nutrient uptake and nitrogen leaching.



The overall SVS project aims are:

- ➔ To maintain vegetable and potato industries' social license to operate
- ➔ To protect the ability to grow process & sell, while meeting environmental standards
- ➔ To ensure industry access to land, water and nutrients through national, regional and farm programs in order to achieve industry growth



In order to support this project, there is a desire to better understand farmer perceptions to nitrogen loss and benchmark current behaviours in the nutrient management space.



Insight Objectives and Approach.

The overall aims of the project are:

1

Establish a baseline of grower knowledge of nitrogen (N) leaching and its impact on the environment.

3

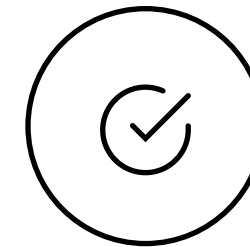
Quantify the current level of key fertiliser management practices.

2

Determine the level of problem recognition amongst growers of N leaching.

4

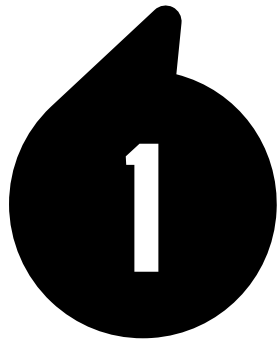
Determine the barriers to change.



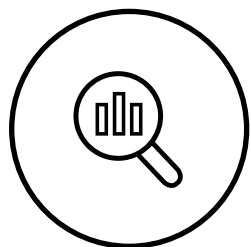
In order to deliver against these objectives – the following approach was used:

- ➔ 10 minute online survey of vegetable growers from existing databases
- ➔ Survey sent to circa 600 growers with 112 responses received (19% response rate)
- ➔ All respondents were the key/joint decision maker

Key Insight Summary.



Nutrient management ranks highly for growers as a key aspect of their day-to-day operations and growers are aware of the importance in managing nitrogen leaching to protect both the environment and their industry.



Despite this perceived importance, many farmers are unsure about the specific levels of impact nitrogen leaching has.



Rather than using a formal tools, nutrient budgeting is often done by a grower's own methods; signaling that a need may exist for use of additional or more formal solutions.



There is a link between acknowledgement of nitrogen loss impact on the environment and positive intent to address this issue on their own operation, however in many cases the degree of stated importance of reducing nitrogen loss is not always translated to practical application at the farm itself; with the main concern for growers being reduced yield.



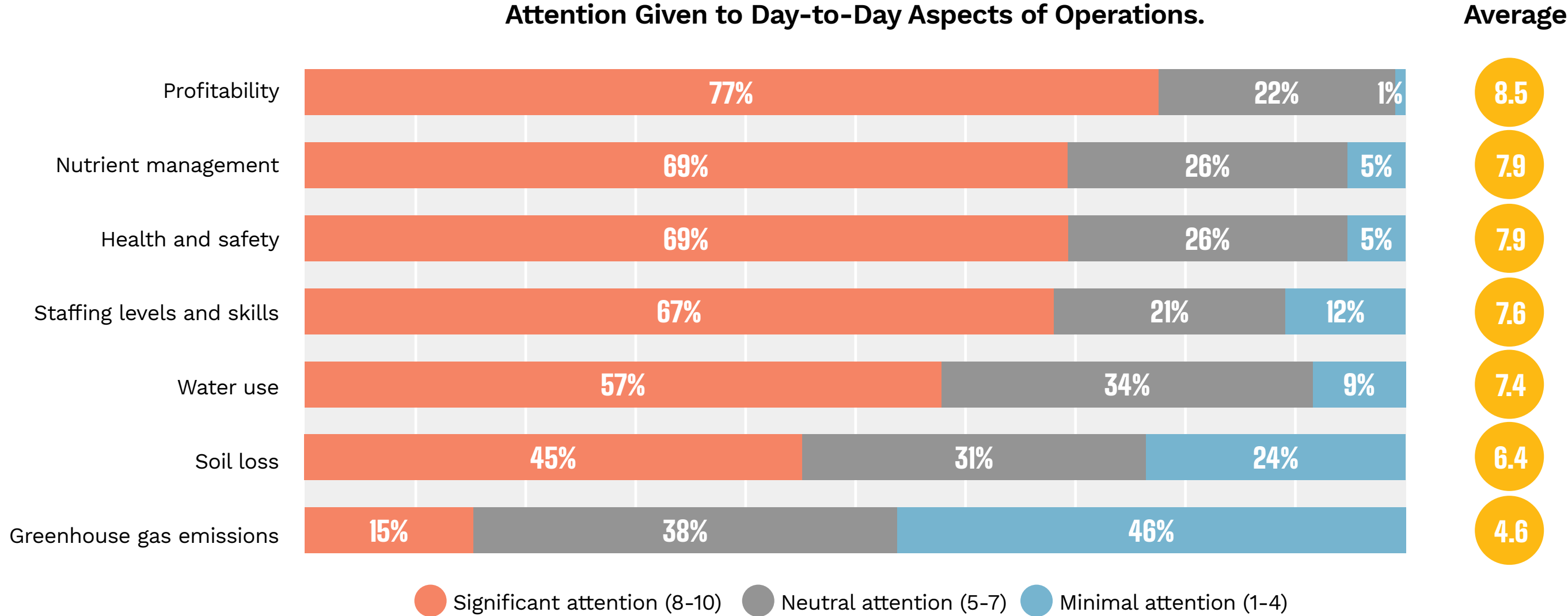
Measurement of nitrogen is occurring amongst eight in ten growers; however, the frequency of this is variable. Clear guidance on the ideal frequency for testing could be beneficial. Those who are not measuring nitrogen within soil testing regimes feel it is either too complicated/difficult or have not recognised/been convinced that a need exists on their farm.



Awareness of nitrogen loss management methods is largely driven by experience; and many untried strategies signal a potential for encouraging growers to try something new (and perhaps more effective). Growers have diverse views on the most impactful ways to reduce nitrogen loss, thereby presenting us with an opportunity to refine the landscape and steer growers to the most effective strategies.

ATTITUDES TOWARDS NITROGEN LOSS.

Nutrient management ranks highly in terms of the focus it is given in day to day operations, however soil loss is deemed a lower priority.

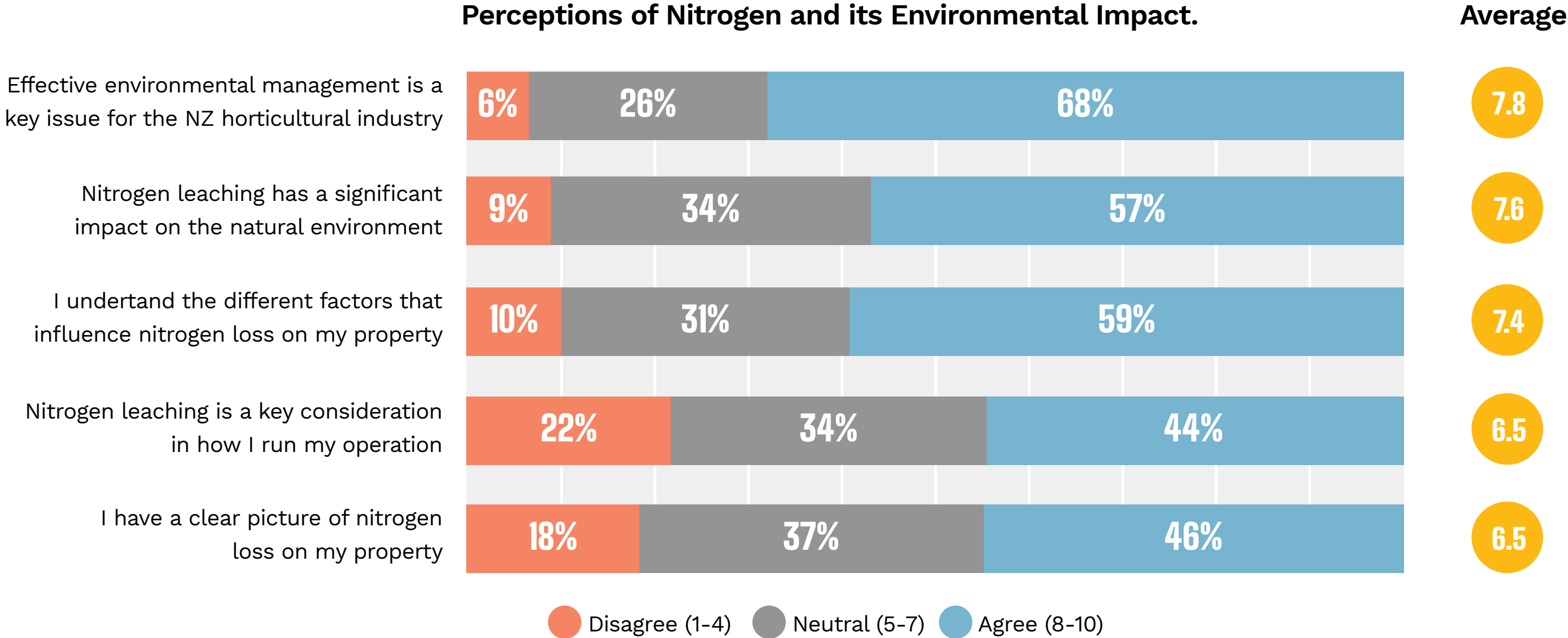


Total n= 112

“How much attention is given to each of the following in the day-to-day running of your operation?”

FOLKL: PROPRIETARY AND CONFIDENTIAL

At an industry level the importance of the environment and nitrogen leaching is well recognised, however at a farm level it receives less focus.

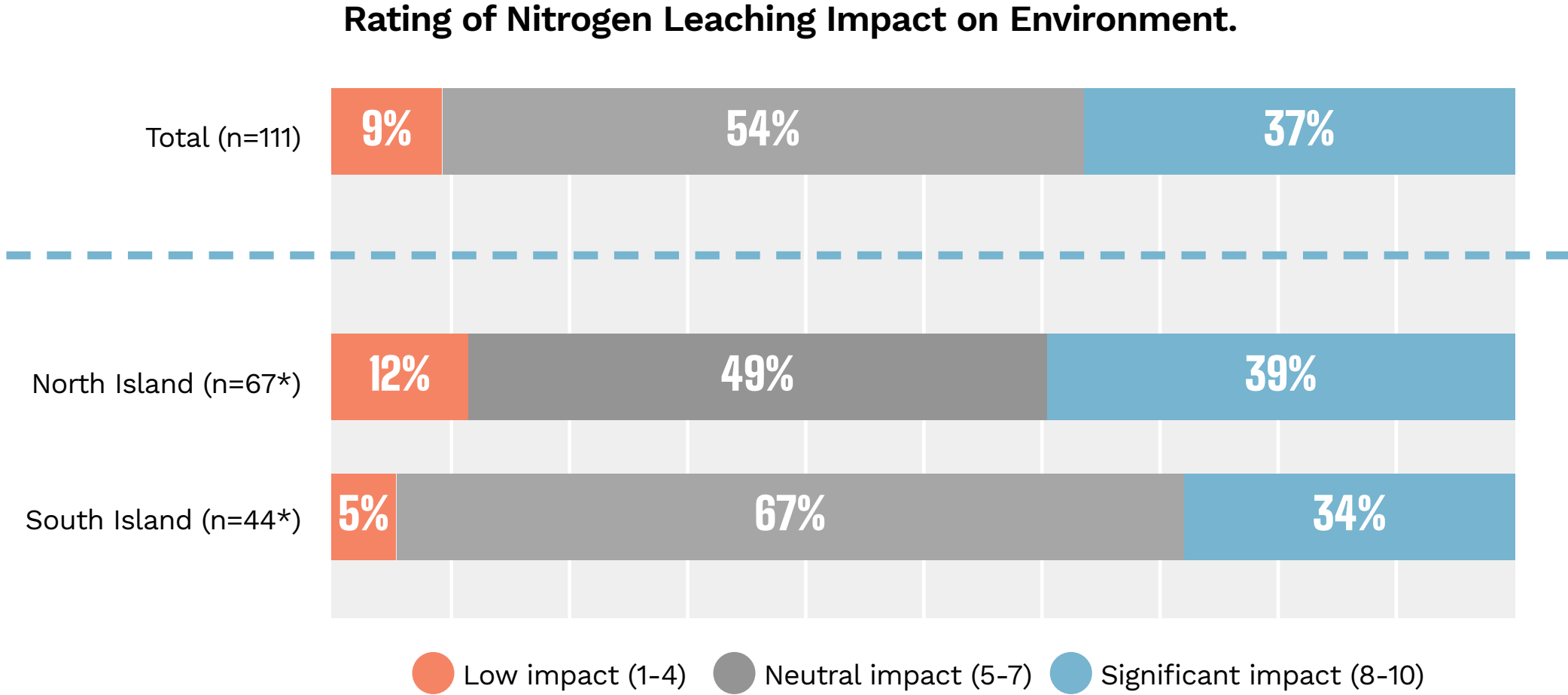


Total n= 112

“How strongly do you agree with each of the following?”

FOLKL: PROPRIETARY AND CONFIDENTIAL

There are a lot of growers sitting on the fence about the magnitude of impact that nitrogen leaching has, and (indicatively) more so amongst those based in the South Island.



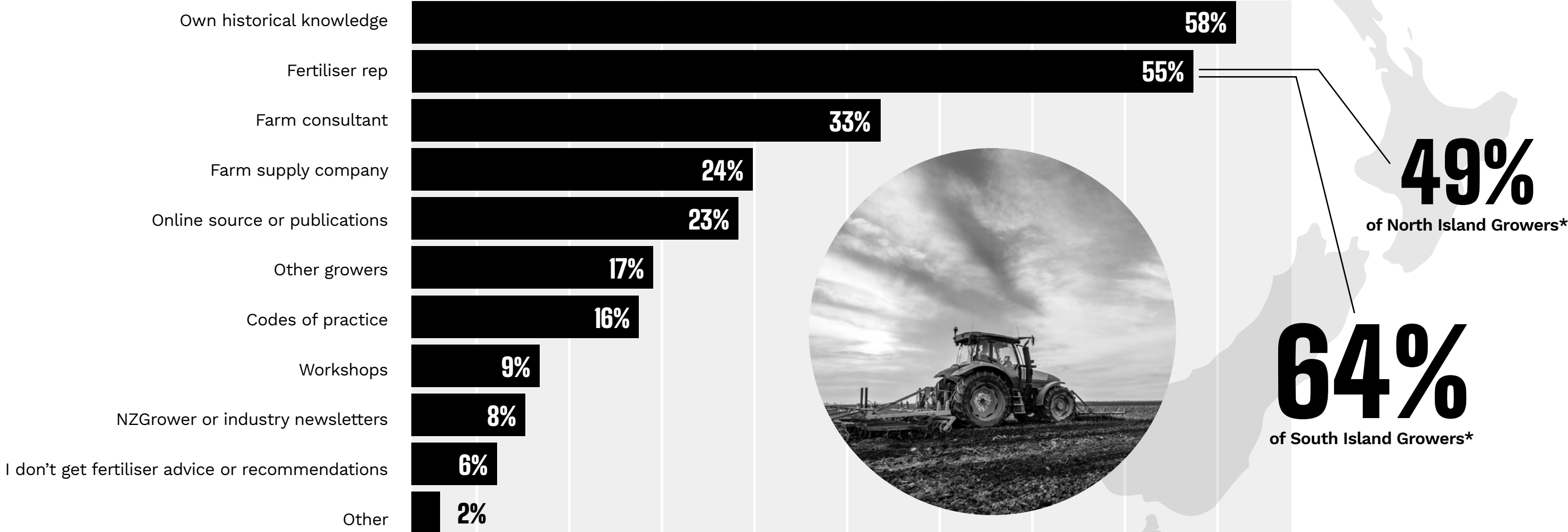
FOLKL: PROPRIETARY AND CONFIDENTIAL

“How would you rate nitrogen leaching in terms of the magnitude of impact it has on the environment?”

* Low base size

When it comes to getting fertiliser advice growers are largely reliant on their own knowledge or that of a fertiliser rep.

Source of Fertiliser Advice/Recommendations.



“Where do you currently get fertiliser advice or recommendations from?”

Total n= 112

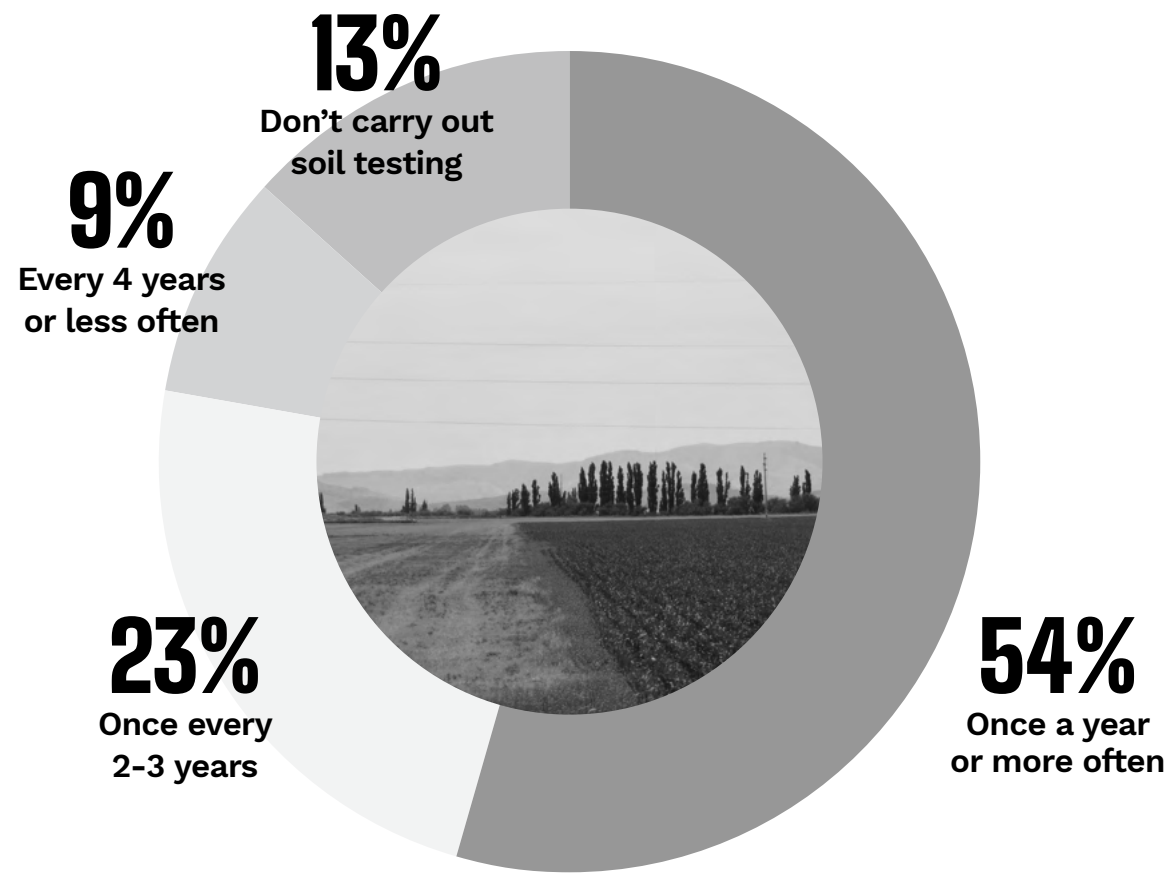
* Low sample size North Island n=68 South Island n=44

FOLKL: PROPRIETARY AND CONFIDENTIAL

SOIL TESTING.

More than half of all growers are carrying out soil testing at least once a year and the majority of these are testing two or more fields.

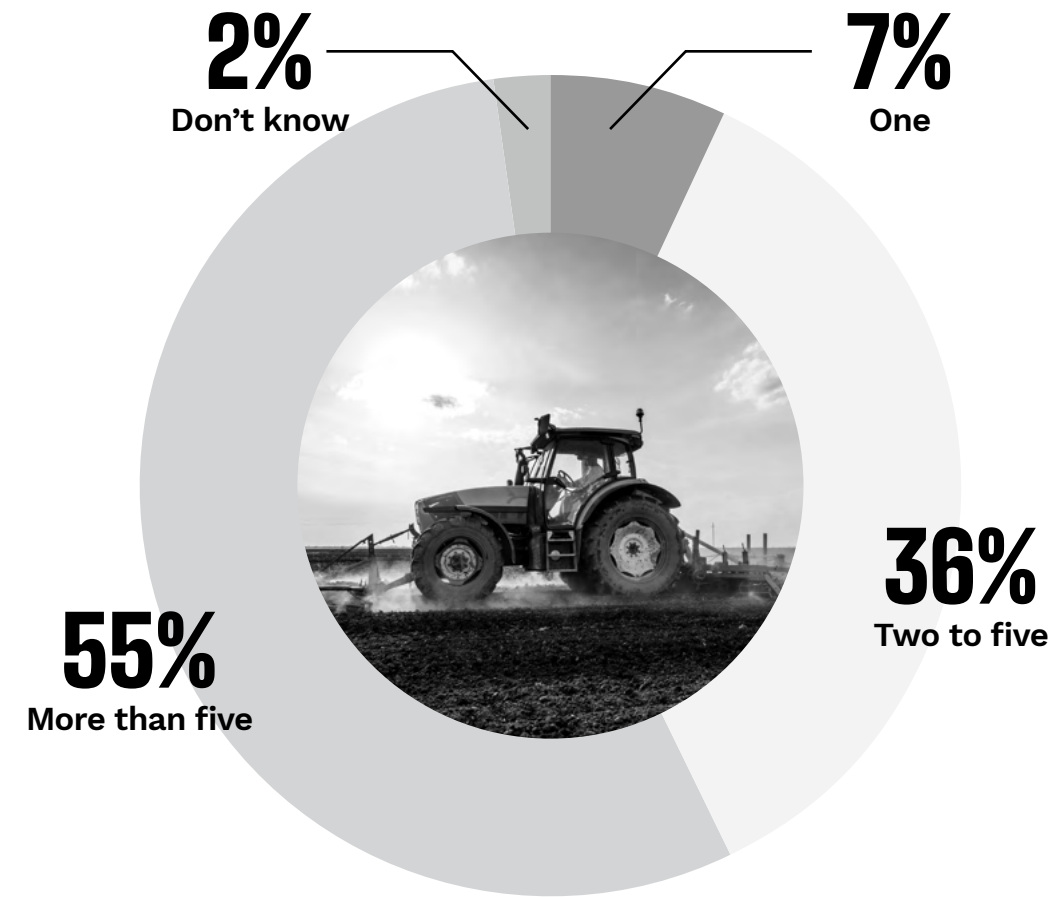
Frequency of Soil Testing Carried Out.



Total n= 112

“Thinking about your typical practices on your main property, how often do you carry out soil testing?”

Number of Fields (Typically) Tested.

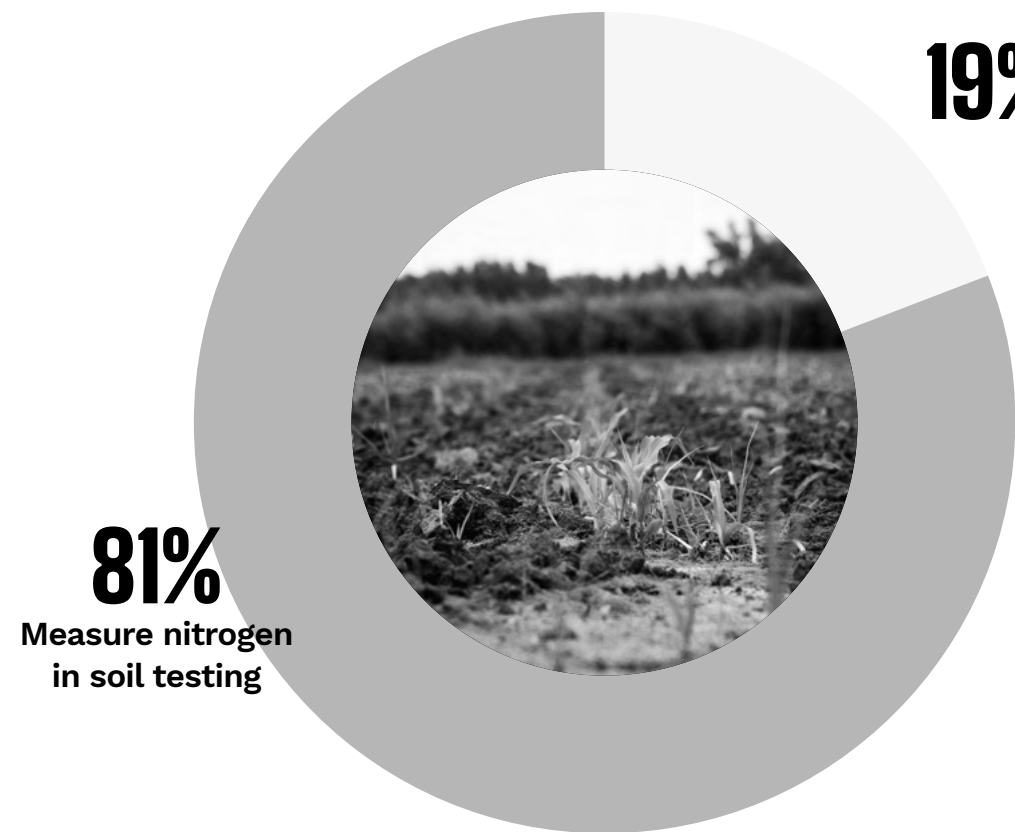


Based on those who carry out soil testing; n= 97

“And how many fields typically do you test?”

Eight in ten growers are measuring nitrogen during soil testing.

Proportion of Growers Who Measure Nitrogen when Soil Testing.



19%

Those farmers who are not testing nitrogen are further profiled in Appendix 1. At an overall level, this audience is less aware of the nitrogen considerations overall including loss levels in their operation and factors that can impact it.



Total n= 112

“Thinking about your typical practices on your main property, how often do you carry out soil testing?”

Reasons for not measuring nitrogen in soil testing are largely based on a lack of perceived need/relevance or general challenges/making do.

Not needed/relevant
on their operation.

“I am a hydroponic grower
so it’s not really relevant”

“We typically use very little nitrogen”

“Up until now we
didn’t see a need”

“We don’t apply any nitrogen
however we do grow lucerne”

Challenging to complete or currently
using “make do” methods to monitor.

“Has been harder to measure,
but that’s changing”

“Cost and type of test is difficult
as it needs refrigerating”

“We have relied on visual assessments
but will consider going forward”

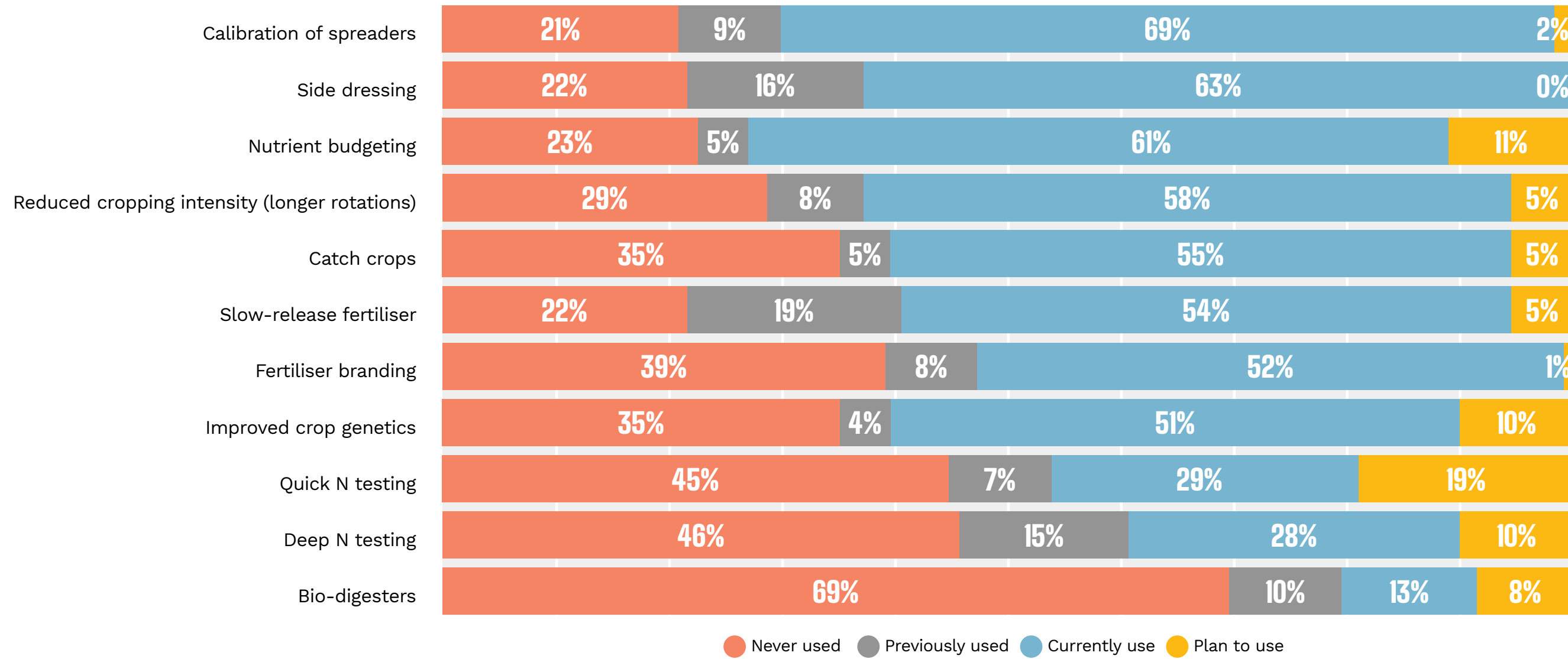
“It’s too variable”

Based on those who do not include N measurement in soil testing; n=18

MANAGEMENT OF NITROGEN LOSS.

Growers vary in extremes of either currently using various nitrogen loss strategies or never having used them at all. Calibration of spreaders and side dressing are the most commonly used management techniques currently.

Usage of Methods to Manage Nitrogen Loss.

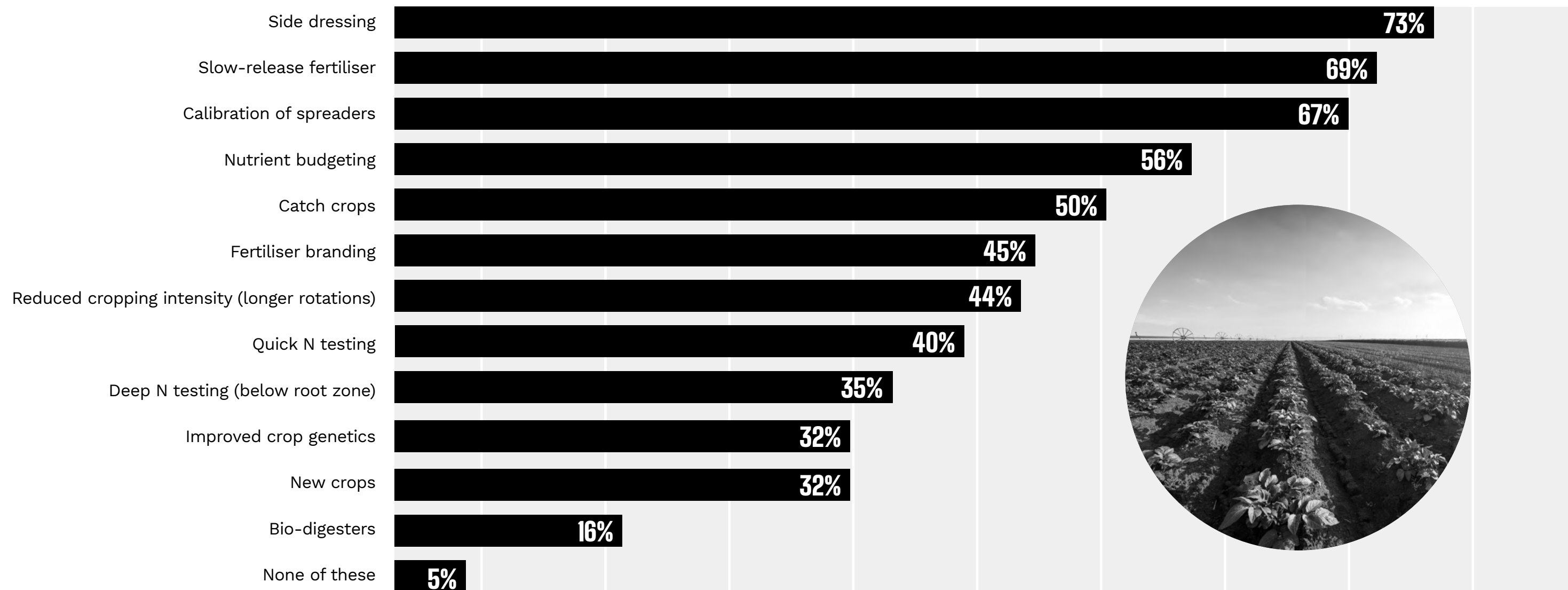


“Please describe your usage of the following methods to help manage N loss”

FOLKL: PROPRIETARY AND CONFIDENTIAL

The most commonly recognised methods for managing nitrogen loss are those that are more commonly used by growers currently.

Awareness (Prompted) of Nitrogen Management Methods.



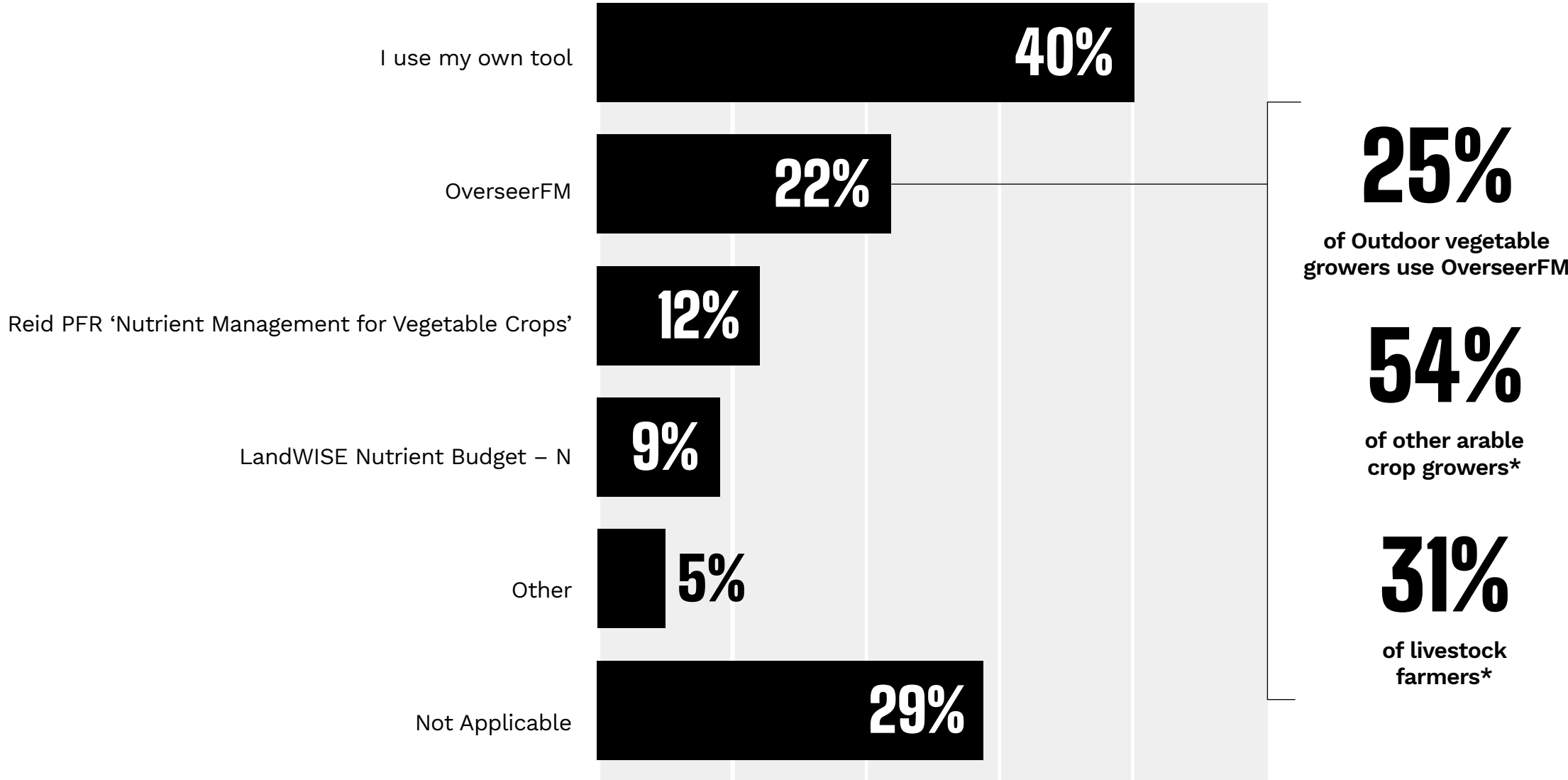
Total n= 112

“Which of the following N management methods are you aware of?”

FOLKL: PROPRIETARY AND CONFIDENTIAL

Many growers are using their own nutrient budgeting tool, with OverseerFM being the second most commonly used tool.

Tool Used For Nutrient Budgeting.

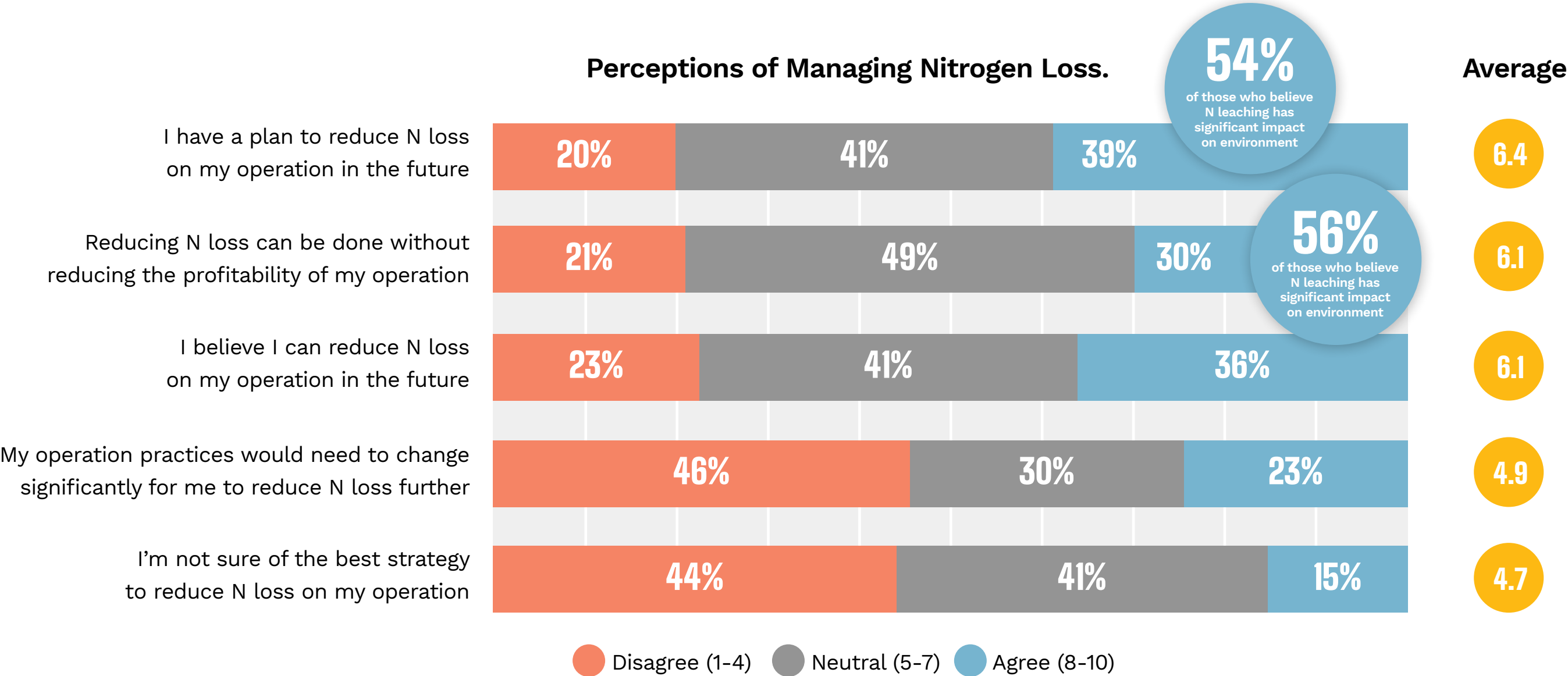


FOLKL: PROPRIETARY AND CONFIDENTIAL

Total n= 112 *Low base size

“Which tool do you use for nutrient budgeting?”

Growers are not entirely convinced about the practical realities of reducing nitrogen loss; however those who acknowledge its impact on the environment are more engaged in a solution.



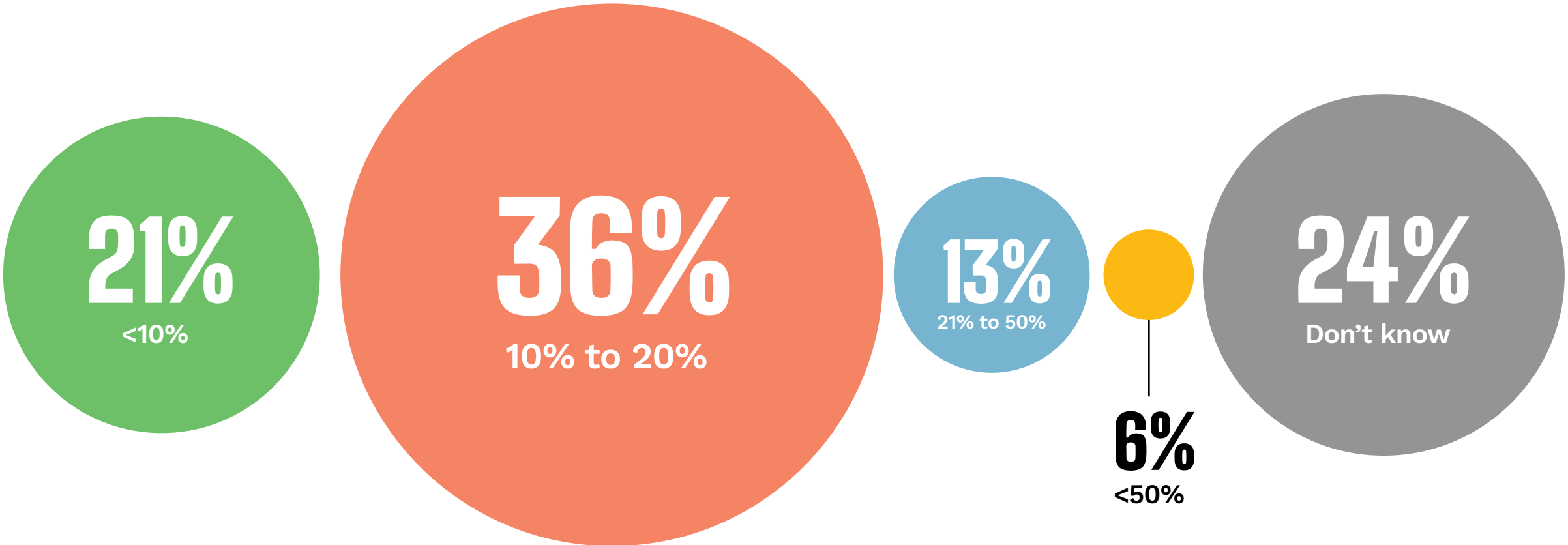
Total n= 112

“How strongly do you agree with each of the following”

FOLKL: PROPRIETARY AND CONFIDENTIAL

Approximately one in two of those growers who feel nitrogen loss reduction is possible believe they can reduce their own levels by up to 20%, however one in four are unclear on what's achievable.

Estimated Potential Reduction of N Loss on own Operation.

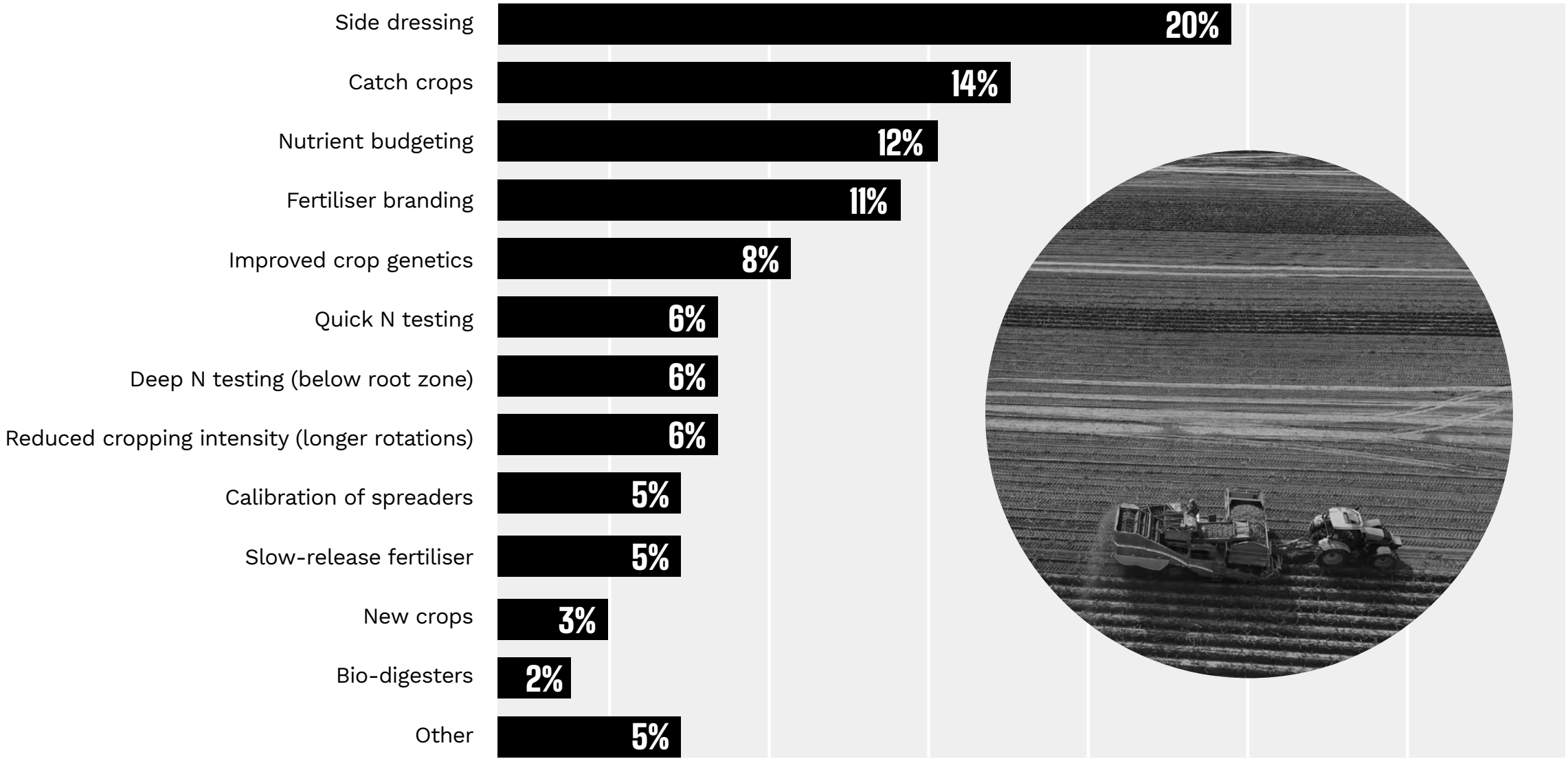


Based on those who agree to some degree (rated 6-10) that "I believe can reduce N loss on my operation in the future"
n= 67 Low base size

"By what percentage do you think you can reduce it?"

For growers there doesn't appear to be a clear-cut method for significantly reducing nitrogen loss.

Nitrogen Management Method with Biggest Impact on Reducing N Loss.



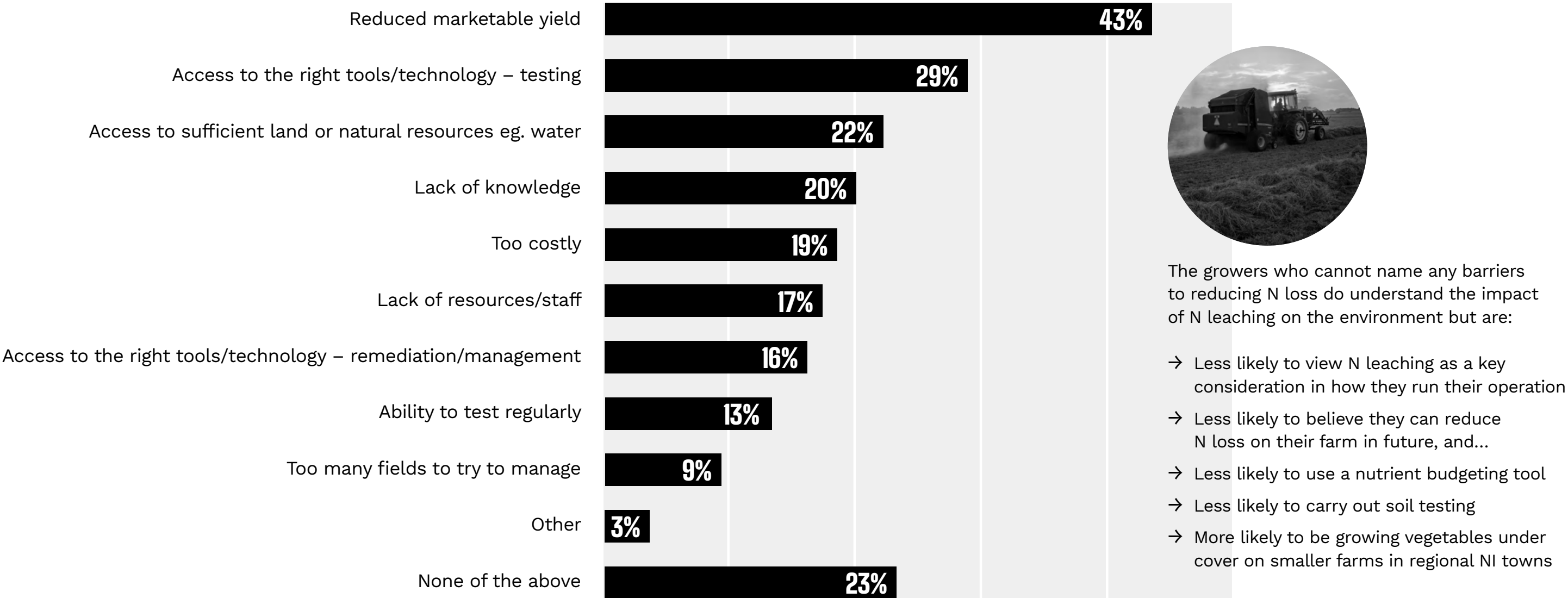
Based on those who agree to some degree (rated 6-10) that "I believe can reduce N loss on my operation in the future"
n= 67 Low base size

"By what percentage do you think you can reduce it?"

FOLKL: PROPRIETARY AND CONFIDENTIAL

The biggest barriers facing growers in reducing nitrogen loss even further are loss of yield and gaining access to suitable testing tools.

Barriers Faced in Reducing N Loss Further.



The growers who cannot name any barriers to reducing N loss do understand the impact of N leaching on the environment but are:

- Less likely to view N leaching as a key consideration in how they run their operation
- Less likely to believe they can reduce N loss on their farm in future, and...
- Less likely to use a nutrient budgeting tool
- Less likely to carry out soil testing
- More likely to be growing vegetables under cover on smaller farms in regional NI towns

Total n= 112

“Which of the following challenges do you face in reducing N loss further?”

FOLKL: PROPRIETARY AND CONFIDENTIAL

There are a range of opportunities for further investigation in stage 2 (qualitative research).

1

Rather than using a formal tool, nutrient budgeting is often done by a growers' own methods; signaling that a need may exist for another solution

➔ Qualitative research can be used to flesh out what growers' own methods look like and gain an understanding of the rationale for doing it this way instead of using a tool such as OverseerFM. Also useful to explore perceptions of the different tools, and future intent to use

2

Growers who are not measuring nitrogen within soil testing regimes feel it is either too complicated/ difficult or have not recognised/ been convinced that a need exists on their farm

➔ Qualitative research could explore more deeply the barriers to nitrogen testing and test potential products or communications executions



3

Growers have diverse views on the most impactful ways to reduce nitrogen loss, thereby presenting us with an opportunity to refine the landscape and steer growers to the most effective strategies

➔ Qualitative research could delve into the beliefs held by growers about the various management practices – and understand how this may differ by farm type etc. – then use this context to develop grower communications

4

Some growers are resistant to reducing their nitrogen loss (and are less likely to be completing the associated processes e.g. soil testing), despite acknowledging the serious effects it has on the environment

➔ Qualitative research could uncover the underlying drivers behind this to then engage more growers in the issue: Possible drivers to explore: is the problem too overwhelming to address on their farm? is their concern for the environmental and industry impact genuine? or do they feel it is someone else's problem to solve?

APPENDIX.



Profiling those with differing views on the importance of nitrogen leaching when running their farm.

1 Farmers who believe N leaching is a key consideration in running their farm are more likely to:

2 Farmers who believe N leaching is not a key consideration in running their farm are more likely to:

Farm size	Operate larger farms i.e. 100Ha - 999Ha	Slight skew to 5-99 Ha
Soil testing	Soil test once a year or more often, and most do test N	Soil test every 2+ years and most do test N
Nutrient budgeting tool usage	Use a nutrient budgeting tool (OverseerFM)	Less likely to use a tool
Attention given to environmental aspects of day-to-day operations	Focus attention on: <ul style="list-style-type: none"> — Nutrient management — Greenhouse gas emissions — Soil loss 	Less likely to focus attention on: <ul style="list-style-type: none"> — Greenhouse gas emissions — Soil loss
Usage of methods to manage N loss	Use calibration of spreaders Complete deep N testing	-
Barriers to reducing N loss further	Costly Ability to test regularly	Lack of resources/staff Lack of knowledge
Impact of N leaching on environment	Believe N leaching has a big impact	Believe N leaching has some impact

1. Farmers who rated 8-10 (Agree) that Nitrogen is a key consideration in running their farm n=49
 2. Farmers who rated 1-7 (disagree/neutral) that Nitrogen is a key consideration in running their farm n=63
 **Themes rather than data have been used given low sample sizes

Understanding the growers who are not measuring nitrogen in soil testing.

➔ Strongly agree about nitrogen leaching's impact on the natural environment and that this issue is of a significant impact

➔ Less inclined to feel they have a clear picture of nitrogen loss on their farm

➔ Less (reported) understanding of the factors affecting nitrogen loss on their farm

➔ Less inclined to believe they can reduce nitrogen loss in future

➔ More likely to cite cost and lack of knowledge as barriers to reducing nitrogen loss further

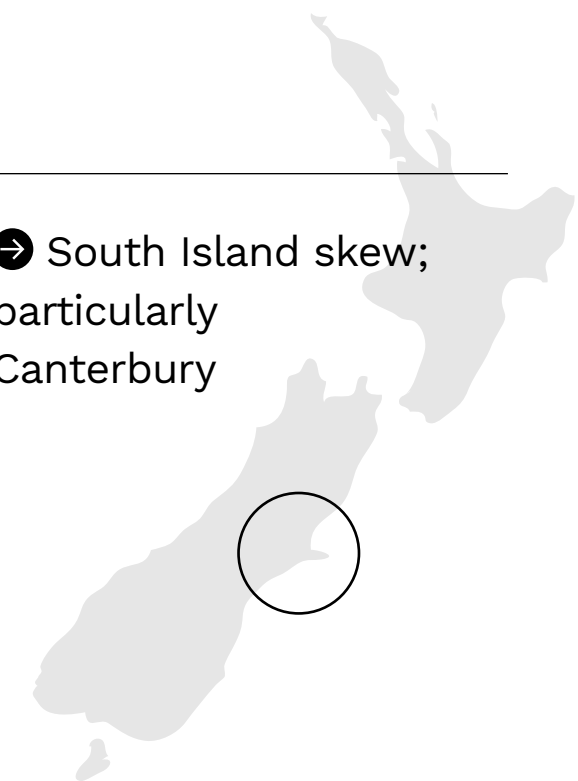
➔ Less frequent soil testers

➔ More likely to be aware of the following: Calibration of spreaders, catch crops, new crops, deep nitrogen testing and improved crop genetics

➔ More likely to use the following: catch crops, slow-release fertiliser, reduced cropping intensity, improved crop genetics, nutrient budgeting (OverseerFM)

➔ Less likely to be growing vegetables under cover; more likely to be growing other arable crops

➔ South Island skew; particularly Canterbury



Ngā mihi | Thank you.





F O L K L