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2023 Alberta Farmer Tracking Survey

Final Report

CLEANFARMS
2023 ALBERTA
TRACKING SURVEY

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Executive Summary and Implications

Executive Summary

Introduction

- In July and August 2019, Cleanfarms conducted a quantitative survey of 428 Alberta crop and livestock producers related to the implementation of a pilot program for recycling grain bags and plastic baler twine.
- The goals of the 2019 study were to develop baseline measures of attitudes toward and practices for disposing of certain used agricultural plastics, to develop initial measures related to the pilot program and to obtain producer feedback on key topics as an input into program design and implementation.
- In partnership with the Agricultural Plastics Recycling Group and Alberta Beef Producers, Cleanfarms commissioned Stratus Ag Research to conduct an online tracking survey in July and August 2023 with 400 Alberta crop, beef and dairy producers to compare against the 2019 study benchmarks and address key questions regarding awareness, use of and satisfaction with the Alberta Ag-Plastic. *Recycle it!* pilot program.
- This report presents the results of the 2023 tracking survey.

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TRACKING SURVEY

Executive Summary

Methodology

- Using the Stratus database, a quantitative online survey was conducted in July/August 2023 with a random sample of 400 Alberta farmers.
- The final sample distribution was 59% mainly grain and oilseed producers, 36% beef producers and 5% dairy producers.
    - A vast majority of “Beef” producers in the survey (84%) have “mixed farm” – crops and beef operations, whereby income is split between the sale of grain/oilseeds and beef cattle (cow/calf, feedlot or backgrounding). Respondents who were “mixed farm” - crops, beef and dairy and “primarily beef” were also included in the “Beef” producer segment.
    - A vast majority of “Dairy” producers (72%) in the survey have “mixed farm” – crops, beef and dairy operations, whereby income is split between the sale of grain/oilseeds, beef cattle (cow/calf, feedlot or backgrounding) and dairy. Respondents who were “mixed farm” – crops and dairy, “mixed farm – crops, beef and dairy, and “primarily dairy” were included in the “Dairy” producer segment.
- The percentage of “Beef” producers in the final sample is notably less than the 2021 Ag Census of Agriculture (NAICS) (50%). A possible reason is, because of drought conditions in recent years, beef producers downsized their beef cow herd or exited the industry due to a lack of feed (hay) and/or the high cost of feed. Given that, we feel the final sample distribution of mainly grains/oilseeds (59%) and mainly beef producers (36%) is a more accurate reflection of the 2023 Alberta farm population than the 2021 Ag Census of Agriculture (NAICS) distribution.
- In terms of sample distribution by region - South (33%), Central (41%) and North (26%) - the final sample of 400 was weighted to ensure the results are representative by region as per the 2021 Census of Agriculture.

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Executive Summary

Usage Of Ag Plastics

- Respondents were asked about their usage and disposal of 8 ag plastics, including grain bags and plastic baler twine, as well as other ag plastics (mostly beef and dairy related) that might form part of future recycling programs. As a benchmark for comparison, plastic pesticide or fertilizer containers <23L and pesticide or fertilizer drums and non-deposit drums and totes (bulk containers) were also included. The usage questions led into other questions regarding disposal and satisfaction with disposal methods.
- **Overall, there was a high incidence of producers who use and regularly dispose of (on-farm or off-farm) plastic pesticide or fertilizer containers <23L (90%, 87% in 2019) and pesticide or fertilizer drums and non-deposit drums and totes (bulk containers) (71%; not asked in 2019).**
- **Reported grain bag usage has increased since the 2019 survey.** 32% of respondents reported that they used and disposed of grain bags in 2023. 36% of Alberta farmers in the 2023 survey said they used grain bags in the past 3 years – up from 26% in 2019.
- **Usage of plastic baler twine, in terms of percentage of farmers, is about the same as the 2019 survey results**. Overall, in 2023, 44% of farmers reported using and regularly disposing of plastic baler twine compared to 46% in 2019. 80% of beef producers reported using and regularly disposing of plastic baler twine.
- Usage of net wrap or netting was high among beef (75%) and dairy producers (82%).
- Usage of silage plastic (silo bags, tarps, bunker covers) was high among dairy producers (85%), and lower among beef producers (51%).
- Regarding bale wrap, 35% of beef producers use it and regularly dispose of it versus 48% of dairy producers.

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Executive Summary

Methods Of Disposal Of Ag Plastics

- **The high-water mark for recycling ag plastics is plastic pesticide or fertilizer containers (<23L) as 85% of users of these containers report returning them to a designated collection site for recycling as the main disposal method.**
- **In comparison, just under half of all grain bag users (46%) said returning them to a collection site for recycling is the main way of disposal. This is up from 32% in 2019.**
  - However, in 2023, fewer grain bag users in the North (27%) said recycling was their main method.
- **In 2023, 28% of plastic baler twine users reported returning the twine to a designated collection site for recycling as their main disposal method; over double that reported in 2019 (13%).** Nevertheless, burning continues to be the primary reported method of disposal (31% of plastic baler twine users) – but down from 46% in 2019.
  - Fewer plastic baler twine users in the North returned it to a collection site for recycling as their main method (15%).
- 20% of net wrap users said their main method of disposal for net wrap was taking it to a collection site for recycling – up from 9% in 2019. Burning is the primary reported method (35%).
- Returning it to a collection site for recycling is the primary reported method of disposal for silage plastic (28% - up from 19% in 2019.) However, in 2023, almost as many use landfill (26%) and burning (25%).
- 20% of bale wrap users said taking it to a collection site for recycling is their main method of disposal (up from 14% in 2019). Burning remains the primary reported method (37%).

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Executive Summary

Satisfaction With Methods Of Disposal Of Ag Plastics

- **There is a high level of satisfaction (very/somewhat) with returning ag plastics to a collection site for recycling.** Satisfaction with disposal methods ranged from a high of 95% for grain bags and silage plastics to 82% for net wrap and plastic seed bags, fertilizer bulk bags, pesticide and/or inoculant bags. A much smaller percentage were satisfied with other disposal methods used.
- **For grain bags, 95% satisfied (very/somewhat) is up from 81% in 2019**.
  - Key reasons for being very satisfied are “don’t have to pay to get it recycled”, “collection site is nearby”, and “not too difficult to transport”.
- **For plastic baler twine, 88% satisfied (very/somewhat) is down somewhat from 94% satisfied in 2019.**
  - Key reasons for being very satisfied are “collection site is nearby”, “don’t have to pay to get it recycled”, and “not too difficult to transport”.
- **However, many grain bag, plastic baler twine, bale wrap, silage plastic and net wrap users are not satisfied with their current access to recycle these ag plastics.**
  - Top2box scores (% very/somewhat) for satisfaction with current access to recycle among users is 64% for grain bags, 51% for plastic baler twine, 44% for silage plastic, 43% for bale wrap, and 41% for net wrap.
  - However, satisfaction with current access to recycle grain bags and plastic baler twine was higher for users who participated in the pilot program (86% for grain bags, 75% for plastic baler twine) versus those who did not (30% for grain bags, 32% plastic baler twine).

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Executive Summary

Satisfaction With Methods Of Disposal Of Ag Plastics (continued)

- **In terms of ease of recycling grain bags and plastic baler twine, half of grain bag users and about a third of plastic baler twine users said it was very/somewhat easy to recycle grain bags**.
  - Fewer grain bag users and plastic baler twine users in the North said it was easy to recycle grain bags and plastic baler twine (27% for grain bags, 18% for plastic baler twine).
  - More grain bag users (68%) and plastic baler twine users (59%) who participated in the pilot program said it was easy to recycle grain bags or plastic baler twine versus those who did not participate in the pilot program (18% for grain bag users who did not, 16% for plastic baler twine users who did not).
  - More grain bag users (48%) said it was easy to recycle grain bags in 2023 versus 2019 (31%). However, for plastic baler twine users, somewhat more (35%) said it was easy to recycle plastic baler twine in 2023 versus 2019 (28%).

Executive Summary

Satisfaction With Methods Of Disposal Of Ag Plastics (continued)

- **"No collection site nearby" is the number one difficulty experienced or expected with recycling ag plastics**.
  - It's the number one difficulty for both grain bag users who participated in the pilot program (41%) and grain bag users who did not participate in the pilot program (68%).
  - It's the number two difficulty for plastic baler twine users who participated in the pilot program (31%) and the number one difficulty for plastic baler twine users who did not participate in the pilot program (68%).
- Other key difficulties experienced or expected by grain bag users who participated in the pilot program are "collection site won't accept all ag plastics" (32%), "too difficult to keep clean" (28%), and "collection site has too many rules about returning ag plastics" (27%). However, 37% said they "have not experienced/don't expect to experience any difficulties".
  - Other key difficulties or potential barriers for grain bag users who did not participate in the pilot program include "too difficult to keep clean" (47%), "collection site has too many rules about returning ag plastics" (42%), "too difficult to transport" (41%), "labour needed to sort and clean" (40%), and "collection site won't accept all ag plastics" (38%).

Executive Summary

Satisfaction With Methods Of Disposal Of Ag Plastics (continued)

- Other key difficulties experienced or expected by plastic baler twine users that participated in the pilot program are “too difficult to keep clean” (36%), “collection site won’t accept all ag plastics” (31%), “collection site has too many rules about returning ag plastics” (26%), and “labour needed to sort and clean” (25%). 34% said they “have not experienced/don’t expect to experience any difficulties”.
  - Other key difficulties or potential barriers for plastic baler twine users who did not participate in the pilot program include “too difficult to keep clean” (48%), “labour needed to sort and clean” (44%), “collection site has too many rules about returning ag plastics (42%), “collection site won’t accept all ag plastics” (41%), and “too difficult to transport” (39%).

Executive Summary

Awareness Of And Familiarity With Grain Bags And Plastic Baler Twine Pilot Program

- **Majority of survey respondents are unfamiliar with the pilot program for recycling grain bags and plastic baler twine**.
  - Overall, 67% of all respondents have never heard of the pilot program for grain bags or have heard of it but don't know anything about it.
  - Overall, 74% of all respondents have never heard of the pilot program for plastic baler twine or have heard of it but don't know anything about it.
  - Majority of surveyed grain bag users (57%) and plastic baler twine users (67%) have never heard of the pilot programs or have heard of it but don't know anything about it.
  - Interestingly, 43% of grain bag users and 54% of plastic baler twine users that return these ag plastics to a designated collection site for recycling said they have never heard of the pilot program or have heard of it but don't know anything about it.
- **Unaided and aided awareness of "Alberta Ag-Plastic. *Recycle it!*" is low**.
  - In terms of unaided awareness, 88% of respondents said, "don't know/can't recall". 2% said "Alberta Ag-Plastics" or "Alberta Ag-Plastics, *Recycle it*". Another 5% said Cleanfarm/Cleanfarms.
  - In terms of aided awareness, 25% said they have heard of "Alberta Ag-Plastics. *Recycle it!*".

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Sources of Information Used To Learn About Opportunities For Recycling Grain Bags Or Plastic Baler Twine In The Past 3 or 4 Years

- **Overall, newspaper articles, family/friend/neighbour, ag retail supplier and print advertising were the main sources of information used to learn about opportunities for recycling grain bags or plastic baler twine in the past 3 or 4 years**.
  - Main sources used by grain bag users that participated in the pilot program were ag retail supplier, family/friend/neighbours, and newspaper articles.
  - Main sources used by plastic baler twine users that participated in the pilot program were ag retailer supplier, newspaper articles, print advertising, family/friend/neighbour, and newsletters/County newsletter.
- **Overall, the most preferred sources of information about how to manage grain bags and plastic baler twine for recycling include ag retail supplier, newspaper articles, email from a company or organization, and direct mail**.
  - Most preferred sources for grain bag users that participate in the pilot program are ag retail supplier, newspaper articles, direct mail, website(s), and email from a company or organization.
  - Most preferred sources for plastic baler twine users that participate in the pilot program are ag retail supplier, newspaper articles, direct mail, email from a company or organization, and direct mail.

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Executive Summary

Attitudes Toward Recycling Ag Plastics

- **56% to 65% of grain bag, plastic baler twine, bale wrap, silage plastic, and net wrap users are concerned (very/somewhat) about how to deal with these ag plastics**.
  - Concern with how to deal with grain bags was lower among those who participated in the pilot program (57%) versus those who did not (75%).
  - Concern with how to deal with plastic baler twine was lower among those who participated in the pilot program (52%) versus those who did not (60%).
- **The level of concern with how to deal with ag plastics in general has decreased from 82% in 2019 to 64% in 2023.**
  - Grain bag users who participated in the grain bag pilot program were less concerned (63%) with how to deal with ag plastics in general versus grain bag users who did not participate in the pilot program (79%).
  - Furthermore, plastic baler twine users who participated in the plastic baler twine pilot program were also less concerned (58%) with how to deal with ag plastics in general versus plastic baler twine users who did not participate in the pilot program (66%).

Executive Summary

Attitudes Toward Recycling Ag Plastics (continued)

- **Vast majority of grain bag, plastic baler twine, bale wrap, silage plastic, and net wrap users believe it is important to be able to recycle these ag plastics.**
  - Top2box scores (% very/somewhat) for importance among users ranged from 78% for net wrap to 93% for grain bags.
  - The importance of each of these individual ag plastics was not measured in 2019. However, in 2019, overall, 92% said it was important to be able to recycle ag plastics (other than pesticide containers, such as twine, grain bags, bale wrap, and silage plastic).
- **A vast majority of survey respondents are concerned with the responsible disposal of different types of ag plastics.**
  - The highest level of concern (very/somewhat) is for the responsible disposal of grain bags (85%), plastic pesticide or fertilizer containers <23L (83%) and pesticide or fertilizer drums and non-deposit drums and totes (bulk containers) (82%).
  - In the 2019 survey, the highest level of concern was for responsible disposal of grain bags (85%), plastic silage wrap or cover (84%) and plastic pesticide or fertilizer containers <23L (81%).

Executive Summary

Attitudes Toward Recycling Ag Plastics (continued)

- **A majority of survey respondents believe there are a number of strong and compelling reasons to participate in recycling programs for ag plastics**
  - The top 4 strong and compelling reasons are “recycling ag plastics helps keep my farm tidy” (80%), “recycling ag plastics enables me to avoid burning, burying or landfilling ag plastics” (75%), “recycling ag plastics helps protect my farm for future generations” (74%), and “recycling ag plastics helps avoid the environmental impacts of burning” (74%).
- **63% rated “recycling ag plastics is a convenient and easy to use alternative for disposing ag plastics” as a strong and compelling reason.**
  - More grain bag users that participated in the pilot program (72%) said “recycling ag plastics is a convenient and easy to use alternative for disposing ag plastics” is a strong and compelling reason for participating in recycling programs versus 54% of the grain bag users that did not participate in the pilot program.
  - More plastic baler twine users that participated in the pilot program (66%) said “recycling ag plastics is a convenient and easy to use alternative for disposing ag plastics” is a strong and compelling reason for participating in recycling programs versus 50% of the plastic baler twine users that did not participate in the pilot program.
  - In contrast, in the 2019 survey, 83% of respondents said “recycling ag plastics is a convenient and easy to use alternative to disposing ag plastics” is a strong and compelling reason for participating in recycling programs for ag plastics.

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Executive Summary

Non-Participants' Awareness Of and Attitudes Toward Grain Bag Pilot Program

- **Low awareness of local designated collection site for grain bags for recycling among surveyed current non-pilot program participants.**
  - Of the 40% of grain bag users who do not participate in the pilot program, 19% of this group in total are aware of a collection site in their area. Lower in the North (8% awareness).
  - Possible barriers to participating in the pilot program among those who are aware of a local collection site for grain bags for recycling but chose not to participate include "too difficult to keep clean", "labour needed to sort and clean", "too difficult to transport", "poor access to equipment to prepare for recycling (i.e. grain bag rollers)", "collection site has too many rules about returning grain bags".
- **80% of grain bag users (who currently don't participate in the pilot program and are unaware of a local designated collection site) would likely participate in the pilot program if there was a collection site in their area.**
  - The number one reason for not likely participating in the pilot program is "no collection site nearby". Other reasons include "too difficult to keep clean", "poor access to equipment to prepare for recycling (i.e. grain bag rollers)", "don't have a good system on farm for gathering and returning grain bags", "too much work and hassle to take to a collection site", "too much material to return", "collection site won't accept all ag plastics", "collection site has too many rules about returning grain bags".
  - In the 2019 survey, 92% of all grain bag users said they would likely participate in the pilot program.

Executive Summary

Non-Participants' Awareness Of and Attitudes Toward Grain Bag Pilot Program (continued)

- Things that would help motivate grain bag users who are somewhat likely to participate in the pilot program – to very likely participate in the pilot program include "have facility close by/easy to access", "accept all grain bags that may contain debris – hard to clean", "equipment to roll bags", and "on-farm pick up".
- **On average, 47 kms (56 kms in 2019) is the farthest current non-participants in the pilot program would drive to take grain bags to a designated collection site for recycling.**
- **There is strong support (93% very/somewhat supportive) among all grain bag users for making the grain bag-recycling program a permanent solution.**
  - Support is strong among grain bag users who currently participate in the pilot program (97% very/somewhat supportive) and among grain bag users who don't (88% very/somewhat supportive).

Executive Summary

Non-Participants' Awareness Of and Attitudes Toward Plastic Baler Twine Pilot Program

- **Low awareness of local designated collection site for plastic baler twine for recycling among current non-pilot program participants.**
  - Of the 55% of plastic baler twine users who do not participate in the pilot program, 19% of this group are aware of a collection site in their area.
  - Possible key barriers to participating in the pilot program among those who are aware of a local collection site for plastic baler twine for recycling but chose not to participate include "too difficult to keep clean", "labour needed to sort and clean", "collection site has too many rules about returning plastic baler twine".
- **67% of plastic baler twine users (that currently don't participate in the pilot program and are unaware of a local designated collection site) would likely (very/somewhat) participate in the pilot program if there was a collection site in their area.**
  - The top two reasons for not likely participating in the pilot program are "too much work and hassle to take to a collection site", and "labour needed to sort and clean".
  - In the 2019 survey, 86% of all plastic baler twine users said they would likely participate in the pilot program.
- Things that would help motivate plastic baler twine users who are somewhat likely to participate in the pilot program include "accept dirty baler twine – impractical to clean, time consuming", and "have a facility close by/easy access."

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Executive Summary

Non-Participants' Awareness Of and Attitudes Toward Plastic Baler Twine Pilot Program (continued)

- **On average, 38 kms (36 kms in 2019) is the farthest current non-participants in the pilot program would drive to take plastic baler twine to a designated collection site for recycling.**
- **There is strong support (77% very/somewhat supportive) among all plastic baler twine users for making the plastic baler twine recycling program a permanent solution.**
  - Support is stronger among plastic baler twine users who currently participate in the pilot program (87% very/somewhat supportive) versus plastic baler twine users who don't (69% very/somewhat supportive).
  - In the 2019 survey, 92% of all grain bag users and plastic baler twine users combined were supportive of making a grain bag and plastic baler twine recycling program a permanent solution.

Executive Summary

Attitudes Toward Cost Sharing

- **59% of grain bag users who participated in the pilot program support (strongly/somewhat agree) paying an additional 3% to 7% for ag plastics to contribute to the cost of a recycling program.**
  - Fewer (44%) of grain bag users that did not participate in the pilot program support paying an additional 3% to 7% for ag plastics to contribute to the cost of a recycling program.
- **38% of plastic baler twine users who participated in the pilot program support (strongly/somewhat agree) paying an additional 3% to 7% for ag plastics to contribute to the cost of a recycling program**
  - 44% of plastic baler twine users that did not participate in the pilot program support paying an additional 3% to 7% for ag plastics to contribute to the cost of a recycling program.
  - In the 2019 survey, 58% of all survey respondents agreed (strongly/somewhat) with users of materials paying an additional 3% to 7% of the price of the ag plastic to contribute to the cost of a permanent recycling program.
- **Just over half of the survey respondents (54%) agreed they're "OK paying an additional cost if a recycling program for ag plastics is easy to use and accessible".**
  - Somewhat more grain bag users (63%) than plastic baler twine users (52%) agreed with this statement. There was no notable difference in attitude among grain bag and plastic baler twine users who participated in the pilot program versus those who didn't.
  - In the 2019 survey, 56% agreed with this statement.

Implications

Implications For Grain Bags and Plastic Baler Twine Pilot Program

- **Almost half of all grain bag users (46%) report returning them to a collection site for disposal, up from 32% in 2019.**
- **While the percentage of plastic baler twine users who have reported returning plastic baler twine to a collection site for recycling has doubled since 2019, recycling of this ag plastic remains comparatively low.**

“Customer” Acquisition

- While a vast majority of grain bag users and plastic baler twine users believe it’s important to be able to recycle these ag plastics, there are a number of barriers to overcome to help ramp up adoption of recycling these ag plastics:
  - Awareness of a collection site in their area is low among grain bag users and plastic baler twine users who do not return grain bags or plastic baler twine to a collection site for recycling. It will be important to have good awareness-creating communications with the target areas of each site.
  - Many grain bag users and in particular plastic baler twine users are not satisfied with their current access to recycle grain bags and plastic baler twine – particularly in the North.

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Implications

Implications For Grain Bags and Plastic Baler Twine Pilot Program (continued)

"Customer" Acquisition (cont…)

- Ease of use is another key driver of customer acquisition. However, ease of recycling grain bags is an issue for many grain bag users and more so for plastic baler twine users – including grain bag users and plastic baler twine users who currently return their grain bags to a collection site for recycling.

- Ease of recycling grain bags and plastic baler twine includes having collection sites nearby, access to equipment to prepare for recycling (i.e. grain bag rollers), collection sites that accept all ag plastics, fewer "rules" about returning ag plastics, reducing the requirements (to be accepted for recycling), and the amount of effort and time involved to sort and clean. Some grain bag users and in particular plastic baler twine users, are frustrated with the requirements to make these ag plastics acceptable for recycling: "Difficult/not practical to keep it clean enough for recycling", "Make recycling easy and practical – it will encourage recycling."

- **"Customer" retention**
  - Grain bag users and plastic baler twine users that recycle these ag plastics clearly see this method of disposal to be superior to alternative methods such as burning and landfill. To retain "recyclers", continue to ensure that grain bag and plastic baler twine users, who recycle these ag plastics, are satisfied with their experience using this method of disposal. However, a note of caution, while 95% of grain bag users and 88% of plastic baler twine users who recycle are satisfied with this method of disposal, about half of them are only somewhat satisfied. "Somewhat satisfied" recyclers could be at risk of becoming "lapsed" recyclers. Convenience/access and ease of use are critical drivers of "customer" acquisition and "customer" retention.

Implications

Cost Sharing

- While there is some receptivity to having ag plastics users contribute to the costs of a recycling program (with the hypothetical 3 to 7% additional cost used), there is a large segment of the market that is opposed to any additional fees.
    - Execution of the recycling programs will be key to getting more farmers to accept cost sharing – to see value in paying an additional cost to recycle by delivering a program that is truly easy to use and accessible.
    - At the end of the survey, many farmers made comments about paying an additional fee to help cover the costs of recycling. Comments included concerns that the cost of recycling will outweigh the benefits and would be a disincentive to recycle; farmers shouldn't bear the full cost of recycling ag plastics – costs should be shared with retailers and manufacturers; use the beverage bottle model – pay deposit and get it back when recycle; the "system" needs to be self-supporting without subsidies or fees.

Plastics Used and Regularly Dispose Of

Click any title above to jump to that section.

Farmers were asked: "On your farms, do you use and regularly dispose of (on-site or off-site) the following agricultural plastics?"

In the 2023 survey, grain bags were included in the list of ag plastics. In the 2019 survey, grain bag users were defined as those who used any grain bags within the past 3 years or plan to use any grain bags in 2019.

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Key Findings – Ag Plastics Used and Regularly Disposed Of

Grain Bag Usage and Trends

Grain bag usage has increased since 2019 ▶

- 32% use and regularly dispose of grain bags in 2023 (59% of large farms).
- 36% in the 2023 survey said they used grain bags in the past 3 years – up from 26% in 2019. ▶
- In terms of current frequency of use, 45% of grain bag users said they use them every year while 41% use them when harvest dictates the need. ▶
- 22% plan to use grain bags this year, however, 16% were unsure. A number of grain bag users (14%) said they do not plan to use grain bags this year due to drought (not needed). ▶
- In terms of future usage, overall, about 40% of all farmers will very/somewhat likely use grain bags in the next few years (beyond 2013). 90% of current grain bag users will very/somewhat use them compared to only 16% of current non-users. ▶
- In 2019, 28% of all farmers said they would very/somewhat likely use grain bags in the next few years, beyond 2019.

Plastic Baler Twine Usage

Usage of plastic baler twine, in terms of percentage of farmers, has remained stable since 2019.

- Overall, in 2023, 44% of farmers use and regularly dispose of plastic baler twine compared to 46% in 2019. ▶
- 80% of beef producers use and regularly dispose of plastic baler twine.

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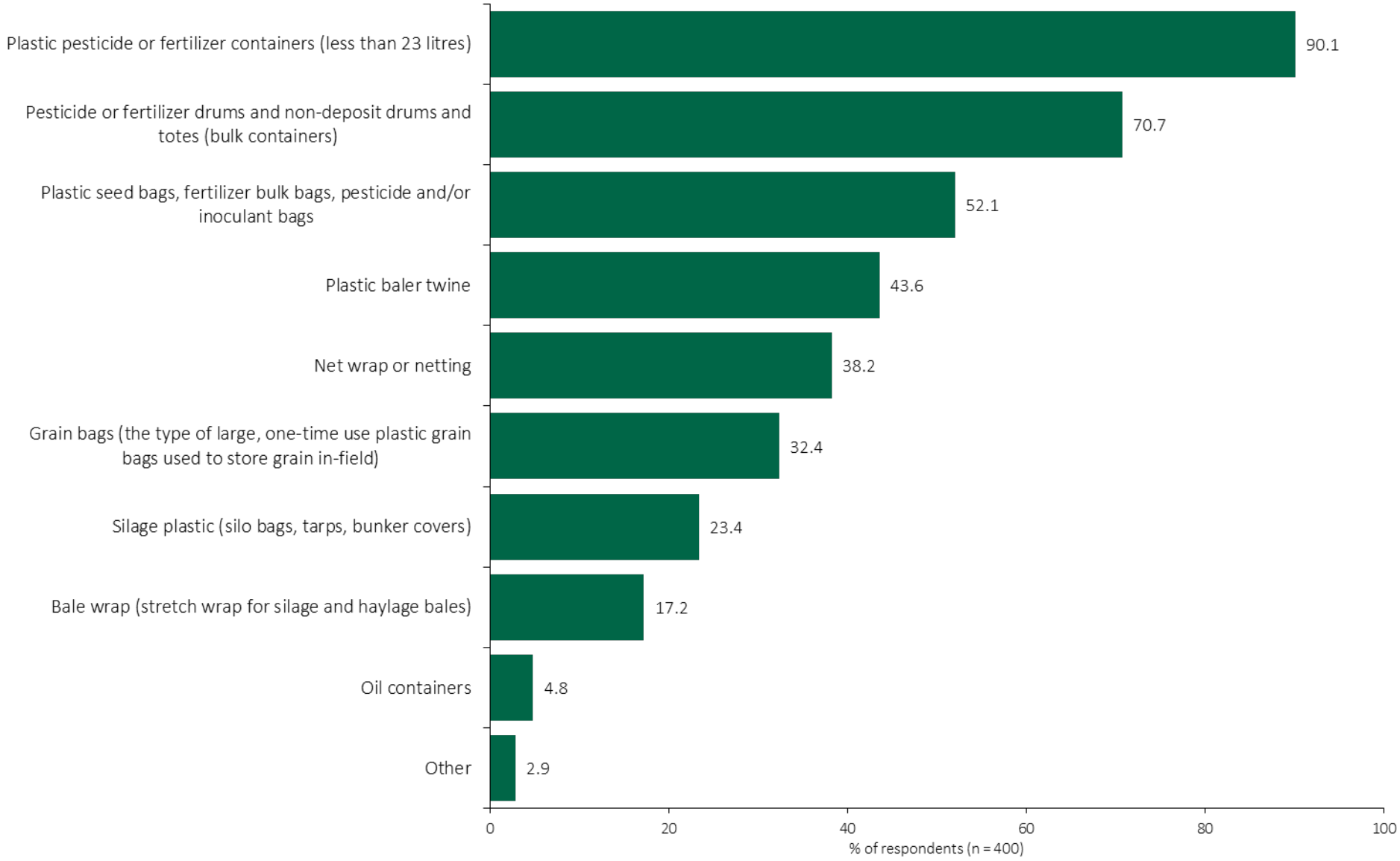
Key Findings – Ag Plastics Used and Regularly Disposed Of

Other Ag Plastics Used and Regularly Disposed Of

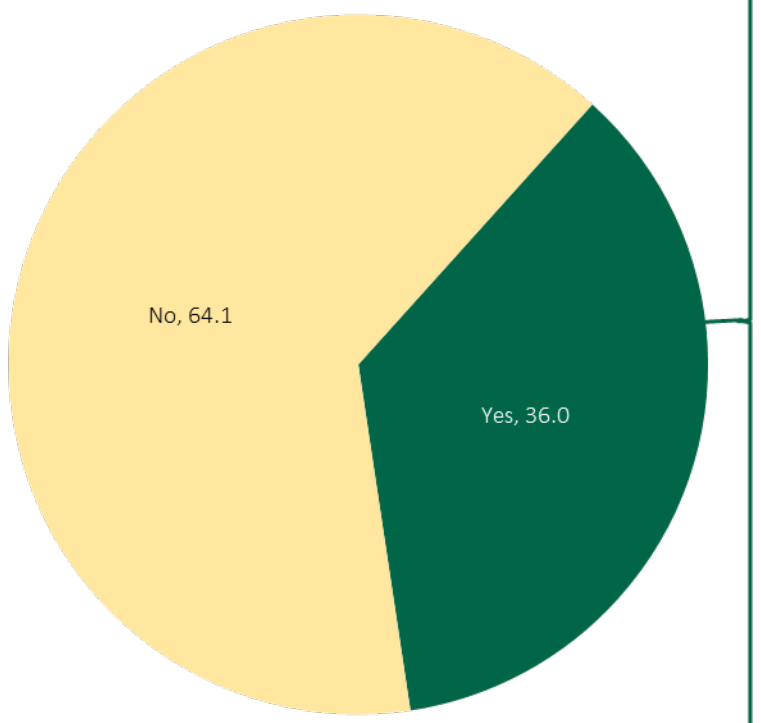
- **Plastic pesticide or fertilizer containers <23L -** 90% use and regularly dispose of them in 2023 (87% in 2019). ▶
- **Pesticide or fertilizer drums and non-deposit drums and totes (bulk containers)** – 71% use and regularly dispose of them in 2023 (not asked in 2019).
- **Plastic seed bags, fertilizer bulk bags, pesticide and/or inoculant bags** – 52% use and regularly dispose of them in 2023 (45% in 2019 – referred to as “polyethylene seed bags or pesticide bags”).
- **Net wrap or netting** – 38% use and regularly dispose in 2023 (33% in 2019). Users were primarily beef (75%) and dairy producers (82%).
- **Silage plastic (silo bags, tarps, bunker covers)** – 23% (35% “plastic silage wrap or cover” in 2019). Users were mainly beef (51%) and dairy (85%) producers.
- **Bale wrap** – 17% use and regularly dispose in 2023 (20% in 2019). Users were predominantly beef (35%) and dairy (48%) producers.

Plastics Used and Regularly Dispose Of

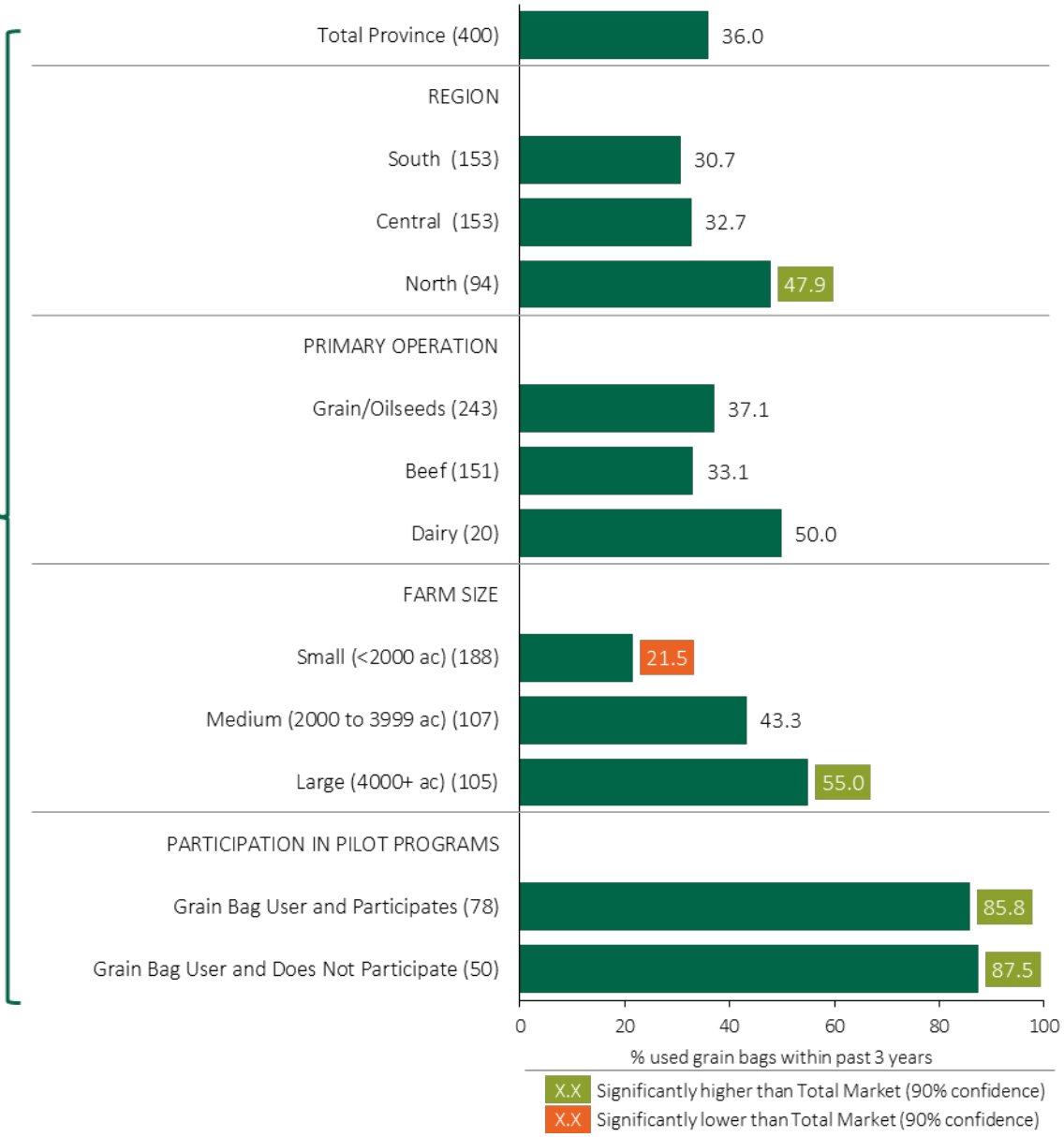
Types of Ag Plastics Used And Regularly Disposed Of



Grain Bag Usage Within Past 3 Years



% of total respondents (n = 400)



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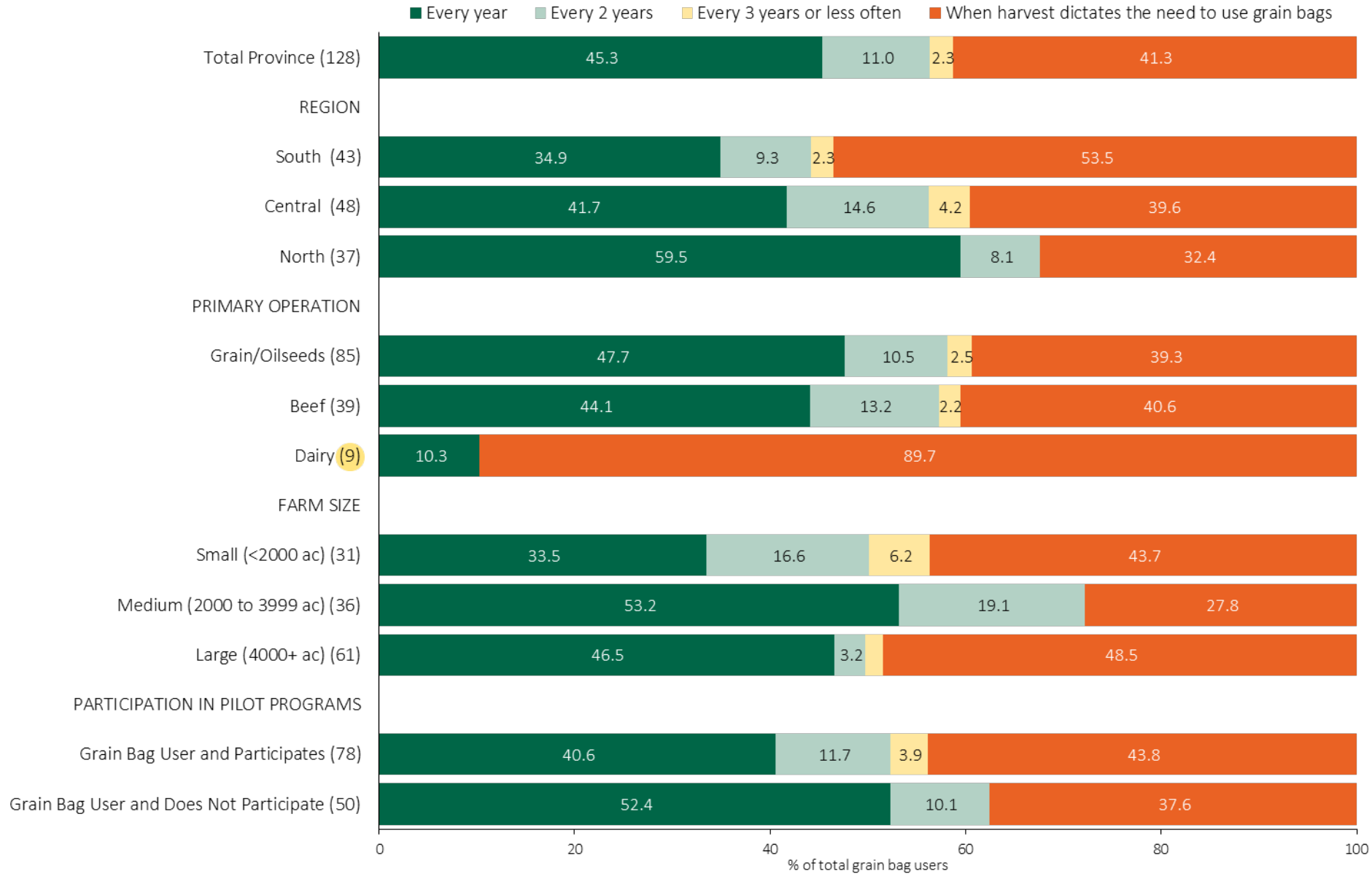
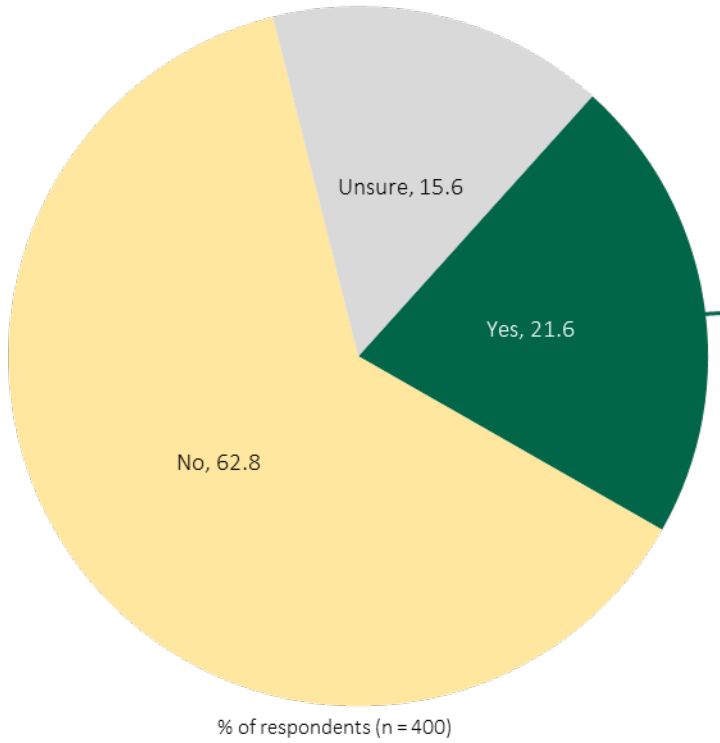
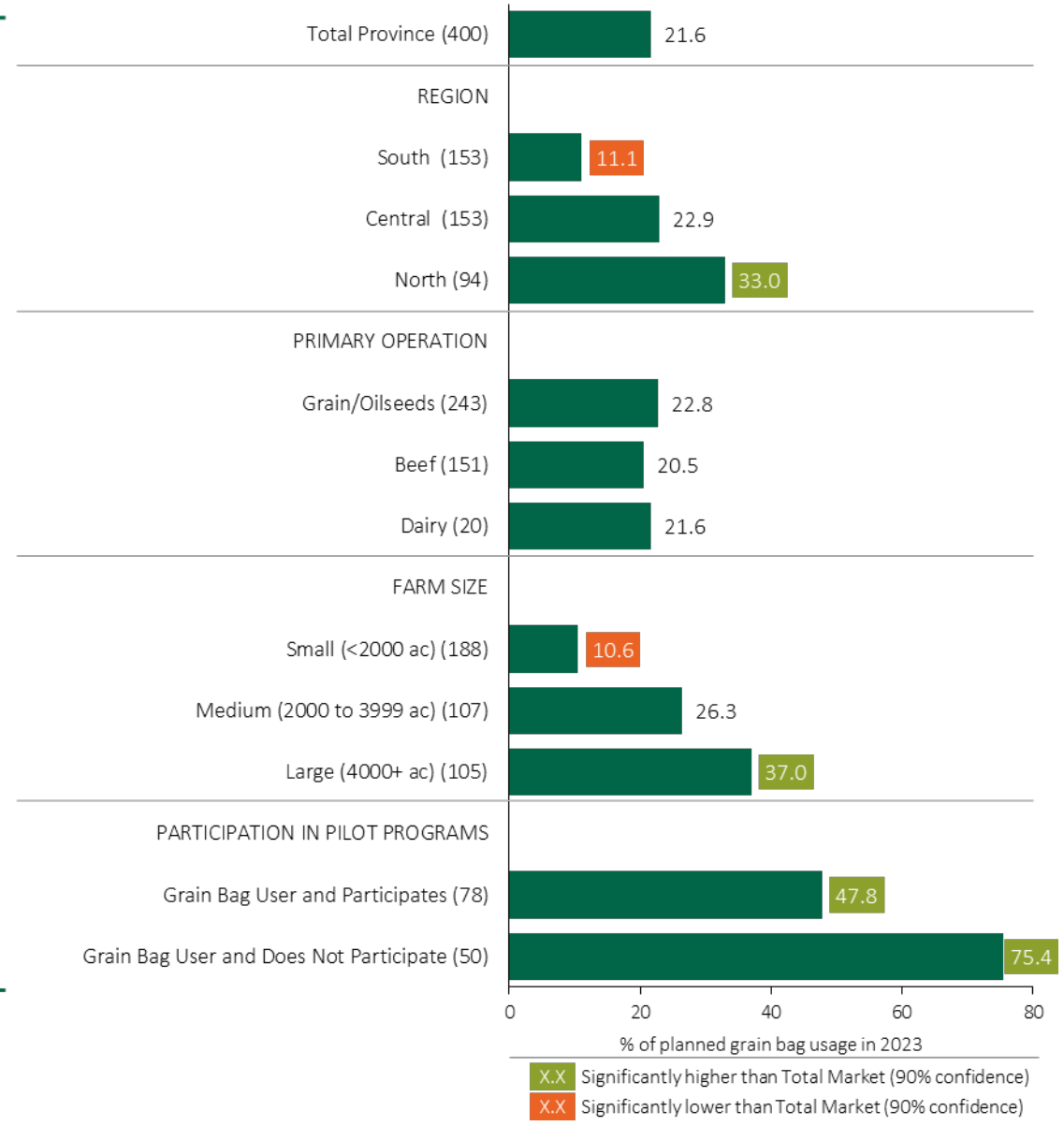
Current Frequency of Grain Bag Usage



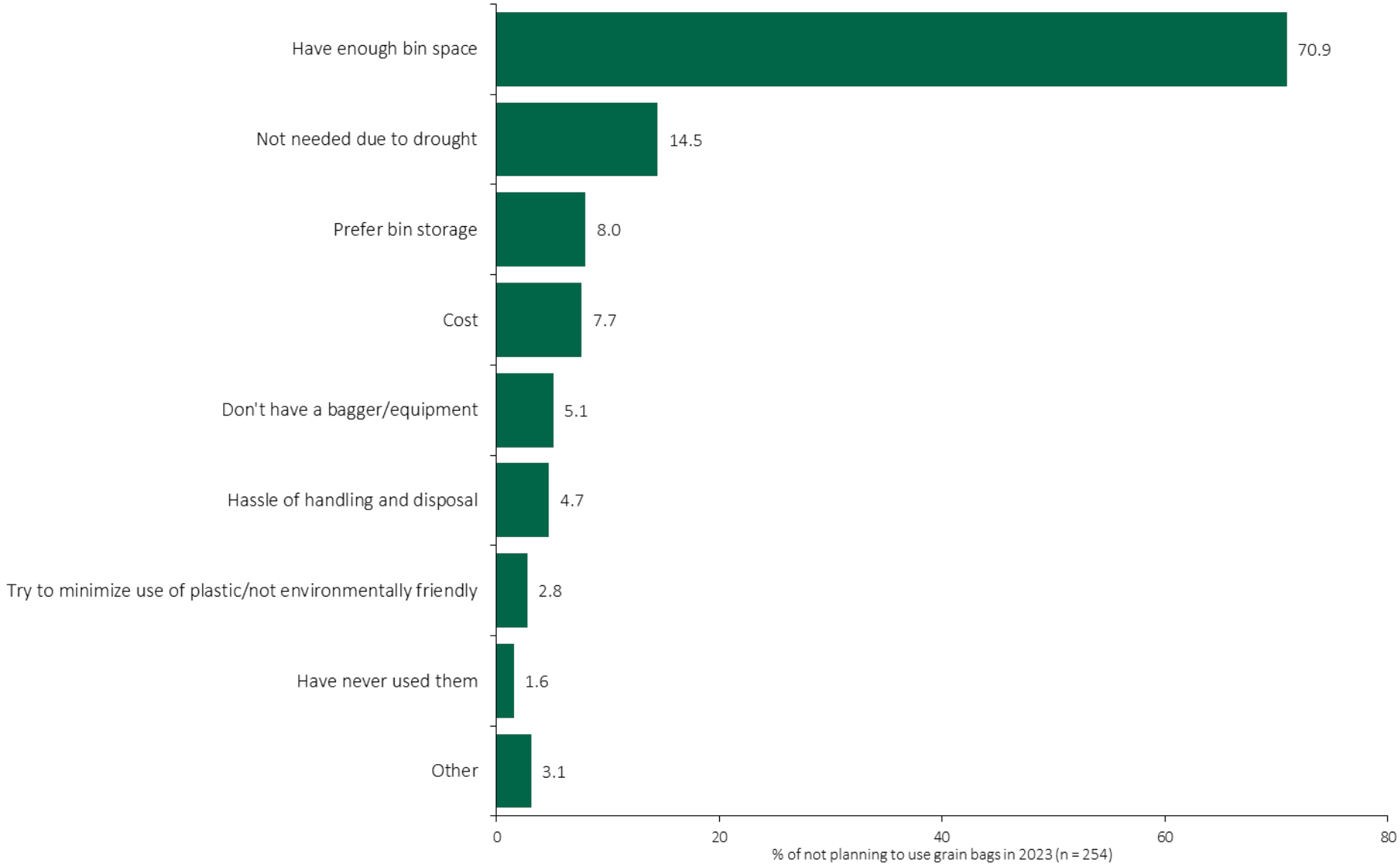
Plans to Use Grain Bags In 2023



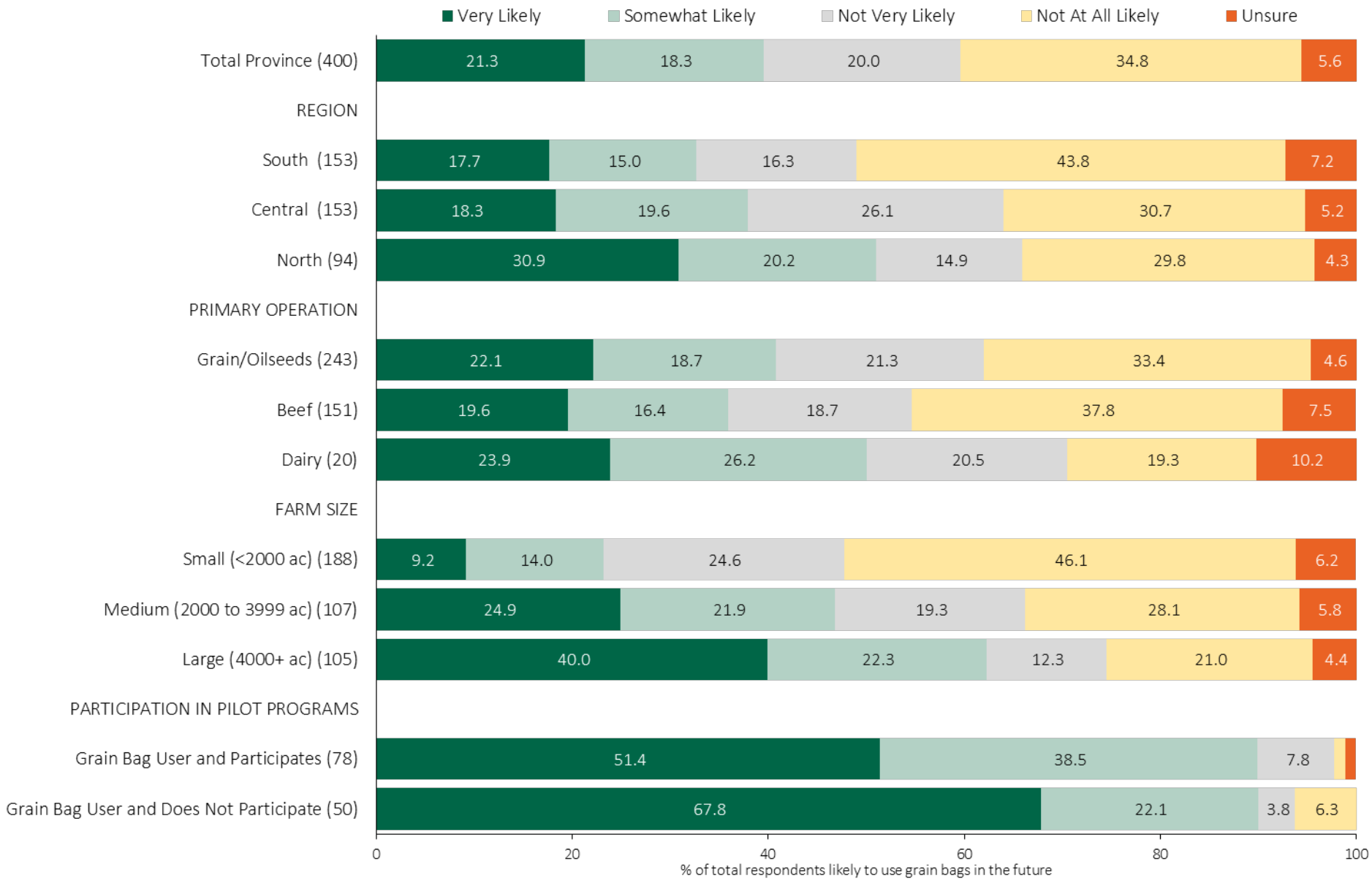
% of respondents (n = 400)



Reasons For Not Planning To Use Grain Bags in 2023



Future Usage of Grain Bags



Methods of Disposal of Ag Plastics

Click any title above to jump to that section.

For each ag plastic used, farmers were presented with a number of methods of disposal and, for each method, asked if the method is their “main way of disposal”, “a way sometimes used”, or “a method not used”

Stratus AG RESEARCH

Key Findings – Main Methods of Disposal Of Ag Plastics

Grain Bags

Just under half of all grain bag users (46%) said "returning them to a collection site for recycling" is the main way of disposing of them. This is up from 32% in 2019. ▶

- However, fewer grain bag users in the North (27%) said this was their main method.
- 30% of grain bag users said "storing grain bags on-farm, planning to deal with them later" was the main method (up from 20% in 2019). ▶
- 19% of grain bag users said "landfill" was the main method (down from 24% in 2019), and another 14% said "burning" is the main method (same as 2019). However, more grain bag users in the North said "burning" was their main method (32%).

Plastic Baler Twine

Burning (31%), returning to a collection site for recycling (28%) and landfill (25%) were the top three main disposal methods for plastic baler twine. ▶

- Only 15% of plastic baler twine users from the North said returning it to a collection site for recycling was their main disposal method.
- Considerably more plastic baler twine users from the North (47%) burn or landfill (47%) this material.
- In comparison, in 2019, only 13% returned their plastic baler twine to a designated collection site for recycling while 46% said burning was their main disposal method.

Stratus AG RESEARCH

Key Findings – Main Methods of Disposal Of Ag Plastics

Net Wrap

Burning (35%) is the most commonly used main disposal method for net wrap followed by landfill (26%), mechanically shredded while processing bales (20%) and returned to a designated collection site for recycling (20%). ▶

- In 2019, 39% said burning was their main method, 33% said landfill, 9% mechanically shredded and only 9% said they returned net wrap to a designated collection site for recycling.
- To note, in Alberta, there are no recycling programs in any municipality for net wrap, therefore there is possibly a misunderstanding of the definition of net wrap or a belief that net wrap is being recycled when returned to a municipal collection site.

Silage Plastic

The top three main methods of disposal for silage plastic are returned to a designated collection site for recycling (28%), landfill (26%) and burning (25%). ▶

- In 2019, landfill (37%) and burning (26%) were the most popular disposal methods followed by returning to a designated collection site for recycling (19%).

Key Findings – Main Methods of Disposal Of Ag Plastics

Bale Wrap

Burning (37%) is the most popular main disposal method or bale wrap followed by returning to a designated collection site for recycling (20%), landfill (18%) and store on farm to deal with later (17%). ▶

- In 2019, burning (38%) and landfill (35%) were the top two main disposal methods, while 14% said they returned bale wrap to a designated collection site for disposal.

Plastic Pesticide or Fertilizer Containers <23L

Returned to a designated collection site for recycling is by far the main disposal method of for small plastic pesticide or fertilizer containers (85%). ▶

- In 2019, 75% returned small plastic pesticide or fertilizer containers to a designated collection site for recycling while another 10% said they returned it to the retailer or supplier.

Pesticide or Fertilizer Drums and Non-Deposit Drums and Totes (Bulk Containers)

Returned to a designated collection site for recycling is by far the main disposal method for bulk containers (80%). ▶

Plastic Seed Bags, Fertilizer Bulk Bags Pesticide and/or Inoculant Bags

Returning to a designated collection site for recycling (34%) is the most commonly used disposal method followed by landfill (25%) and burning (19%). ▶

- In 2019, 26% returned plastic seed bags etc. to a designated collection site for recycling, another 7% said they returned it to a retailer or supplier, 31% used landfill, while 22% said burning was their main disposal method.

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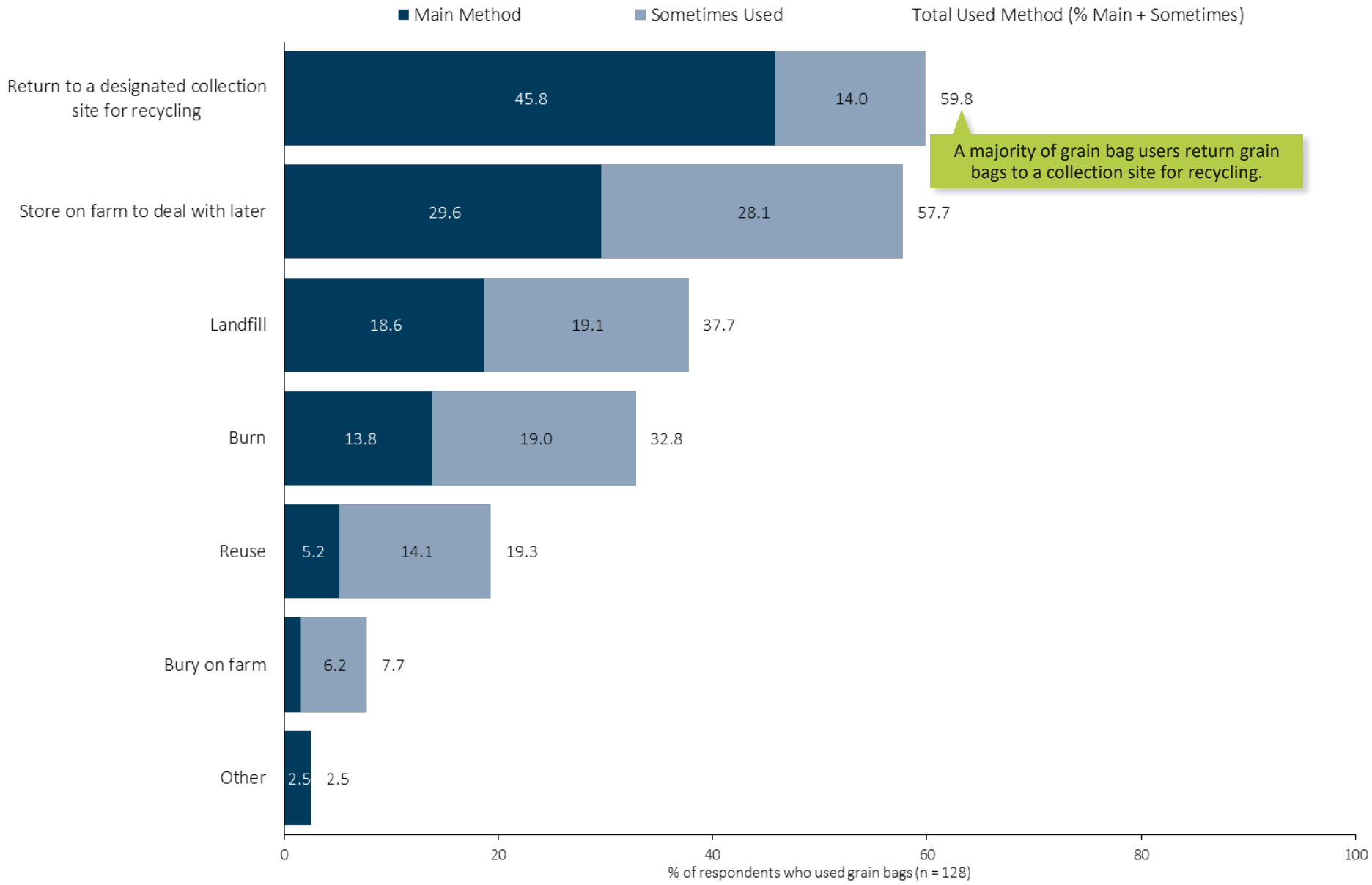
Methods of Disposal of Ag Plastics

Key Findings

Main Methods and Methods Sometimes Used to Dispose of Grain Bags



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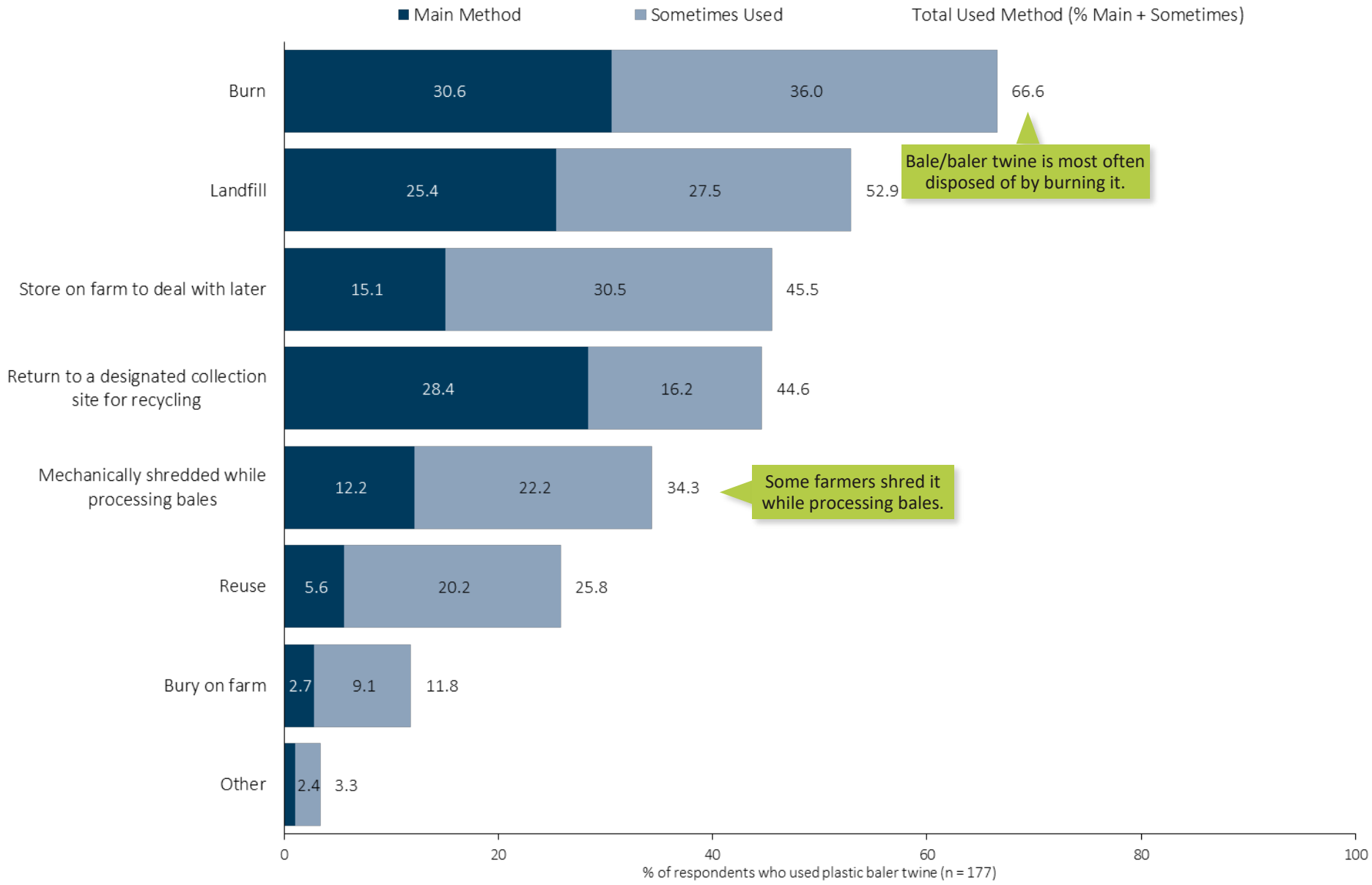
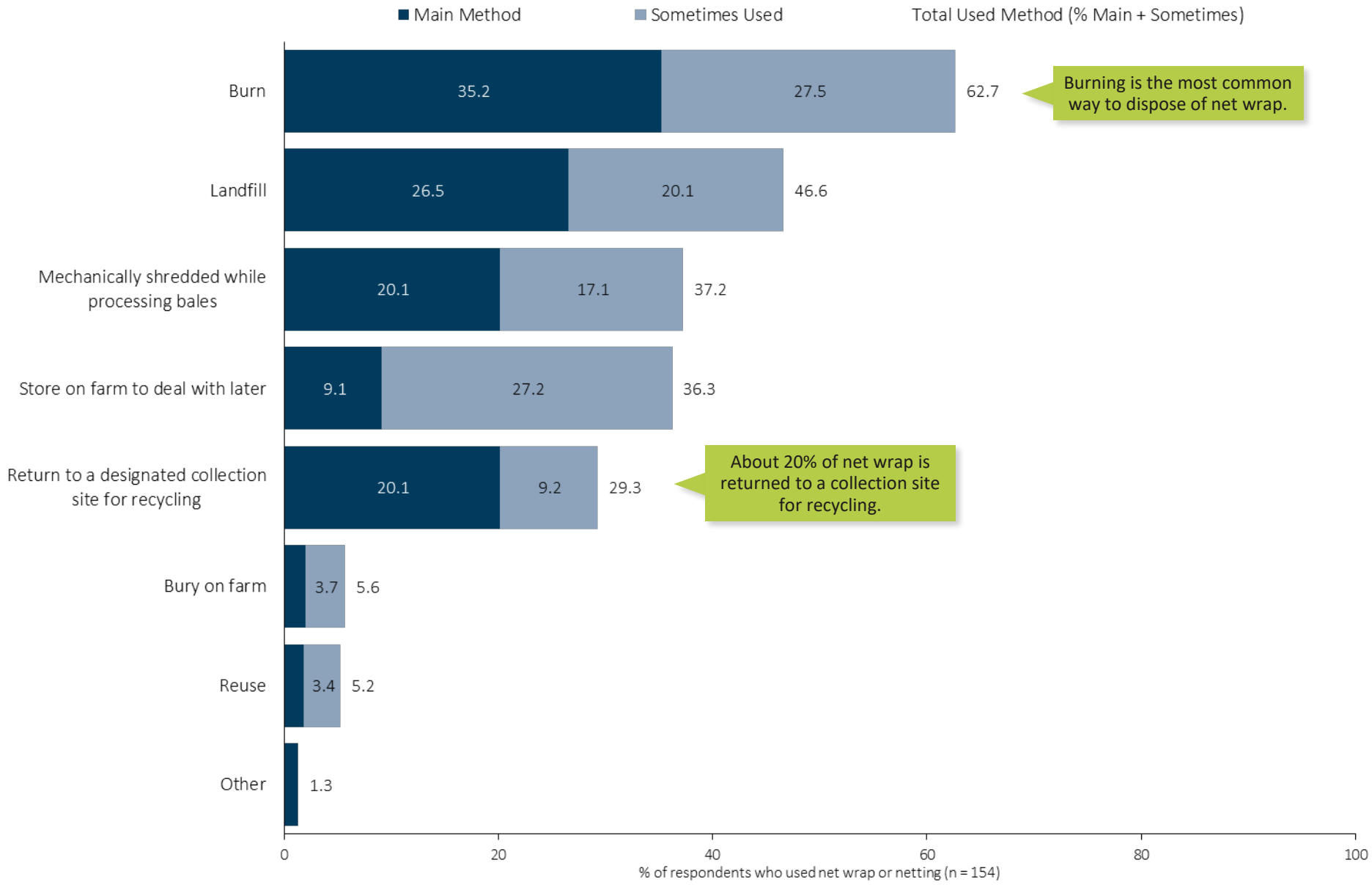
Main Methods and Methods Sometimes Used to Dispose of Plastic Baler Twine



Methods of Disposal of Ag Plastics

Key Findings

Main Methods and Methods Sometimes Used to Dispose of Net Wrap or Netting



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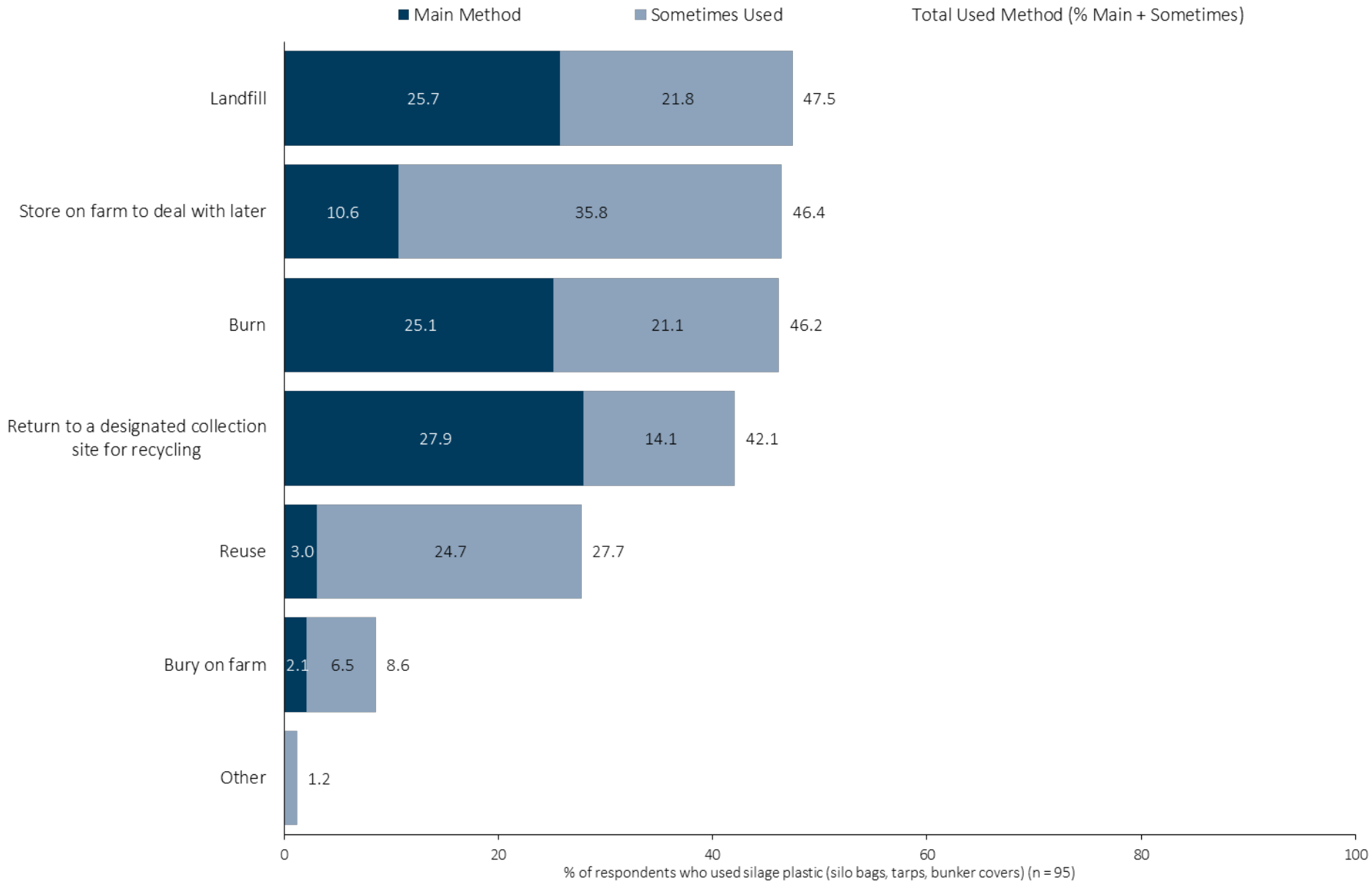
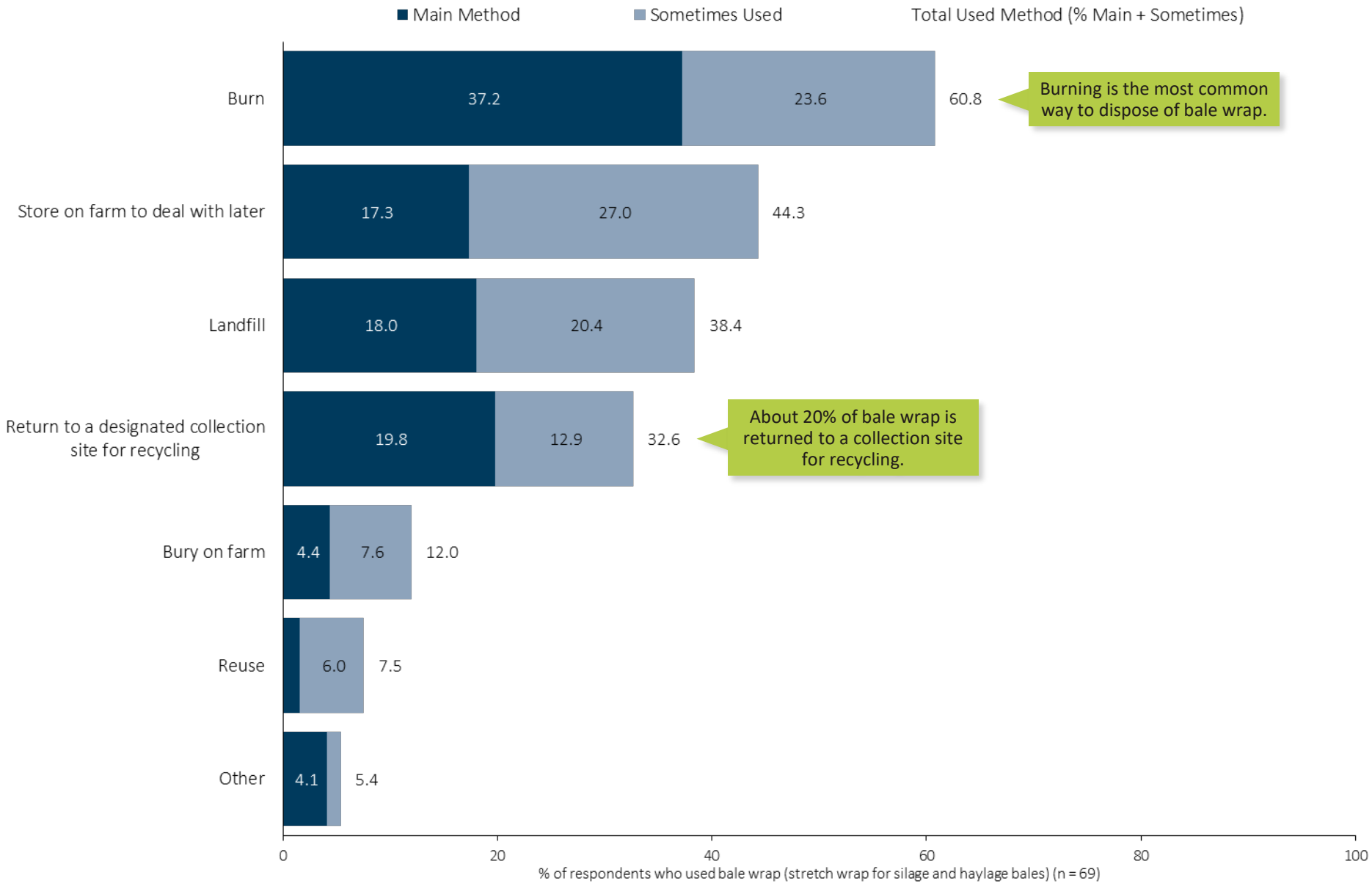
Main Methods and Methods Sometimes Used to Dispose of Silage Plastic (Silo Bags, Tarps, Bunker Covers)



Main Methods and Methods Sometimes Used to Dispose of Bale Wrap (Stretch Wrap for Silage and Haylage Bales)

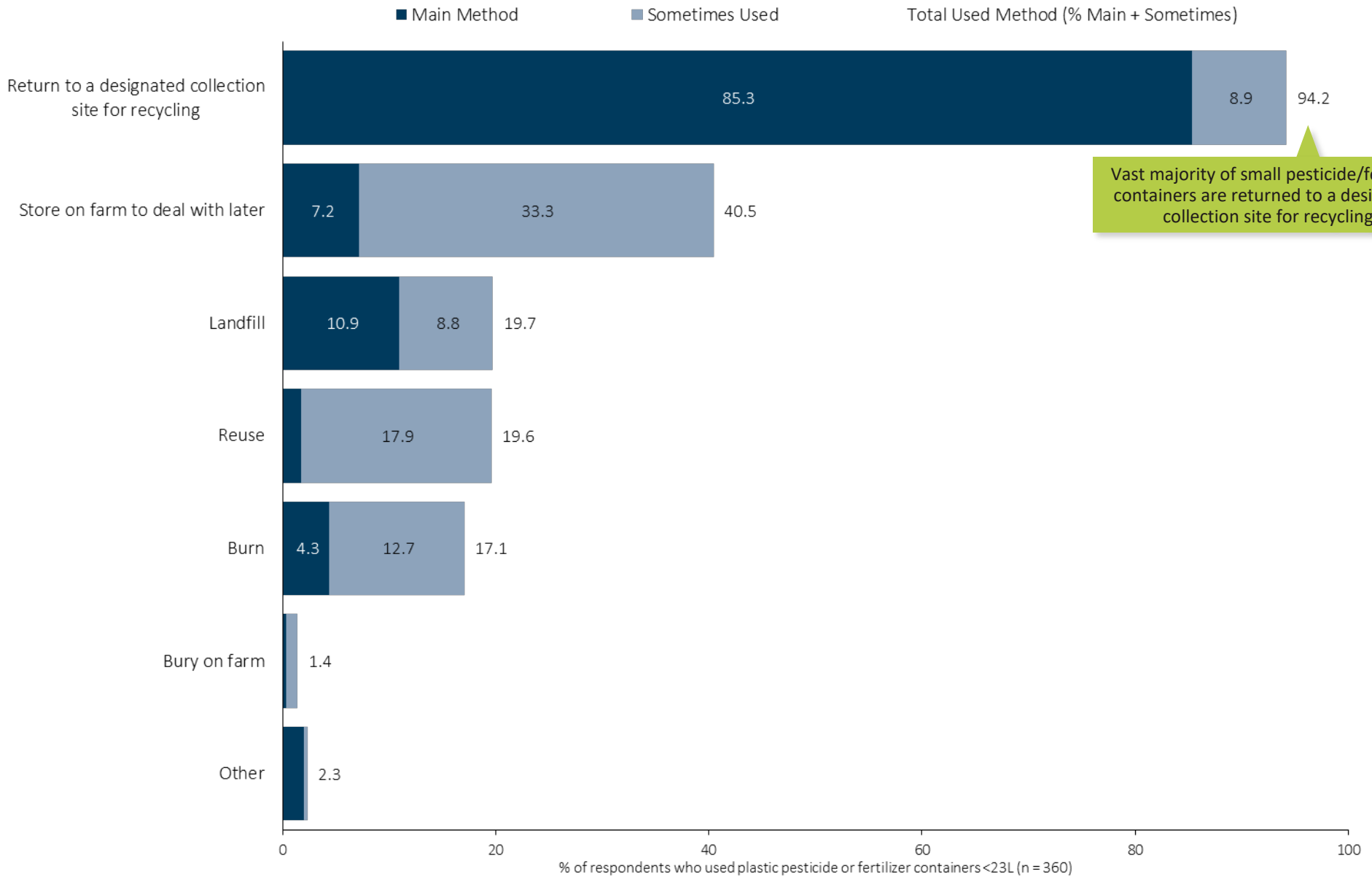


Burning is the most common way to dispose of bale wrap.

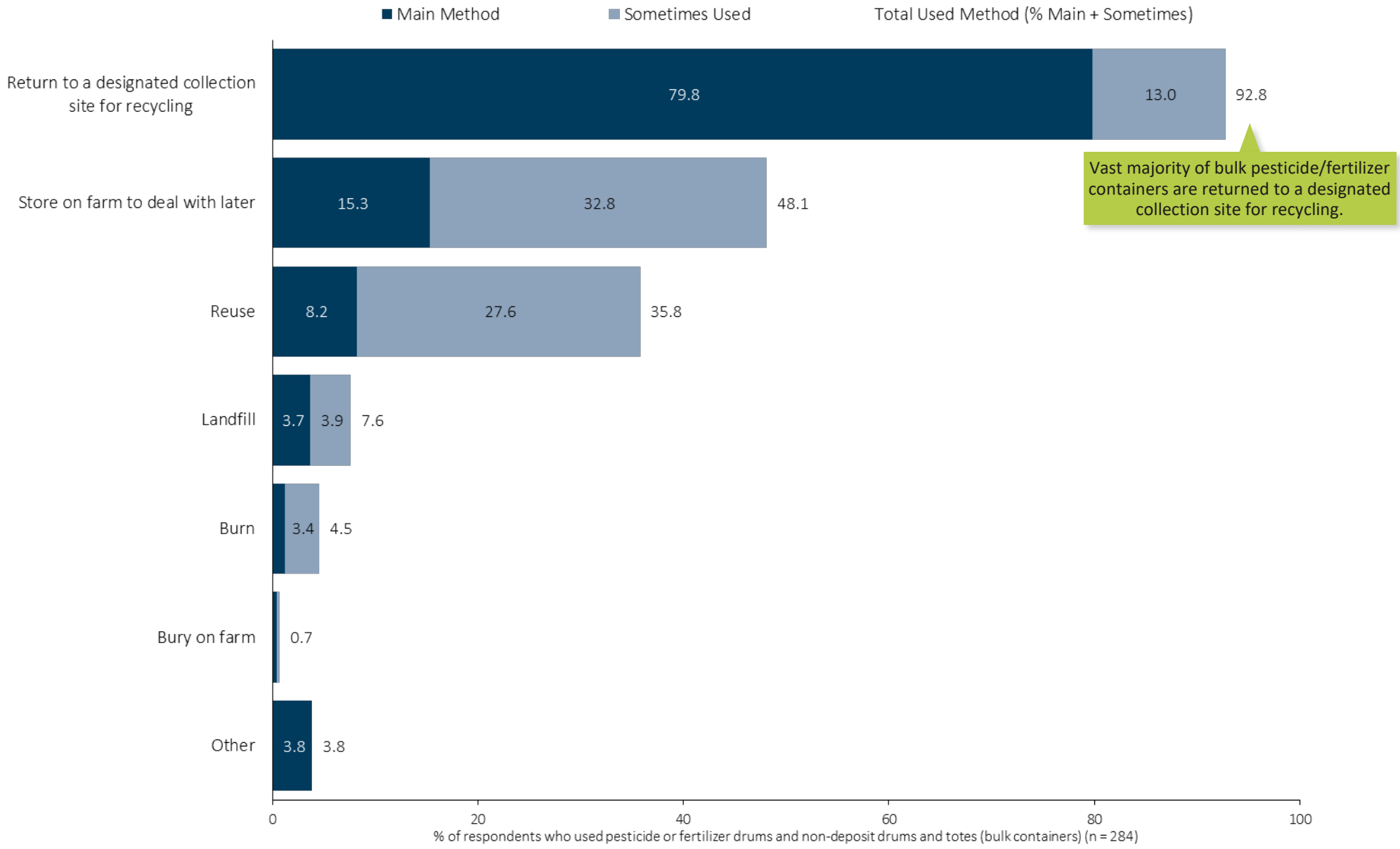
About 20% of bale wrap is returned to a collection site for recycling.

Stratus AG RESEARCH

Main Methods and Methods Sometimes Used to Dispose of Plastic Pesticide or Fertilizer Containers (Less Than 23 Litres)



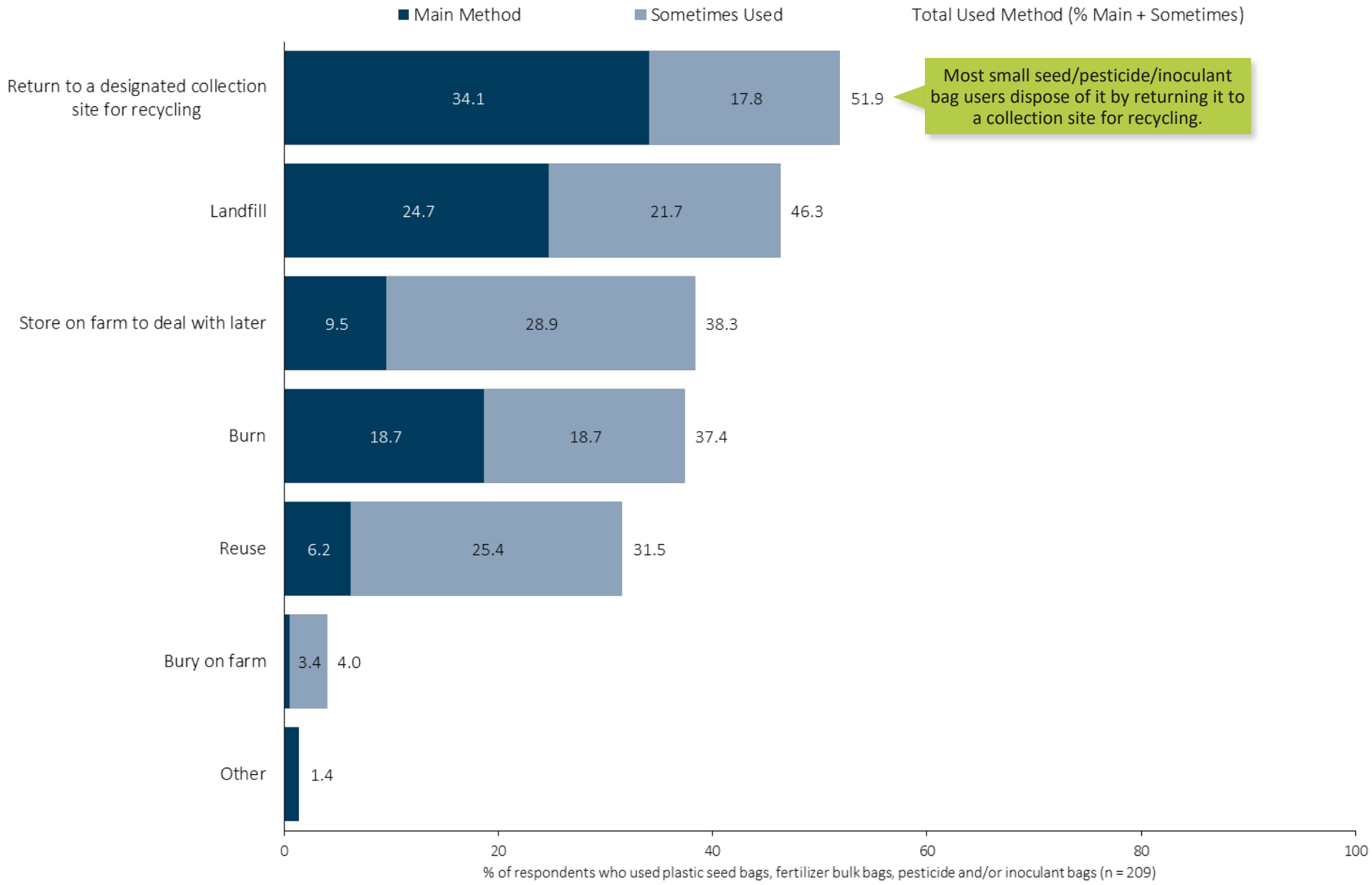
Main Methods and Methods Sometimes Used to Dispose of Pesticide or Fertilizer Drums And Totes (Bulk Containers)



Vast majority of bulk pesticide/fertilizer containers are returned to a designated collection site for recycling.

Stratus AG RESEARCH

Main Methods and Methods Sometimes Used to Dispose of Plastic Seed Bags, Fertilizer Bulk Bags, Pesticide and/or Inoculant Bags



Satisfaction with Methods of Disposal for Ag Plastics

Click any title above to jump to that section.

- **For each ag plastic used, farmers were asked how satisfied they were with the main or sometimes used method of disposal they used – “not at all satisfied”, “not very satisfied”, “somewhat satisfied”, or “very satisfied”**

- **Grain bag users and plastic baler twine users who were very satisfied with their experience returning these ag plastics to a recycling collection site were asked why**

Stratus AG RESEARCH

Key Findings - Satisfaction with Methods Used To Dispose Of Ag Plastics

Grain Bags

95% are satisfied (very satisfied or somewhat) with returning grain bags to a collection site for recycling. ▶

- A much smaller percentage of grain bag users who used on-farm storage (42%), landfill (55%) or burned their grain bags (44%) were satisfied (very or somewhat) with these methods.
- In 2019, 81% of grain bag users who said returning their grain bags to a recycling collection site was their main disposal method were satisfied with this method.
- The top 2 reasons why grain bag users were very satisfied with their experience returning these ag plastics to a recycling collection site include “don’t have to pay to get it recycled”, and “collection site is nearby”. ▶

Plastic Baler Twine

88% are satisfied (very or somewhat) with returning plastic baler twine to a collection site for recycling. ▶

- In comparison, a much smaller percentage of plastic baler twine users who used burning (56%) or landfill (59%) were satisfied with these methods.
- In 2019, 94% of plastic baler twine users who said returning plastic baler twine to a recycling collection site was their main disposal method were satisfied with this method.
- The top 2 reasons why plastic baler twine users were very satisfied with their experience returning these ag plastics to a recycling collection site include “collection site is nearby”, and “don’t have to pay to get it recycled”. ▶

Stratus AG RESEARCH

Key Findings - Satisfaction with Methods Used To Dispose Of Ag Plastics

Net Wrap or Netting

82% are satisfied (very or somewhat) with returning net wrap to a collection site for recycling. ▶

- In comparison, a much smaller percentage of net wrap users who used burning (56%) or landfill (55%) or mechanical shredding while processing bales (62%) were satisfied with these methods.
- In 2019, 69% of net wrap users who said returning their net wrap to a recycling collection site was their main method of disposal were satisfied with this method.

Silage Plastic

95% are satisfied (very or somewhat) with returning silage plastic to a collection site for recycling. ▶

- In comparison, a much smaller percentage of silage plastic users who used landfill (56%) or burned silage plastic (56%) were satisfied with these methods .
- In 2019, 86% of plastic silage wrap/cover users who said returning this ag plastic to a recycling collection site was their main disposal method were satisfied with this method.

Bale Wrap

84% are satisfied (very or somewhat) with returning bale wrap to a collection site for recycling. ▶

- In comparison, a much smaller percentage of bale wrap users who used burning (66%), landfill (47%) or stored bale wrap on farm to deal with later (23%%) were satisfied with these methods.
- In 2019, 83% of bale wrap users who said returning this ag plastic to a recycling collection site was their main disposal method were satisfied with this method.

Stratus AG RESEARCH

Key Findings - Satisfaction with Methods Used To Dispose Of Ag Plastics

Plastic Pesticide or Fertilizer Containers <23L

89% are satisfied (very or somewhat) with returning plastic pesticide or fertilizer containers <23L to a collection site for recycling. ▶

- In 2019, 95% of small pesticide or fertilizer container users who said returning these containers to a recycling collection site was their main method of disposal were satisfied with this method, while 98% of those who said they returned this ag plastic to a retailer or supplier were satisfied with that method.

Pesticide or Fertilizer Drums and Non-Deposit Drums and Totes (Bulk Containers)

92% are satisfied (very or somewhat) with returning pesticide or fertilizer drums and non-deposit drums and totes (bulk containers) to a collection site for recycling. ▶

Plastic Seed Bags, Fertilizer Bulk Bags, Pesticide and/or Inoculant Bags

82% are satisfied (very or somewhat) with returning plastic seed bags, fertilizer bulk bags, pesticide and/or inoculant bags to a collection site for recycling. ▶

- In comparison, a much smaller percentage of these ag plastics users who used landfill (52%) or burned these ag plastics (57%) were satisfied with these methods.
- In 2019, 81% of polyethylene seed/pesticide users who said returning this ag plastic to a recycling collection site was their main disposal method were satisfied with this method.

Stratus AG RESEARCH

Key Findings – Users' Satisfaction With Current Access To Recycle Certain Ag Plastics

Level of Satisfaction With Current Access To Recycle Grain Bags, Plastic Baler Twine, Bale Wrap, Silage Plastic and Net Wrap

Many grain bag, plastic baler twine, bale wrap, silage plastic and net wrap users are not satisfied with their current access to recycle these ag plastics. ▶

- Top2box scores (% very/somewhat) for satisfaction with current access to recycle among users is 64% for grain bags, 51% for plastic baler twine, 44% for silage plastic, 43% for bale wrap, and 41% for net wrap.
  - Satisfaction with current access to recycle grain bags was notably higher among those who participated in the pilot program (86%) versus those that did not (30%).
  - Satisfaction with current access to recycle plastic baler twine was significantly higher among those who participated in the pilot program (75%) versus those that did not (32%).
  - Grain bag, bale wrap, and silage plastic users in the North were less satisfied with their current access to recycle these ag plastics.
- In the 2019 survey, all farmers were asked about their satisfaction with their current access to recycle to ag plastics in general (other than pesticide containers, such as twine, grain bags, and baler/silage wrap) – but not by individual types of ag plastics. 57% of farmers in the 2019 survey were satisfied with their current access.

Stratus AG RESEARCH

Key Findings – Ease Of Recycling Grain Bags and Plastic Baler Twine

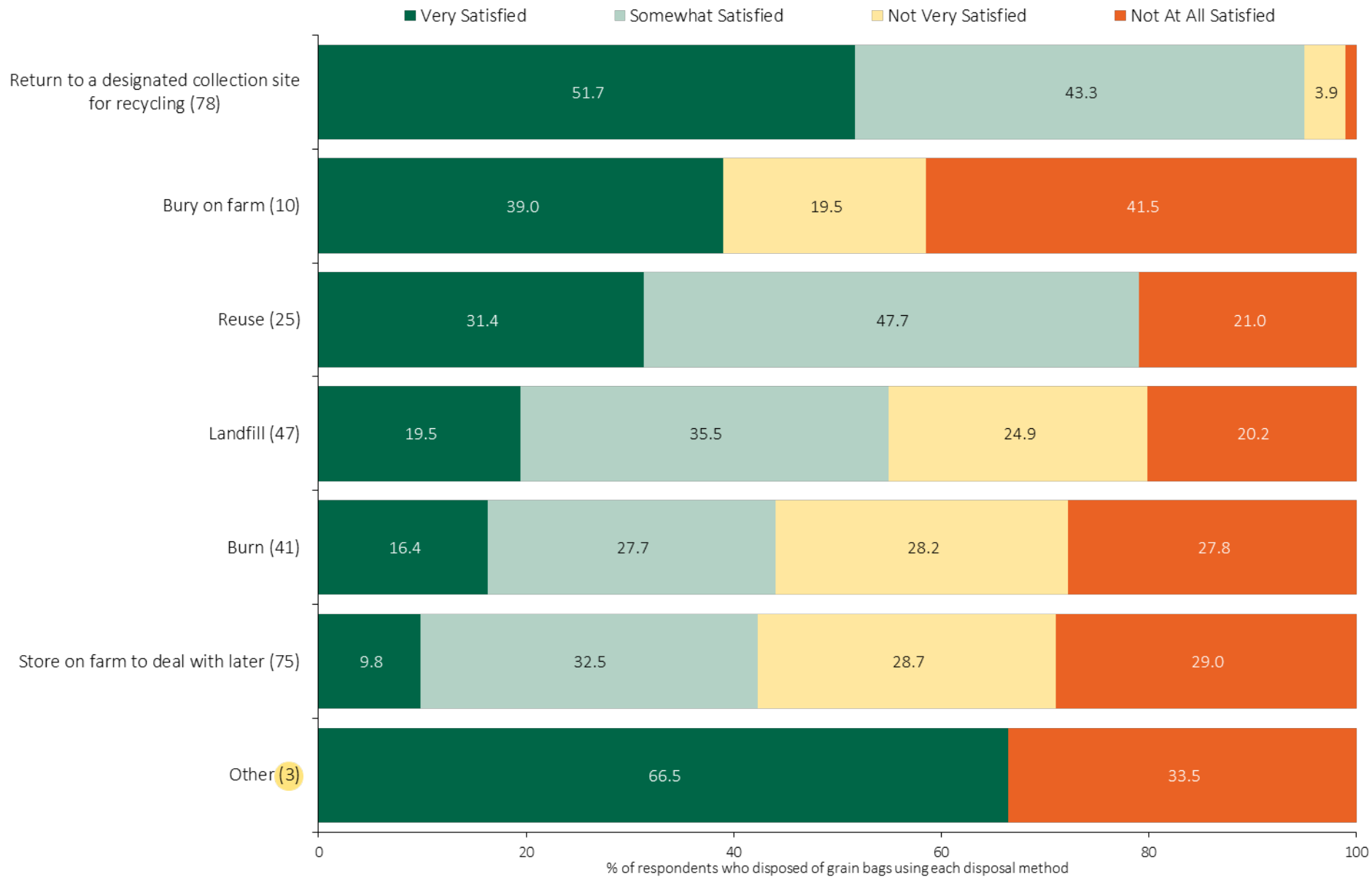
Ease of Recycling Grain Bags and Plastic Baler Twine

About half of all grain bag users and about a third of all plastic baler twine users said it was very/somewhat easy to recycle grain bags. ▶ ▶

- Overall, 48% of all grain bag users said it was easy (very/somewhat) to recycle grain bags.
  - More grain bags users who participated in the pilot program (67%) said it was easy to recycle grain bags versus those that did not (18%).
  - Fewer grain bag users in the North said it was easy to recycle grain bags (27%).
  - In the 2019 survey, 31% of grain bag users said it was easy to recycle grain bags.
- Overall, 35% of all plastic baler twine users said it was easy to recycle plastic baler twine
  - More plastic baler twine users who participated in the pilot program (59%) said it was easy to recycle plastic baler twine versus those who did not (16%).
  - Fewer plastic baler twine users in the North said it was easy to recycle plastic baler twine (18%).
  - In the 2019 survey, 28% of plastic baler twine users said it was easy to recycle plastic baler twine.

Satisfaction with Methods of Disposal for Ag Plastics

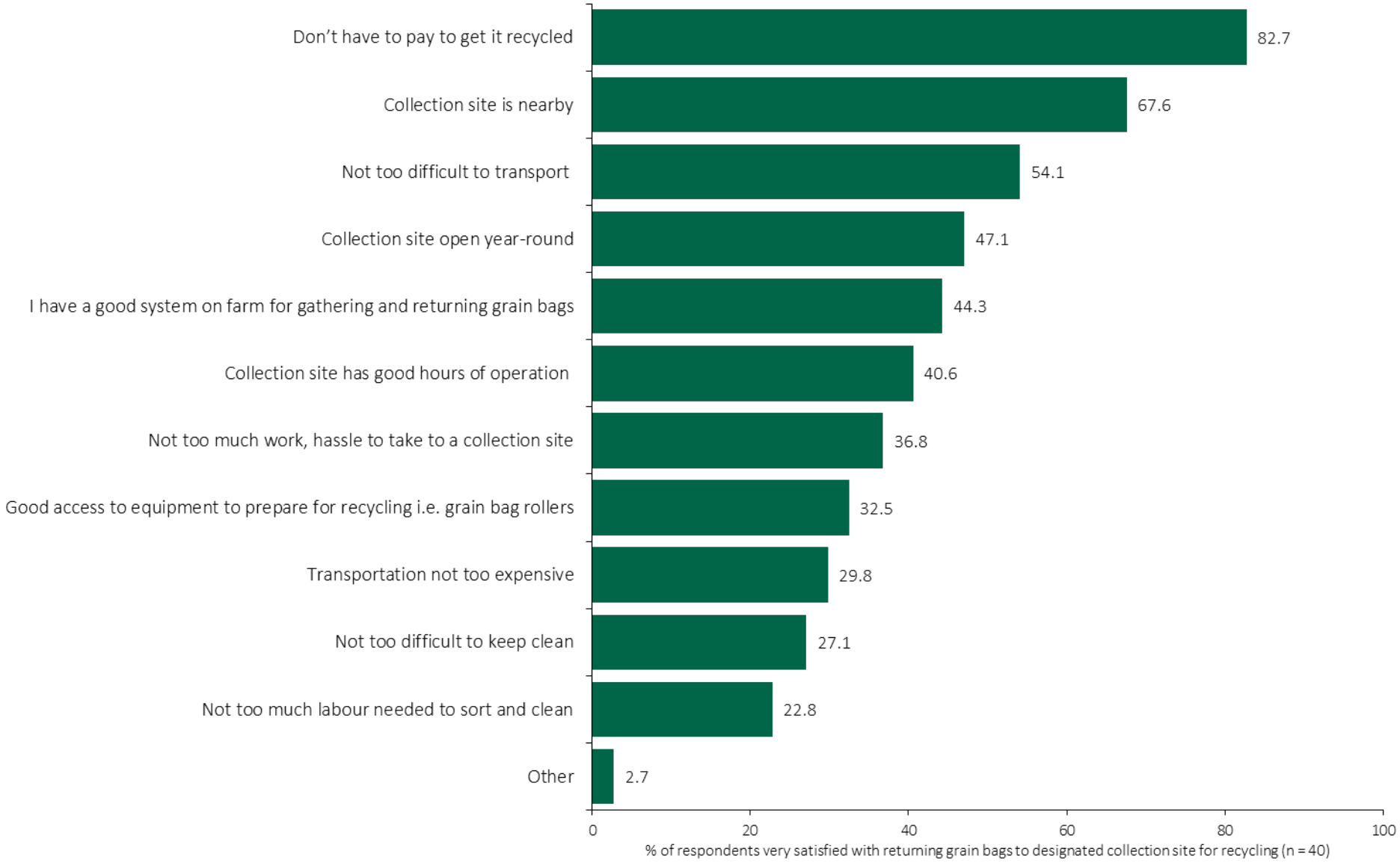
Satisfaction with Methods of Disposing Grain Bags



Satisfaction with Methods of Disposal for Ag Plastics

Key Findings

Reasons For Being Very Satisfied With Returning Grain Bags to Designated Collection Site For Recycling



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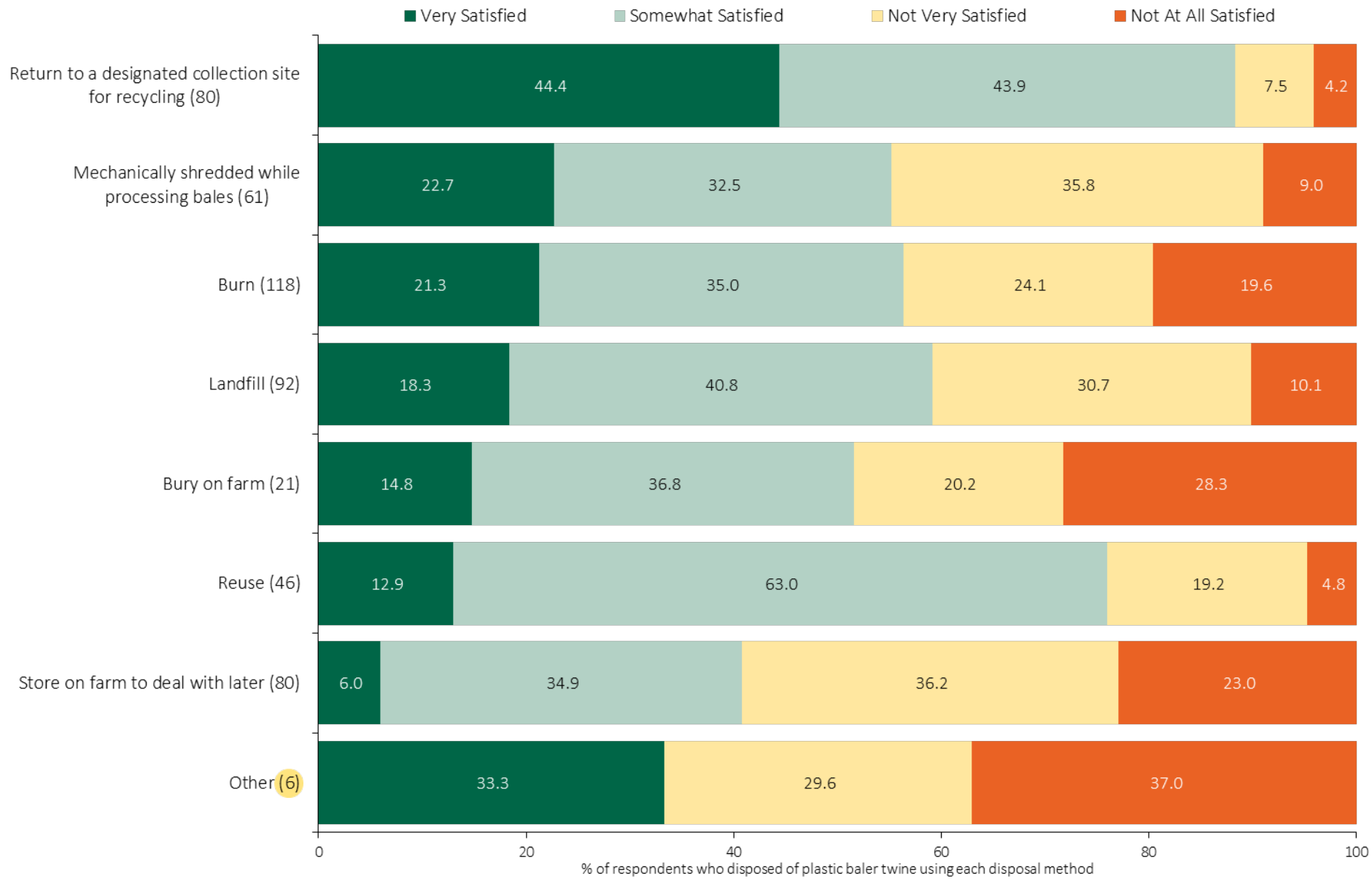
Satisfaction with Methods of Disposal for Ag Plastics

Key Findings

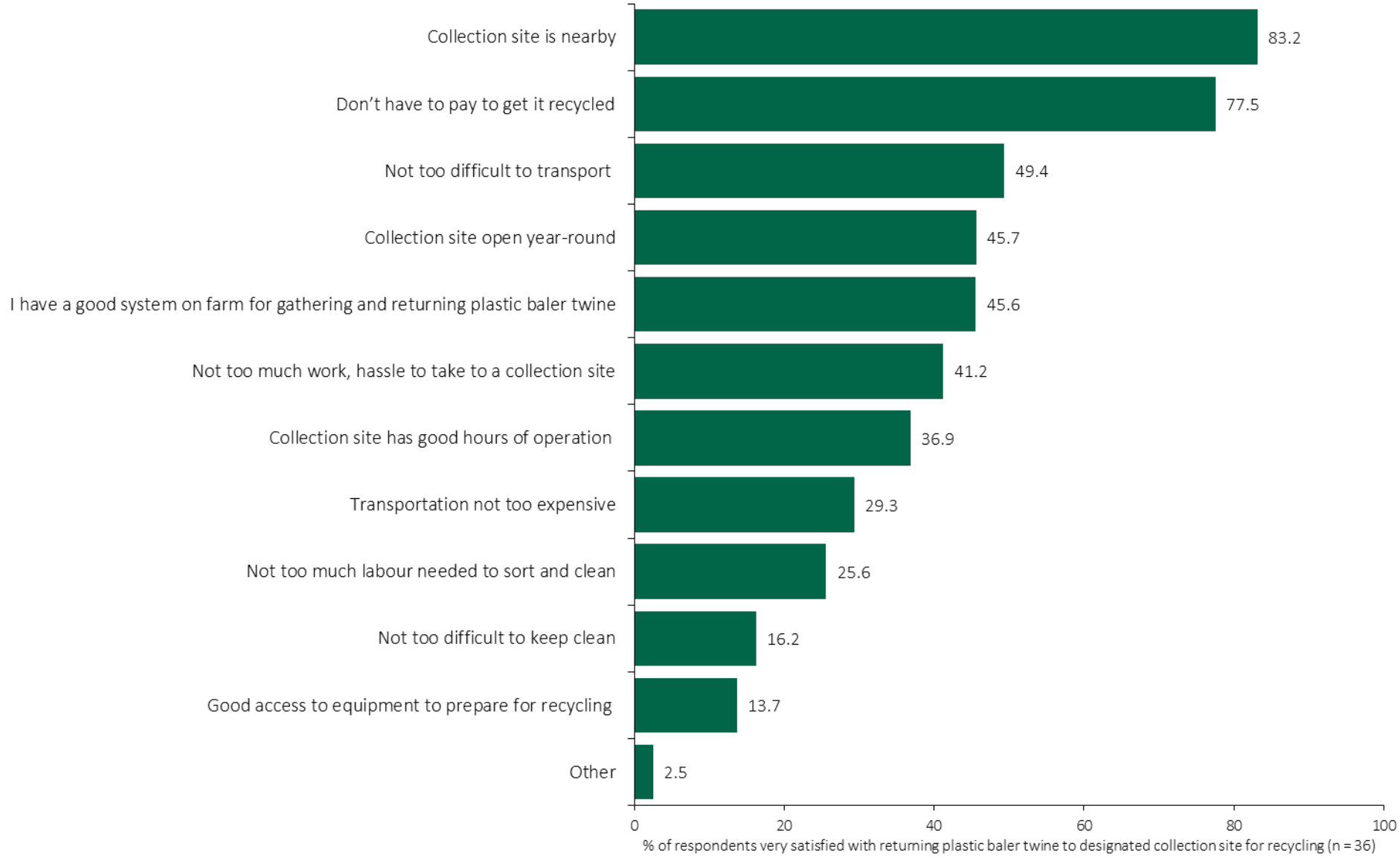
Satisfaction with Methods of Disposing Plastic Baler Twine



Satisfaction with Methods of Disposal for Ag Plastics

Key Findings

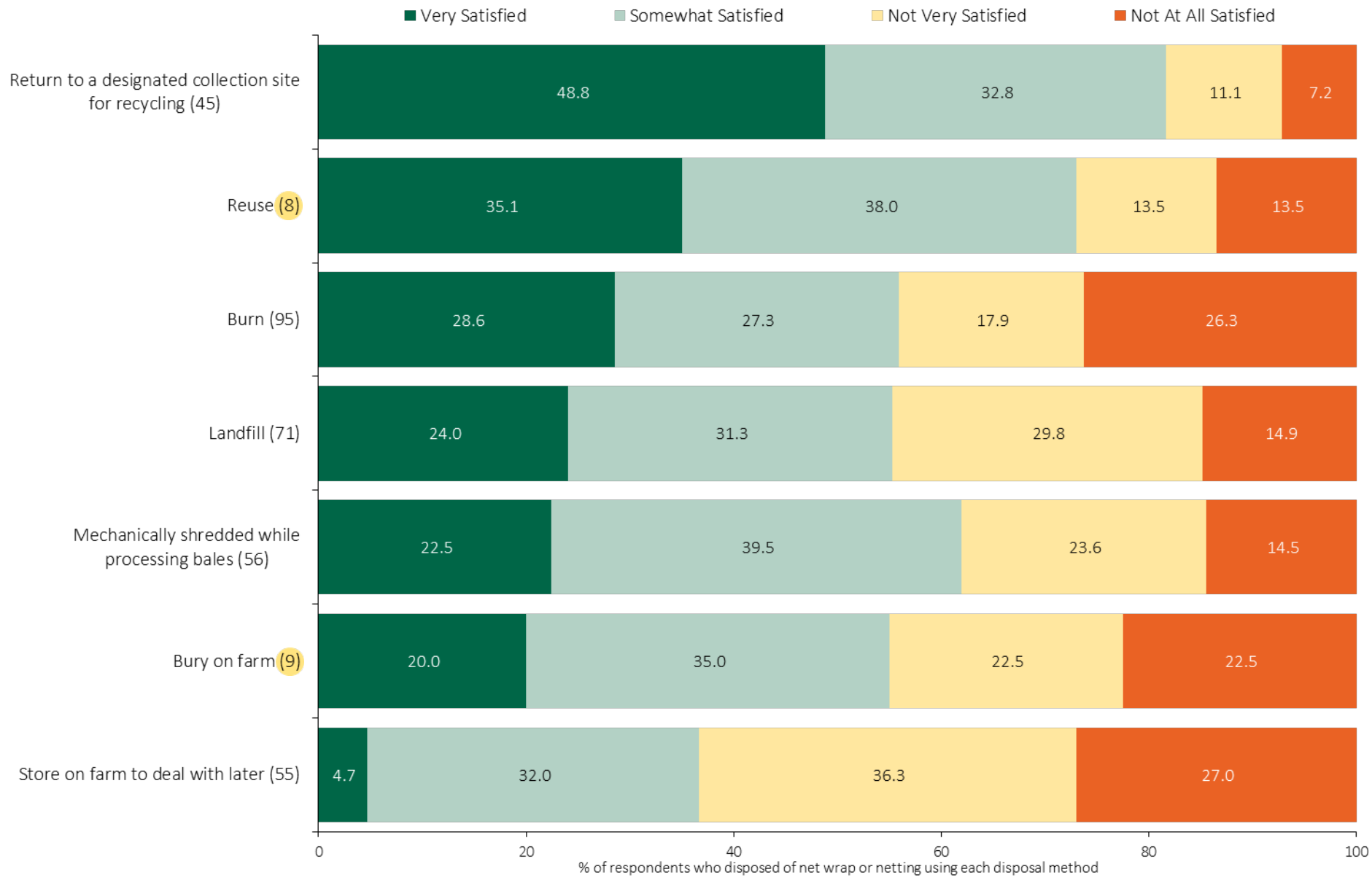
Reasons For Being Very Satisfied With Returning Plastic Baler Twine to Designated Collection Site For Recycling



Satisfaction with Methods of Disposal for Ag Plastics

Key Findings

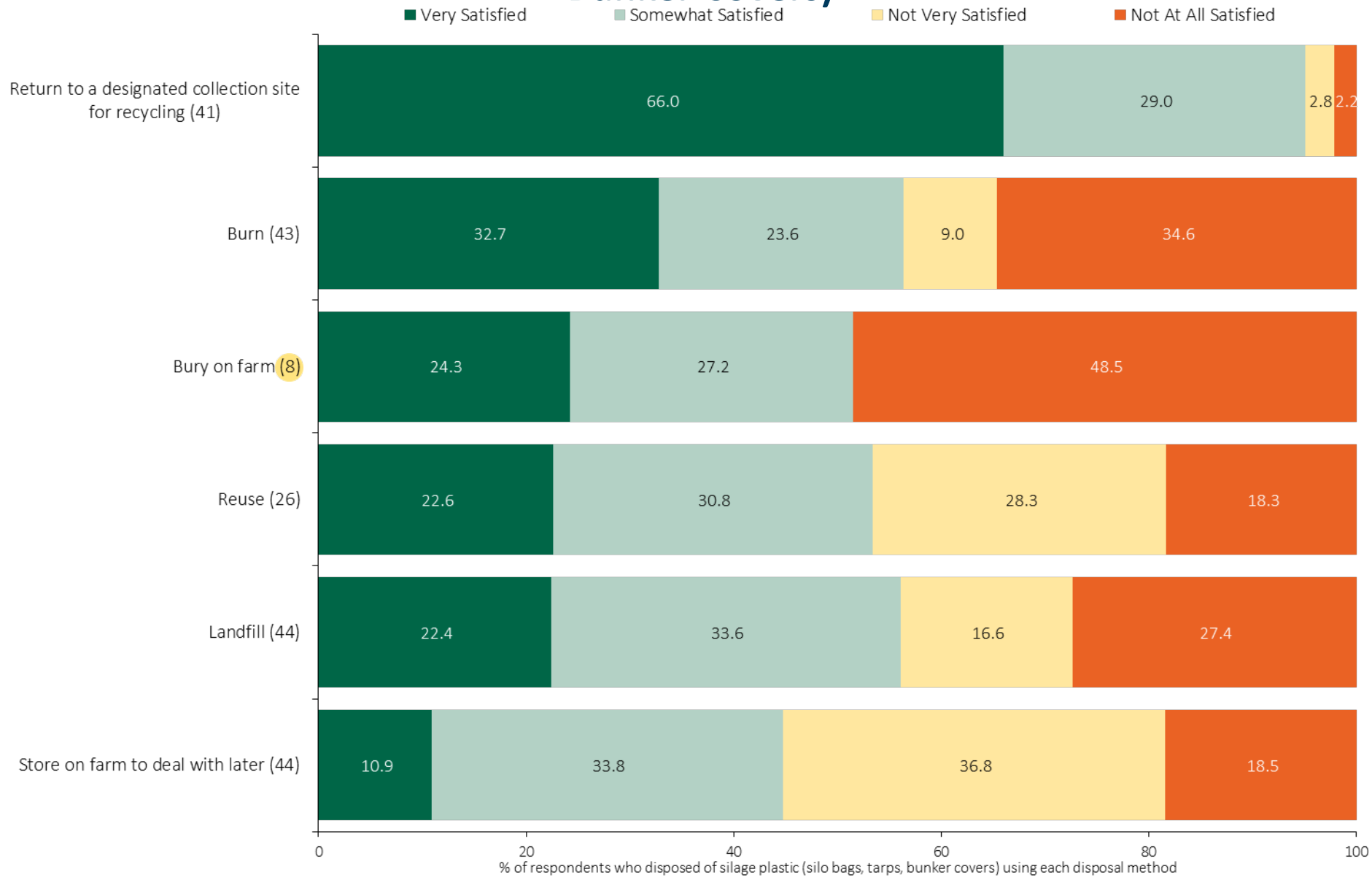
Satisfaction with Methods of Disposing Net Wrap or Netting



Satisfaction with Methods of Disposal for Ag Plastics

Key Findings

Satisfaction with Methods of Disposing Silage Plastic (Silo Bags, Tarps, Bunker Covers)



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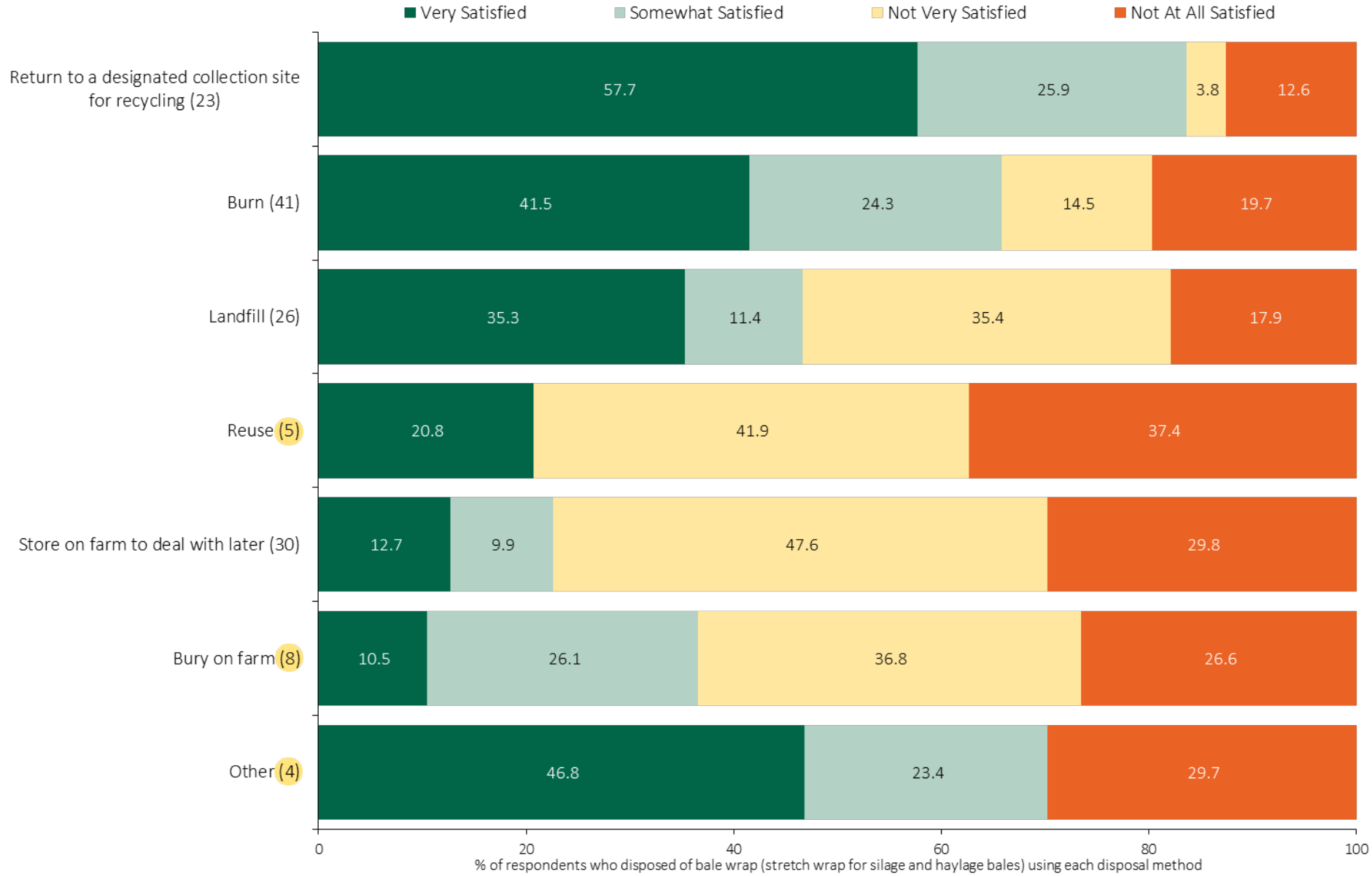
Satisfaction with Methods of Disposal for Ag Plastics

Key Findings

Satisfaction with Methods of Disposing Bale Wrap (Stretch Wrap for Silage and Haylage Bales)



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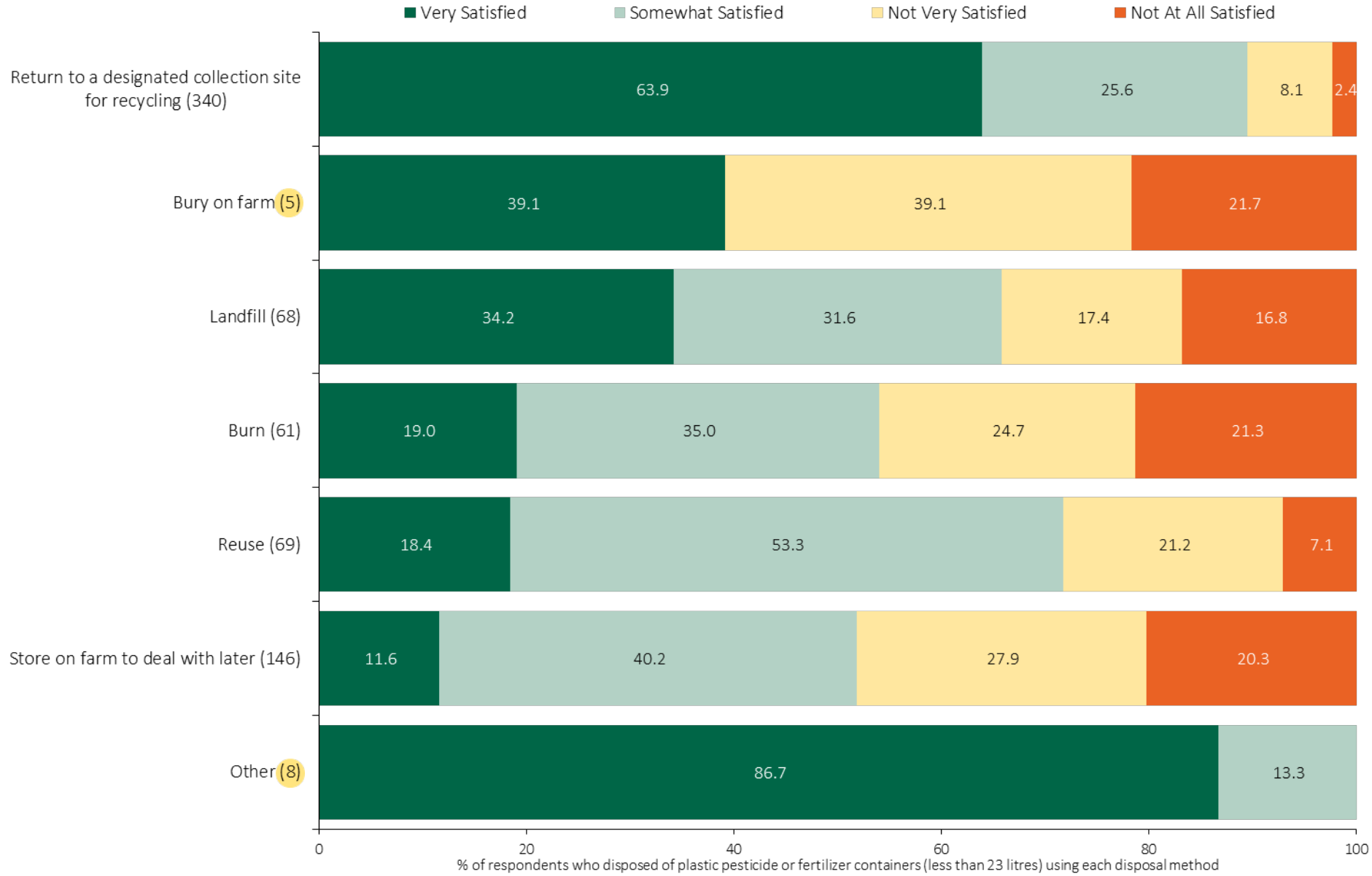
Satisfaction with Methods of Disposal for Ag Plastics

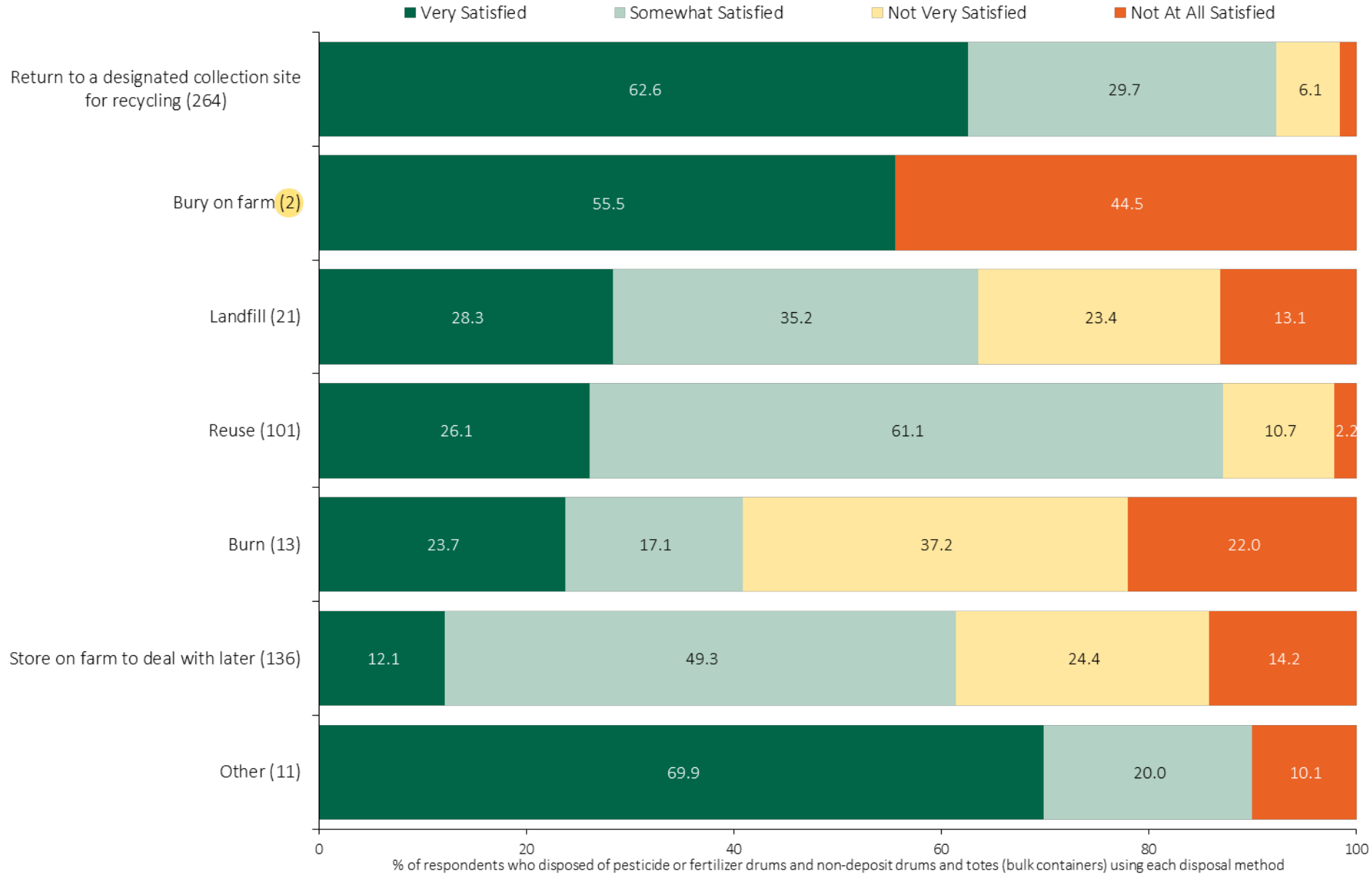
Satisfaction with Methods of Disposing of Plastic Pesticide or Fertilizer Containers (Less Than 23 Litres)



Stratus AG RESEARCH

Satisfaction with Methods of Disposal for Ag Plastics

Satisfaction with Methods of Disposing of Pesticide or Fertilizer Drums And Totes (Bulk Containers)



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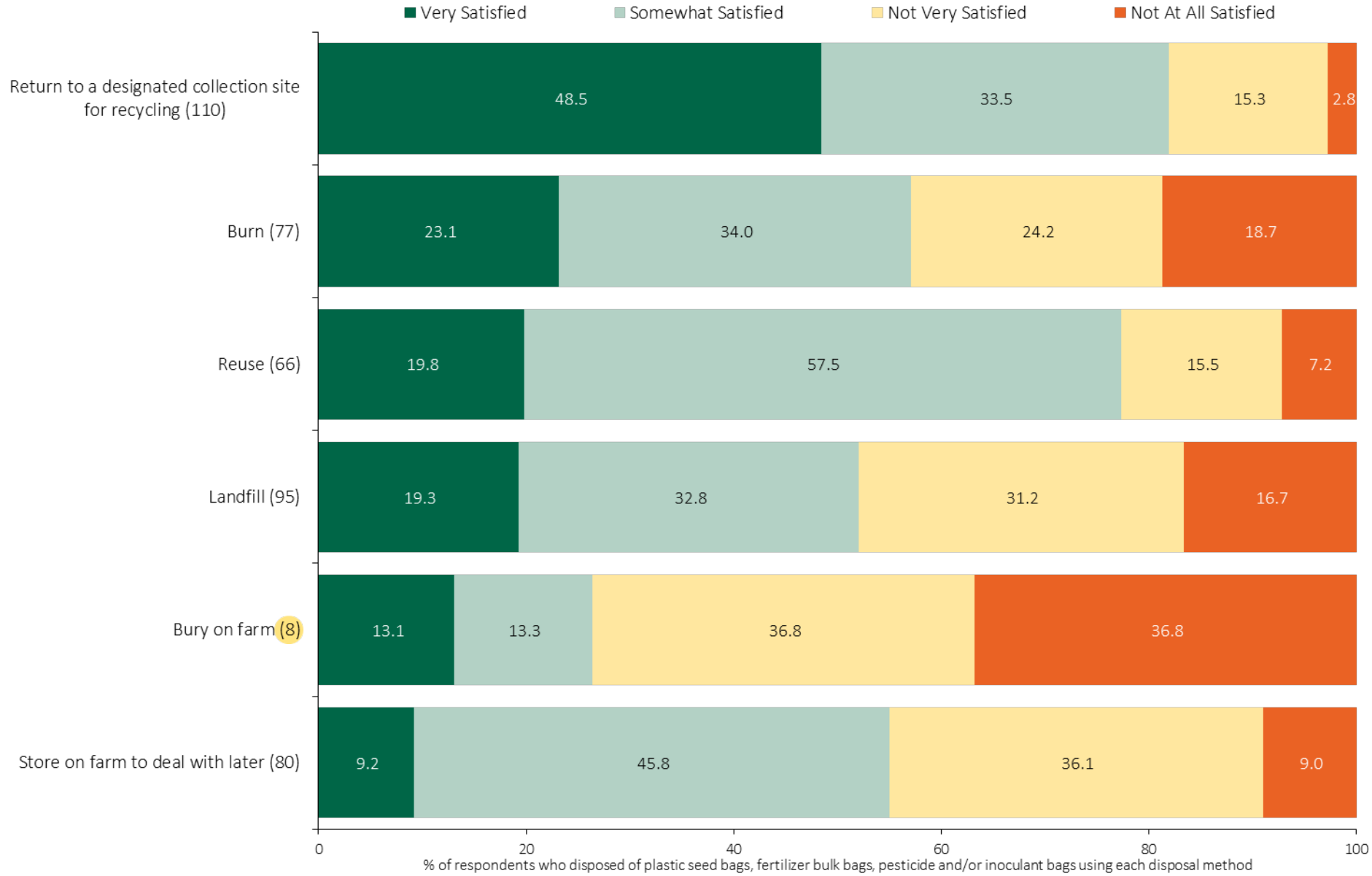
Satisfaction with Methods of Disposal for Ag Plastics

Key Findings

Satisfaction with Methods of Disposing of Plastic Seed Bags, Fertilizer Bulk Bags, Pesticide and/or Inoculant Bags



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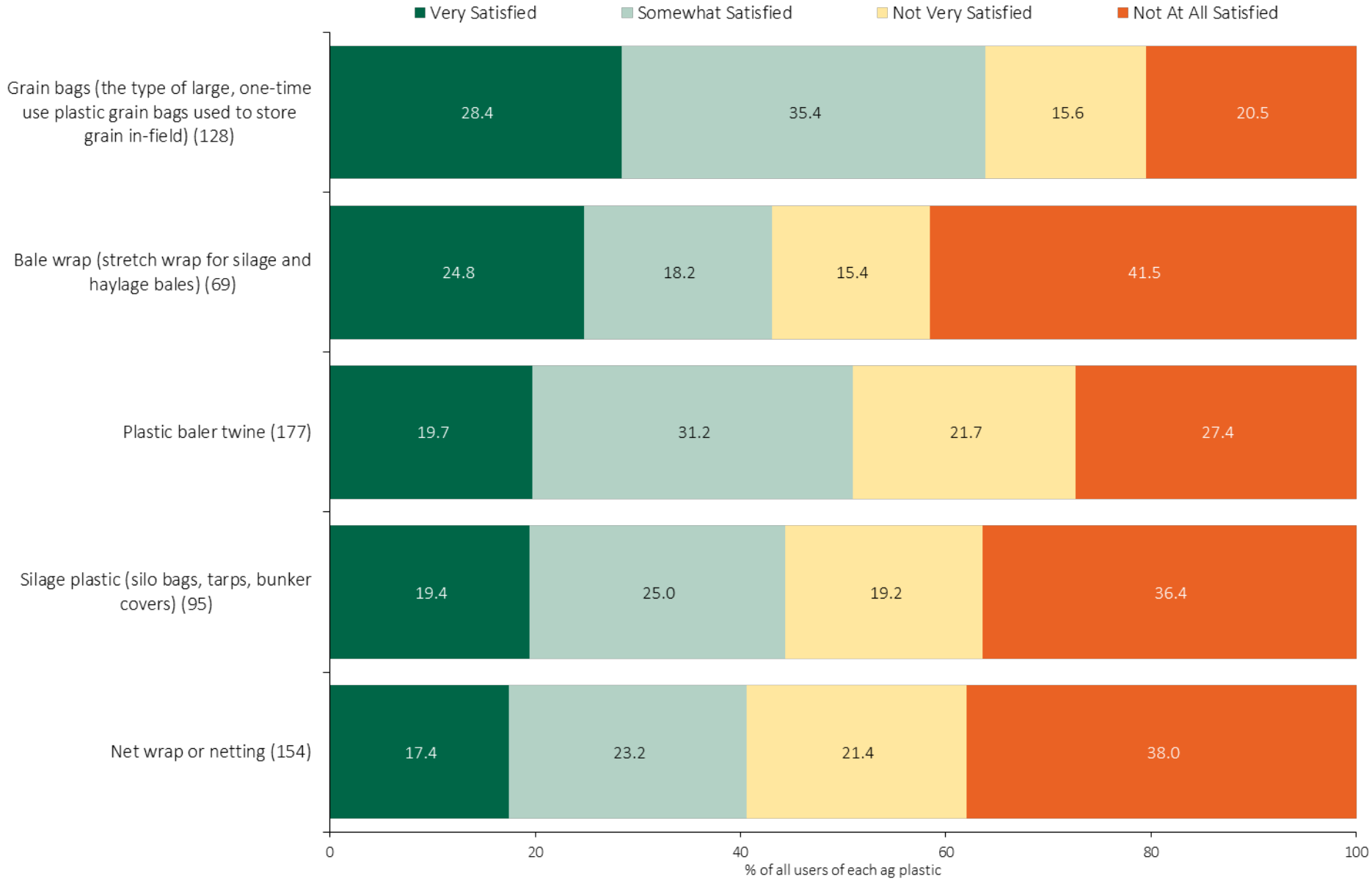
Satisfaction with Methods of Disposal for Ag Plastics

Level of Satisfaction With Current Access To Recycle Plastic Baler Twine, Grain Bags, Bale Wrap, Silage Plastics, Net Wrap/Netting



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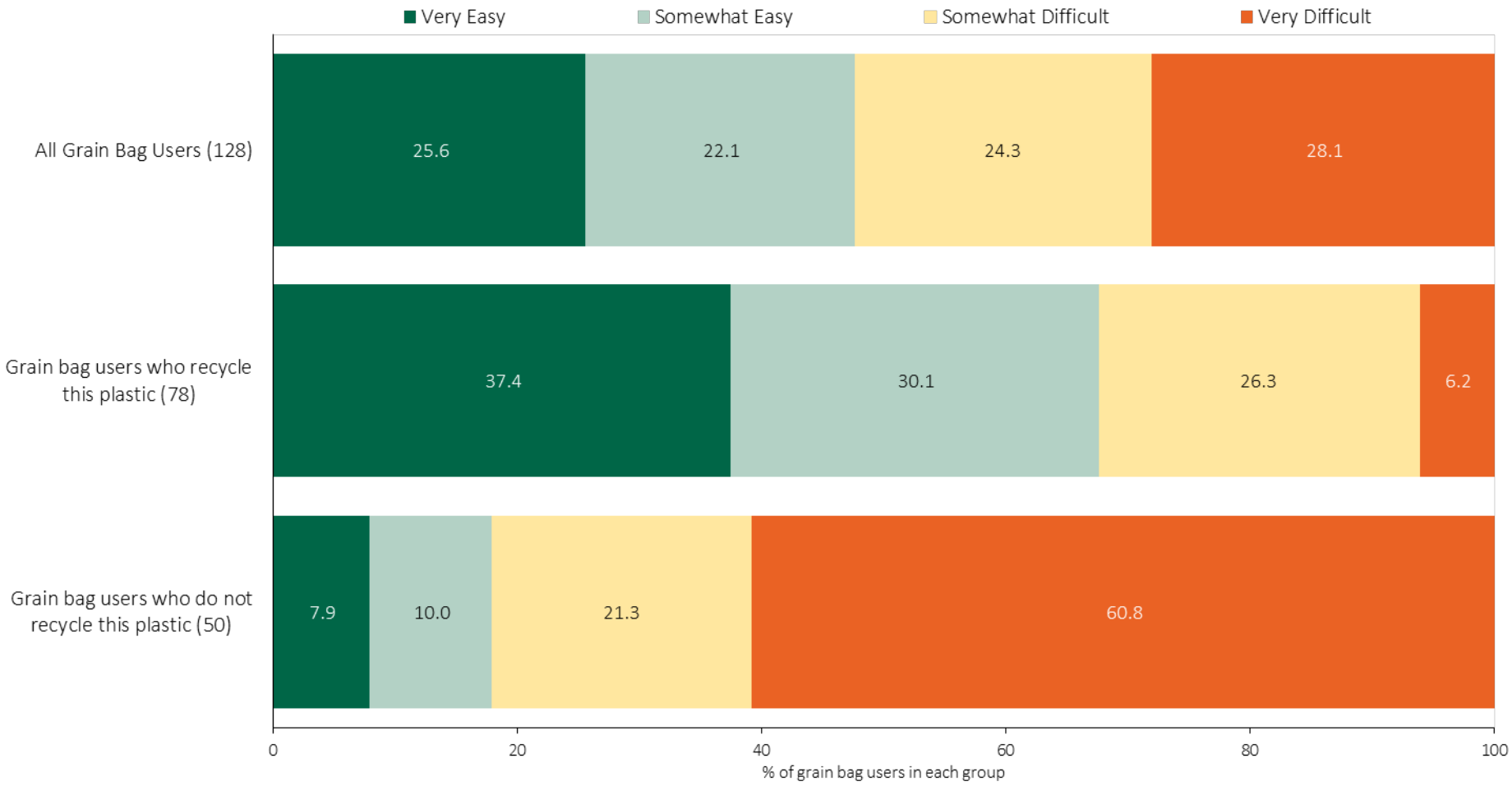
Satisfaction with Methods of Disposal for Ag Plastics

Key Findings

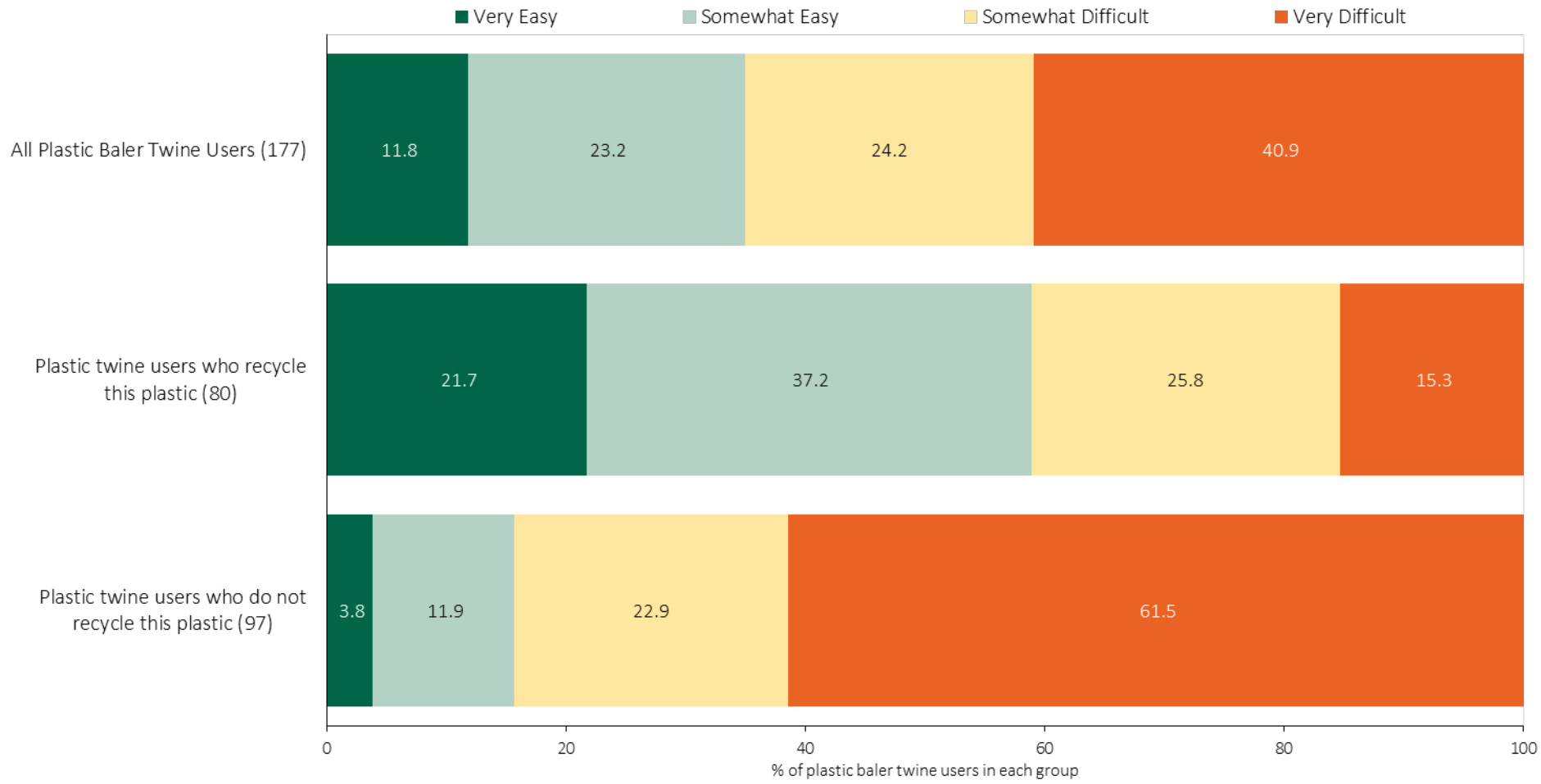
Ease of Recycling Grain Bags



Satisfaction with Methods of Disposal for Ag Plastics

Key Findings

Ease of Recycling Plastic Baler Twine



Familiarity With Alberta Pilot Program

Click any title above to jump to that section.

- **Farmers were asked about their familiarity with the pilot program in Alberta to recycling grain bags and plastic baler twine.**
- **Farmers were asked about their unaided and aided awareness of the name of the pilot program in Alberta for recycling grain bags and plastic baler twine ("Alberta Ag-Plastic – *Recycle it!)*.**
- **Sources of information used to learn about opportunities in Alberta for recycling grain bags or plastic baler twine.**
- **Preferred sources of information to learn about how to manage grain bags and plastic baler twine for recycling.**

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Key Findings – Familiarity With Pilot Programs To Recycle Grain Bags And Plastic Baler Twine

Familiarity With The Pilot Program In Alberta To Recycle Grain Bags

Majority of respondents are not familiar with a pilot program for recycling grain bags. ▶

- Overall, 67% of all respondents have never heard of the grain bag pilot program or have heard of it but don't know anything about it.
- 57% of grain bag users have never heard of the grain bag program or have heard of it but don't know anything about it.
- 43% of grain bag users that return their grain bags to a designated collection site for recycling have never heard of the pilot program or have heard of it but don't know anything about it. 25% of grain bag users who participate in the grain bag pilot program said they had heard of the pilot program.

Familiarity With The Pilot Program In Alberta To Recycle Plastic Baler Twine

Majority of respondents are not familiar with a pilot program for recycling plastic baler twine. ▶

- Overall, 74% of all respondents have never heard of the plastic baler twine pilot program or have heard of it but don't know anything about it.
- 67% of plastic baler twine users have never heard of the plastic baler twine pilot program or have heard of it but don't know anything about it.
- 51% of plastic baler twine users that return their plastic baler twine to a designated collection site for recycling have never heard of the plastic baler twine pilot program or have heard of it but don't know anything about it. 13% of plastic baler twine users who participate in the plastic baler twine pilot program said they have heard of the pilot program.

Key Findings – Unaided and Aided Awareness Of "Alberta Ag-Plastic. *Recycle it!*"

Unaided And Aided Awareness of "Alberta Ag-Plastic. *Recycle it!*"

Unaided and aided awareness of "Alberta Ag-Plastic. *Recycle it*!" is low. ▶▶

- In terms of unaided awareness, 88% of respondents said "don't know/can't recall" when asked "what is the name of the pilot program in Alberta for recycling grain bags and plastic baler twine".
  - 2% said "Alberta Ag-Plastics" or "Alberta Ag-Plastics. *Recycle it!*"
  - Another 5% said "Cleanfarm/Cleanfarms"
- In terms of aided awareness, 25% said they have heard of "Alberta Ag-Plastics. *Recycle it!*"

Key Findings – Sources Of Information Used In The Past 3 or 4 Years To Learn About Opportunities For Recycling Grain Bags Or Plastic Baler Twine

Sources Of Information Used In The Past 3 or 4 Years To Learn About Opportunities In Alberta For Recycling Grain Bags or Plastic Baler Twine

Overall, the main sources of information were newspaper articles, family/friend/neighbours, ag retail supplier and print advertising. ▶

- The main sources used by grain bag users were ag retailer supplier (30%) and family/friend/neighbours (30%).
  - Main sources used by grain bag users that participate in the pilot program were ag retail supplier (36%), family/friend/neighbours (31%), and, newspaper articles (27%).
- The main sources used by plastic baler twine users were newspaper articles (31%), family/friend/neighbours (24%), ag retail supplier (22%), and, print advertising (20%).
  - Main sources used by plastic baler twine users that participate in the pilot program were ag retail supplier (31%), newspaper articles (29%), print advertising (24%), family/friend/neighbour (23%), and, newsletters/County newsletter (19%).

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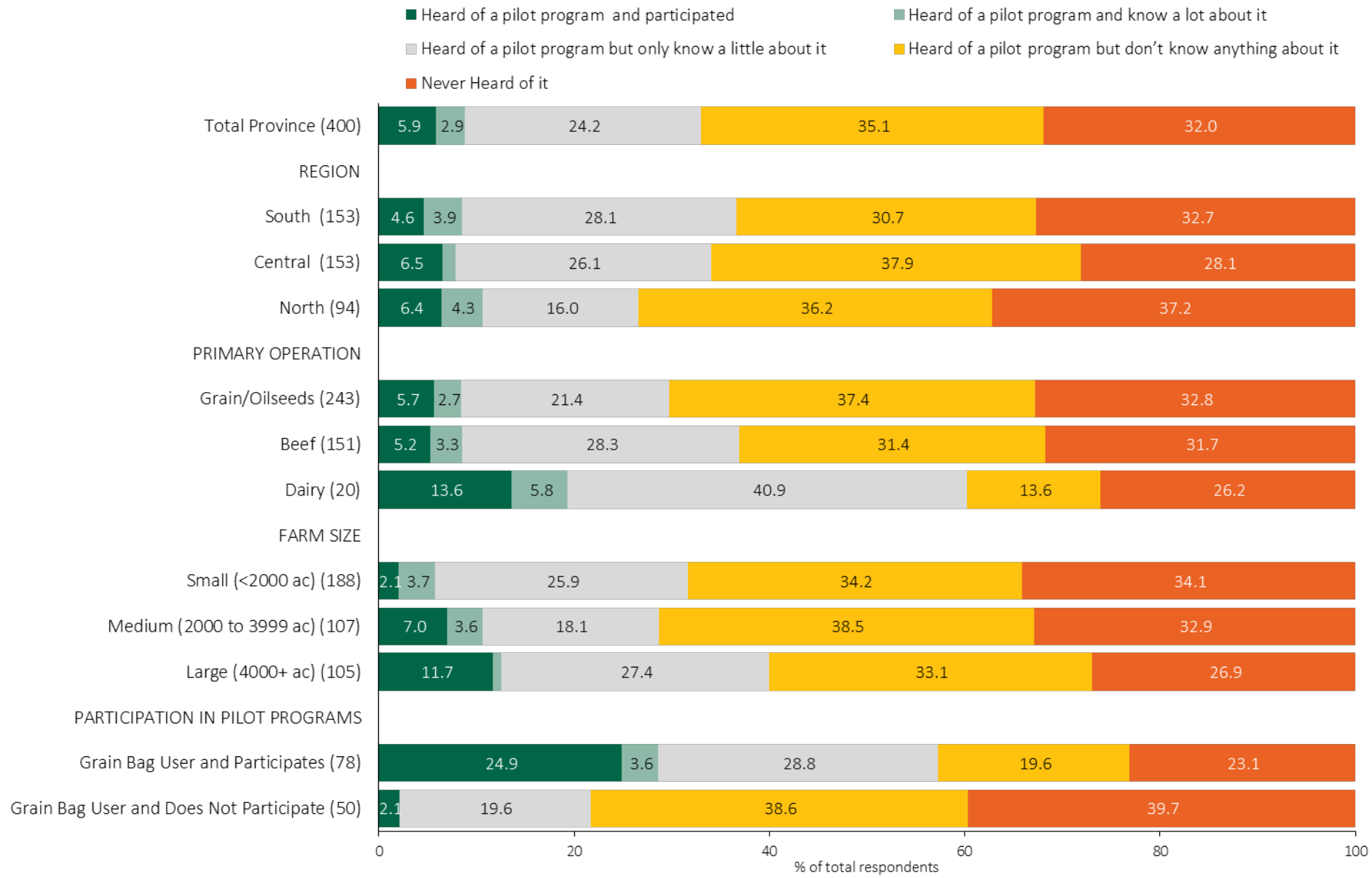
Key Findings – Preferred Sources Of Information About How To Manage Grain Bags And Plastic Baler Twine For Recycling

Preferred Sources Of Information About How To Manage Grain Bags and Plastic Baler Twine For Recycling

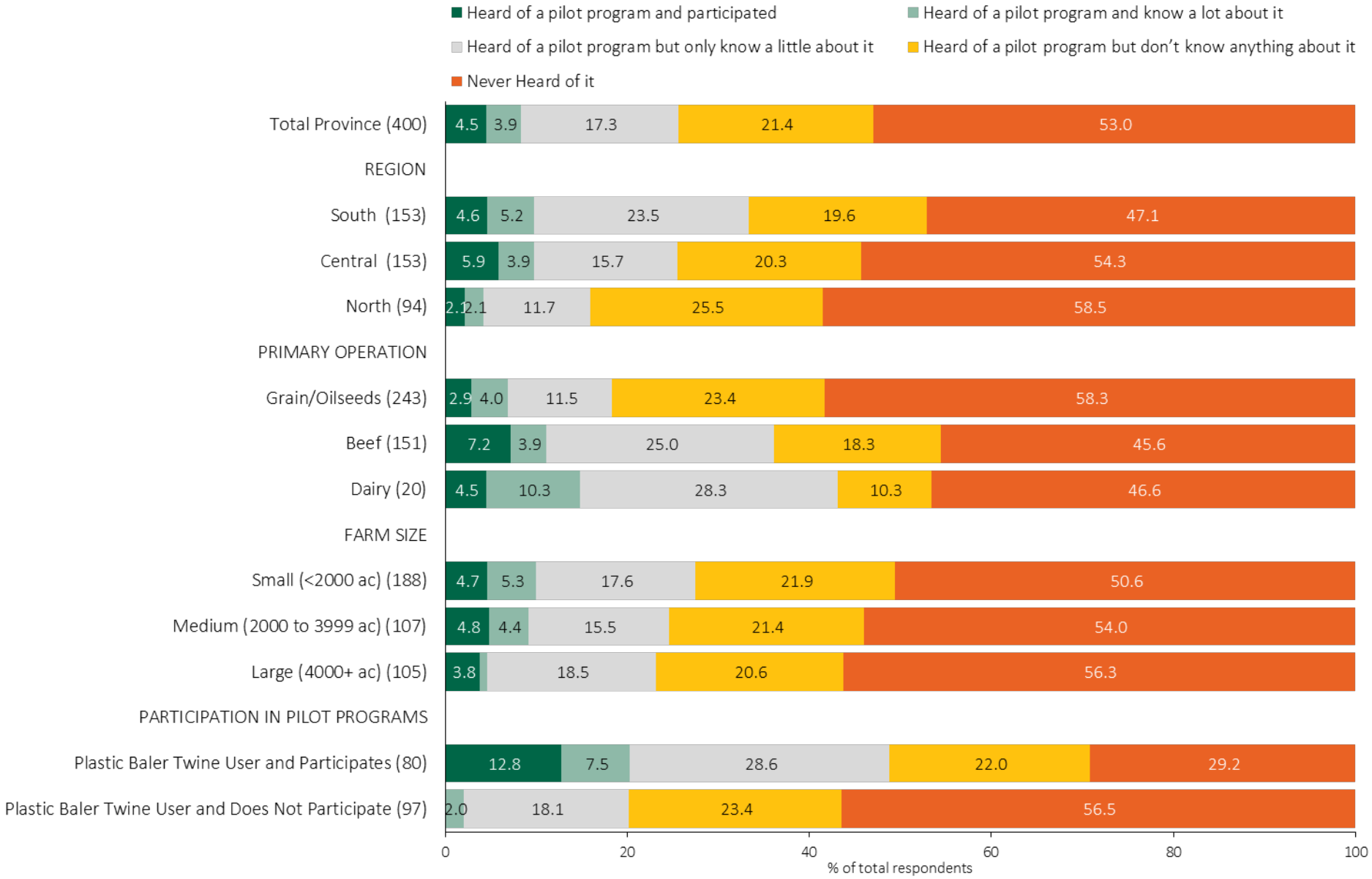
Overall, the ag retail supplier is the most preferred source of information, followed by email from a company or organization, newspaper articles, and direct mail. ▶

- Sources most preferred by grain bag users are ag retailer supplier (51%), newspaper articles (27%), direct mail (27%), and email from a company or organization (25%).
  - Most preferred sources for grain bag users that participate in the pilot program are ag retail supplier (47%), newspaper articles (35%), direct mail (27%), website(s) (24%), and email from a company or organization (22%).
- Sources most preferred by plastic baler twine users are ag retail supplier (55%), newspaper articles (34%), email from a company or organization (32%), and direct mail (28%).
  - Most preferred sources for plastic baler twine users that participate in the pilot program are ag retail supplier (57%), newspaper articles (37%), email from company or organization (34%), and direct mail (29%).

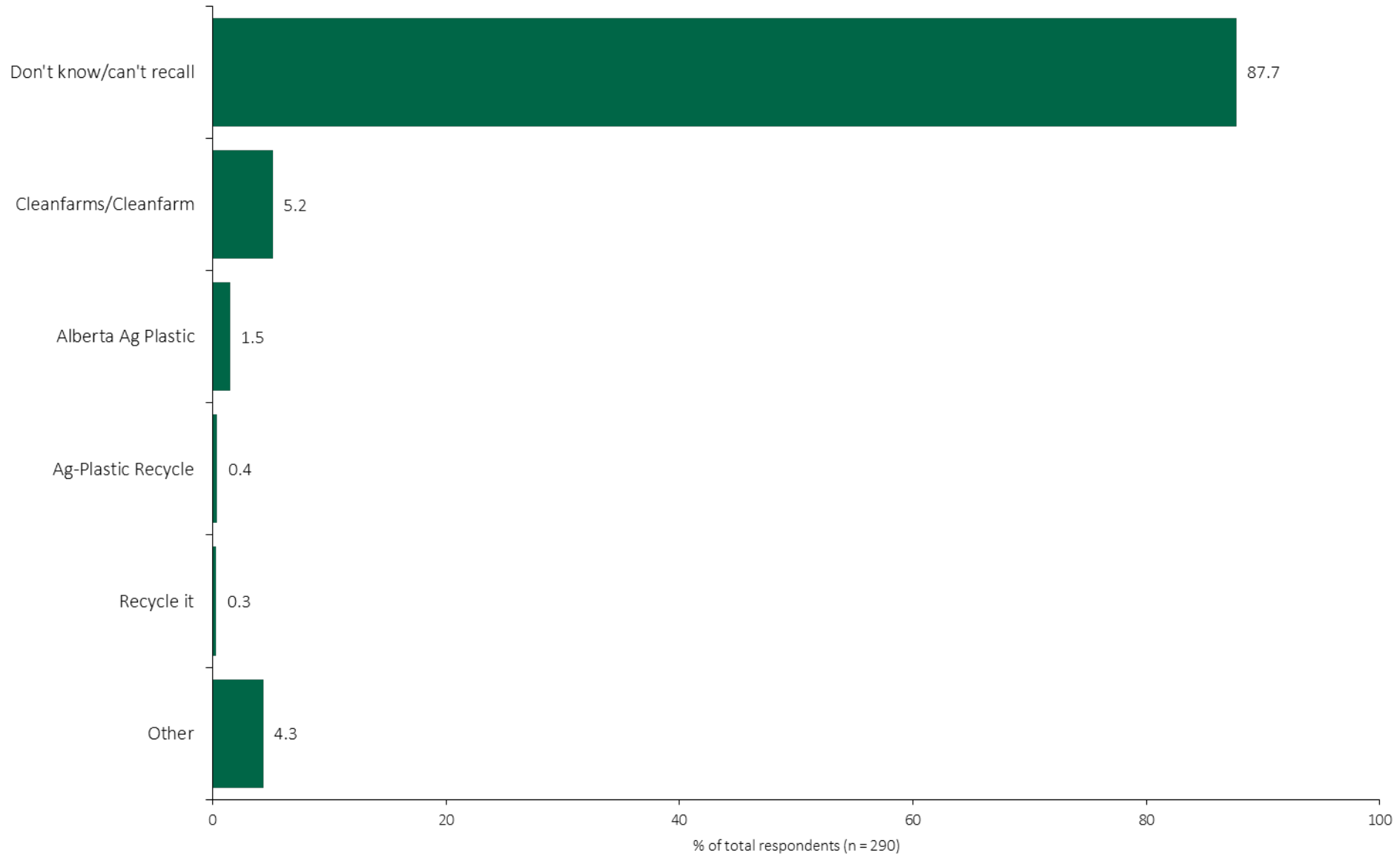
Familiarity With Grain Bag Pilot Program



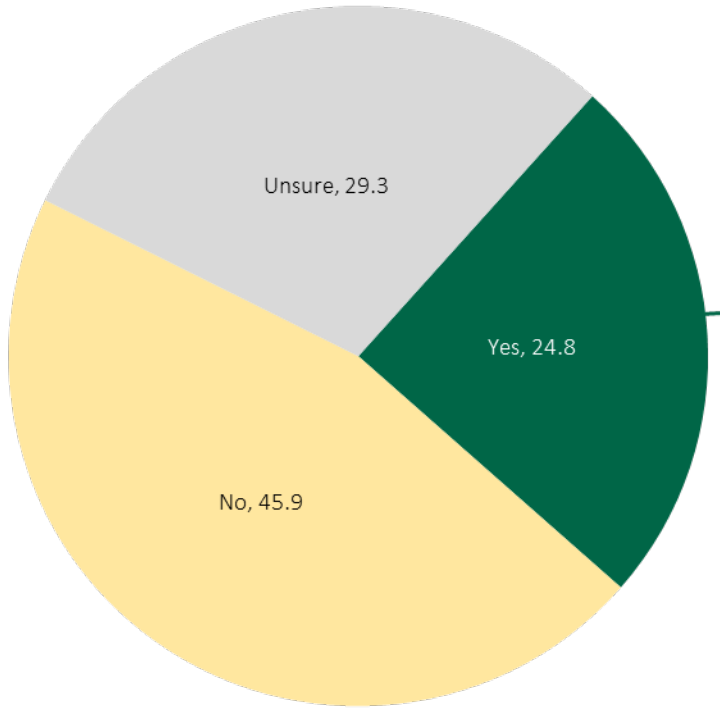
Familiarity With Plastic Baler Twine Pilot Program

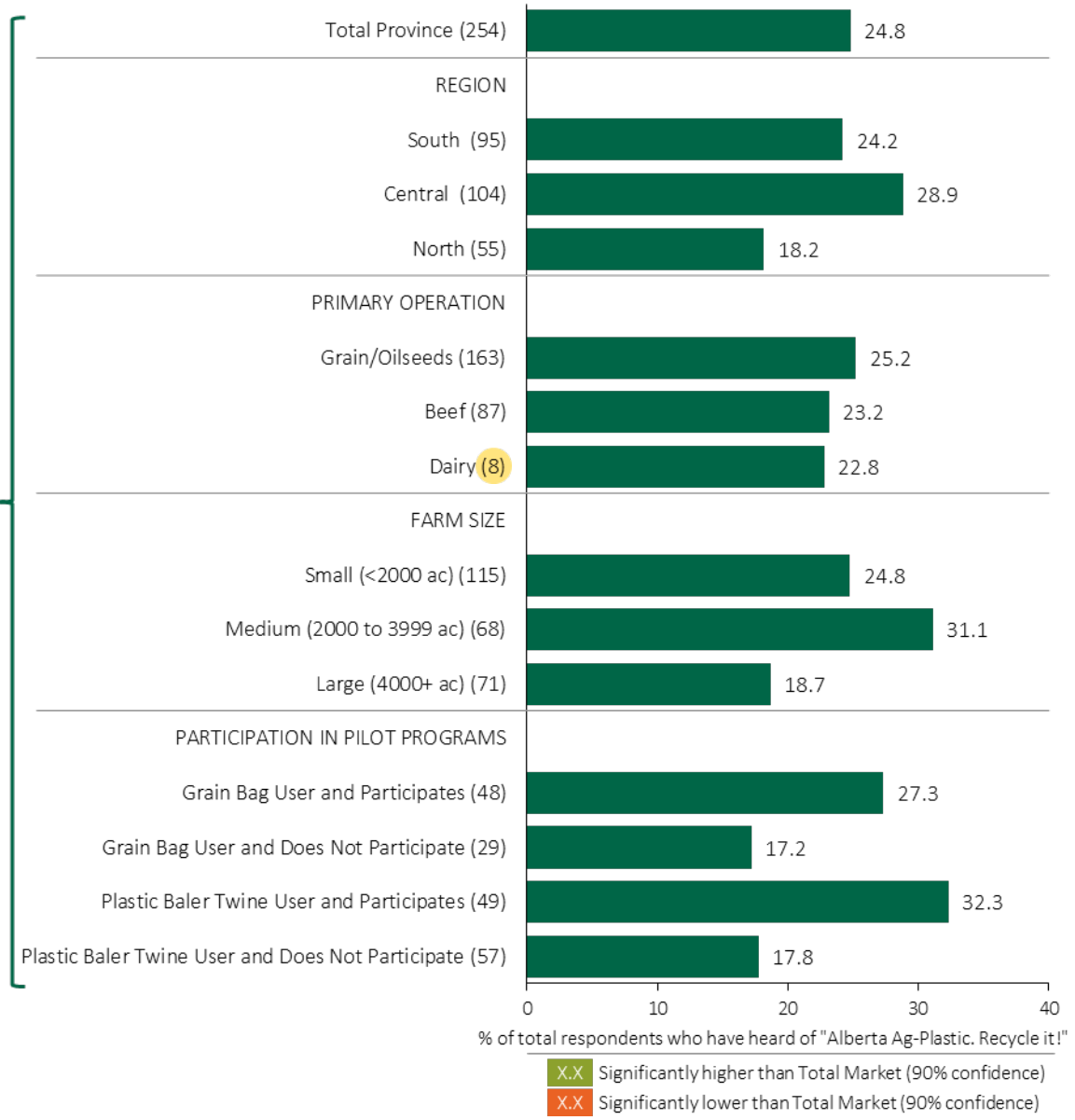


Unaided Awareness of Name of Pilot Program

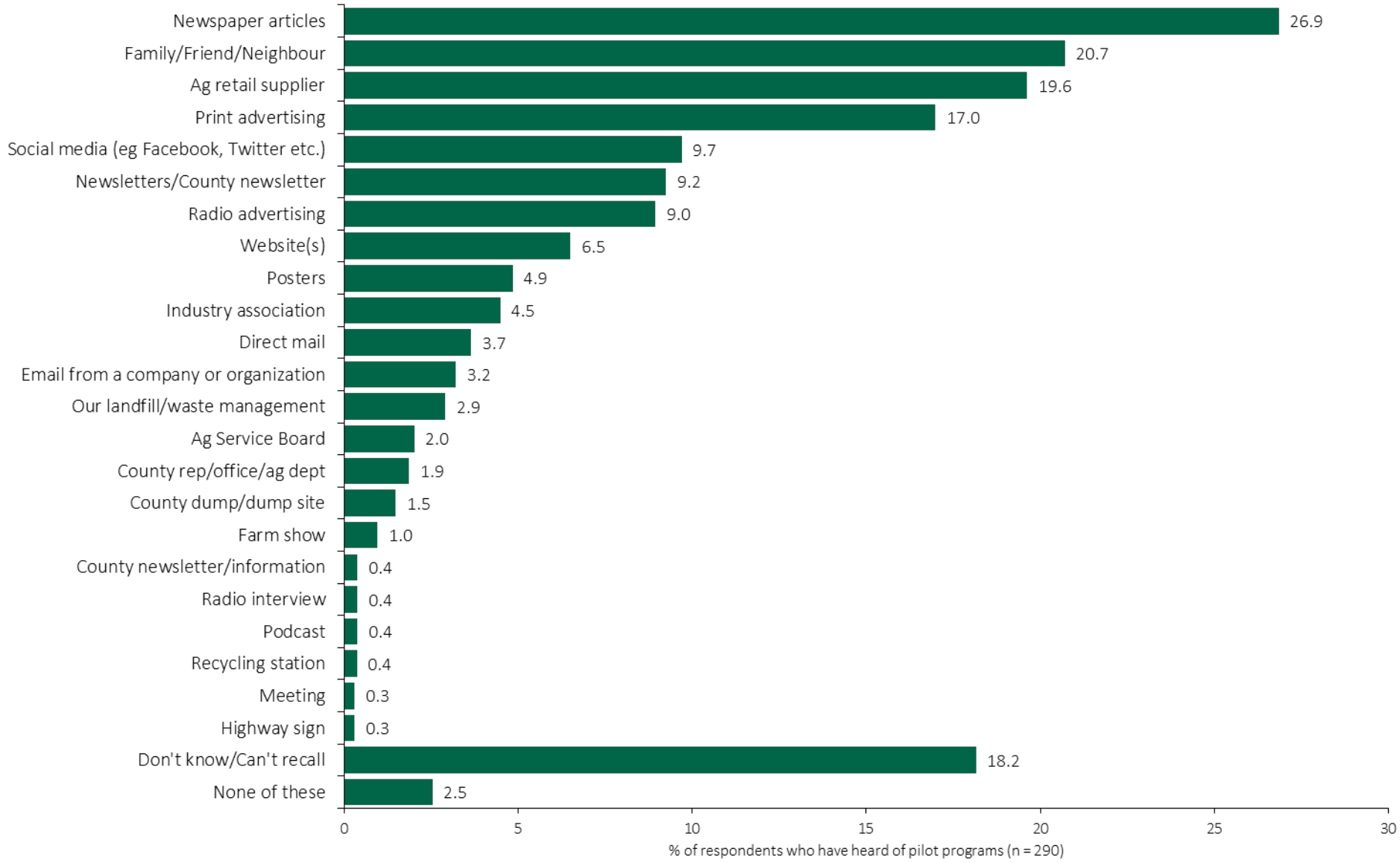


Aided Awareness of "Alberta Ag-Plastic. *Recycle it!*"

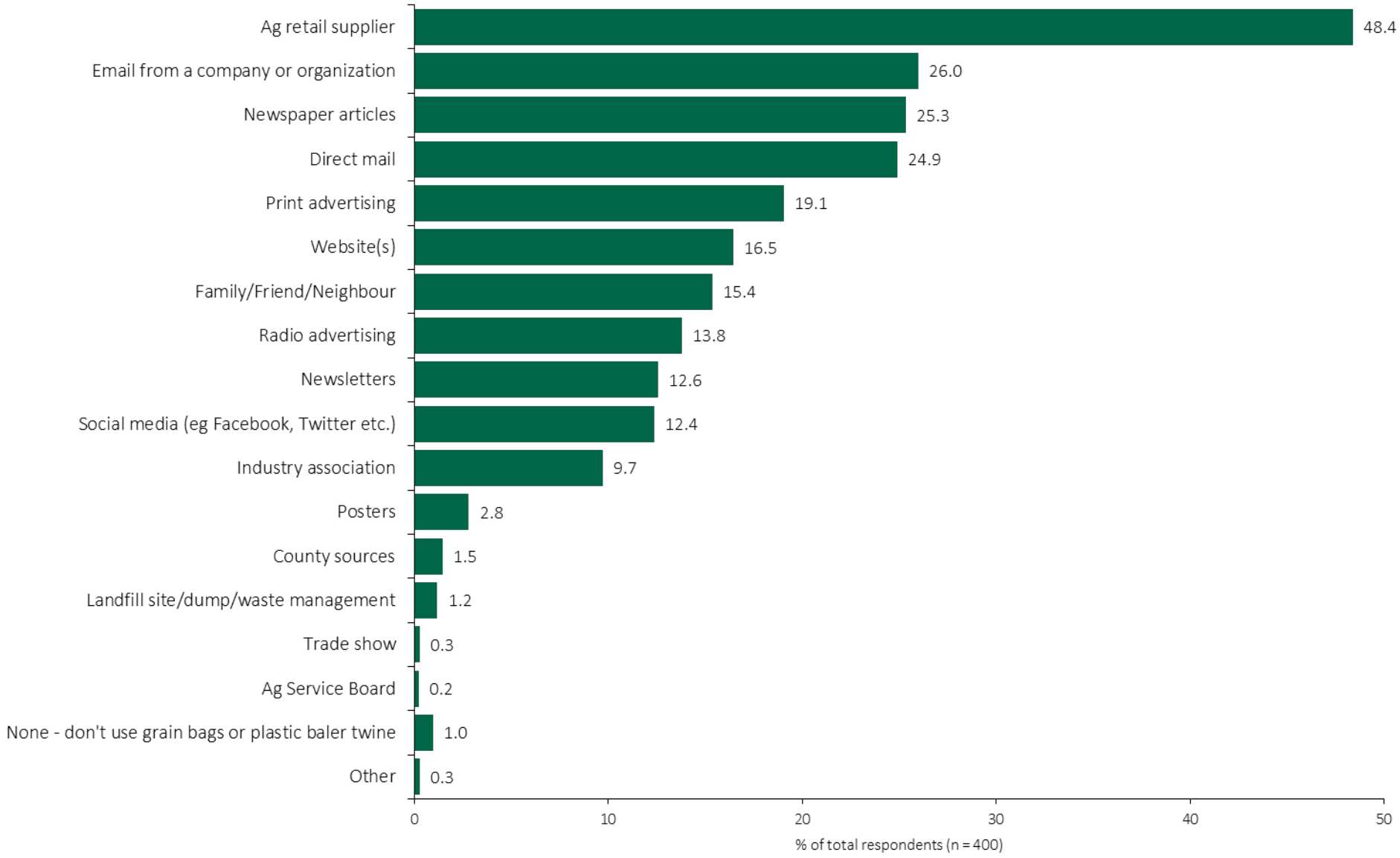




Sources of Information Used In Past 3 or 4 Years For Information About Pilot Programs



Preferred Sources of Information About Ways To Manage Used Grain Bags and Plastic Baler Twine For Recycling



Attitudes Toward Certain Ag Plastics

Click any title above to jump to that section.

Alberta farmers were asked:

- **Are there any types of ag plastics on their farm they would like to see a recycling program for (unmet recycling needs)?**
- **How concerned are they with how to deal with some of the ag plastics they use?**
- **How important it is to be able to recycle certain ag plastics.**
- **Whether or not they used them, how concerned are they about the responsible disposal of certain ag plastics?**
- **Compelling reasons why they might participate in recycling programs for ag plastics.**
- **What difficulties, if any, would they expect to experience or have experienced with recycling ag plastics?**

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Key Findings – Recycling Unmet Needs

Types of Ag Plastics Would Like To See A Recycling Program For (That Doesn't Exist As Far As You Know)

Overall, 29% of respondents said there are ag plastics for which they would like to see a recycling program. ▶

- The top 2 main ag plastics these farmers mentioned were net wrap and grain bags.
- In the 2019 survey, 33% of respondents said there were ag plastics for which they would like to see a recycling program. The main types of ag plastics mentioned by these respondents included bale/silage/net wrap/silage covers (27%), grain bags (24%), all/more plastics (22%), oil/antifreeze containers (14%) and twine (13%).

Key Findings – Users' Concern With How To Deal With Certain Ag Plastics

Level of Concern With How To Deal With Grain Bags, Plastic Baler Twine, Bale Wrap, Silage Plastic and Net Wrap

A majority of grain bag, plastic baler twine, bale wrap, silage plastic and net wrap users are concerned with how to deal with these ag plastics. ▶

- Top2box scores (% very/somewhat) for level of concern among users is 65% for grain bags, 62% for silage plastic, 58% for bale wrap, 58% for net wrap, and 56% for plastic baler twine.
  - Concern with how to deal with grain bags was lower among those who participated in the pilot program (57%) versus those that did not (75%).
  - Concern with how to deal with plastic baler twine was lower among those who participated in the pilot program (52%) versus those that did not (60%).
- In the 2019 survey, all farmers were asked about their level of concern with how to deal with ag plastics in general (other than pesticide containers, such as twine, grain bags, and baler/silage wrap) – but not by individual types of ag plastics. 82% of farmers in the 2019 survey were concerned with how to deal with ag plastics in general. However, the level of concern has decreased since then (64%).
  - Grain bag users who participated in the grain bag pilot program were less concerned (63%) with how to deal with ag plastics in general versus grain bag users who did not participate in the pilot program (79%).
  - Furthermore, plastic baler twine users who participated in the plastic baler twine pilot program were also less concerned (58%) with how to deal with ag plastics in general versus plastic baler twine users who did not participate in the pilot program (66%).

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Key Findings – Importance To Users For Being Able To Recycle Certain Ag Plastics

Importance Of Being Able To Recycle Grain Bags, Plastic Baler Twine, Bale Wrap, Silage Plastic and Net Wrap

Vast majority of grain bag, plastic baler twine, bale wrap, silage plastic and net wrap users believe it is important to be able to recycle these ag plastics. ▶

- Top2box scores (% very/somewhat) for importance among users is 93% for grain bags, 86% for silage plastic, 83% for plastic baler twine, 80% for bale wrap, and 78% for net wrap.
- Importance for each of these individual ag plastics was not measured in the 2019 survey. However, overall, 92% said it was important to be able to recycle ag plastics (other than pesticide containers, such as twine, grain bags and bale/silage wrap).

Key Findings – Whether or Not They Were Used, Level of Concern About Responsible Disposal Of Different Types of Ag Plastics

Whether Or Not They Were Used, Level of Concern About Responsible Disposal Of Different Types Of Ag Plastics

Vast majority of all survey respondents are concerned with the responsible disposal of different types of ag plastics. ▶

- The following table compares the level of concern (very/somewhat) for certain ag plastics in 2023 versus 2019 :

Type of Ag Plastic	2019	2023
Grain bags	85%	85%
Plastic silage wrap or cover (silage plastic)	84%	79%
Plastic pesticide or fertilizer containers <23L	81%	83%
Pesticide or fertilizer drums and deposit drums and totes (bulk containers)	Not included in survey	82%
Plastic baler twine	78%	75%
Plastic bale wrap	79%	78%
Net wrap	79%	75%
Plastic seed bags, fertilizer bulk bags, pesticide or inoculant bags	78%	78%
Feed or supplement bags	72%	65%

Key Findings – Strong and Compelling Reasons To Participate In Recycling Programs For Ag Plastics

Strong and Compelling Reasons To Participate In Recycling Programs For Ag Plastics

A majority of all survey respondents believe there are a number of strong and compelling reasons to participate in recycling programs for ag plastics . ▶

- The top 4 strong and compelling reasons (% rated 8, 9 or 10=very strong and compelling reason) are:
  - Recycling ag plastics helps keep my farm tidy (80%).
  - Recycling ag plastics enables me to avoid burning, burying or landfilling ag plastics (75%).
  - Recycling ag plastics helps avoid the environmental impacts of burning (74%).
  - Recycling ag plastics helps protect my farm for future generations (74%).
- 63% rated “recycling ag plastics is a convenient and easy to use alternative for disposing ag plastics” as a strong and compelling reason.
  - More grain bag users that participated in the pilot program (72%) said “recycling ag plastics is a convenient and easy to use alternative for disposing ag plastics” is a strong and compelling reason for participating in recycling programs versus 54% of the grain bag users that did not participate in the pilot program.
  - More plastic baler twine users that participated in the pilot program (66%) said “recycling ag plastics is a convenient and easy to use alternative for disposing ag plastics” versus 50% of the plastic baler twine users that did not participate in the pilot program.
  - In contrast, in the 2019 survey, 83% said “recycling ag plastics is a convenient and easy to use alternative for disposing ag plastics” is a strong and compelling reason for participating in recycling programs for ag plastics.

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Key Findings – Difficulties Expected Or Experienced In Recycling Ag Plastics (1/2)

What Difficulties, If Any, Farmers Expect Or Have Experienced With Recycling Ag Plastics

No collection site nearby is the number one difficulty experienced or expected with recycling ag plastics. ▶

- Overall, 43% mentioned “no collection site nearby”.
  - It’s the number one difficulty for both grain bag users who participated in the pilot program (41%) and grain bag users who did not participate in the pilot program (68%).
  - It’s the number two difficulty for plastic baler twine users who participated in the pilot program (31%) and the number one difficulty for plastic baler twine users who did not participate in the pilot program (68%).
- Other key difficulties experienced or expected by grain bag users that participated in the pilot program are “collection site won’t accept all ag plastics” (32%), “too difficult to keep clean” (28%), and “collection site has too many rules about returning ag plastics” (27%). However, 37% said they have not experienced/don’t expect to experience any difficulties.
  - Other key difficulties or potential barriers for grain bag users who did not participate in the pilot program include “too difficult to keep clean” (47%), “collection site has too many rules about returning ag plastics” (42%), “too difficult to transport” (41%), “labour needed to sort and clean” (40%), and “collection site won’t accept all ag plastics” (38%).

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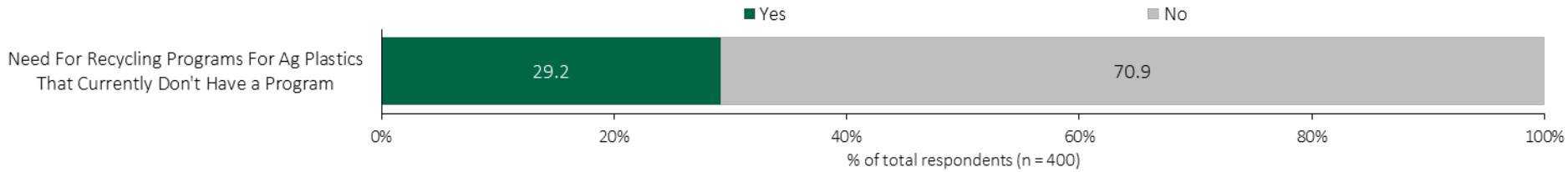
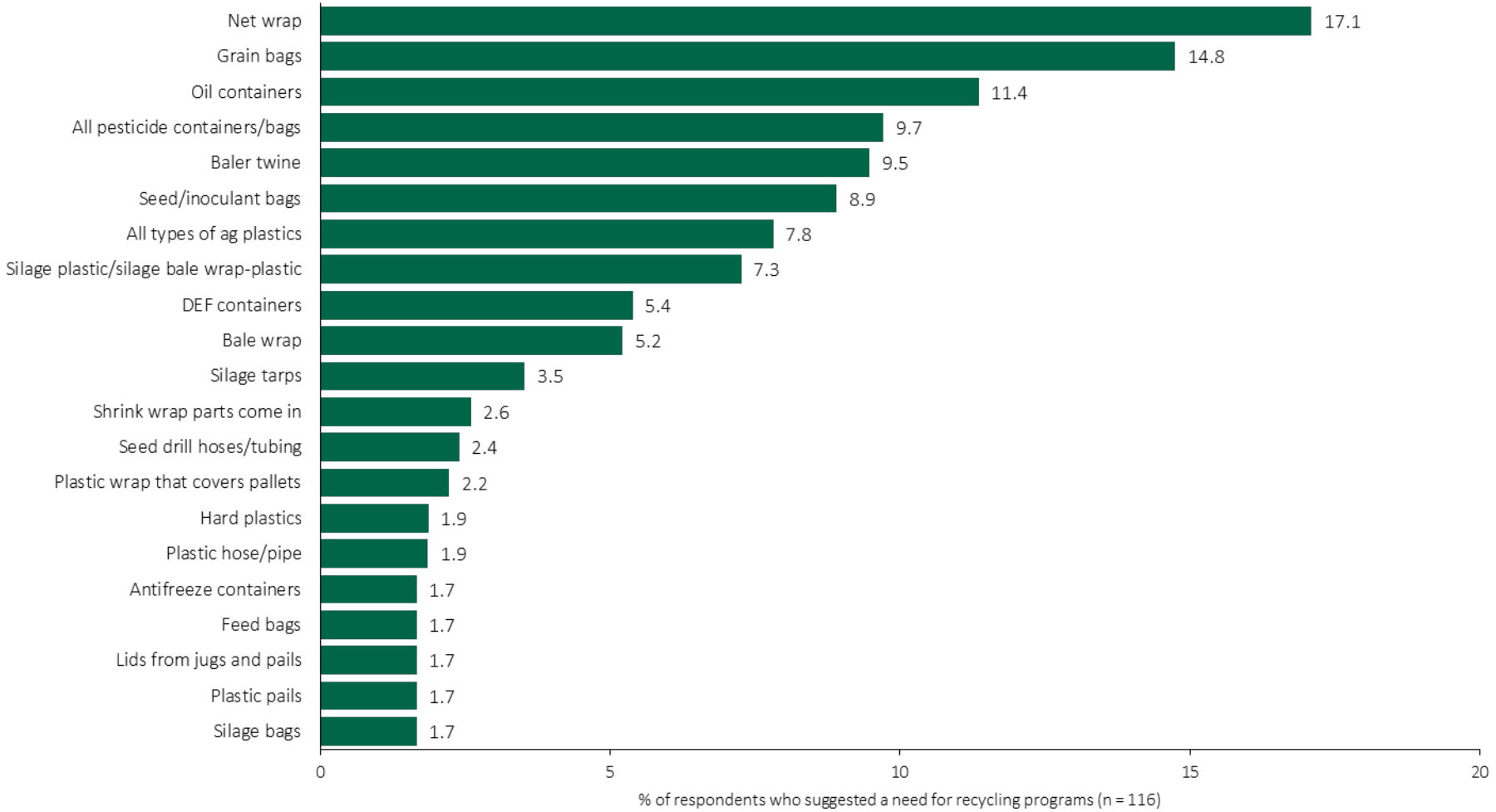
Key Findings – Difficulties Expected Or Experienced In Recycling Ag Plastics (2/2)

What Difficulties, If Any, Farmers Expect Or Have Experienced With Recycling Ag Plastics

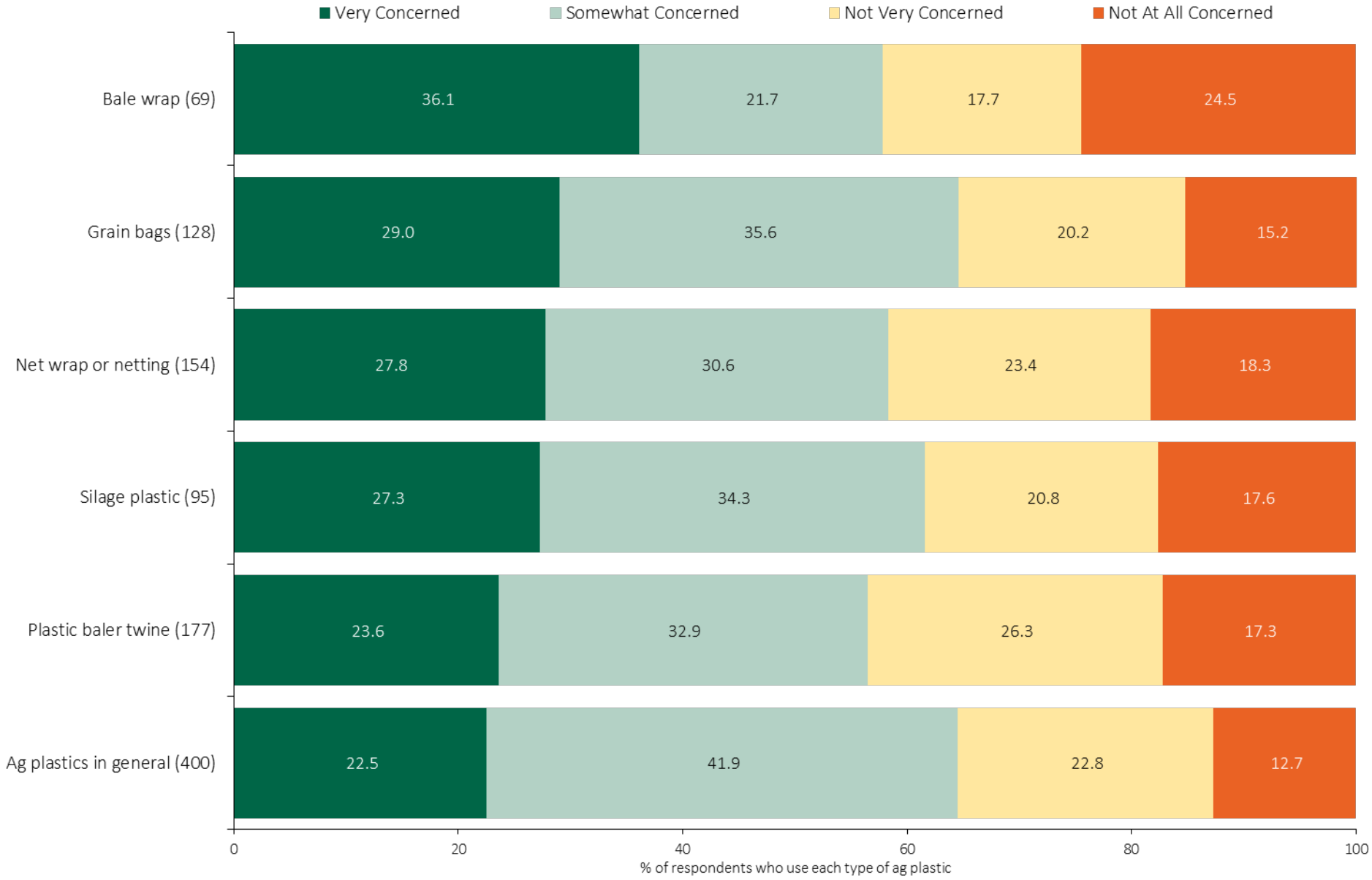
- Other key difficulties experienced or expected by plastic baler twine users that participated in the pilot program are “too difficult to keep clean” (36%), “collection site won’t accept all ag plastics” (31%), “collection site has too many rules about returning ag plastics” (26%), and “labour needed to sort and clean” (25%). However, 34% said they have not experienced/don’t expect to experience any difficulties.
  - Other key difficulties or potential barriers for plastic baler twine users who did not participate in the pilot program include “too difficult to keep clean” (48%), “labour needed to sort and clean” (44%), “collection site has too many rules about returning ag plastics” (42%), “collection site won’t accept all ag plastics” (41%), and “too difficult to transport” (39%).

Need For Recycling Programs For Ag Plastics That Currently Don't Have a Program And Types of Ag Plastics Would Like To See A Recycling Program For

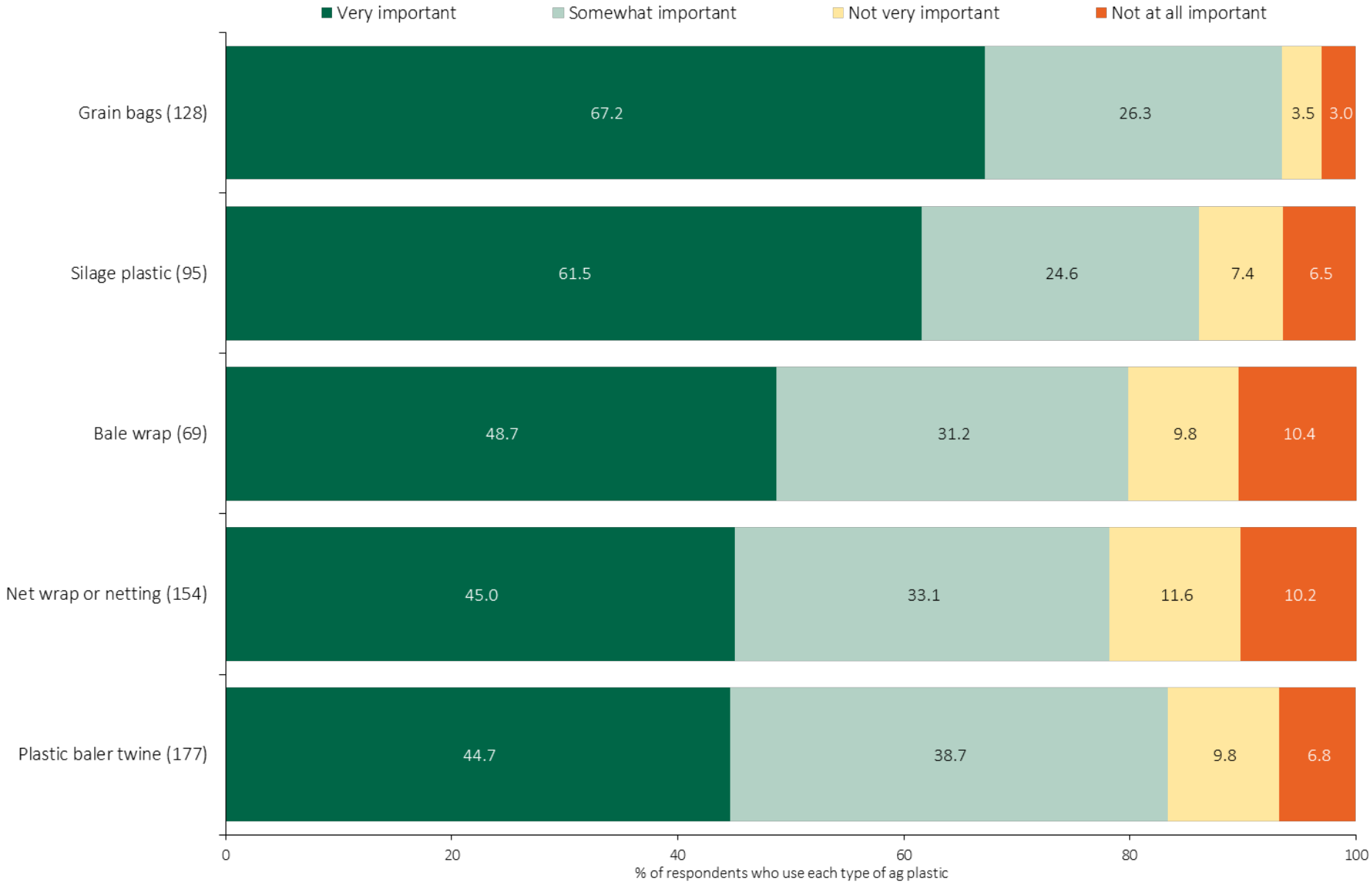




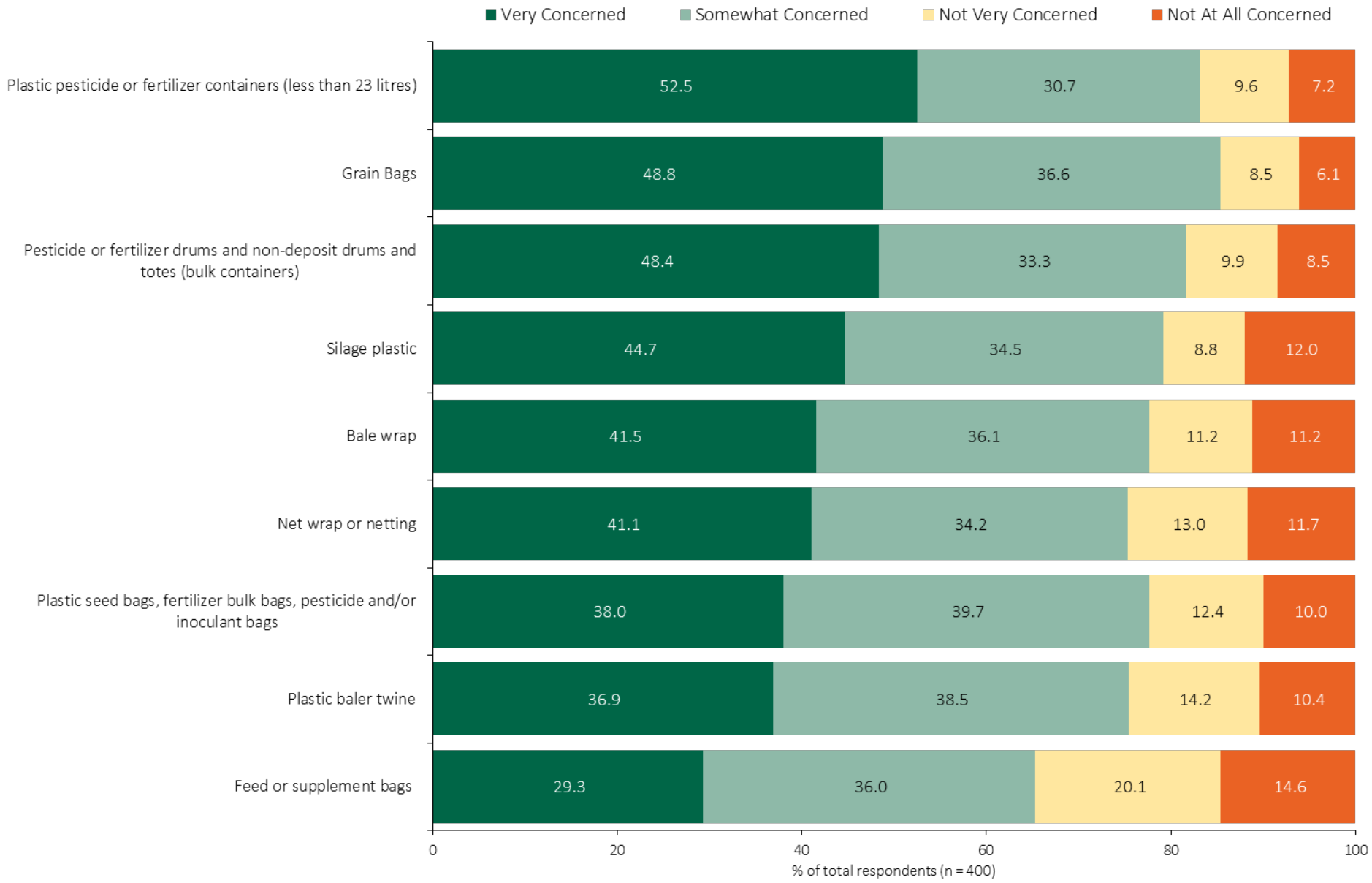
Level of Concern With How To Deal With Plastic Baler Twine, Grain Bags, Bale Wrap, Silage Plastics, Net Wrap/Netting



Importance of Being Able To Recycle Plastic Baler Twine, Grain Bags, Bale Wrap, Silage Plastics, Net Wrap/Netting

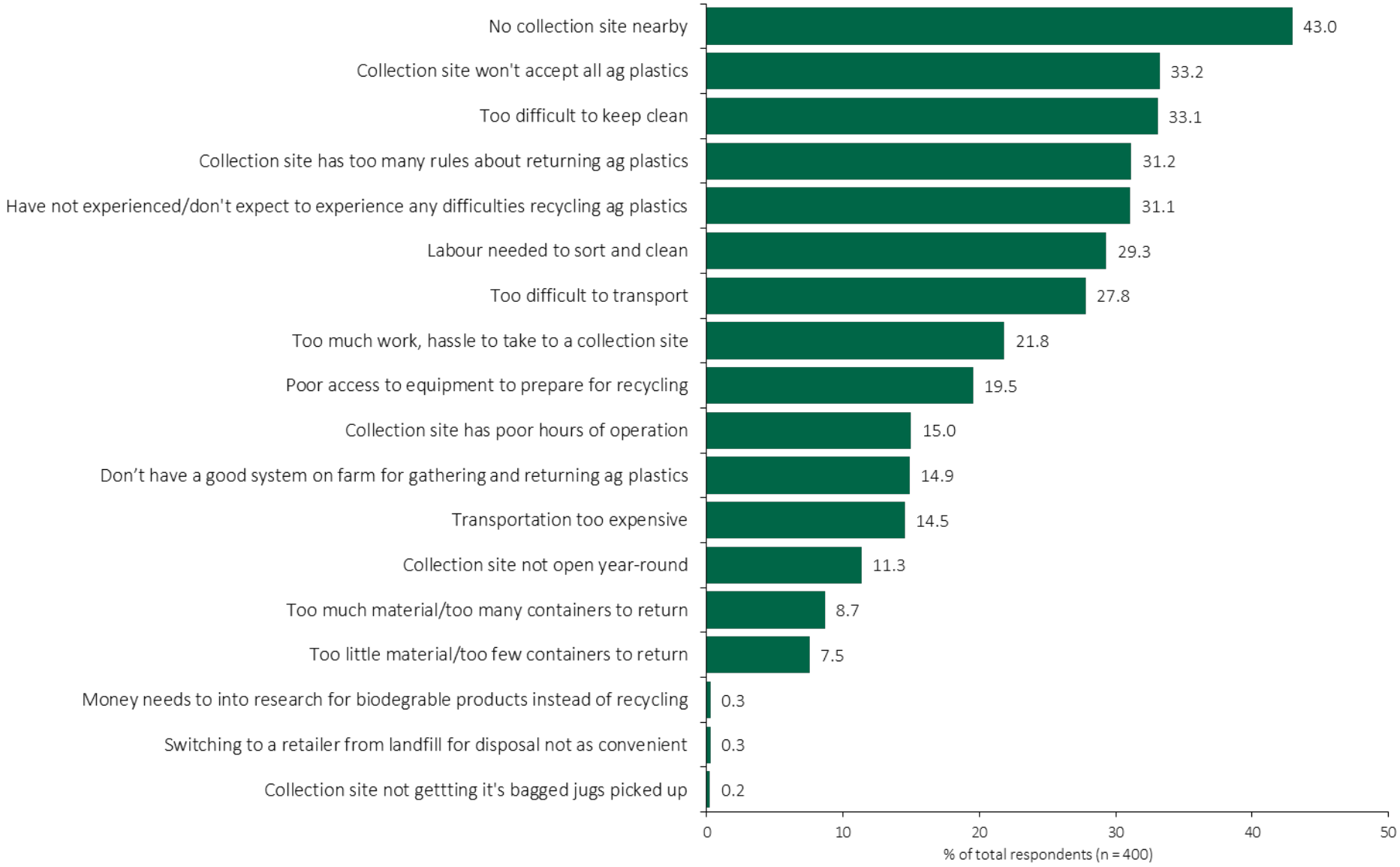


Level of Concern With Responsible Disposal Of Ag Plastics



Compelling Reasons For Participating In Recycling Programs For Ag Plastics

Difficulties Experienced or Would Expect With Recycling Ag Plastics



Non-Participant Awareness Of And Attitudes Towards The Pilot Program For Grain Bags

Click any title above to jump to that section.

Grain bag users who did not participate in the pilot program were asked:

- **Awareness of designated collection sites.**
- **If aware – possible barriers to returning grain bags to the collection sites**
- **If not aware:**
  - **Likelihood to participate in the pilot program.**
  - **If not likely – possible barriers to participation.**
  - **If somewhat likely – what would motivate these grain bag users to very likely participate in the pilot program.**
- **Farthest distance grain bag users who do not participate in the pilot program would travel to take grain bags to a designated collection site for recycling.**
- **How supportive are grain bag users for making the pilot program a permanent program.**

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Key Findings – Non-Participants' Awareness Of And Attitudes Toward Grain Bag Pilot Program

Awareness of Designated Collection Site In Your Area For Returning Grain Bags For Recycling

Low awareness of local designated collection site for grain bags for recycling among current non-pilot program participants. ▶

- Of the 40% of grain bag users that currently do not return their grain bags to a designated collection site for recycling, 19% of this group are aware of collection site in their area.
  - Lower awareness in the North (8%).

If Aware Of Local Collection Site For Grain Bags For Recycling – Possible Barriers For Returning Grain Bags To These Sites

Possible barriers for choosing not to use a collection site for grain bags include too difficult to keep clean, labour needed to sort and clean, too difficult to transport, poor access to equipment to prepare for recycling (i.e. grain bag rollers), collection site has too many rules about returning grain bags. ▶

- None of the grain bag users in this segment said "no collection site nearby" as a possible barrier.
- However, a number of grain bag users in this segment said they don't expect to experience any difficulties recycling grain bags.

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Key Findings – Non-Participants' Attitudes Toward Grain Bag Pilot Program

Likelihood To Participate In Grain Bag Pilot Program As Described

80% of grain bag users (that currently don't participate in the grain bag pilot program and are unaware of local designated collection site) would likely participate in the pilot program if there was a collection site in their area. ▶

- The following was the description of the preparation and return process:
  - Shake off debris, roll grain bags and tie securely with twine or use a grain bag roller.
  - Return prepared grain bags to the nearest collection site.
- **The number one reason for not likely participating in the pilot program is "no collection site nearby".** Other reasons include "too difficult to keep clean", "poor access to equipment to prepare for recycling (i.e. grain bag rollers)", "don't have a good system on farm for gathering and returning grain bags", "too much work and hassle to take to a collection site", "too much material to return", "collection site won't accept all ag plastics", "collection site has too many rules about returning grain bags". ▶
- Things that would help motivate grain bag users who are somewhat likely to participate in the pilot program – to very likely participate in the pilot program include "have facility close by/easy access", "accept grain bags that may contain debris – hard to clean", "equipment to roll bags", and "on-farm pick up". ▶
- In the 2019 survey, 92% of all grain bag users would likely (68% very/24% somewhat) participate in the pilot program.

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Key Findings – Non-Participants' Attitudes Toward Grain Bag Pilot Program

Farthest Distance Current Non-Participants In Pilot Program Would Drive To Take Grain Bags To a Designated Collection Site For Recycling

On average, 47 kms is the farthest current non-participants in the grain bag pilot program would drive to take grain bags to a designated collection site for recycling. ▶

- 74% said < 51 kms was the farthest they would drive.

How Supportive Are Grain Bag Users Of Making The Grain Bags Recycling Program A Permanent Solution

Very strong support among grain bag users. ▶

- Overall, 94% are supportive (very/somewhat) of making the grain bag recycling program a permanent solution.
- 97% of grain bag users who currently participate in the pilot program are supportive, while support is also strong among grain bag users who currently don't participate in the pilot program (88%).

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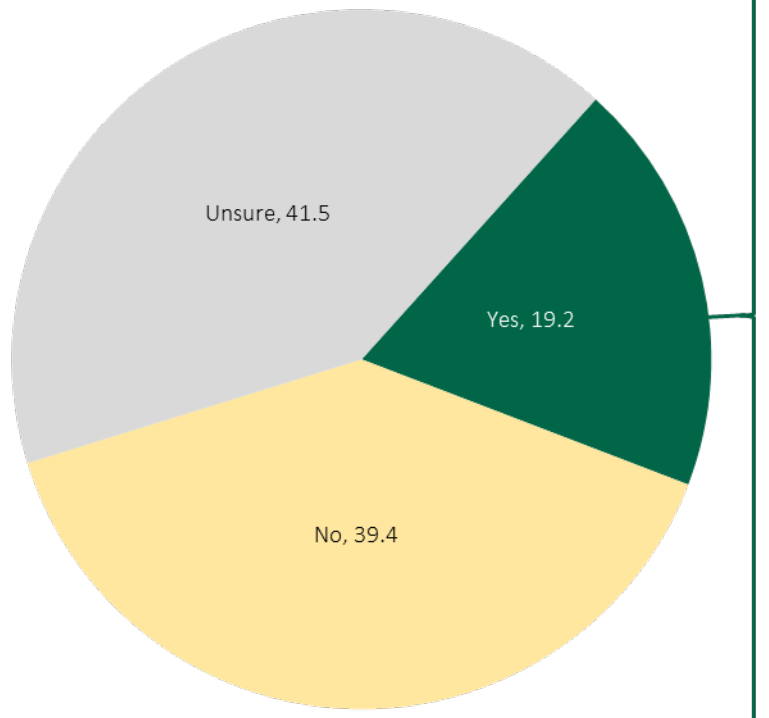
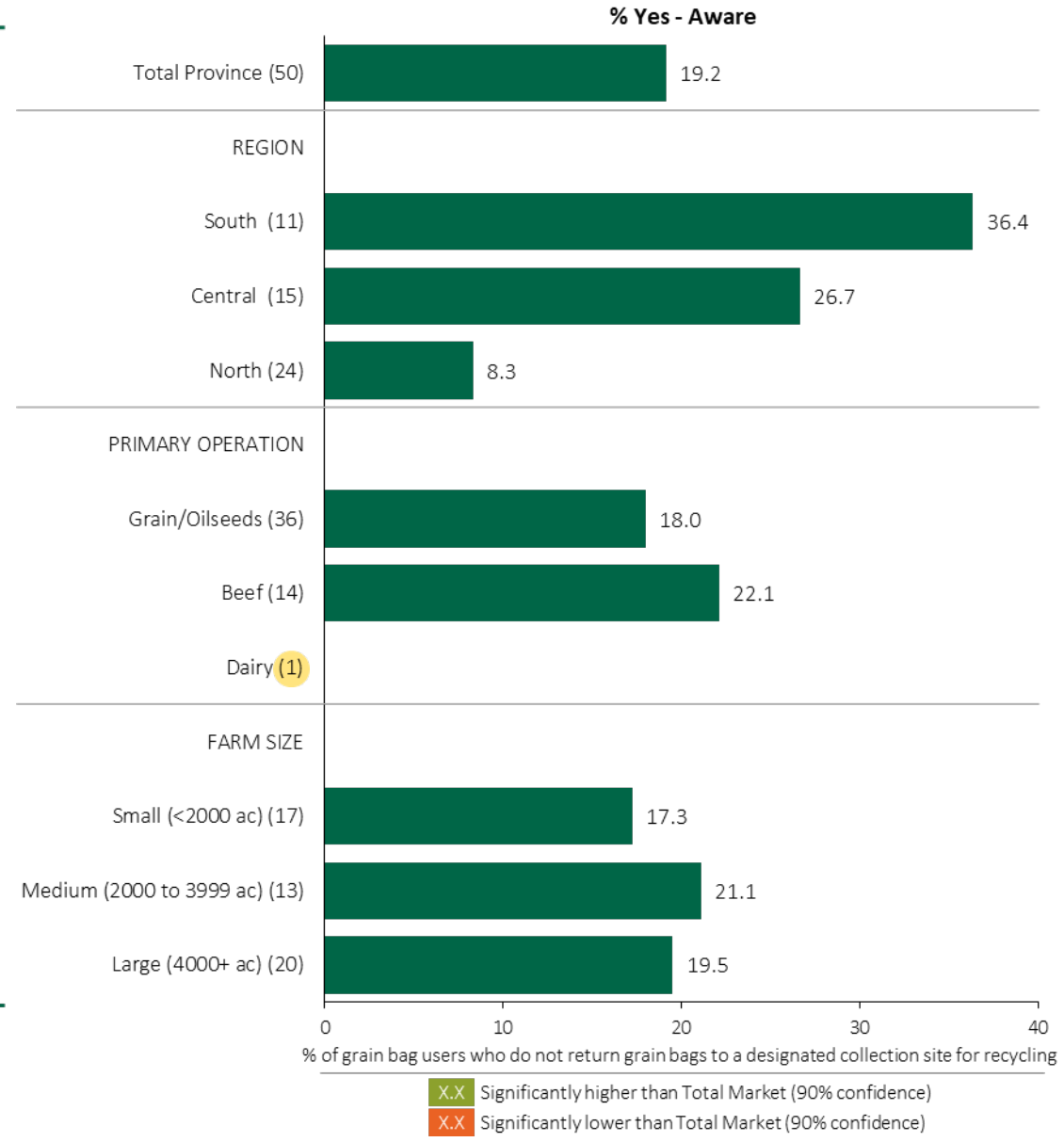
Awareness of Designated Collection Site(s) Among Grain Bag Users Not Returning Grain Bags To A Designated Collection Site

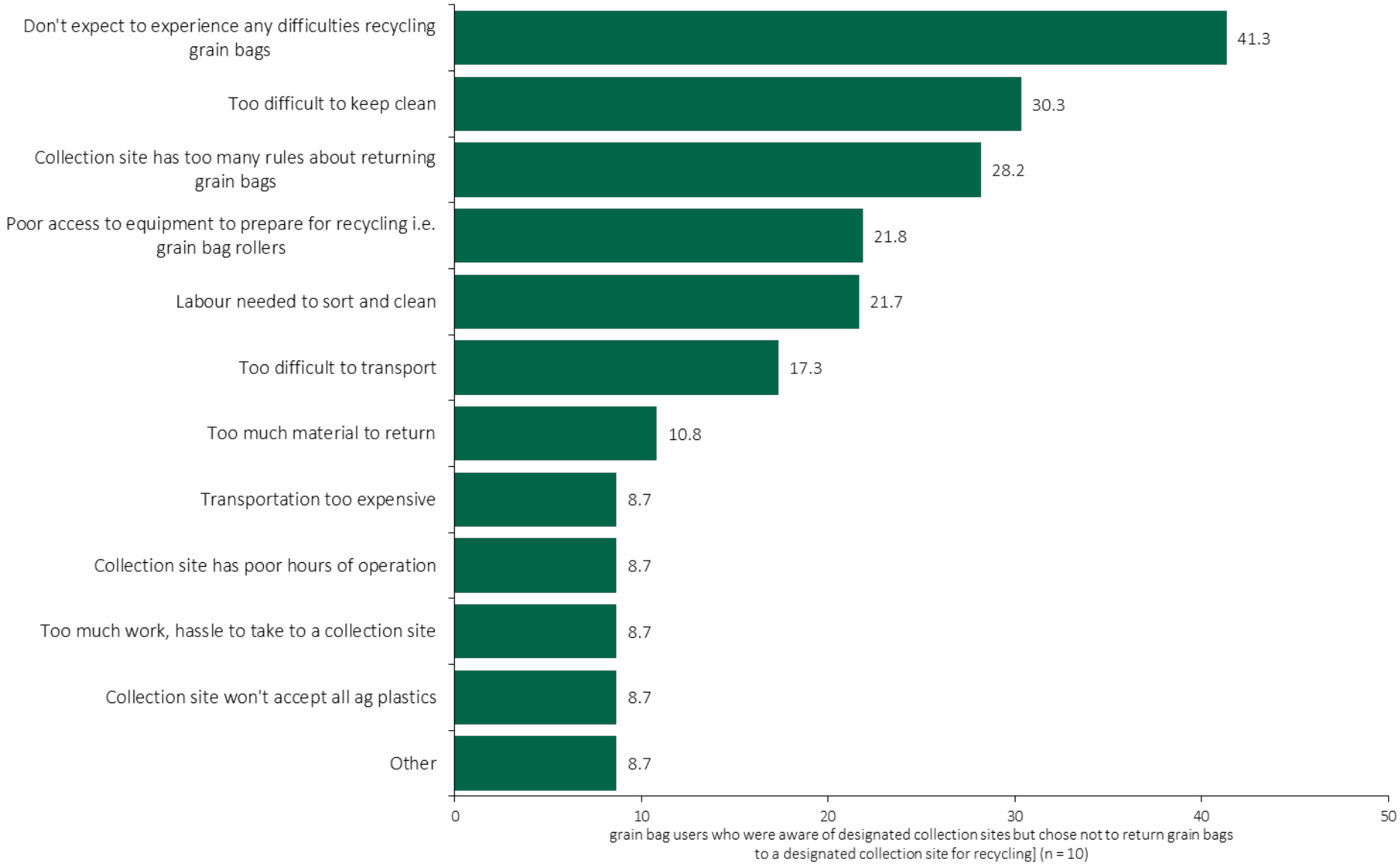


% of grain bag users who do not return grain bags to a designated collection site for recycling (n = 50)



Support For Pilot Program For Grain Bags

Reasons Why Grain Bag Users (Aware of Designated Collection Site(s)) Chose Not To Return Grain Bags For Recycling



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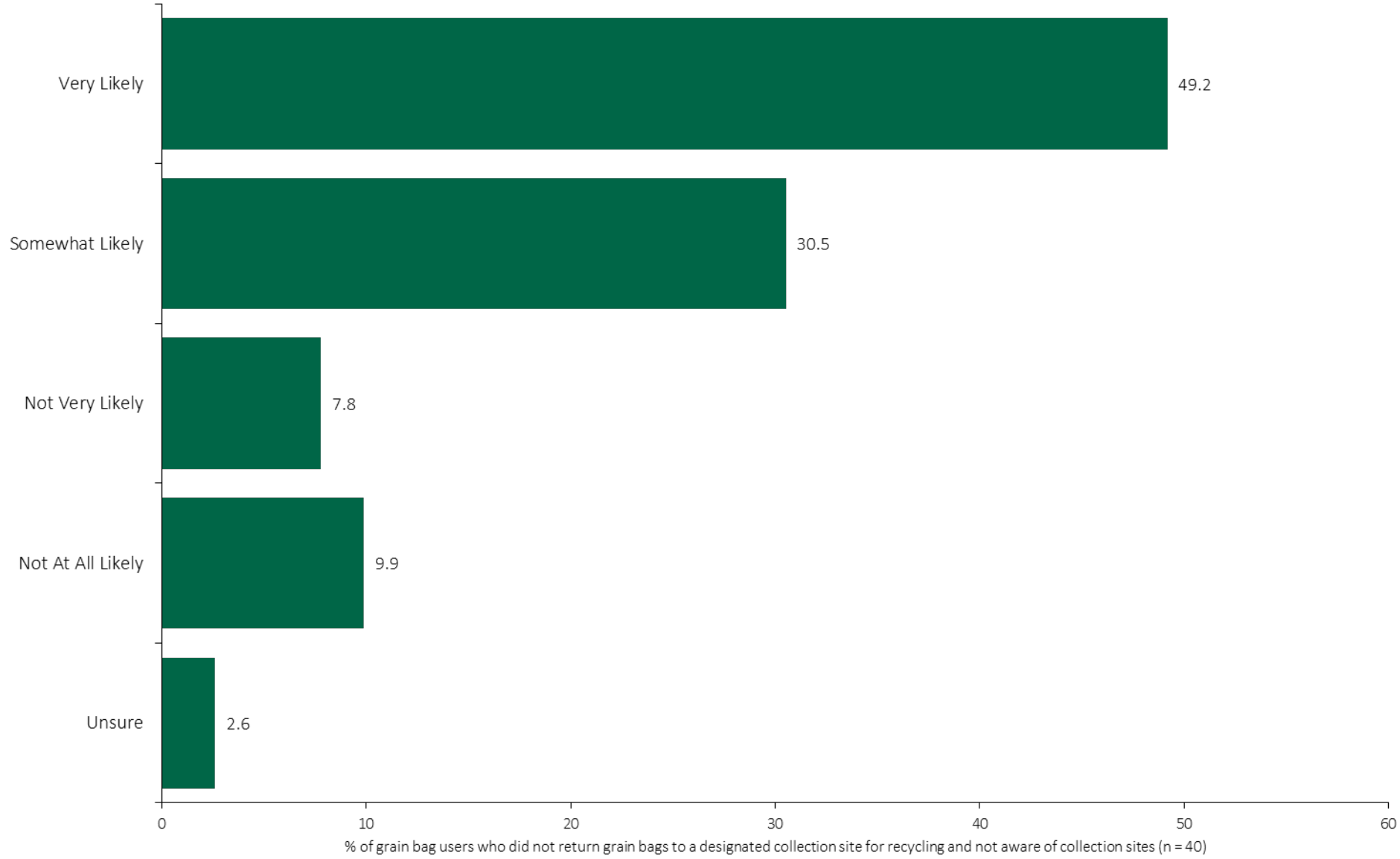
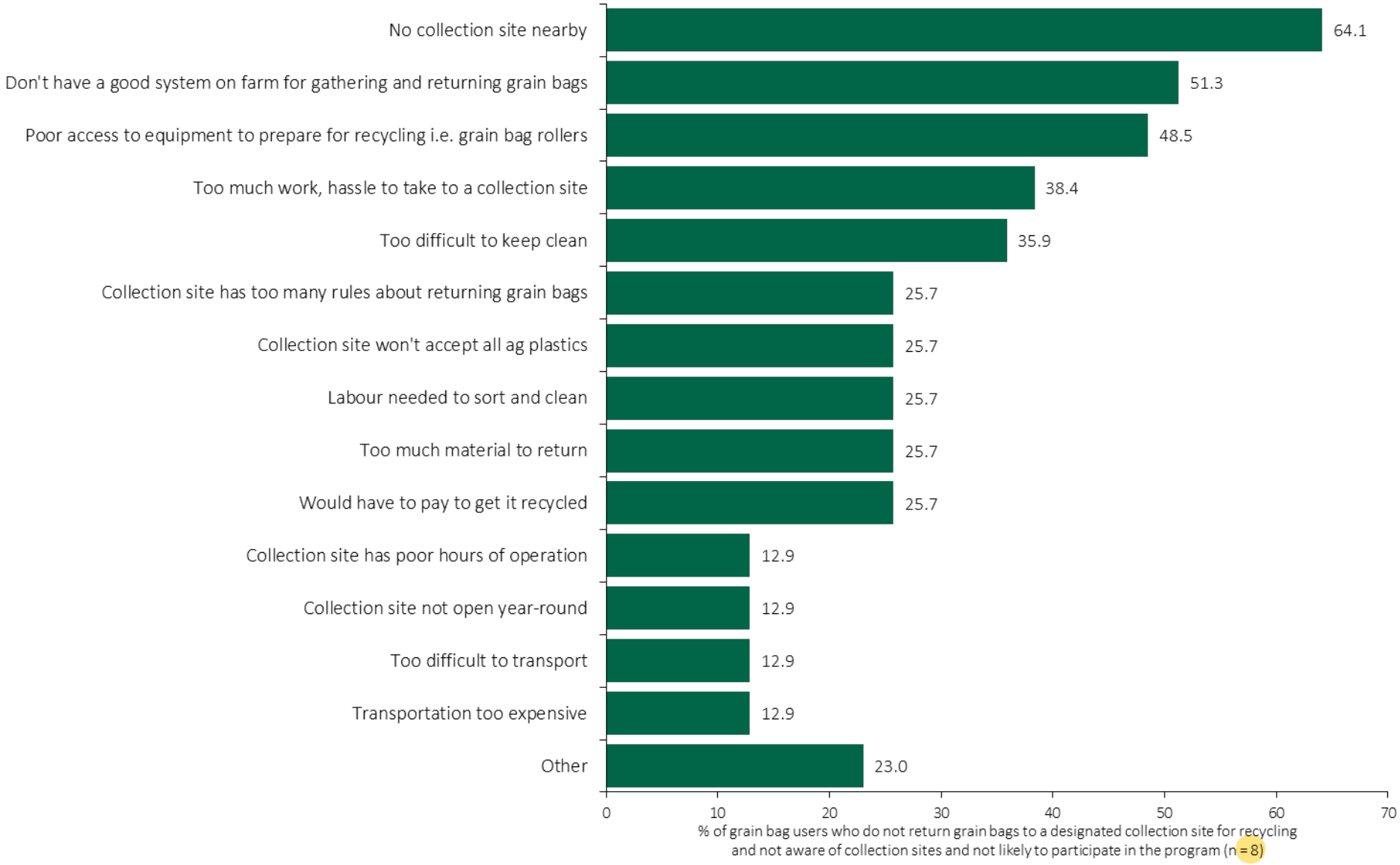
Support For Pilot Program For Grain Bags

Likelihood to Participate In Grain Bag Pilot Program Among Grain Bag Users Unaware of Collection Sites



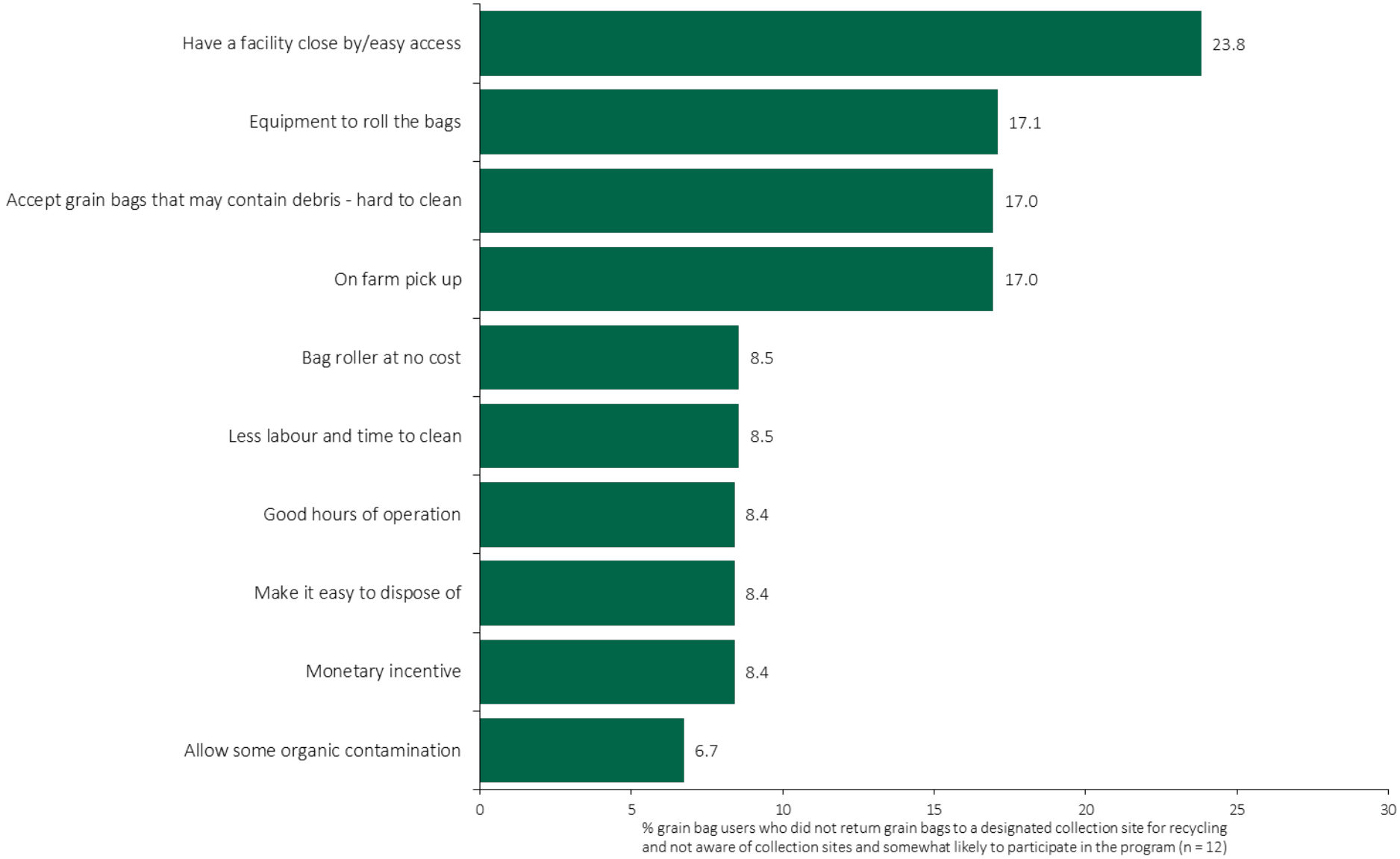
Support For Pilot Program For Grain Bags

Possible Barriers to Participate In Grain Bag Pilot Program Among Grain Bag Users Not Aware of Sites and Not Likely To Participate In Pilot Program



Support For Pilot Program For Grain Bags

Possible Motivators To "Very Likely" Participate In Grain Bag Recycling Pilot Program Among Grain Bag Users Not Aware and Somewhat Likely To Participate



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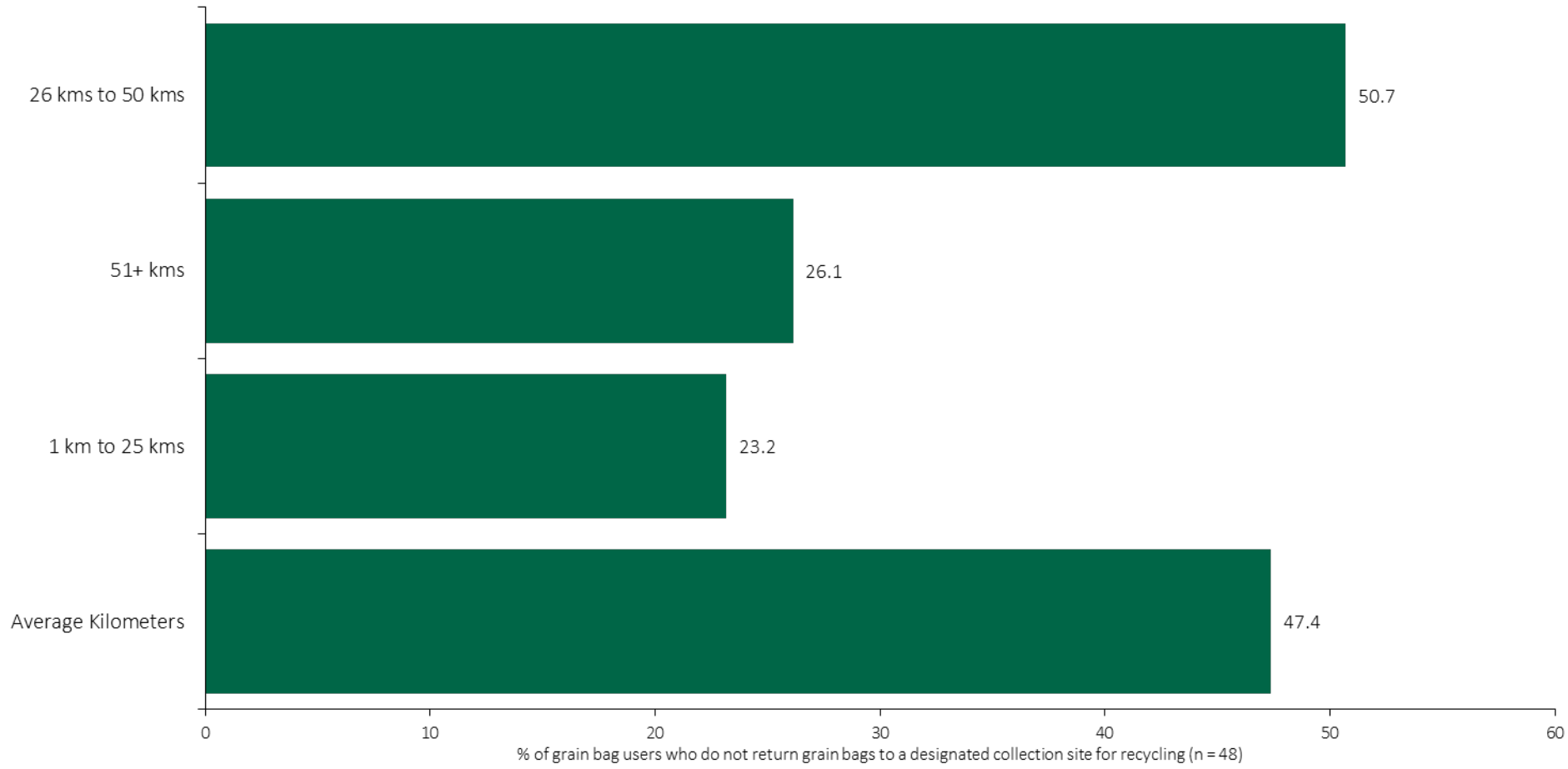
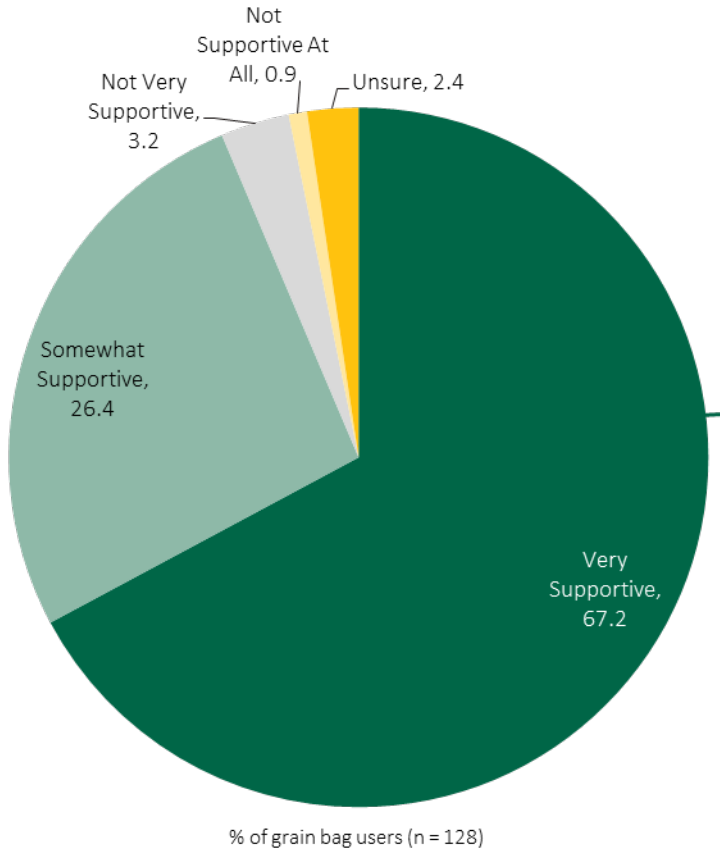
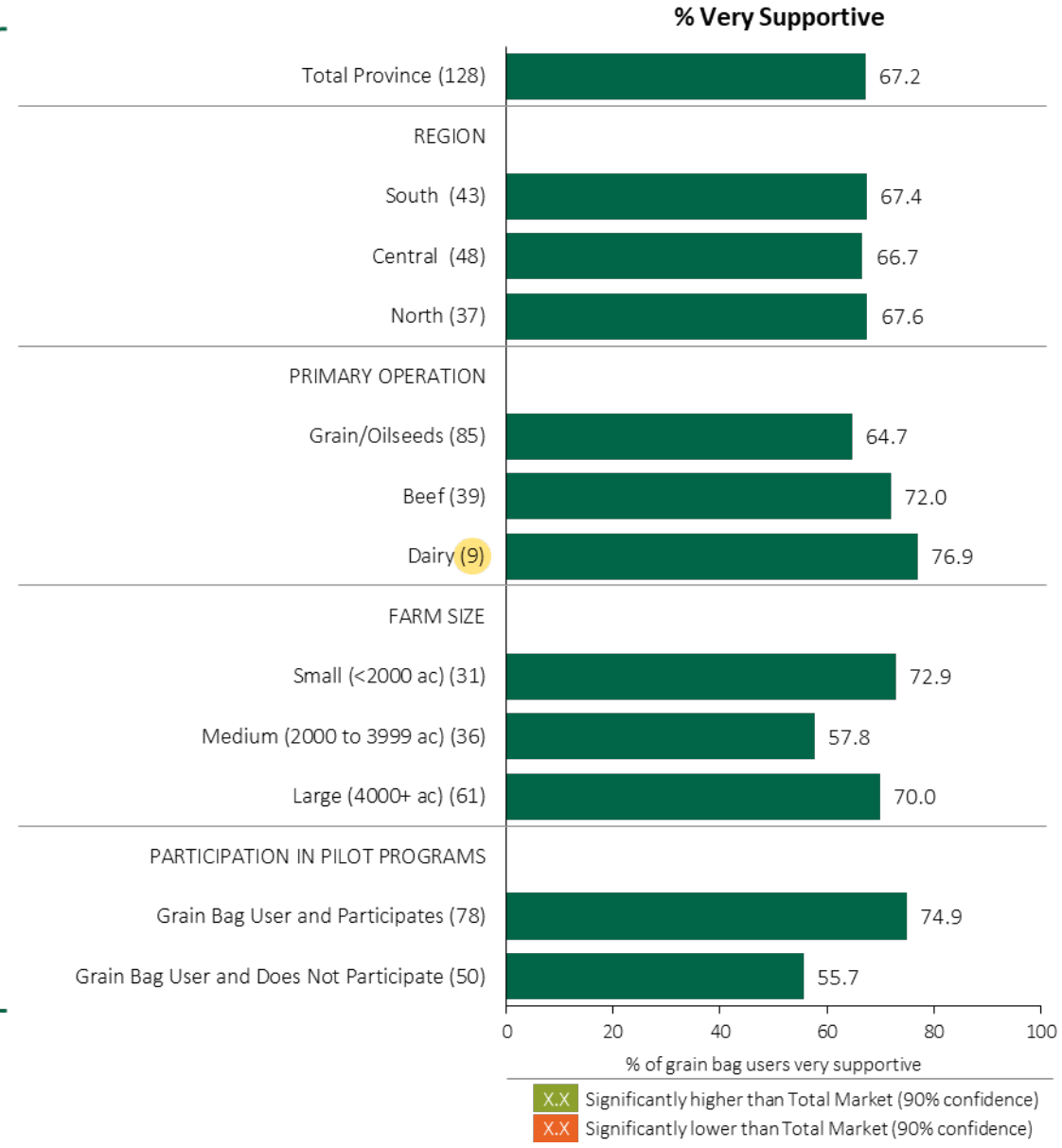
Farthest Distance Grain Bag Users (Currently Not Participating In Pilot Program) Are Willing To Drive To Recycling Collection Sites For Grain Bags



Grain Bag User Support For Making The Grain Bags Recycling Program A Permanent Solution





Non-Participant Awareness Of And Attitudes Towards The Pilot Program For Plastic Baler Twine

Click any title above to jump to that section.

Plastic baler twine users who did not participate in the pilot program were asked:

- **Awareness of designated collection sites.**
- **If aware – possible barriers to returning plastic baler twine to the collection sites.**
- **If not aware:**
  - **Likelihood to participate in the pilot program.**
  - **If not likely – possible barriers to participation.**
  - **If somewhat likely – what would motivate these plastic baler twine users to very likely participate in the pilot program.**
- **Farthest distance plastic baler twine users who do not participate in the pilot program would travel to take plastic baler twin to a designated collection site for recycling.**
- **How supportive are plastic baler twine users for making the pilot program a permanent program.**

Stratus AG RESEARCH

Key Findings – Non-Participants' Awareness Of And Attitudes Toward Plastic Baler Twine Pilot Program

Awareness of Designated Collection Site In Your Area For Returning Plastic Baler Twine For Recycling

Low awareness of local designated collection site for plastic baler twine for recycling among current non-pilot program participants. ▶

- Of the 55% of plastic baler twine users that currently do not return their plastic baler twine to a designated collection site for recycling, 19% of this group are aware of collection site in their area.

If Aware Of Local Collection Site For Plastic Baler Twine For Recycling – Possible Barriers For Returning Plastic Baler Twine To These Sites

Key possible barriers include too difficult to keep clean, labour needed to sort and clean, collection site has too many rules about returning plastic baler twine. ▶

- However, a number of plastic baler twine users in this segment said they don't expect to experience any difficulties recycling plastic baler twine.

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Key Findings – Non-Participants' Attitudes Toward Plastic Baler Twine Pilot Program

Likelihood To Participate In Plastic Baler Twine Pilot Program As Described

67% of plastic baler twine users (that currently don't participate in the plastic baler twine pilot program and are unaware of local designated collection site) would likely participate in the pilot program if there was a collection site in their area. ▶

- The following was the description of the preparation and return process:
  - Shake off debris and put in collection bags. Collection bags are available from the municipal/county office, collection site or retailer.
  - Return prepared plastic baler twine to the nearest collection site.
- The top 2 reasons for not likely participating in the pilot program are "too much work, hassle to take to a collection site" (47%), and "labour needed to sort and clean" (46%). Other key reasons include "too difficult to keep clean" (35%), and "no collection site nearby" (31%). ▶
- Things that would help motivate plastic baler twine users who are somewhat likely to participate in the pilot program – to very likely participate in the pilot program include "accept dirty baler twine – impractical to clean, time consuming" (40%), and "have facility close by/easy access" (34%). ▶

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Key Findings – Non-Participants' Attitudes Toward Plastic Baler Twine Pilot Program

Farthest Distance Current Non-Participants In Pilot Program Would Drive To Take Plastic Baler Twine To a Designated Collection Site For Recycling

On average, 38 kms is the farthest current non-participants in the pilot program would drive to take plastic baler twine to a designated collection site for recycling. ▶

- 89% said < 51 kms was the farthest they would drive.

How Supportive Are Plastic Baler Twine Users Of Making The Plastic Baler Twine Recycling Program A Permanent Solution

Strong support among plastic baler twine users. ▶

- Overall, 77% are supportive (very/somewhat) of making the plastic baler twine recycling program a permanent solution.
- 87% of plastic baler twine users who currently participate in the pilot program are supportive, while support is also strong but softer among plastic baler twine users who currently don't participate in the pilot program (69%).

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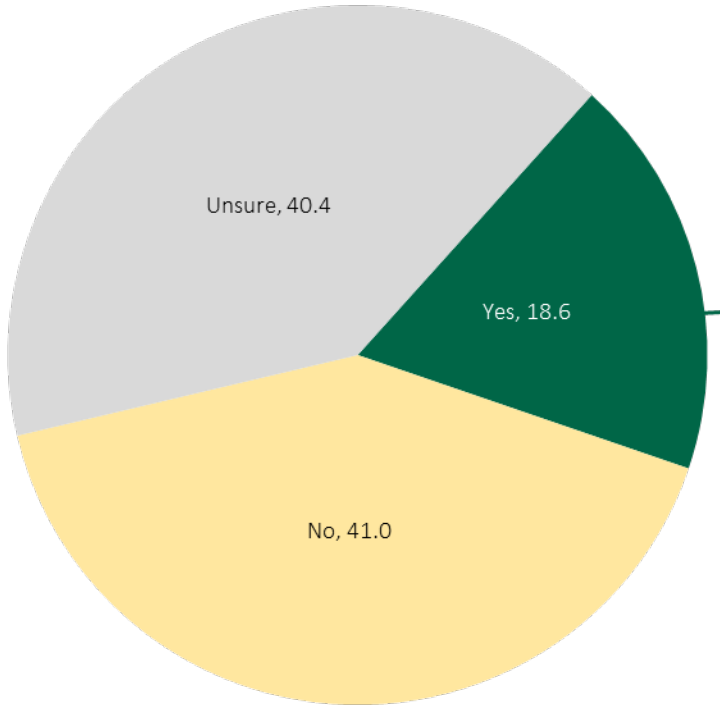
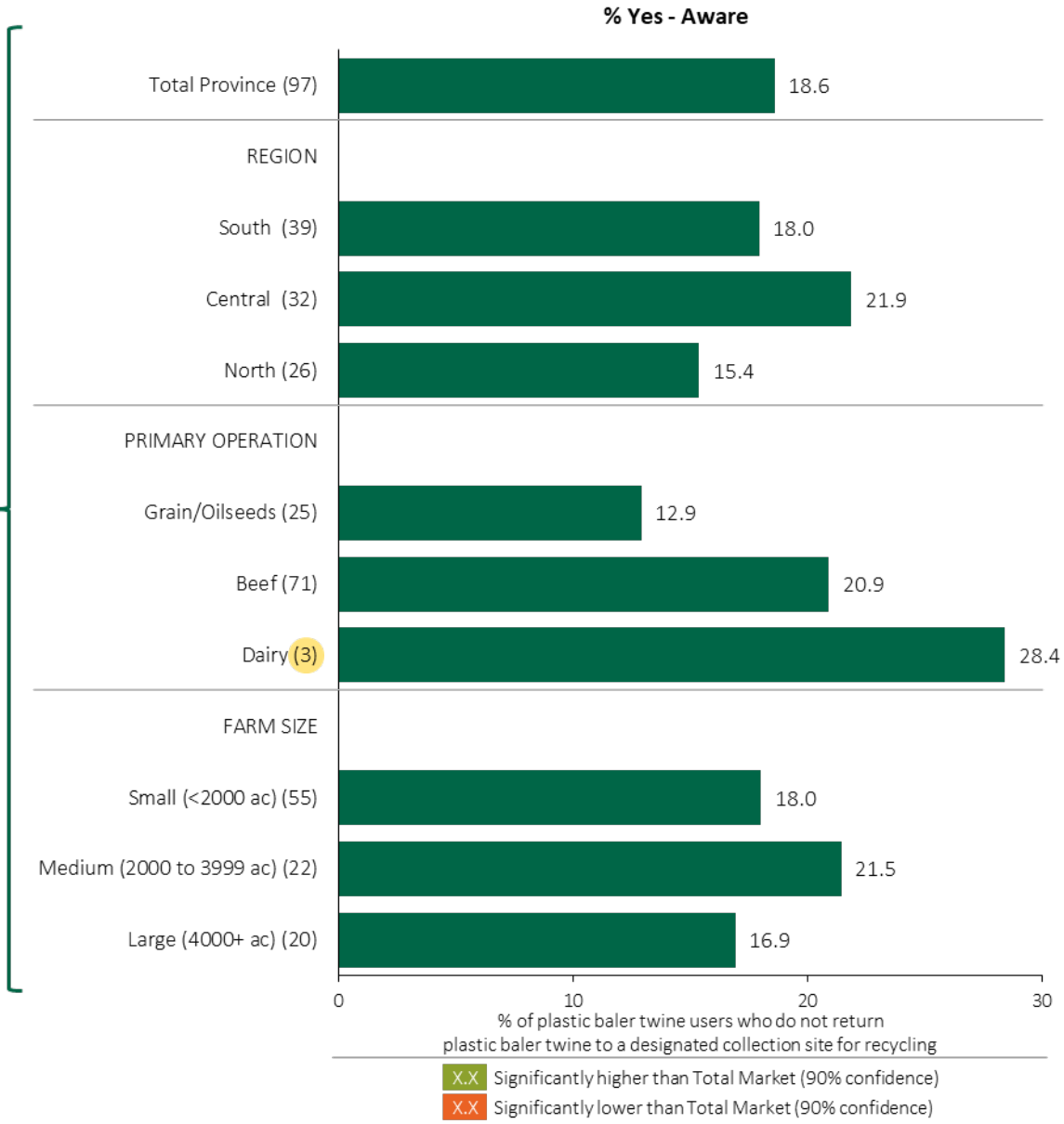
Support For Pilot Program For Plastic Baler Twine

Key Findings

Awareness of Designated Collection Site(s) Among Plastic Baler Twine Users Not Returning Plastic Baler Twine To A Designated Collection Site

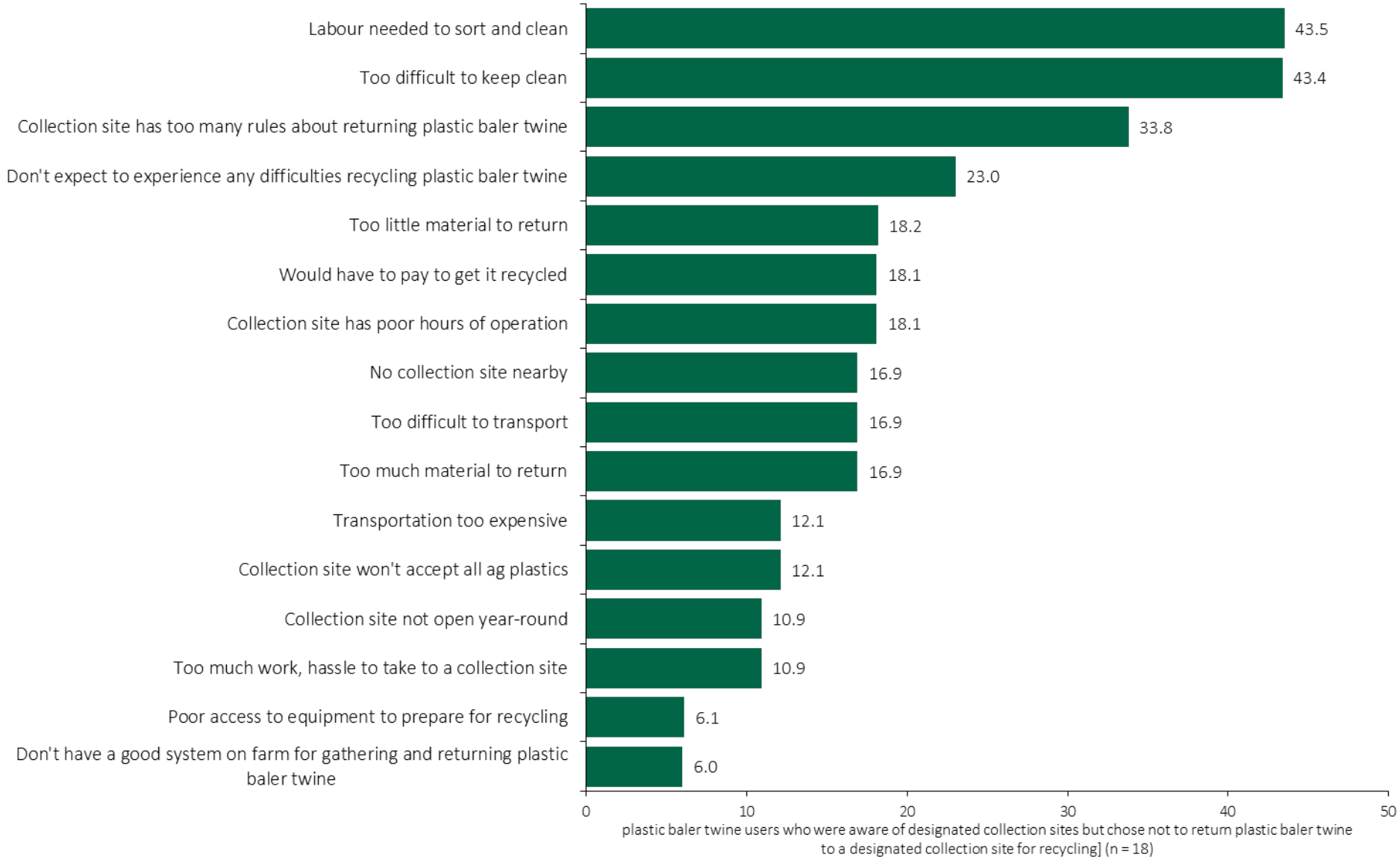


% of plastic baler twine users who do not return plastic baler twine to a designated collection site for recycling (n = 97)



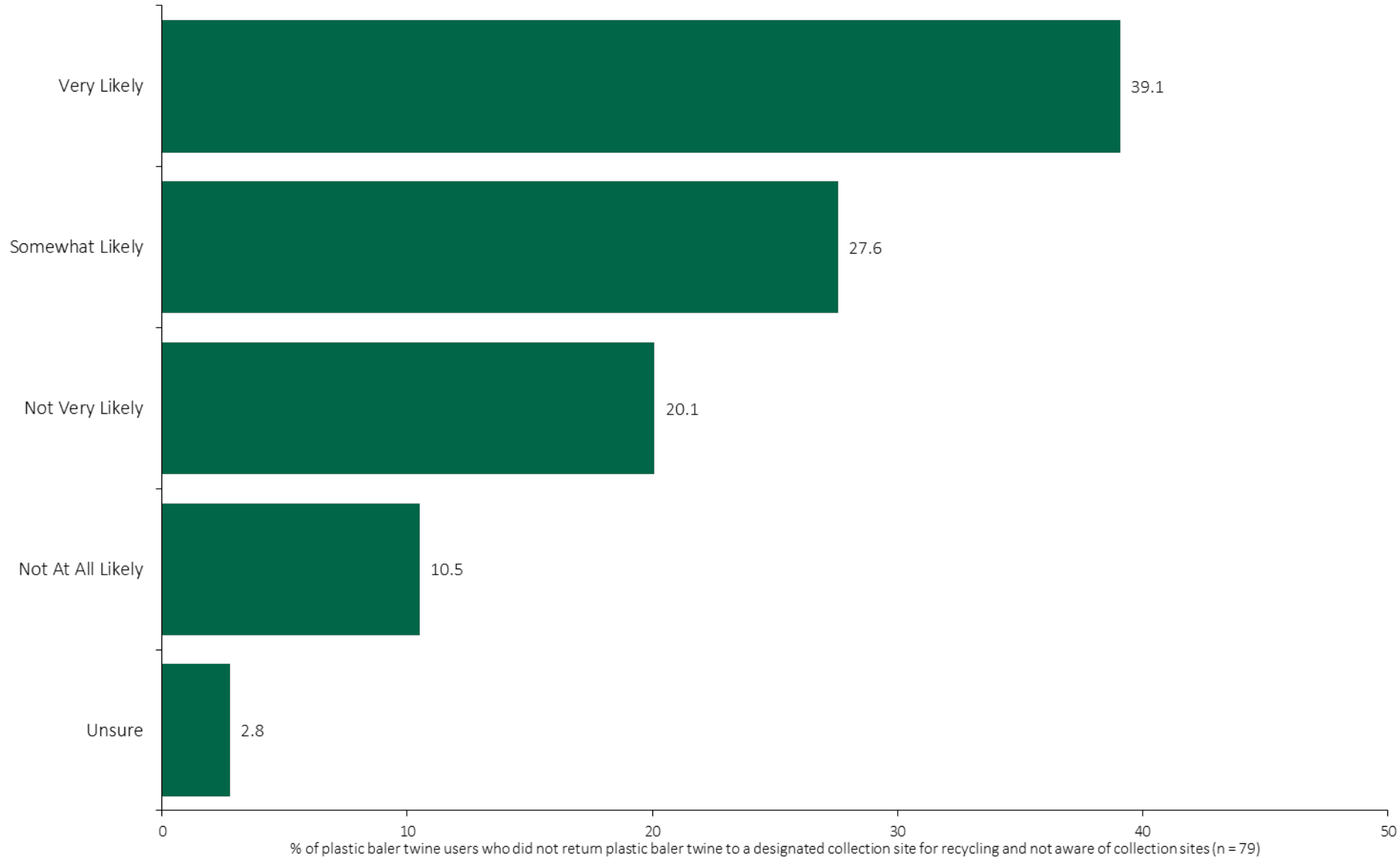
Stratus AG RESEARCH

Reasons Why Plastic Baler Twine Users (Aware of Designated Collection Site(s)) Chose Not To Return Plastic Baler Twine For Recycling



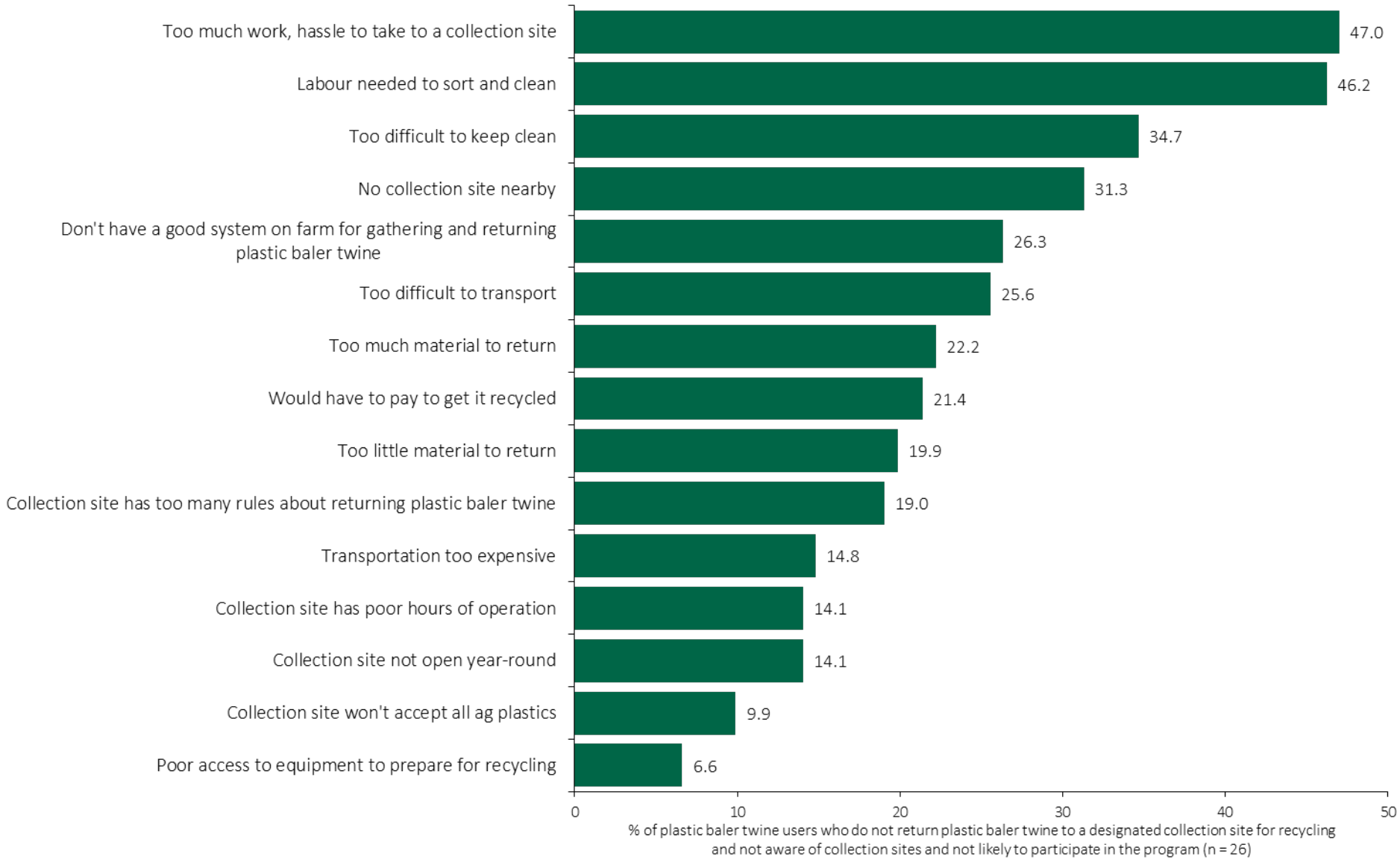
Support For Pilot Program For Plastic Baler Twine

Likelihood to Participate In Plastic Baler Twine Pilot Program Among Plastic Baler Twine Users Unaware of Collection Sites



Support For Pilot Program For Plastic Baler Twine

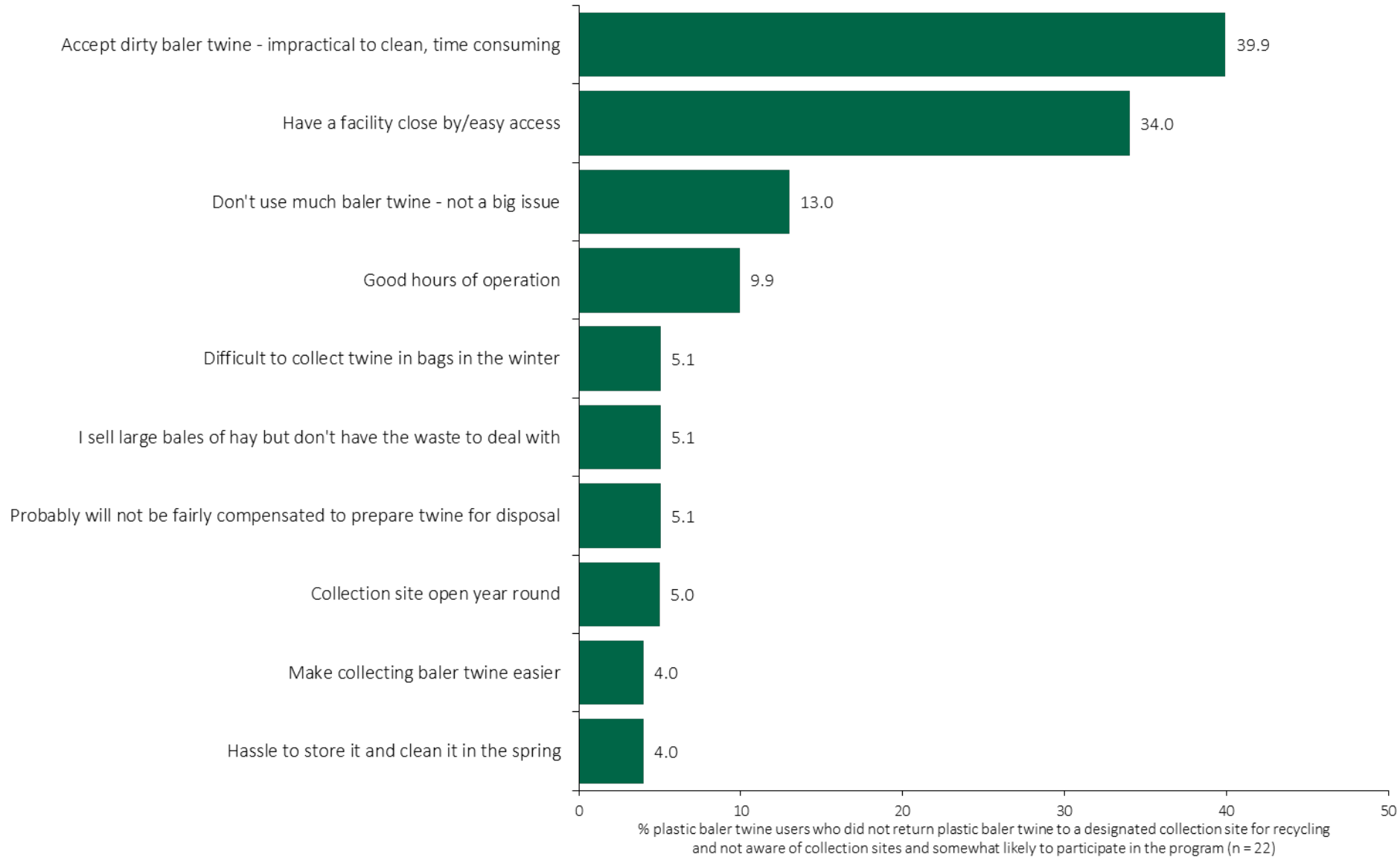
Possible Barriers to Participate In Plastic Baler Twine Pilot Program Among Plastic Baler Twine Users Not Aware of Sites and Not Likely To Participate In Pilot Program



Stratus AG RESEARCH

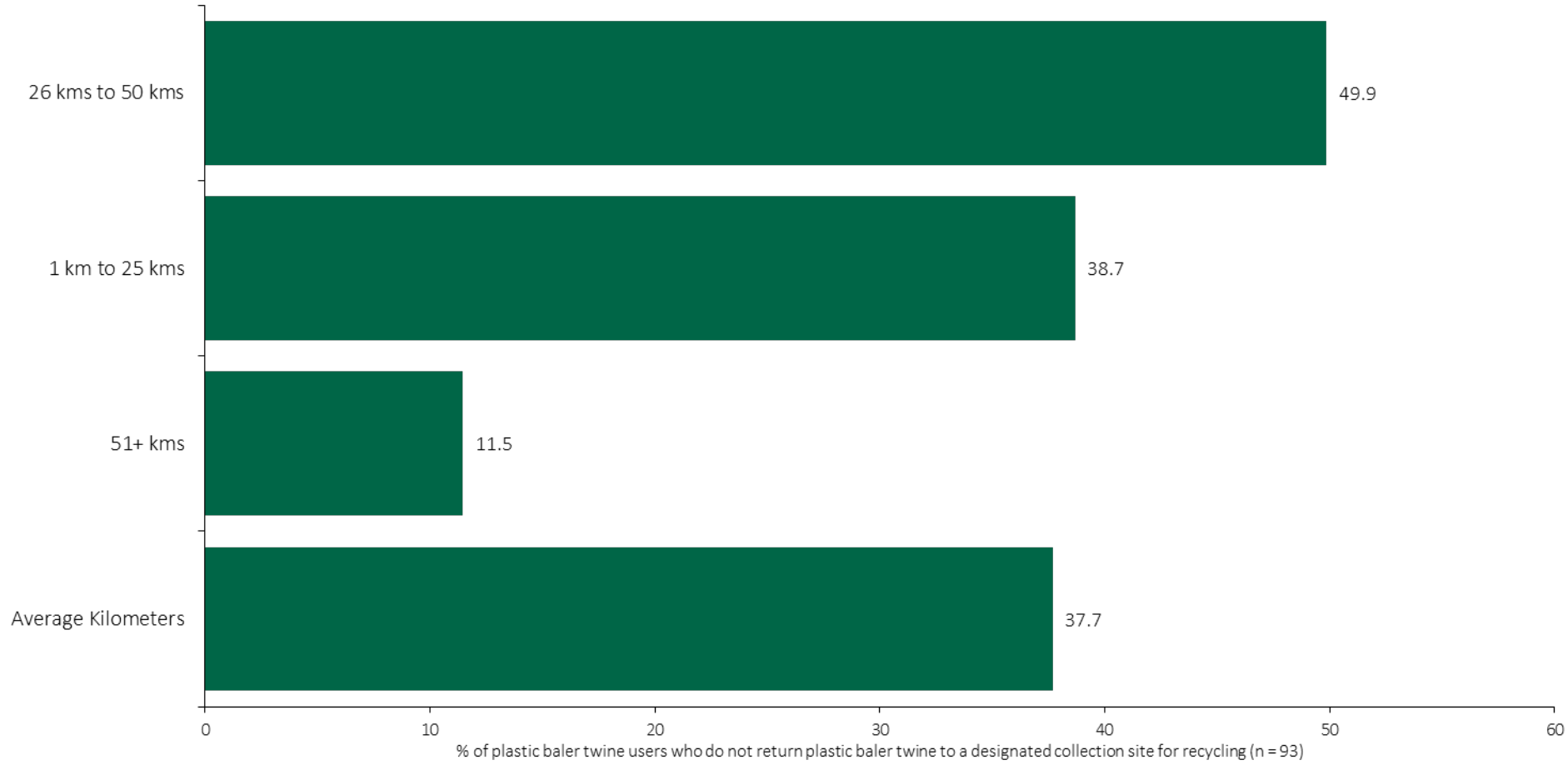
Support For Pilot Program For Plastic Baler Twine

Possible Motivators To "Very Likely" Participate In Plastic Baler Twine Recycling Pilot Program Among Plastic Baler Twine Users Not Aware and Somewhat Likely To Participate



Support For Pilot Program For Plastic Baler Twine

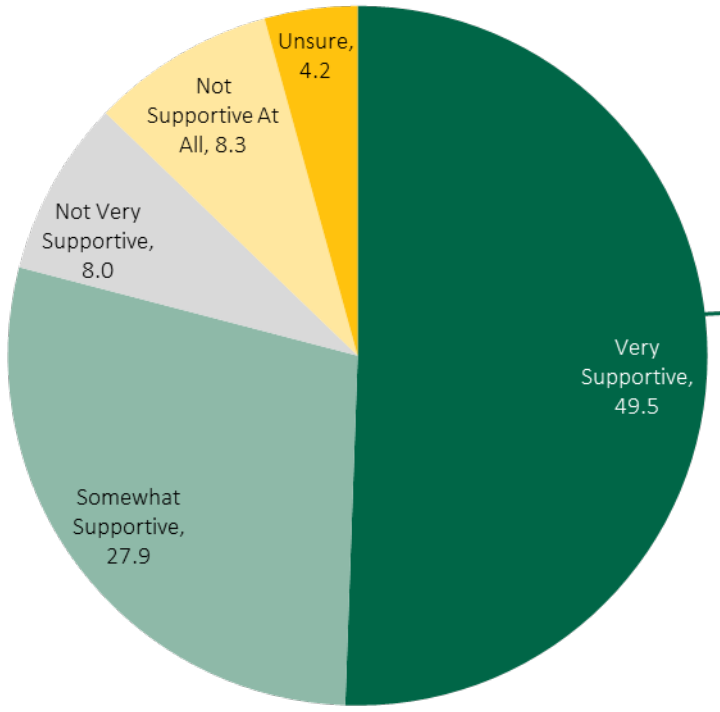
Farthest Distance Plastic Baler Twine Users (Currently Not Participating In Pilot Program) Are Willing To Drive To Recycling Collection Sites For Plastic Baler Twine



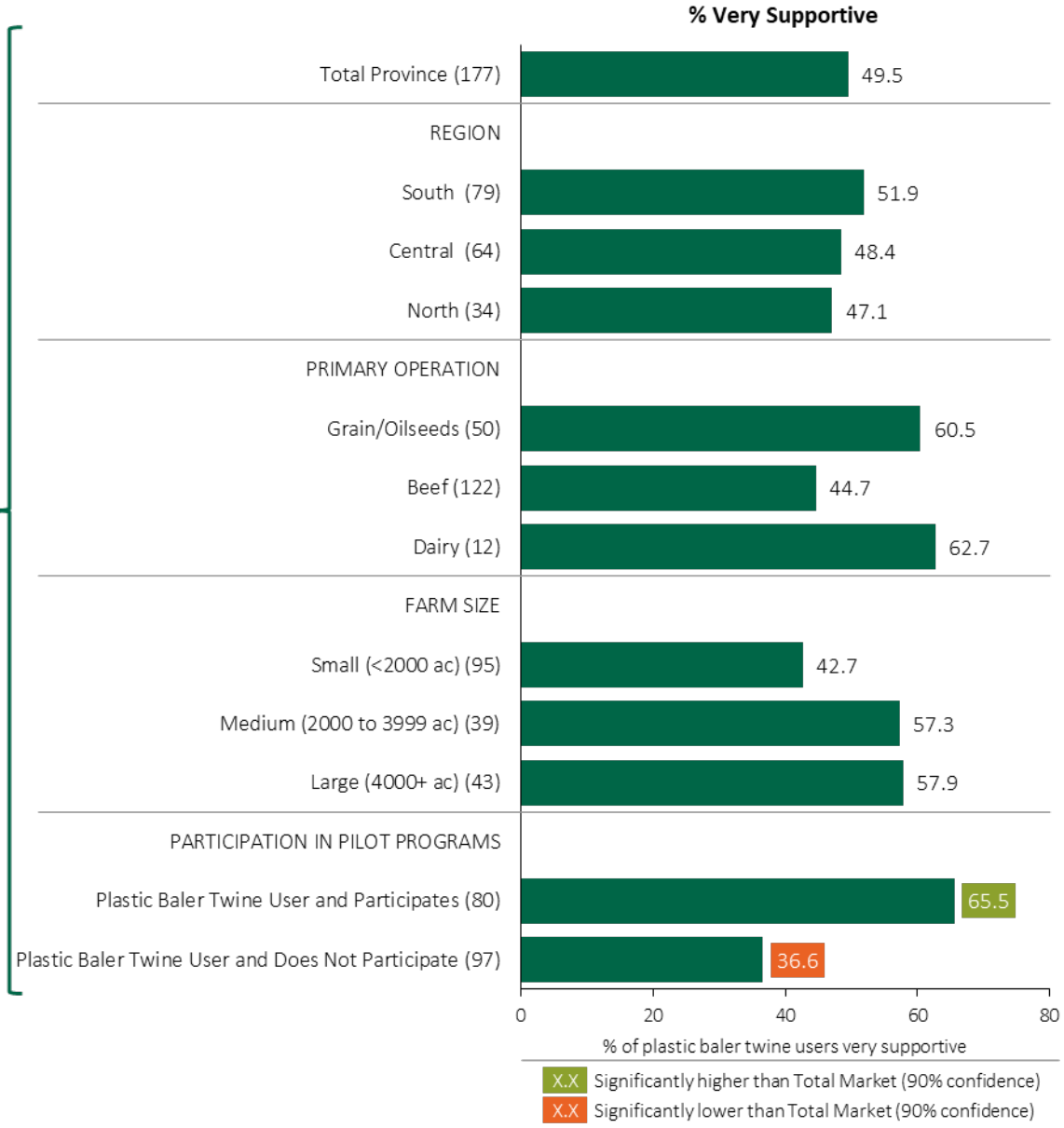
Support For Pilot Program For Plastic Baler Twine

Key Findings

Plastic Baler Twine User Support For Making The Plastic Baler Twine Recycling Program A Permanent Solution



% of plastic baler twine users (n = 177)



Stratus AG RESEARCH

Attitudes Toward Cost Sharing

Click any title above to jump to that section.

- **Grain bag users and plastic baler twine users who are currently unaware of designated collection sites for these ag plastics in their area were asked to what extent they agree users of these ag plastics should contribute to the cost of the recycling program if the additional cost of the ag plastics they use is 3% to 7% of the price of the ag plastic.**

- **Grain bag users and plastic baler twine users who currently return these ag plastics to a designated collection site or are aware of collection sites in their area but chose not to use them were also asked to what extent they agree users of ag plastics should contribute to the cost of the recycling program if the additional cost of the ag plastics they use is 3% to 7% of the price of the ag plastic.**

Stratus AG RESEARCH

Key Findings - Attitudes Towards Cost Sharing

Grain Bag and Plastic Baler Twine Users' (Who Did Not Participate In Pilot Programs) Attitudes Towards Cost Sharing

44% of grain bag users and 44% of plastic baler twine users (who did not participate in the pilot programs) support (strongly/somewhat agree) that users of ag plastics should pay an additional 3% to 7% for ag plastics to contribute to the cost of recycling programs.

Grain Bag and Plastic Baler Twine Users' (Who Did Participate in Pilot Programs) Attitudes Towards Cost Sharing

59% of grain bag users and 38% plastic baler twine users (who participated in the pilot programs) support (strongly/somewhat agree) that users of ag plastics should pay an additional 3% to 7% for ag plastics to contribute to the cost of recycling programs.

- In the 2019 survey, 58% of all farmers surveyed either strongly agreed (14%) or somewhat agreed (44%) with users of materials paying an additional 3% to 7% of the price of the ag plastic to contribute to the cost of a permanent recycling program.

Key Findings - Attitudes Towards Paying Additional Costs for Recycling Programs for Ag Plastics

I understand the need to support a recycling program for ag plastics, but I don't like having to pay additional cost

Vast majority of survey respondents agreed that while they understand the need to support a recycling program for ag plastics, they don't like having to pay an additional cost. ▶

- Overall, 83% (very/somewhat) agreed with this statement.
- There was no notable difference in attitude among grain bag and plastic baler twine users who participate in the pilot program versus those who don't.
- In the 2019 survey, 82% agreed with this statement.

If a recycling program for ag plastics is easy to use and accessible, I'm OK with an additional cost

Just over half of survey respondents agreed they're OK paying an additional cost if a recycling program for ag plastics is easy to use and accessible. ▶

- Overall, 54% (very/somewhat) agreed with this statement.
- Somewhat more grain bag users (63%) than plastic baler twine users (52%) agreed with this statement. There was no notable difference in attitude among grain bag and plastic baler twine users who participate in the pilot program versus those who don't.
- In the 2019 survey, 56% agreed with this statement.

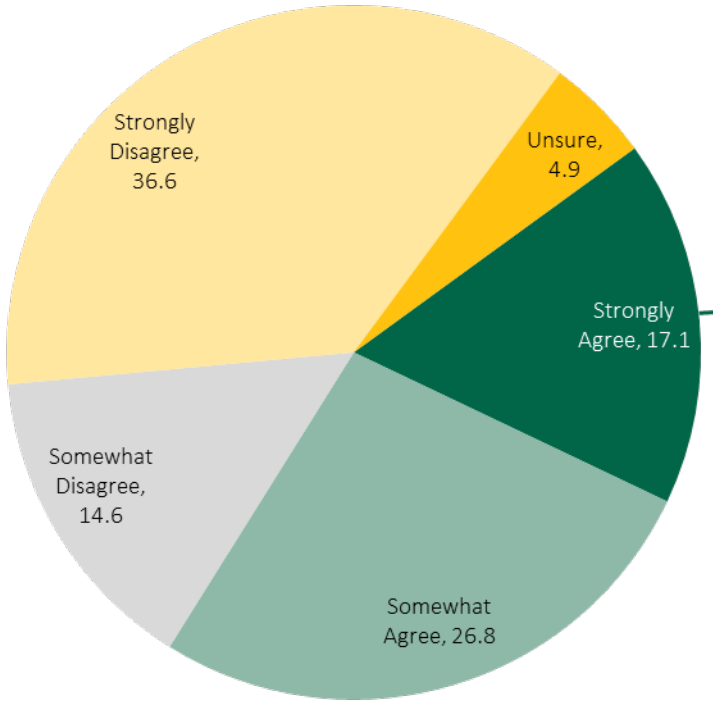
I am strongly opposed to paying any additional cost for recycling ag plastics

A majority of survey respondents are strongly opposed to paying any additional cost for recycling ag plastics. ▶

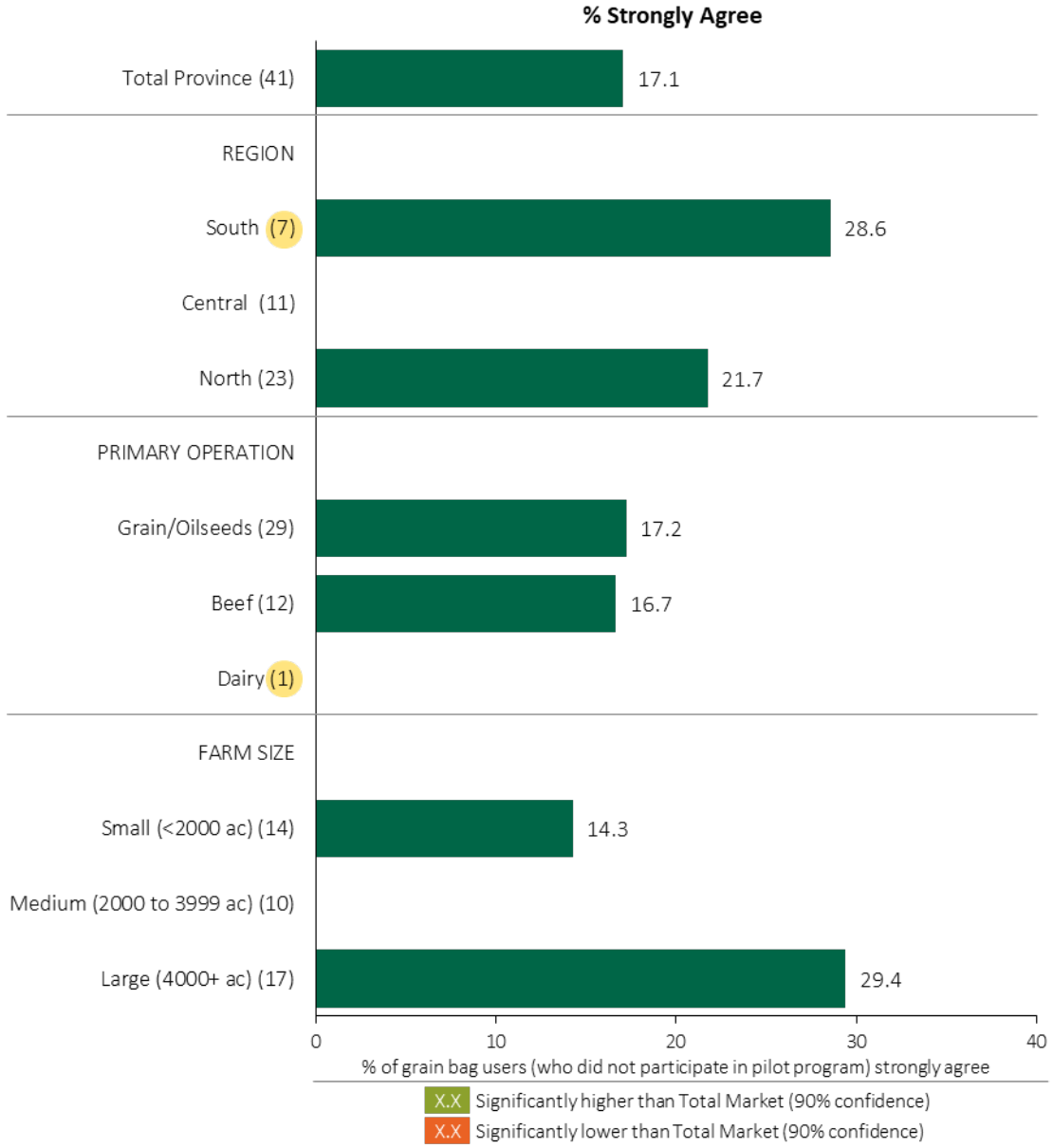
- Overall, 60% (very/somewhat) agreed with this statement.
- Somewhat more plastic baler twine users (61%) than grain bag users (52%) agreed with this statement. There was no notable difference in attitude among grain bag and plastic baler twine users who participate in the pilot program versus those who don't.
- In the 2019 survey, the statement was "I am strongly opposed to paying an environmental handling fee". Overall, 50% agreed with this statement.

Stratus AG RESEARCH

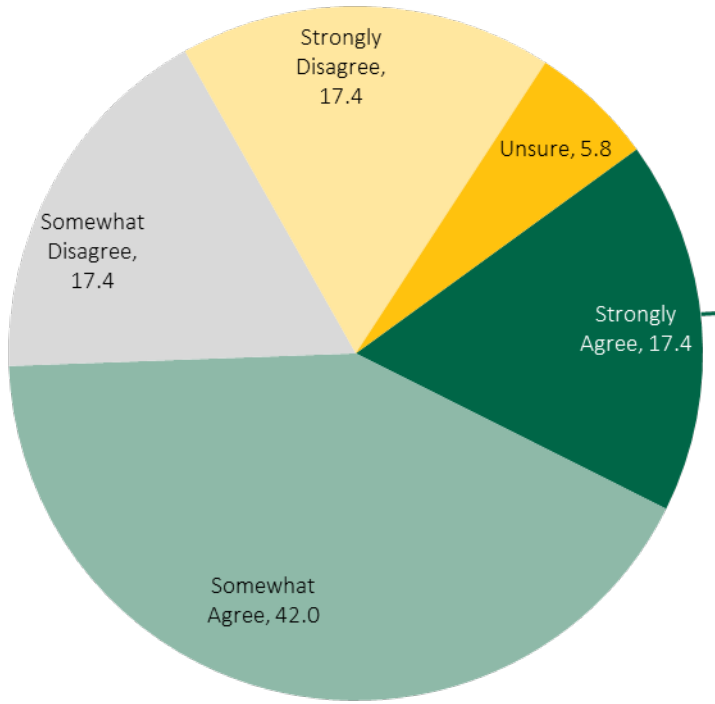
Grain Bag Users' (Who Did Not Participate in Pilot Program) Support For Contributing To Cost of Recycling Programs



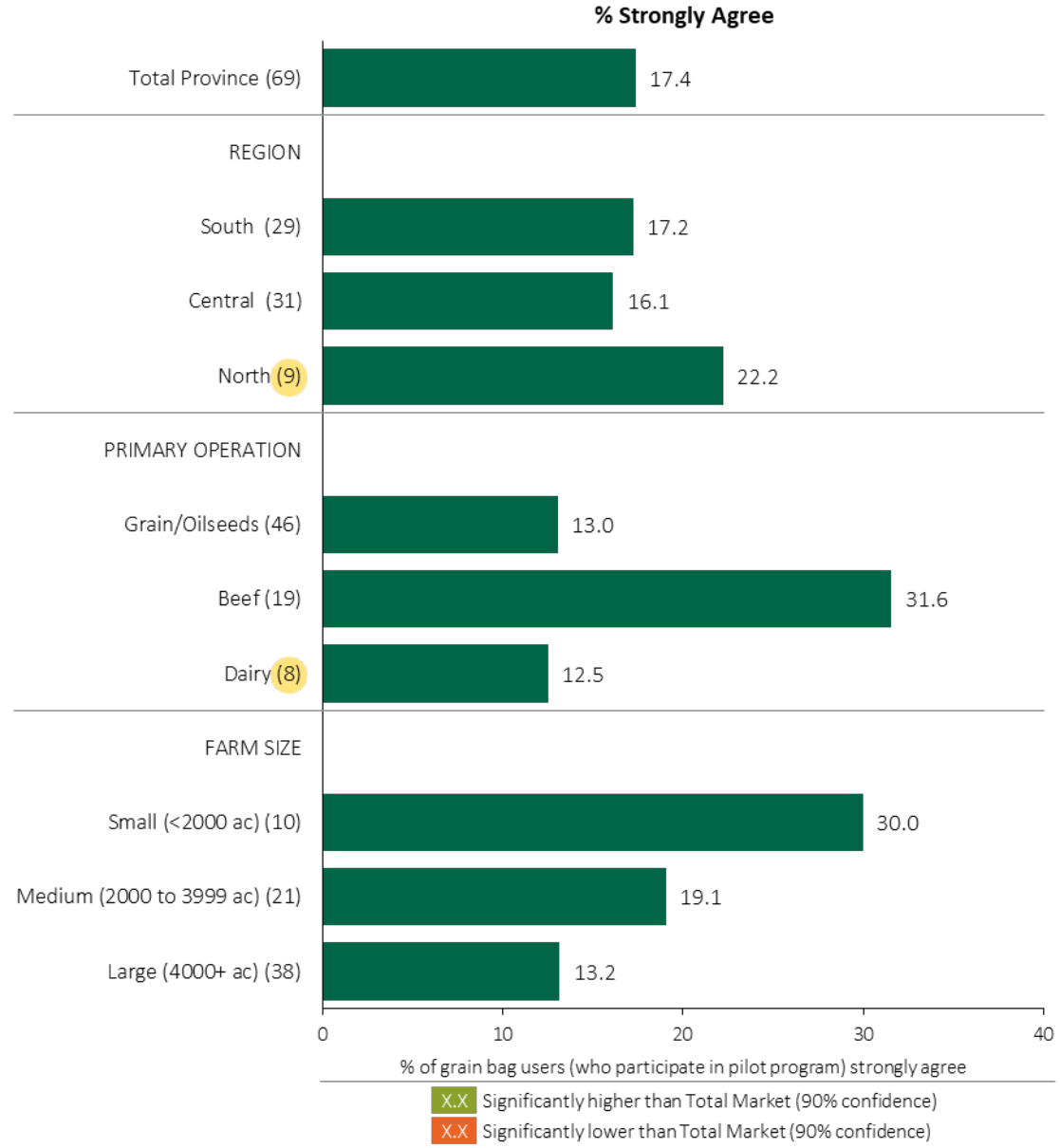
% of grain bag users who did not participate in grain bag pilot recycling program (n = 41)



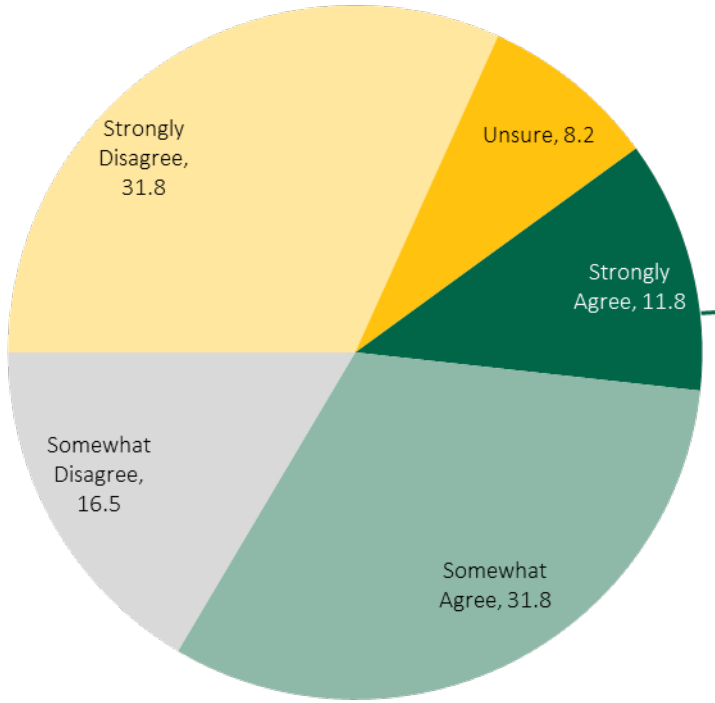
Grain Bag Users' (Who Participate in Pilot Program) Support For Contributing To Cost of Recycling Programs



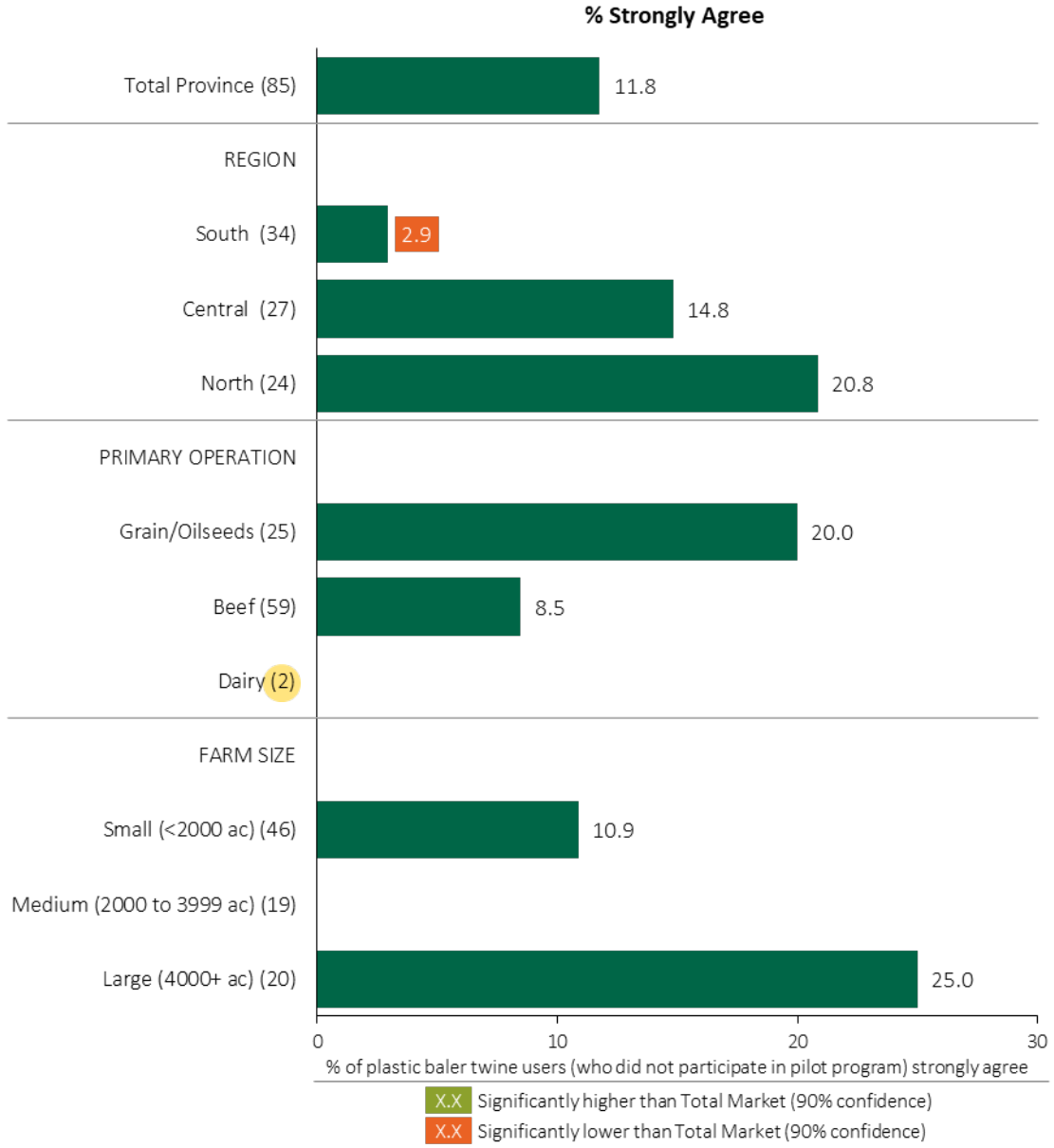
% of grain bag users who participate in grain bag pilot recycling program (n = 69)



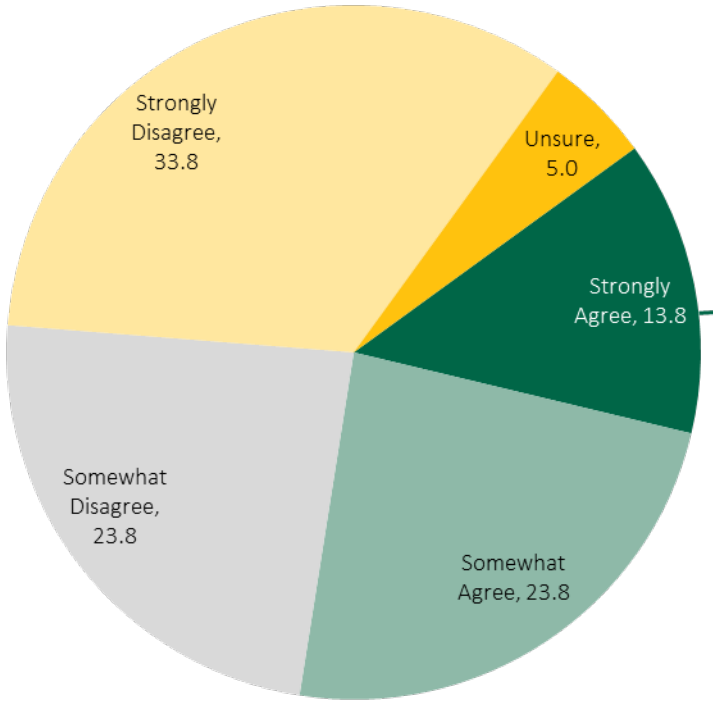
Plastic Baler Twine Users' (Who Did Not Participate in Pilot Program) Support For Contributing To Cost of Recycling Programs



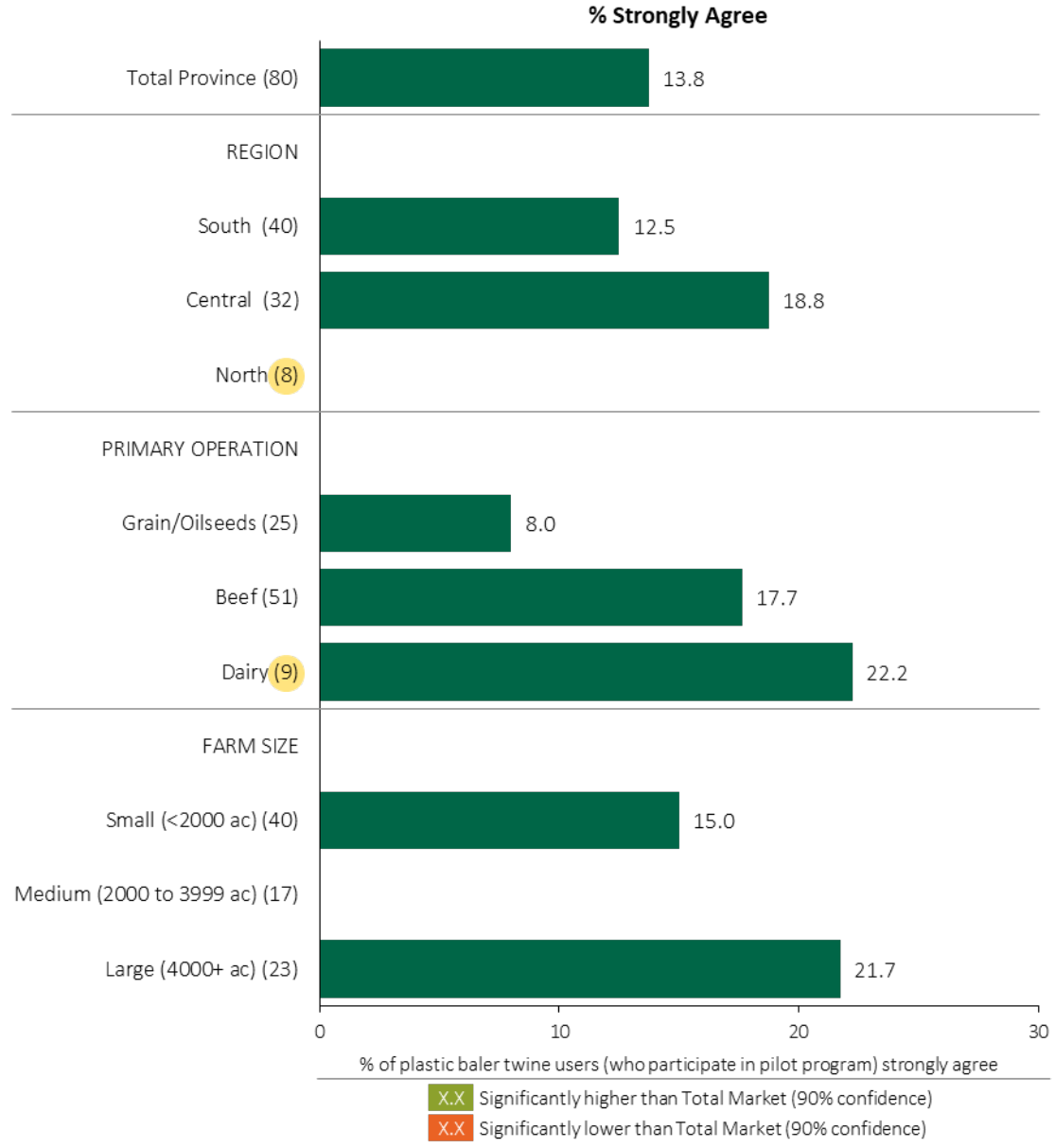
% of plastic baler twine users who did not participate in plastic baler twine pilot recycling program (n = 85)



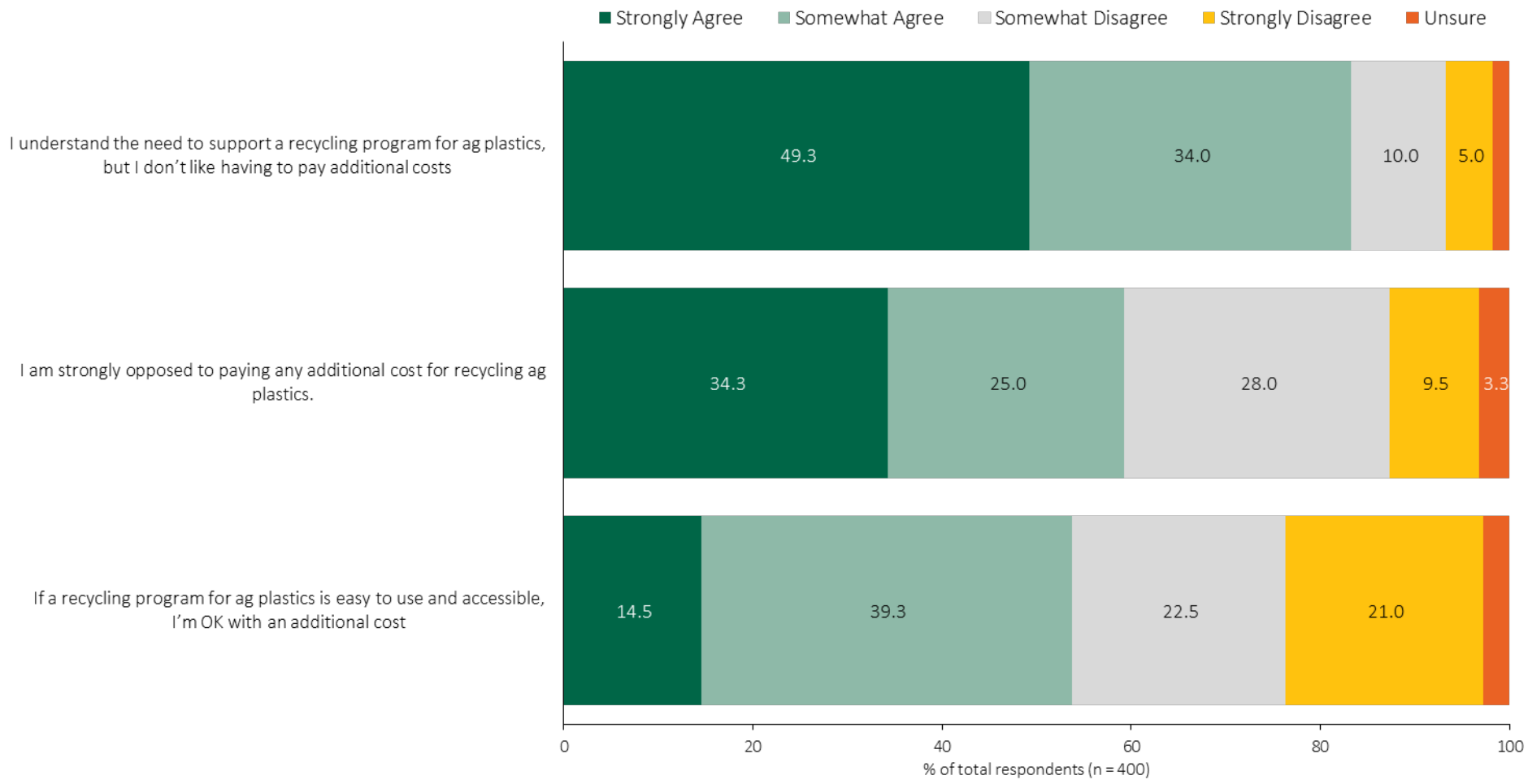
Plastic Baler Twine Users' (Who Participate in Pilot Program) Support For Contributing To Cost of Recycling Programs



% of plastic baler twine users who participate in plastic baler twine pilot recycling program (n = 80)



Attitudes Towards Paying Additional Costs For Recycling Programs For Ag Plastics



Appendix

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Stratus AG RESEARCH

Background

- In July and August 2019, Cleanfarms conducted a quantitative survey of 428 Alberta crop and livestock producers related to the implementation of a pilot program for recycling grain bags and plastic baler twine.
- The goals of the 2019 study were to develop baseline measures of attitudes towards and practices for disposing of certain agricultural plastic waste materials, to develop initial measures related to the pilot program and to obtain producer feedback on key topics as an input into program design and implementation.
- In partnership with the Agricultural Plastics Recycling Group and Alberta Beef Producers, Cleanfarms commissioned Stratus Ag Research to conduct a tracking survey in July and August 2023 with 400 Alberta farmers to compare against the 2019 study benchmarks and address key questions regarding awareness, use of and satisfaction with Alberta Ag-Plastic Recycle It! Pilot program. Of particular interest is the use and disposal habits of plastic baler twine and grain bags.
- This report summarizes the 2023 tracking survey results.

Study Topics (1/4)

This study covered the following topics:

1. Types of ag plastic used and regularly disposed of
   - Use of grain bags within the past 3 years
   - Plans to use grain bags in 2023
   - Frequency of use of grain bags
   - Likelihood of future use of grain bags

2. Ways farmers dispose of ag plastics, once used

3. Farmer satisfaction with current ag plastics disposal methods
   - Reasons for being very satisfied with experience returning grain bags or plastic baler twine to a designated collection site for recycling

4. Familiarity with the Alberta pilot program to recycle used grain bags and plastic baler twine
   - Unaided and aided awareness of "Alberta Ag-Plastic. *Recycle it!*" pilot program
   - Sources of information about opportunities in Alberta for recycling used grain bags or plastic baler twine
   - Preferred sources of information

5. Recycling unmet needs – extent there are types of ag plastics, once used, farmers would like to see a recycling program for
   - Types of ag plastics farmers would like to see a recycling program for

Study Topics (2/4)

This study covered the following topics (continued):

6. Attitudes toward certain ag plastics
   - Level of concern with how to deal with plastic baler twine, grain bags, bale wrap, silage plastic or net wrap/netting
   - Importance of being able to recycle plastic baler twine, grain bags, bale wrap, silage plastic or net wrap/netting
   - Level of satisfaction with the current access to recycle plastic baler twine, grain bags, bale wrap, silage plastic or net wrap/netting
   - Perceived ease of recycling used grain bags and plastic baler twine
   - Level of concern about responsible disposal of various types of ag plastics
   - Compelling reasons for participating in recycling programs for used ag plastics
   - Perceived difficulties farmers would expect or have experienced with recycling ag plastics

Study Topics (3/4)

This study covered the following topics (continued):

7. Attitudes toward the pilot program for grain bags:
   - Awareness of designated collection sites among grain bag users who don't return grain bags to a designated collection site for recycling
     - If aware of designated collection sites – possible barriers to returning grain bags to a designated collection site
     - If unaware of designated collection sites – likelihood to participate in the pilot program for recycling grain bags
       - ✓ If unlikely to participate in the pilot program – possible barriers to participation
       - ✓ If "somewhat likely" to participate in the pilot program – what would motivate these grain bag users to "very likely" participate in the pilot program
   - Farthest grain bag users, who don't return grain bags to a designated collection site for recycling, would travel to take grain bags to a designated site
   - How supportive are all grain bag users in making the grain bags recycling program a permanent solution for recycling ag plastics in Alberta

Study Topics (4/4)

This study covered the following topics (continued):

8. Attitudes toward the pilot program for plastic baler twine:
   - Awareness of designated collection sites among plastic baler twine users who don't return plastic baler twine to a designated collection site for recycling
     - If aware of designated collection sites – possible barriers to returning plastic baler twine to a designated collection site
     - If unaware of designated collection sites – likelihood to participate in the pilot program for recycling plastic baler twine
       - ✓ If unlikely to participate in the pilot program – possible barriers to participation
       - ✓ If "somewhat likely" to participate in the pilot program – what would motivate these plastic baler users to "very likely" participate in the pilot program
   - Farthest plastic baler twine users, who don't return plastic baler twine to a designated collection site for recycling, would travel to take plastic baler twine to a designated site
   - How supportive are all plastic baler twine users in making the plastic baler twine recycling program a permanent solution for recycling ag plastics in Alberta

9. Attitudes towards cost sharing:
   - Extent farmers are supportive of paying an additional 3% to 7% for ag plastics to contribute to the cost of the recycling program
   - Attitudes, in general, toward paying an additional cost to support recycling programs for ag plastics

Research Design and Methodology (1/5)

Methodology and Sample Distribution

- A quantitative online survey was conducted in July/August 2023 with 400 Alberta farmers.
- The farmer "Primary Operation" segments targeted for this study include grains/oilseed, beef and dairy.
- Table 1 below summarizes a) the actual number and % of Alberta farmers in each "Primary Operation" segment according to the 2021 Census of Agriculture (North American Industry Classification System – NAICS) - for example, farmers who fall into the Grains & Oilseed NAICS segment are primarily engaged in growing oilseeds and grains), b) the sample number and % of completed interviews who fell into the NAICS segments.

Table 1

2021 Census NAICS Survey Segments	Alberta	
Primary Operation	**# and % of NAICS Type Farms in Universe**	**# and % of NAICS Type Farms in Final Survey Sample**
Grain & Oilseed	13,942 (48.2%)	243 (58.7%)
Beef (cow-calf, feedlots, backgrounding)	14,601 (50.5%)	151 (36.5%)
Dairy	393 (1.4%)	20 (4.8%)
Total	**28,936**	**414**

Research Design and Methodology (2/5)

Methodology and Sample Distribution (continued)

- A vast majority of “Beef” producers (84%) have “mixed farm” - crops and beef operations, whereby income is split between the sale of grain/oilseeds and beef cattle (cow/calf, feedlot or backgrounding). Respondents who were “mixed farm” crops, beef and dairy and “primarily beef” were also included in the “Beef” producer segment.

- A vast majority of “Dairy” producers (72%) have “mixed farm” - crops, beef and dairy operations, whereby income is split between the sale of grain/oilseeds, beef cattle (cow/calf, feedlot or backgrounding) and dairy. Respondents who were “mixed farm” - crops and dairy, “mixed farm – crops, beef and dairy, and “primarily dairy” were included in the “Dairy” producer segment.

- The percentage of “Beef” producers (36%) in the final sample is notably less than the 2021 Ag Census of Agriculture (NAICS). A possible reason is, because of drought conditions in recent years, beef producers downsized their beef cow herd or exited the industry due to a lack of feed (hay) and/or the high cost of feed. Given that, we feel the final sample distribution of mainly grains/oilseeds (58.7%) and mainly beef producers (36.5%) is a more accurate reflection of the 2023 Alberta farm population than the 2021 Ag Census of Agriculture (NAICS) distribution.

Research Design and Methodology (3/5)

Methodology and Sample Distribution (continued)

- Table 2 shows the target number (and percentage) of respondents versus the actual number (and percentage) of respondents by Region.
- Table 2 shows the sample weight factors (% universe ÷ % final sample) that were applied to ensure the results are representative by region as per the 2021 Census of Agriculture.

Table 2

	Alberta			
Region	**Target # Of Respondents As Per 2021 Ag Census Distribution**	**Actual # Of Respondents in Final Survey Sample**	**Sample Weight Factor**	**Weighted Sample**
South	132 (33%)	153 (38.5%)	.863	132
Central	165 (41.2%)	153 (38.2%)	1.078	165
North	103 (25.8%)	94 (23.3%)	1.096	103
Total	**400**	**400**		**400**

Research Design and Methodology (4/5)

Accuracy Of This Research

- A total sample of 400 out of 28,936 farms (2021 Ag Census NAICS survey segments – grains/oilseeds, beef, dairy) provides an overall level of accuracy of +/- 4.1% at the 90% confidence level. This means that for a given result, we can be 90% confident that the survey result is within 4.1% of the "true" result if we had done a census of the entire population. The margin of error is at its widest for a result of 50%, and narrower for percentages above or below 50%.

- On a NAICS segment basis, a sample of 243 Grain and Oilseed farmers provides an overall accuracy of +/- 5.3% at the 90% confidence level for that segment. A sample of 151 Beef producers provides an overall accuracy of +/- 6.7% at the 90% confidence level for that segment.

- The margin of error for a sample of 128 grain bag users is 7.3% and 6.2% for a sample of 177 plastic baler twine users.

Research Design and Methodology (5/5)

Sample Source and Data Collection

- The Stratus database was the sample source for this survey.
- In terms of data collection, Stratus sent email invitations which included a survey link. Average survey length was 20 minutes.
- Respondents were screened to meet following main farm type criteria:

Which of the following best describes your farm operation	
Primarily Crop Production	• Majority of income is from the production and sale of grain/oilseeds; not livestock sales of significance (counted as Grain & Oilseed)
Mixed Farm – Crops and Beef	• Income is split between the sale of grain/oilseeds and beef cattle (cow/calf, feedlot or backgrounding) (counted as Beef)
Mixed Farm – Crops, Beef and Dairy	• Income is split between the sale of grain/oilseeds, beef cattle and dairy (counted as Beef and counted as Dairy)
Mixed Farm – Crops and Dairy	• Income is split between the sale of grain/oilseeds and dairy operation (counted as Dairy)
Primarily Beef	• Majority of income is from the production and sale of beef (cow/calf, feedlot or backgrounding); no grain/oilseeds sales of significance (counted as Beef)
Primarily Dairy	• Majority of income is from your dairy operation; no grain/oilseeds sales of significance (counted as Dairy)

- In terms of an honorarium, farmers who completed the survey received on average $30.

Ag Plastics Used and Regularly Disposed Of By Farm Type

Type of Ag Plastic	Total n=400	Grains/Oilseeds n=245	Beef (84% Are Mixed Farm) n=150	Dairy (72% Are Mixed Farm) n=19
Plastic pesticide or fertilizer containers <23L	90%	91%	89%	91%
Pesticide or fertilizer drums and non-deposit drums & totes (bulk containers)	71%	75%	65%	64%
Plastic seed bags, fertilizer bulk bags, pesticide and/or inoculant bags (all sizes)	52%	48%	58%	65%
Plastic baler twine	44%	20%	80%	58%
Net wrap or netting	38%	15%	75%	82%
Grain bags	32%	35%	26%	44%
Silage plastic (silo bags, tarps, bunker covers)	23%	5%	51%	85%
Bale wrap	17%	6%	35%	48%

Profile Of A Grain Bag User Versus A Non-User

	Grain Bag User n=129	Did Not Use Grain Bags n=271
Main Farm Type		
Primarily Crop Production	66%	59%
Mixed Farm – Crops and Beef	27%	34%
Farm Size (Acres)		
Average 2023 Crop Acres	4,396	2,459
Other Types of Ag Plastics Used		
Plastic baler twine	40%	45%
Bale wrap	20%	16%
Silage plastic	31%	20%
Net Wrap	41%	37%
Region		
South	29%	35%
Central	40%	42%
North	31%	23%
Average Age	55	59

Profile Of A Grain Bag User That Participates In The Pilot Program Versus Grain Bag Users That Don't

	Grain Bag Users That Participate In Grain Bag Pilot Program n=77	Grain Bag Users That Do Not Participate In Grain Bag Pilot Program n=52
Main Farm Type		
Primarily Crop Production	64%	71%
Mixed Farm – Crops and Beef	27%	26%
Farm Size (Acres)		
Average 2023 Crop Acres	4,715	3,920
Other Types of Ag Plastics Used		
Plastic baler twine	42%	36%
Bale wrap	20%	20%
Silage plastic	31%	30%
Net Wrap	42%	40%
Region		
South	36%	18%
Central	46%	31%
North	18%	51%
Average Age	53	58

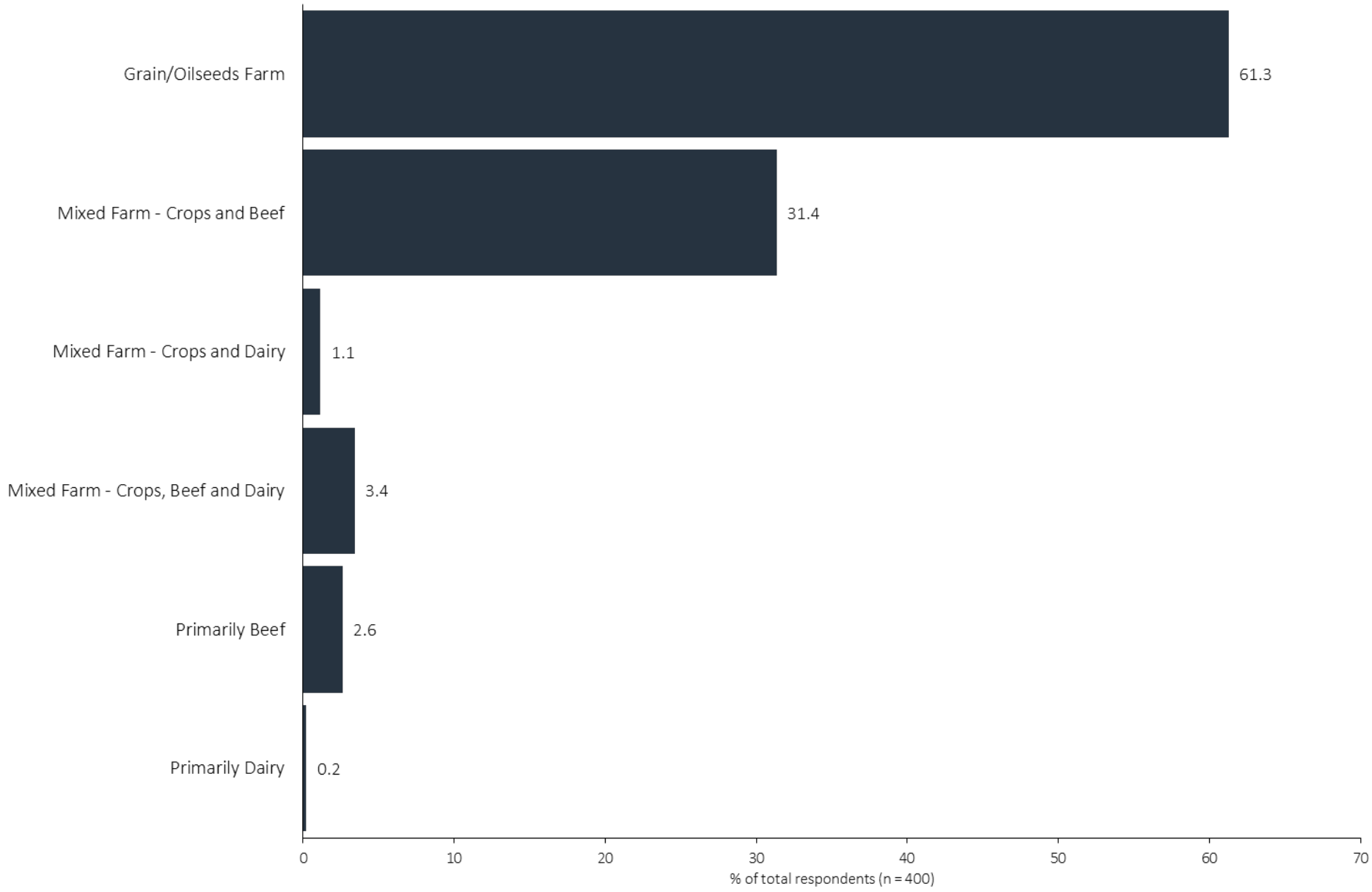
Profile Of A Plastic Baler Twine User Versus A Non-User

	Plastic Baler Twine User n=174	Did Not Use Plastic Baler Twine n=226
Main Farm Type		
Primarily Crop Production	29%	87%
Mixed Farm – Crops and Beef	65%	12%
Grow forage crops	42%	10%
Farm Size (Acres)		
Average 2023 Crop Acres	3,056	3,109
Other Types of Ag Plastics Used		
Grain bags	29%	35%
Bale wrap	30%	8%
Silage plastic	41%	10%
Net Wrap	64%	18%
Region		
South	39%	28%
Central	40%	42%
North	21%	29%
Average Age	58	57

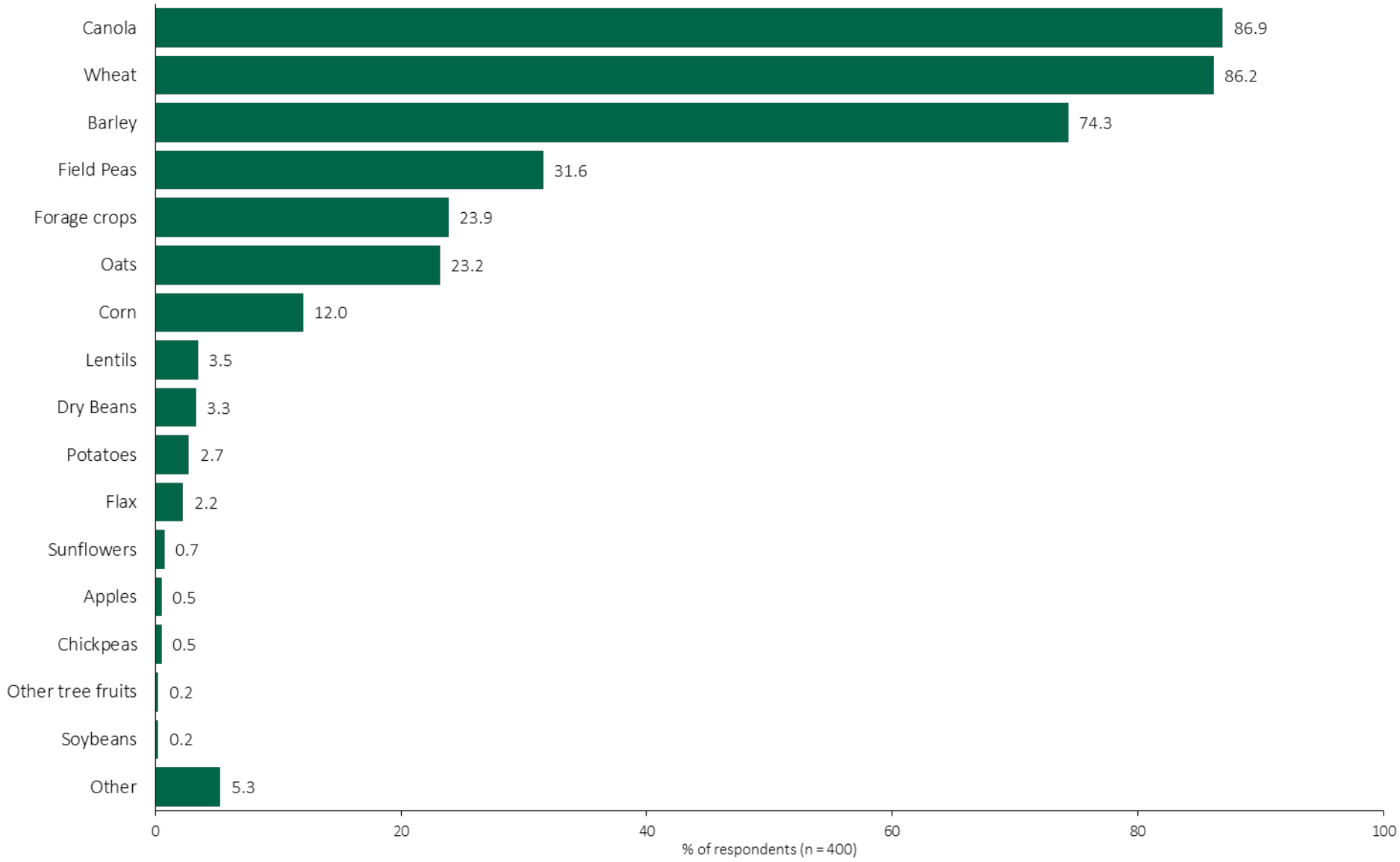
Profile Of A Plastic Baler Twine User That Participates In The Pilot Program Versus Plastic Baler Twine Users That Don't

	Plastic Baler Twine Users That Participate In Plastic Baler Twine Pilot Program n=78	Plastic Baler Twine Users That Do Not Participate In Plastic Baler Twine Pilot Program n=96
Main Farm Type		
Primarily Crop Production	32%	26%
Mixed Farm – Crops and Beef	59%	69%
Grow forage crops	45%	40%
Farm Size (Acres)		
Average 2023 Crop Acres	3,697	2,540
Other Types of Ag Plastics Used		
Grain bags	28%	31%
Bale wrap	27%	32%
Silage plastic	36%	45%
Net Wrap	63%	66%
Region		
South	44%	35%
Central	44%	36%
North	11%	29%
Average Age	59	57

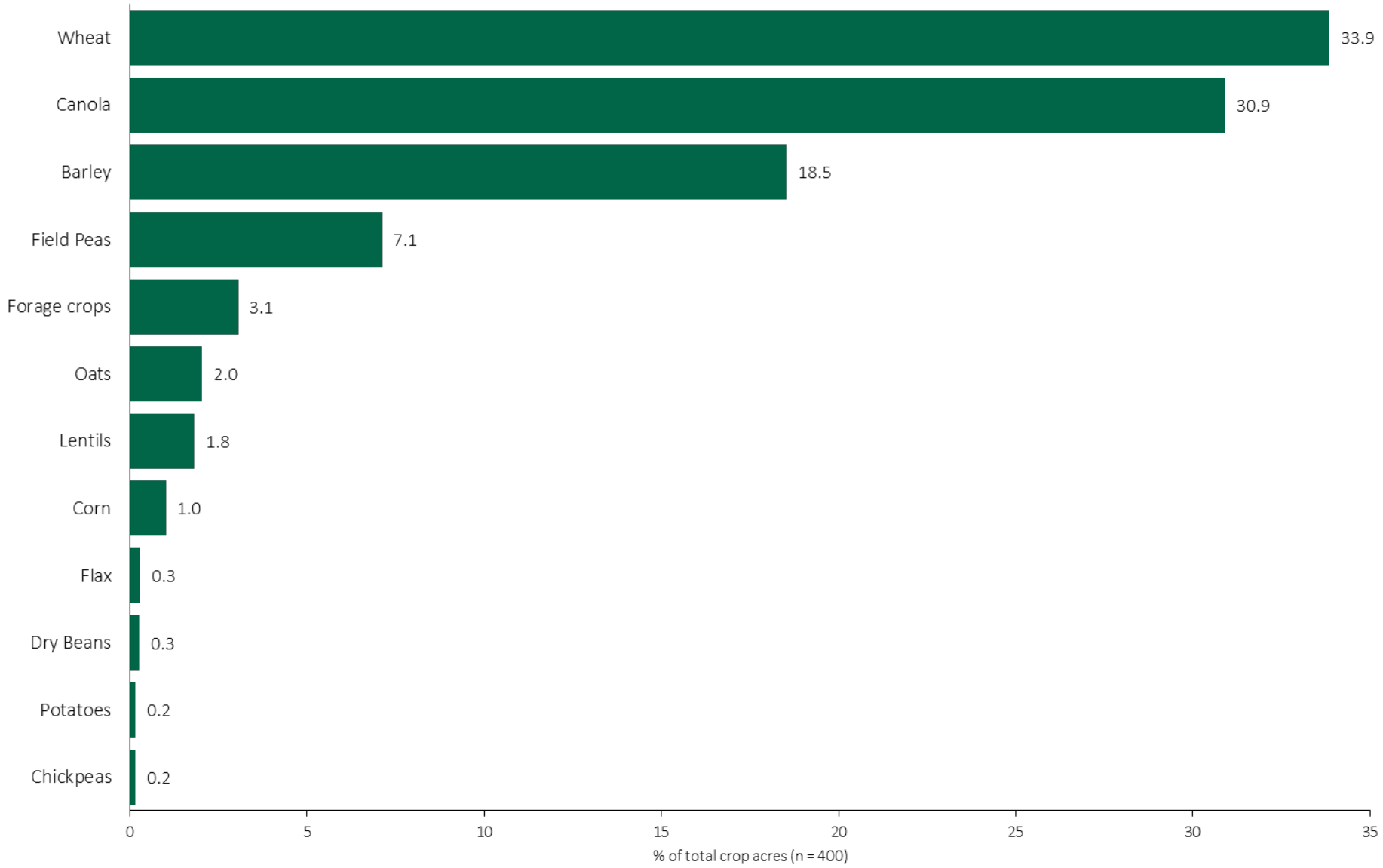
Primary Operation



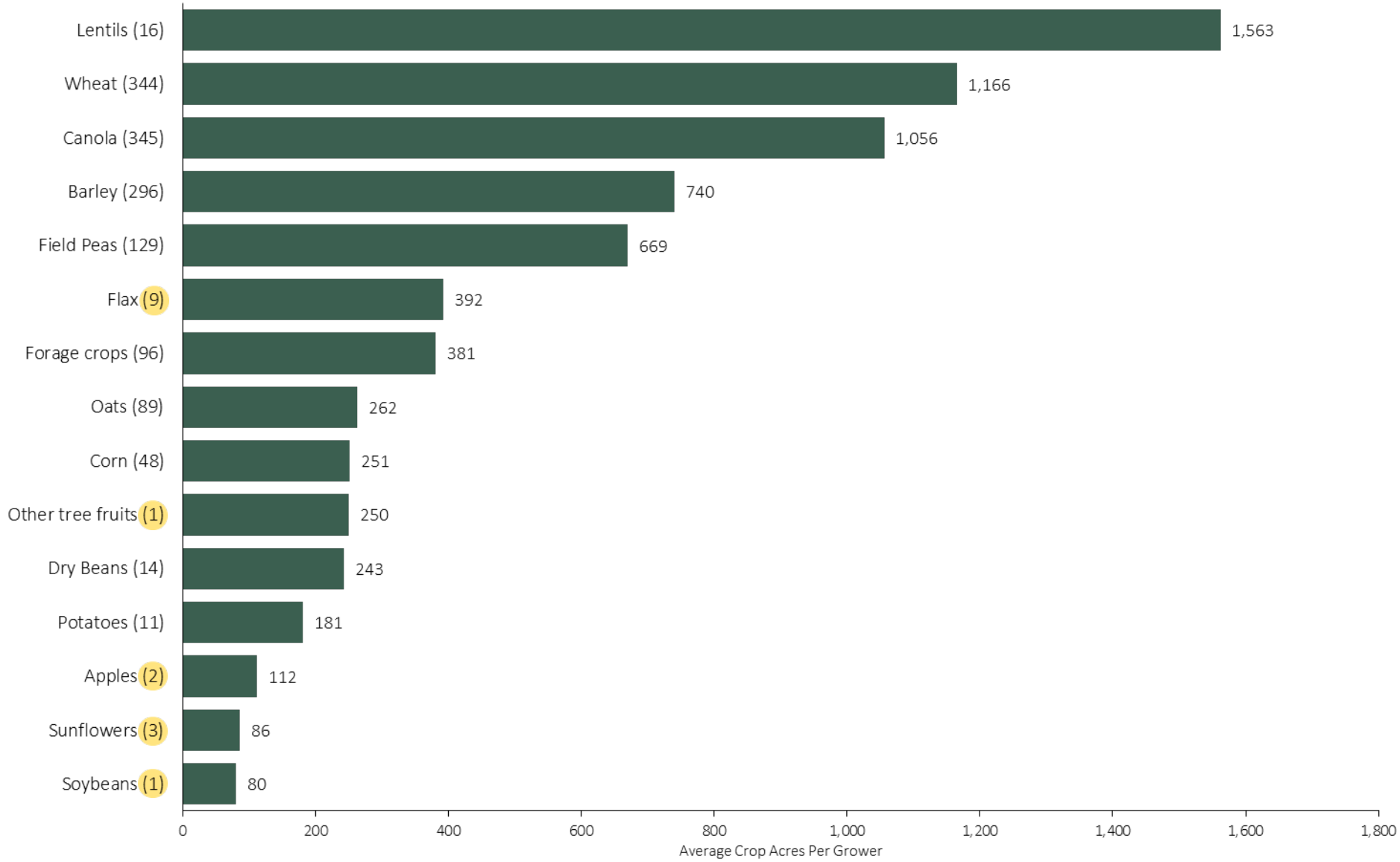
Crops Grown in 2023



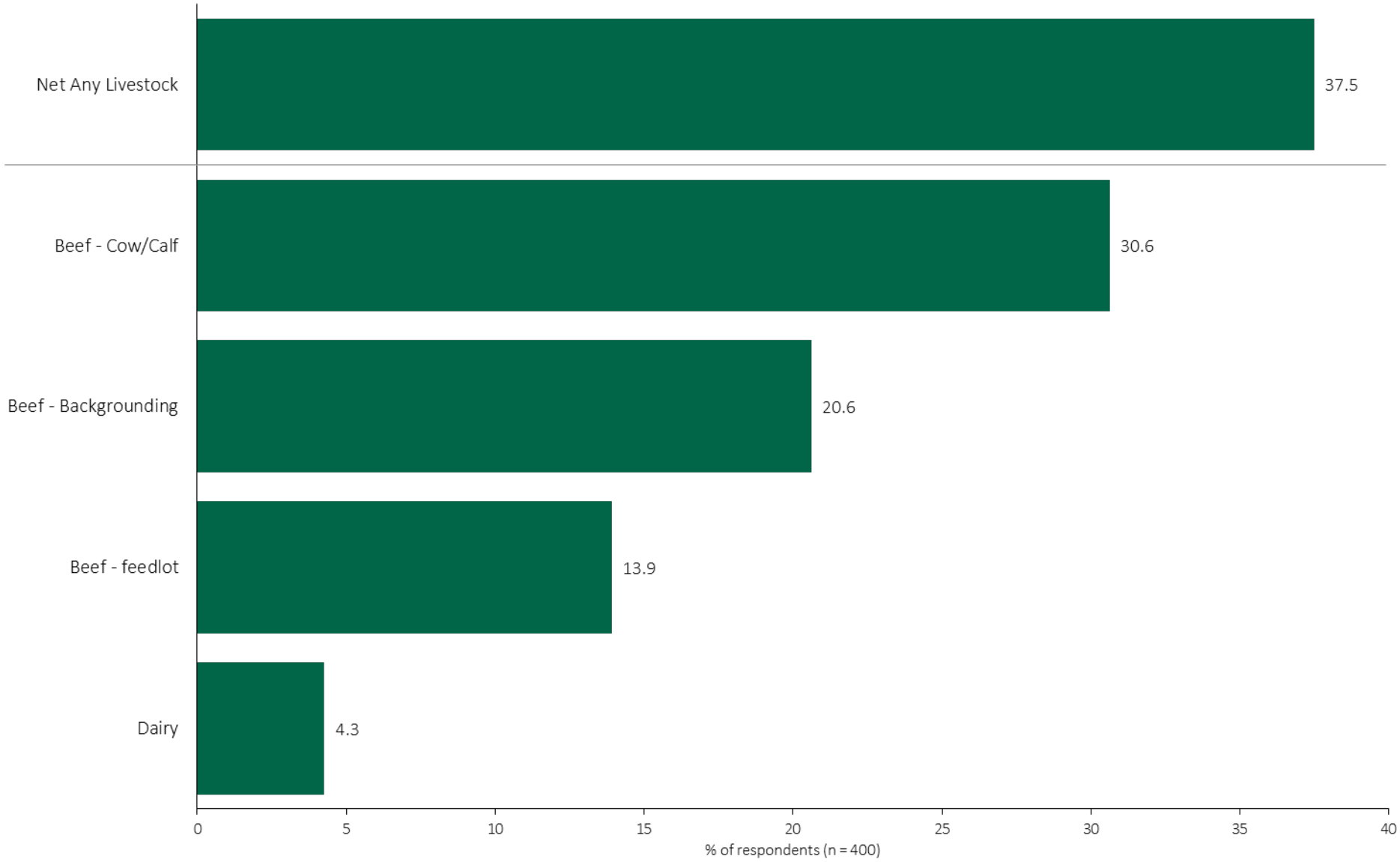
Crops Grown - % of Total 2023 Crop Acres



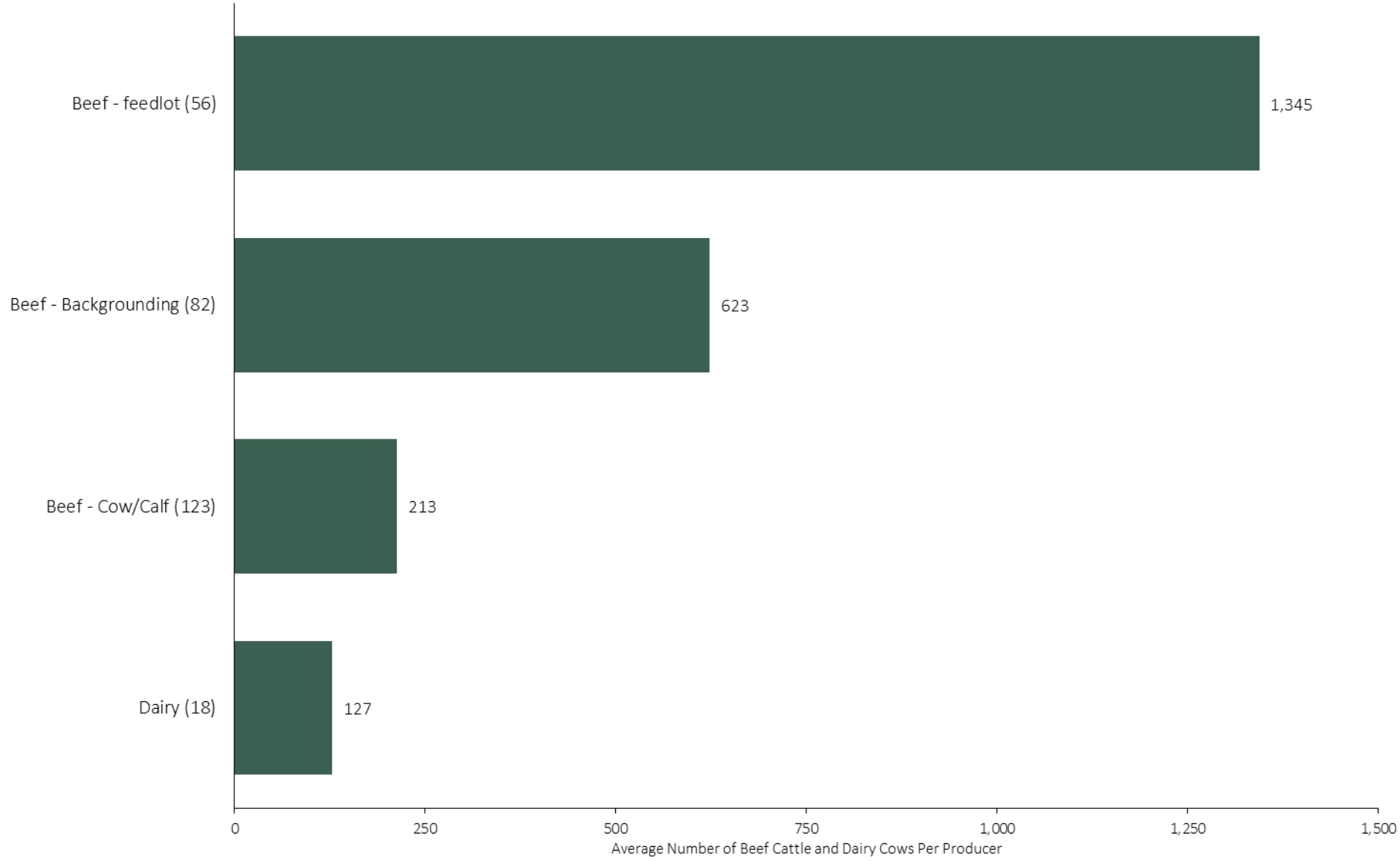
Acres Planted with Crops in 2023 - Average Acres/Grower



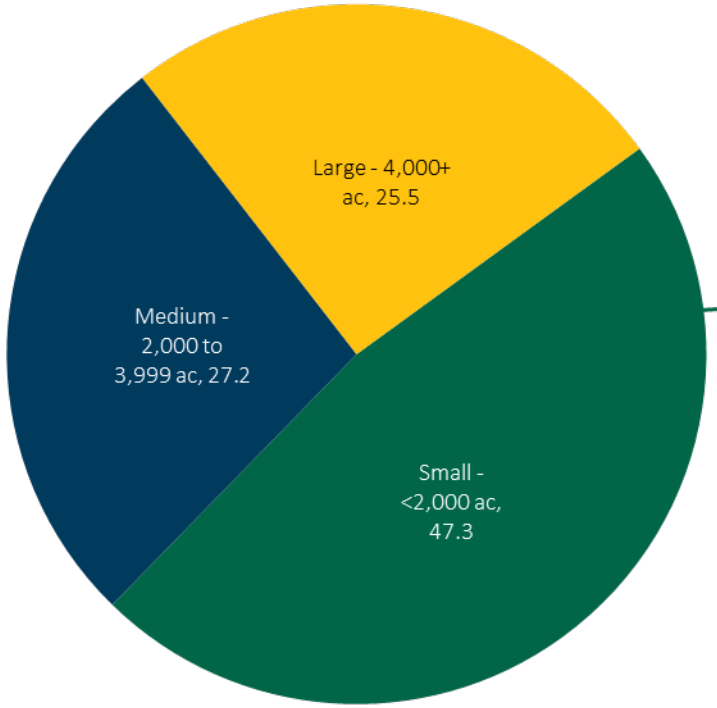
Percentage of Farms That Had Livestock (beef or dairy)



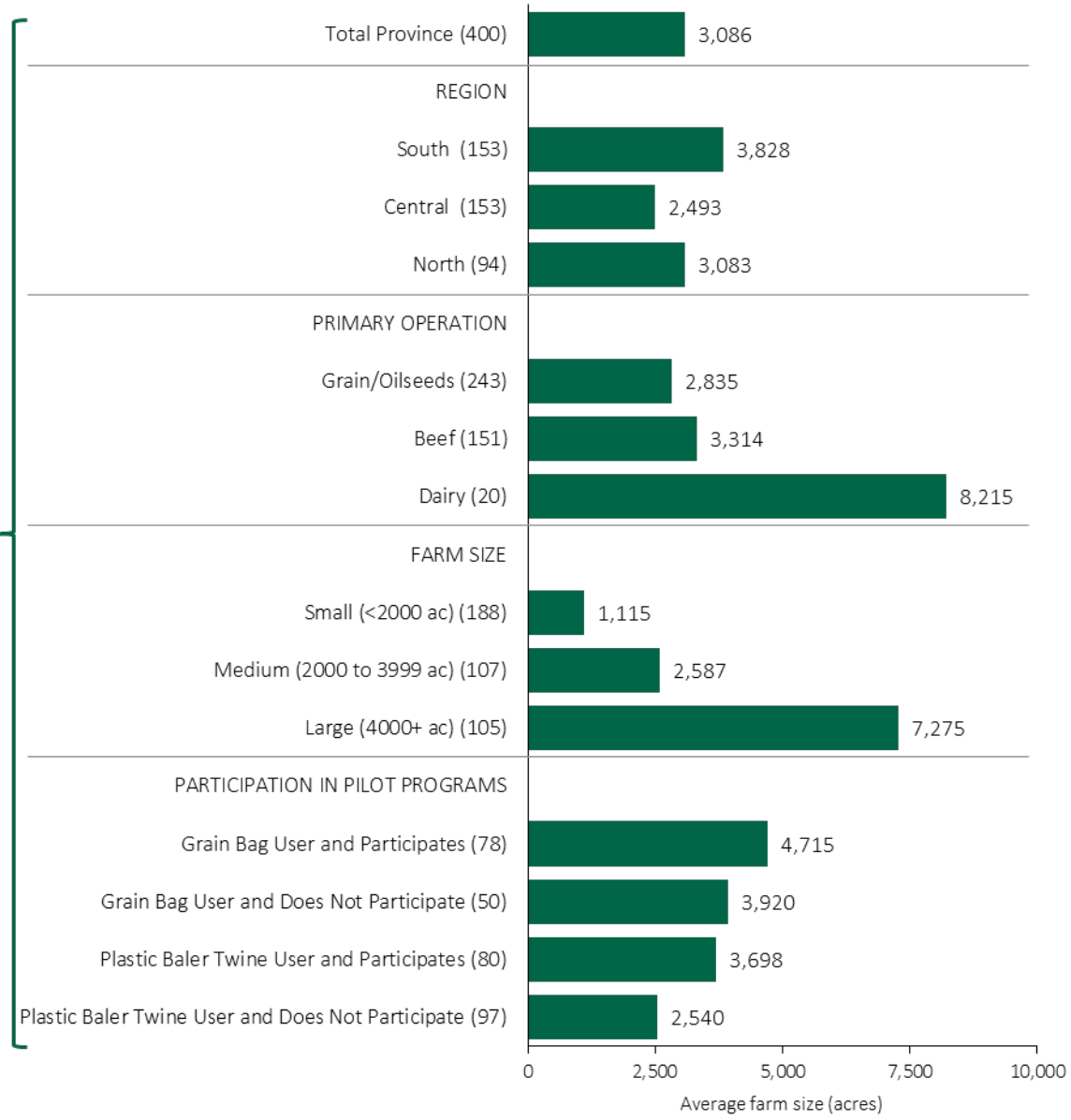
Average Number of Beef Cattle and Dairy Cows in 2023



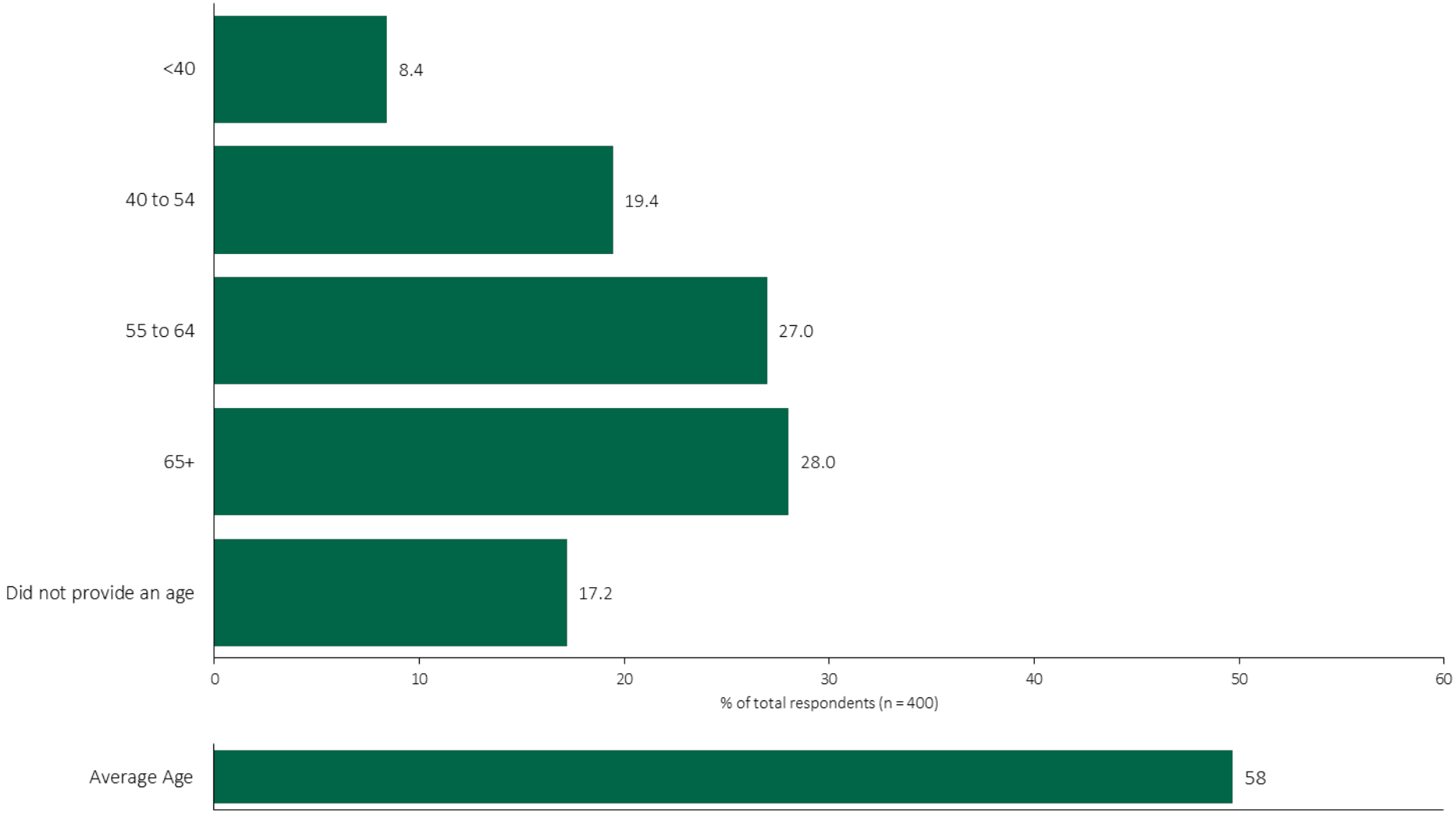
Distribution by Farm Size (Average Crop Acres)



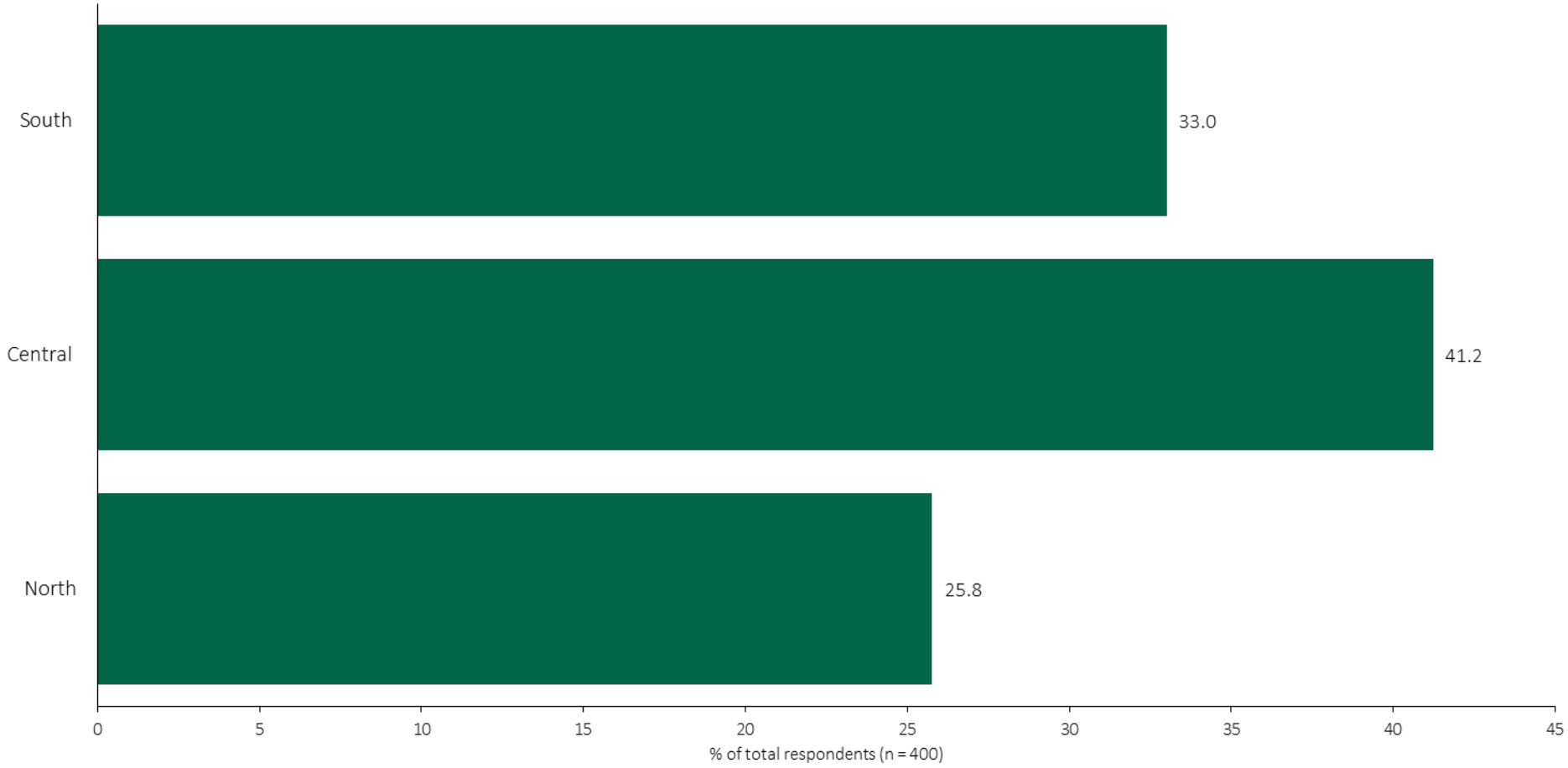
% of respondents (n = 400)



Age


<40
8.4
40 to 54
19.4
55 to 64
27.0
65+
28.0
Did not provide an age
17.2
0
10
20
30
40
50
60
% of total respondents (n = 400)
Average Age
58

Geographic Distribution By Region (Weighted)



Comments About Ag Plastics Management Programs

- At the end of the survey, respondents were asked: "Please use the box below if you have any comments you would like considered as ag plastics management programs are developed."

- The embedded Excel sheet captures the comments as well as the percentage of farmers who made each comment. The main comments were:
  - Make recycling easy and practical – will encourage recycling
  - Difficult/not practical to keep plastics clean enough for recycling
  - Farmers shouldn't bear the full cost of recycling ag plastics
  - Want local collection sites

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2023 Alberta Farmer Tracking Survey

Final Report