BlacksheepStrategy

CleanFARMS
Ontario Farmer Survey

Final Report

January 13, 2011

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CleanFARMS Ontario Farmer Survey

Executive Summary

Executive Summary

This document presents the results of a survey of Ontario farmers, conducted in November 2010. The overall purpose of the research was to gain insight into farmers' behaviours and attitudes related to agricultural waste and recycling, in order to build a base of knowledge to help meet CleanFARMS' objectives.

A quantitative telephone survey was undertaken, targeting 328 farmers in Ontario. The survey was conducted in November 2010. A sample of this size provides a margin of error of +/- 5.4% at the 95% confidence level. This means that for a given result, we can be 95% confident that the survey result is within 5.4% 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 is narrower for percentages above or below 50%.

The sample included about 37% of growers with primarily crop operations, 36% with mixed crops and livestock, 18% with primarily livestock, 5% with horticultural operations, 6% with fruit, and 2% with greenhouse, nursery or other. Average acreage within the sample was 362.

Executive Summary

Waste generation

The most common types of waste materials generated on farm include:

- Waste oil and filters (79% of respondents generate in a typical year or have on farm)
- Plastic oil or antifreeze containers (76%)
- Unwanted tires (69%)
- 10L size-range (under 23L) pesticide containers (66%)
- Empty seed bags (63%).
- Around half of farmers also generate or have plastic or cardboard packaging from agricultural products or pesticides and unwanted paint and solvents.

The least common waste materials include: used irrigation drip pipe, used plastic mulch film, used bird netting, greenhouse film, and greenhouse pots and trays.

Executive Summary

There are some geographic differences in the portion of farmers who have the various waste materials, with farmers in Eastern, Central and Northern Ontario tending to have more of certain the materials. In particular, Eastern and Northern Ontario farmers have more livestock-related waste products. Central Ontario respondents have more machinery-related waste materials such as antifreeze, oil and containers for these products.

Respondents were asked how they dispose of each of the waste materials they have on their farm. Following are the ways that the most predominant materials are disposed of:

- Waste oil and filters - Reuse (26%), collection site (21%), town landfill (10%)
- Plastic oil or antifreeze containers - Town landfill (25%), collection site (24%), town recycling (21%)
- Unwanted tires - Collection site (24%), town landfill (17%), town recycling (12%), reuse (12%), store to deal with later (12%)
- 10 L size-range containers - Return to a collection site (83%)
- Empty seed bags - Burn (57%), reuse (15%)

Executive Summary

Attitudes towards waste disposal

Farmers consider responsible disposal of waste to be a highly important issue, with 100% agreeing (83% strongly) that responsible disposal of agricultural waste is very important.

There is moderate agreement that the agricultural industry is doing enough to ensure that there are responsible ways to dispose of their products. However, 17% disagree (7% strongly and 10% somewhat) that the industry is doing enough.

Just over 1 in 5 farmers have waste materials on their farm of which they are unsure of how to safely dispose. There is not any one type of waste product that stands out, with 3% mentioning plastic wrap, 3% mentioning oil, and 2% mentioning a variety of other materials.

Over half of farmers say they are not comfortable burning or putting certain wastes in the landfill, but don't see an alternative. This seems to indicate a significant level of engagement and concern about this issue.

Executive Summary

Container recycling – awareness of collection program and disposal methods

Among those farmers who generate 10L size-range containers, 90% are aware that there is a collection and recycling program for these containers. Awareness is high across the various segments, but especially high among horticultural, fruit and vineyard operations.

Concerning how they dispose of their empty 10L containers, 86% take at least some of their containers to a collection site. About 17% of farmers save up their containers to deal with later. Just over 1 in 10 farmers reuse some of their containers, and about the same portion burn some of their containers. Some containers also get taken to the landfill, with about 6% of farmers saying they do this with some containers.

Sixty percent of Ontario farmers return 100% of their jugs. However, 40% return less than 100%, and 22% don't return any.

Including all farmers who generate these jugs and considering those who don't return any as well as those who return some or all, survey results indicate that on average, 76% of jugs are returned.

Executive Summary

Those whose operations are “primarily livestock” but who do generate 10L containers on their operation, are less likely to return empty containers. We would expect, however that these type of operations might typically produce fewer containers.

Although the number of horticultural operations in the sample is small, it appears that they are more likely than other types of operations to return more containers.

There is a slight tendency for farmers in higher age categories to return more containers, and Southern, Central and Western Ontario farmers return a higher portion of containers, on average.

Executive Summary

Container recycling – what motivates farmers to return their containers?

About 40% of farmers who return their containers are primarily motivated by a desire to be environmentally responsible – they feel that returning containers is just “the right thing to do.” Another 9% cite a related reason of liking the idea of recycling and making something new out of the used materials.

About 30% return their containers because it is simple for them to do so. Basically, it is more convenient to return the containers than to do anything else with them.

About one in ten want the containers off their farm due to safety concerns, and about the same portion return their containers because it cleans up the farm and frees up space.

There is a group who say they return their containers because they don’t like the alternative of burning (9%) or putting them in the landfill (5%). Only a small portion of farmers are motivated to return their containers out of a feeling of compulsion or fear of breaking the law (4%).

Executive Summary

Those who do not return 100% of their containers were asked why. About two-thirds indicate that they reuse some of their containers. Many of these are reusing some containers for holding oil, fuel or water, or storing other materials. Another smaller segment said they didn't return some containers because they couldn't get them clean.

About one in five farmers who generate 10 litre containers do not return any containers. About a quarter of these farmers feel that it is not convenient to return any of their containers. Most of these mention that the site is too far away. About one in six of those who don't return any containers are unsure where to take the containers, or weren't aware there was a recycling program.

When asked what would encourage them to return more containers, the largest portion of respondents mentioned having closer or more convenient sites.

Executive Summary

Analysis shows a strong correlation between distance to site and portion of containers returned: the closer the site, the higher the portion returned. Among those whose site is 10 km away or closer (and who know where the site is), 93% of containers are returned.

There is high correlation between certain attitudes and likelihood of returning containers. The attitudes that farmers agree most strongly with, and that are highly correlated with returning containers include:

- Returning and recycling containers demonstrates that you have good stewardship practices
- Burning the plastic jugs can be harmful to people and the environment
- I would expect that returning pesticide containers is common practice among the farmers in my province

Almost all feel that their retailers are supportive of container recycling, and only about one in ten indicate that their retailer won't take jugs back if they weren't purchased there.

Executive Summary

Unwanted or obsolete pesticides

About 21% of respondents generate unwanted pesticides in a typical year or have unwanted pesticides on their operation, and 15% currently have unwanted pesticide. About 60% of farmers with unwanted pesticides say these pesticides are 3 years old or less.

The vast majority of farmers who have unwanted pesticides are aware of the pesticide collection program. Only 3% of all respondents had unwanted pesticides but were not aware of the program.

When asked how often they would accumulate enough unwanted pesticides that they would want to dispose of them, about 40% indicated that they would want to dispose of unwanted pesticides every 2 to 3 years, while another 26% said every 4 to 5 years, and 21% said every year.

We estimate that Ontario farmers have approximately 258,000 litres plus 21,000 kg of unwanted pesticide on farm. Note that this is a midpoint of a range, and when we apply the margin of error to these numbers, we obtain a range of between 169,000 and 346,000 litres and 10,000 and 32,000 kg.

Executive Summary

Communications

When asked where they are most likely to find out about recycling or safe disposal programs, the most common responses were: farm newspapers, crop input retailers, or farm magazines.

When asked to rate the usefulness of a list of information sources, farm newspapers and magazines were most highly rated, followed by crop input retailers. Other farmers are also seen to be a useful source of information.

CleanFARMS Ontario Farmer Survey

Discussion and Implications

Discussion and Implications

Which waste materials are best candidates for increased disposal alternatives?

This survey did not address volume, so there may be some materials that are a problem, even though a comparatively low portion of farmers have them. The survey did not take into account the toxicity or harmfulness of particular materials ending up in landfill or being burned, so again, even if there is a low portion of farmers with certain materials, there may be other reasons to consider a particular material a priority.

Based on the more prevalent waste materials, combined with looking at how these items are disposed of, it appears that a disposal program is more urgently needed for:

- Plastic oil and antifreeze containers - a high portion has them, and 40% get burned or put in landfill
- Empty seed bags - a high portion has, and two-thirds get burned or put in landfill
- Plastic wrap or packaging - a high portion has, and most gets put in landfill or burned

Discussion and Implications

- Cardboard packaging from pesticides and other products - a high portion has, and a high portion gets burned
- Twine or net wrap - a high portion gets put in landfill or burned
- Sharps or needles – a lower portion has, but a high portion gets put in the landfill
- Empty feedbags – a lower portion has, but a high portion gets burned or put in the landfill
- Plastic wrap from hay or silage bags – a lower portion has, but there might be a high volume based on the quantity of plastic wrap that would be generated, and most of it is burned or put in landfill
- Empty plastic livestock disinfectant containers and unwanted animal pharmaceuticals – about a third is burned or put in landfill
- Styrofoam packaging – although only 17% generate, about two-thirds ends up in landfill or being burned

Discussion and Implications

Farmers specifically mention being concerned about disposing of plastic wraps and oil, two of the materials identified above.

Farmers in Northern and Eastern Ontario are more likely to dispose of their unwanted materials by taking them to the landfill. It may be that these farmers are more remote from collection or safe disposal sites. Other collection alternatives might be considered for these farmers.

Those with livestock operations have specialized needs, including the need to responsibly dispose of plastic bale and silage wrap, plastic disinfectant and cleaning containers, sharps and needles and pharmaceuticals.

Farmers have a high level of concern for responsible disposal of waste agricultural products, and it appears they would be open to disposal programs that are convenient and accessible.

The survey sample did not include sufficient numbers of greenhouse, horticultural, vineyard or orchards to draw strong conclusions – research specifically with these segments could be conducted to explore their particular needs and concerns.

Discussion and Implications

Container recycling

The survey results suggest that 76% of jugs are returned. About 20% of farmers don't return any jugs. For these growers, distance from collection point appears to be the main issue. It is significant that the closer the collection point, the higher the portion of jugs returned, so in areas where distance is an issue, consideration should be given to setting up alternative collection points. Possibly, a periodic mobile collection option could also be considered.

There are some strong intangible motivators for returning containers – including the motivation to "do the right thing" and take care of the environment. Combined with this is the preference for making something new out of waste items, not wanting to burn or increase the landfill, and safety concerns. Interestingly, the "practical" aspect of cleaning up the farm and getting the containers out of the way is only mentioned by about one in ten farmers.

Discussion and Implications

A lower portion of containers is returned in Northern and Eastern Ontario, suggesting that CleanFARMS could look at whether it needs to increase the number of collection points. Possibly, specific communications targeted into these areas may also be warranted.

For a small portion of those who don't return any containers, awareness is an issue. However, this only amounts to a very small portion of farmers over all, and the vast majority are aware of the program and of the location of collection sites near them.

Aside from ensuring that there is a convenient collection point close to all farmers, there were only a few other suggestions as to how to increase participation – including allowing farmers to return containers "as is" or having some kind of deposit or incentive. A very low portion suggested these ideas.

Discussion and Implications

For a few, there is an issue of not being able to get the container clean, with some saying that they would be more likely to return containers if CleanFARMS would take the containers as is. Perhaps there really are certain pesticides that are extremely difficult to rinse completely out of containers – perhaps the program could be modified to accept the containers in some cases.

It appears that there is sufficient communication about the container recycling program, with only a very small number saying that they needed more notice or communication of the program. As noted above, some targeted communication into Northern and Eastern Ontario might be considered.

It appears that retailers are on-side, with the vast majority of respondents saying that their retailer encourages container return.

Discussion and Implications

Pesticide Collection

About 15% currently have unwanted pesticides on their farm, and the majority of these are under three years old. This does not appear sufficient to warrant another collection program at this time. Most farmers thought a program should be held every 2 – 3 years or every 4 – 5 years.

The results show that most growers who generate unwanted pesticides know about the pesticide collection program. It appears that most are willing to use the program, and the primary reason that they don't return the pesticides is that they think they might eventually use the pesticides.

CleanFARMS could also develop an ongoing process to track need – perhaps a "registry" where farmers could go to indicate that they have unwanted pesticide (perhaps this is already done). Farmers could update their entries from year to year, if they end up using the pesticide. In this way, CleanFARMS would have an ongoing "inventory" of unwanted pesticide and a way of gauging when it is time to run the program again.

Discussion and Implications

Communications

For future communications about recycling and safe disposal programs, farm publications would be most effective. Ensuring that retailers know all the disposal options is also key, as they are a primary information source and considered to be among the most useful sources.

CleanFARMS
Ontario Farmer
Survey

Introduction

Introduction and Objectives

This document presents the results of a survey of Ontario farmers, conducted in November 2010. The overall purpose of the research was to gain insight into farmers' behaviours and attitudes related to agricultural waste and recycling, in order to build a base of knowledge to help meet CleanFARMS' objectives. More specifically, this research set out to:

- Understand what agricultural wastes need to be managed, and how farmers currently dispose of / recycle specific waste products
- Determine farmer's awareness and attitudes towards pesticide container recycling program, to provide input into what action is required to achieve 80 per cent container return rate
- Examine the need for another wave of the obsolete collection program
- Explore information sources and preferences

Introduction and Objectives

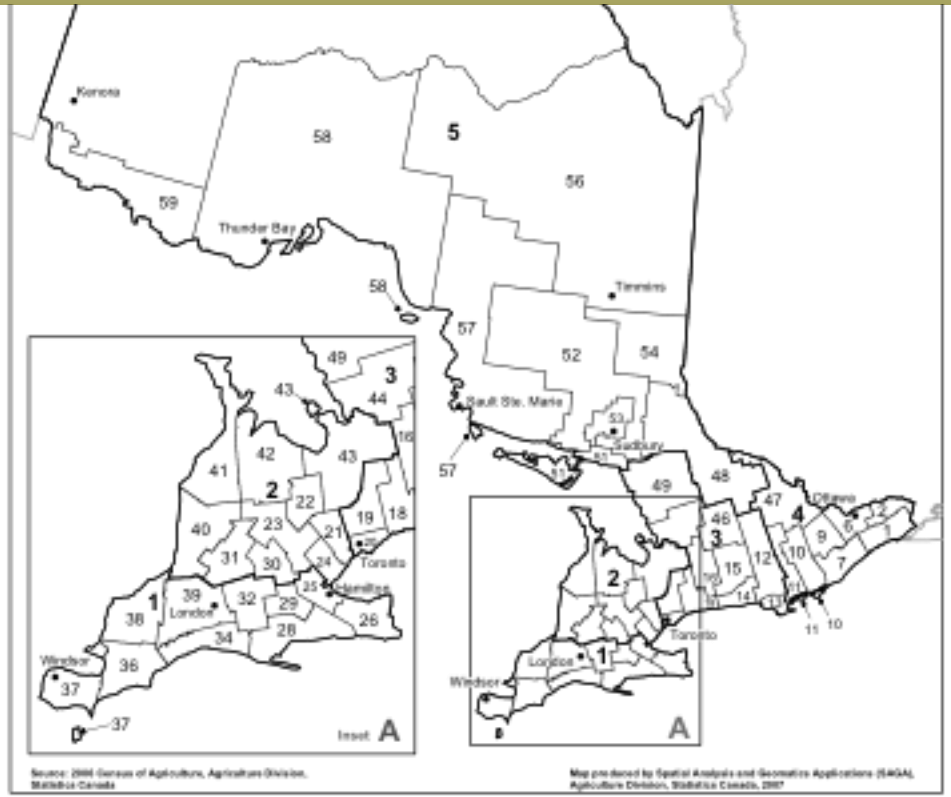
To address these research objectives, a quantitative telephone survey was undertaken, targeting 328 farmers in Ontario. The survey was conducted in November 2010.

The survey targeted a representative distribution of farmers from all growing areas in Ontario. We weighted the final data to ensure that the results are truly representative based on 2006 Census data. Following are both the weighted and un-weighted distribution by census agricultural region.

Regional distribution

N=328	Weighted	Un-weighted
Southern Ontario (CAR 1)*	34%	37%
Western Ontario (CAR 2)	32%	32%
Central Ontario (CAR 3)	15%	15%
Eastern Ontario (CAR 4)	16%	12%
Northern Ontario (CAR 5)	4%	4%

* See Census Ag Region reference map on the following slide


Kenora
Thunder Bay
Timmins
Sault Ste. Marie
Sudbury
Ottawa
Toronto
Hamilton
London
Windsor
Inset: A
A
Source: 2006 Census of Agriculture, Agriculture Division, Statistics Canada
Map produced by Spatial Analysis and Geomatics Applications (SAGA), Agriculture Division, Statistics Canada, 2007

Accuracy of this research

A total sample of 328 out of 57,211 farms in Ontario (2006 Census) provides an overall level of accuracy of +/- 5.4% at the 95% confidence level. . This means that for a given result, we can be 95% confident that the survey result is within 5.4% 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 is narrower for percentages above or below 50%.

On a regional level and based on farm type, the accuracy ranges from +/- 9% to +/- 12% at the 95% level. Differences between regions, farm type and farm size were analyzed, and where these differences are statistically significant and notable, they are described in this report.

Respondent Profile

As seen on the following slide, over a third of respondents had crop only or mixed crop and livestock operations, while about one in five respondents had primarily livestock. Small portions of the sample had horticultural, fruit or greenhouse or other types of operations, reflecting the actual distribution of these types of operations within the Ontario farm population.

Acreage ranges from 1 to 4,500, with average acreage being 362.

Just over half (55%) have livestock. Among those with livestock:

- 54% have cow/calf (average 106 head)
- 27% have dairy (average 84 head)
- 10% have hogs (average 2030)
- 10% have poultry (average 13,400)
- 12% have other livestock

Respondent Profile

Farm type *	N=328
Crops only	37%
Mixed crops and livestock	36%
Primarily livestock	18%
Horticultural	5%
Orchard, fruit, berries, grapes	6%
Greenhouse, nursery, or other	2%
Farm size	**N=328**
< 125 acres	29%
125 – 249	24%
250 – 499	25%
500+	22%

* Percentages add to more than 100, as multiple responses were allowed

CleanFARMS
Ontario Farmer
Survey

Agricultural Waste

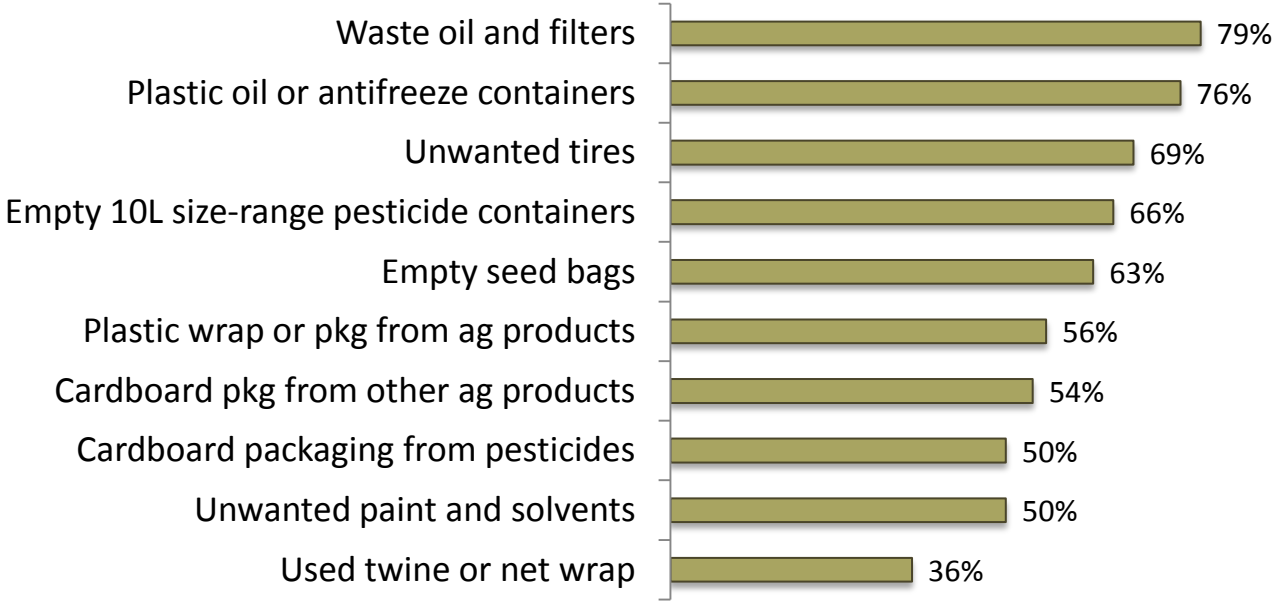
Types of agricultural waste on farms

A list of various types of agricultural waste was read to respondents, and they were asked whether they typically generate each type of waste in an average year, and / or currently have that type of waste on their farm.

Respondents were asked to consider only agricultural waste, as opposed to household waste.

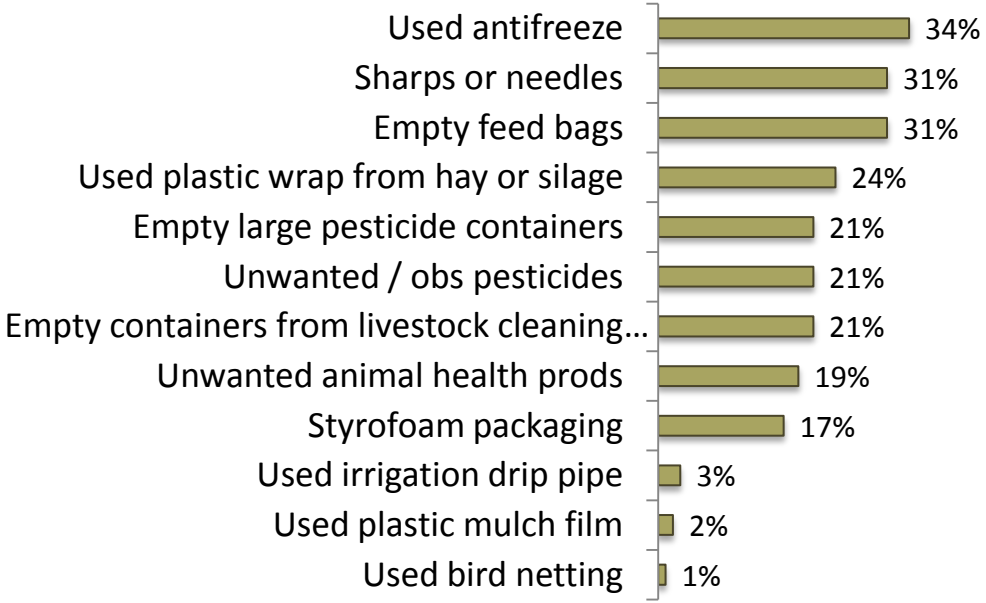
The following slides show the portion of farmers who generate or have each type of waste. We see that waste oil and filters, and plastic oil or antifreeze containers are the most common types of waste generated, followed by unwanted tires, 10L size-range (under 23L) pesticide containers, and empty seed bags.

Types of farm waste generated



N=328, entire sample

Types of farm waste generated (cont.)



Very small portions of the sample used greenhouse film or plastic pots or trays

N=328, entire sample

Types of agricultural waste on farms – segment differences

We saw many differences in between segments, in terms of what kinds of waste are present or generated on farm. The following slides show the segments that are more likely and less likely to have each type of waste.

This information would be important in determining where certain types of waste material are more prevalent and in which sectors, to aid in setting priorities and developing processes for waste collection.

Within the waste materials that are most prevalent, we see the following:

- A higher portion of farmers in Central and Eastern Ontario have waste oil and filters and plastic oil and antifreeze containers on their farms.
- More Eastern and Northern Ontario farmers have unwanted tires.
- Those more likely to generate or have 10L containers include fruit and horticultural operations, those in Southern Ontario, and those with over 500 acres.

Segments more and less likely to generate each type of waste

N=328	Percent who have	Who is more likely to generate or have on farm?	Who is least likely to generate or have on farm?
Waste oil and filters	79%	Central ON, E ON	Fruit
Plastic oil or antifreeze containers	76%	Central ON, E ON, 250 – 499 acres	S ON, < 125 acres
Unwanted tires	69%	E ON, N ON, 250 – 499 acres,	< 125 acres, horticultural
10 litre size range containers	66%	Horticultural ops, fruit, S ON, 500+ acres	Livestock
Empty seed bags	63%	E ON, 125 – 499 acres, mixed farms	N ON, < 125 acres, fruit
Plastic wrap or packaging	56%	E ON, 500 + acres, mixed farms, livestock, horticultural	S ON, < 125 acres, primarily crops, fruit

Continued…

Segments more and less likely to generate each type of waste

N=328	Percent who have	Who is more likely to generate or have on farm?	Who is least likely to generate or have on farm?
Cardboard packaging from other ag products	54%	Central ON, 500+ acres, horticultural	N ON, < 125 acres, livestock
Cardboard packaging from pesticides	50%	500+ acres, horticultural, fruit	N ON, < 125 acres, livestock
Paint and solvents	50%	No significant differences	No significant differences
Used twine or net wrap	36%	C ON, N ON, 250 – 499 acres, mixed farms	< 125 acres, livestock only
Used antifreeze	34%	Central ON, E ON, 500+ acres, mixed farms	W ON
Sharps or needles	31%	E ON, N ON, 500+ acres, livestock	S ON, < 125 acres
Empty feed bags	31%	Central ON, E ON	W ON, N ON, Horticultural

Continued…

Segments more and less likely to generate each type of waste

N=328	Percent who have	Who is more likely to generate or have on farm?	Who is least likely to generate or have on farm?
Used plastic wrap from silage or hay bales	24%	E ON, N ON, 250 – 499 acres, livestock	No significant difs
Drums, totes, shuttles	21%	S ON, 500+ acres, horticultural	Central ON, < 125 acres, livestock
Unwanted pesticides	21%	Fruit	N ON
Empty containers from livestock cleaning products	21%	C ON, E ON, 500+ acres, livestock	W ON, N ON
Unwanted animal health products	19%	E ON, 500+ acres, livestock	W ON, N ON
Styrofoam	17%	250 – 500 acres, mixed farms	Horticultural

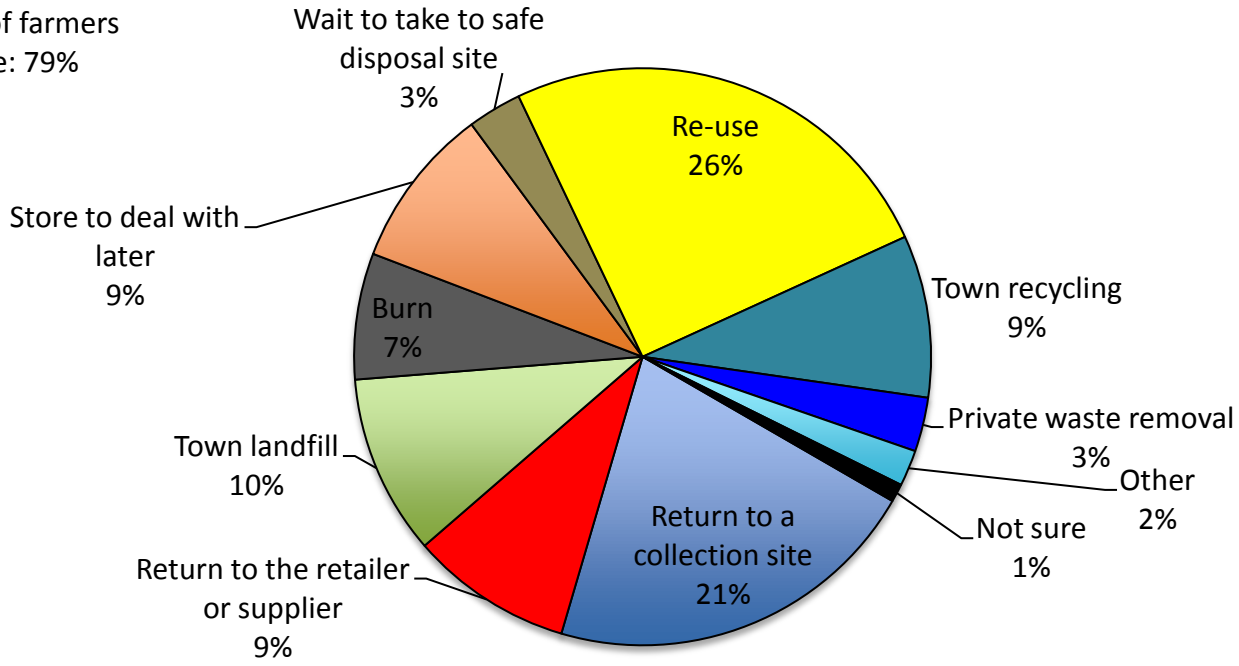
How do farmers dispose of their agricultural waste?

The following series of slides show how farmers dispose of their agricultural waste, through a pie chart showing the portion who dispose of their waste in each way.

The pie slices are colour-coded, so that the same colour always shows the same method of disposal, for easier comparison between types of waste.

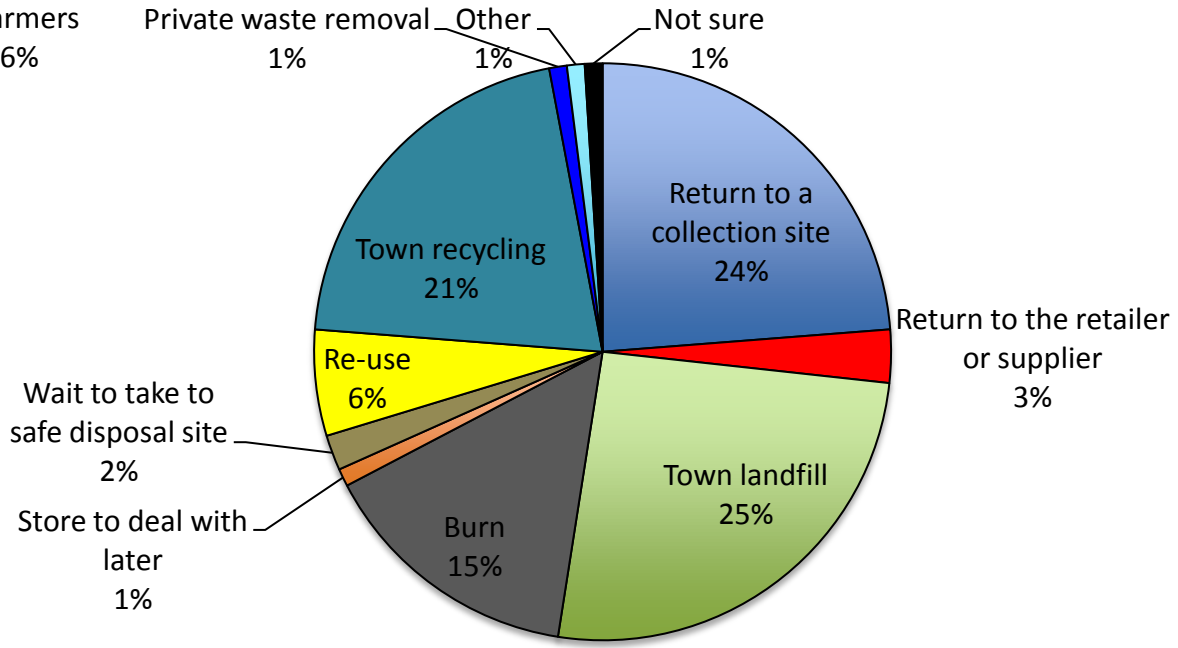
What is done with waste oil and filters?

Portion of farmers who have: 79%
N=259



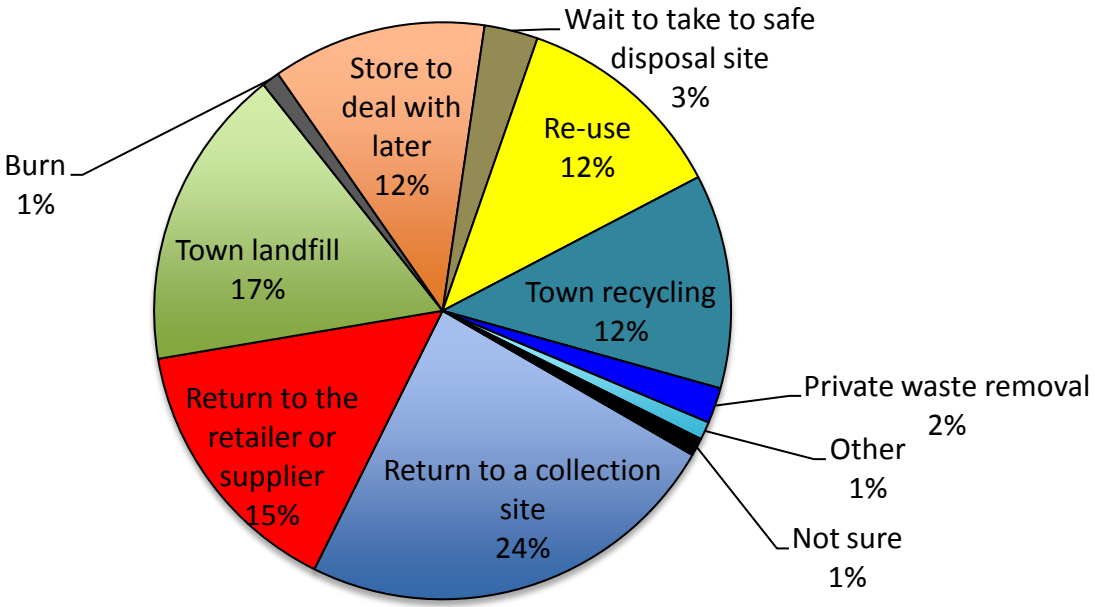
What is done with plastic oil or antifreeze containers?

Portion of farmers who have: 76%
N=248



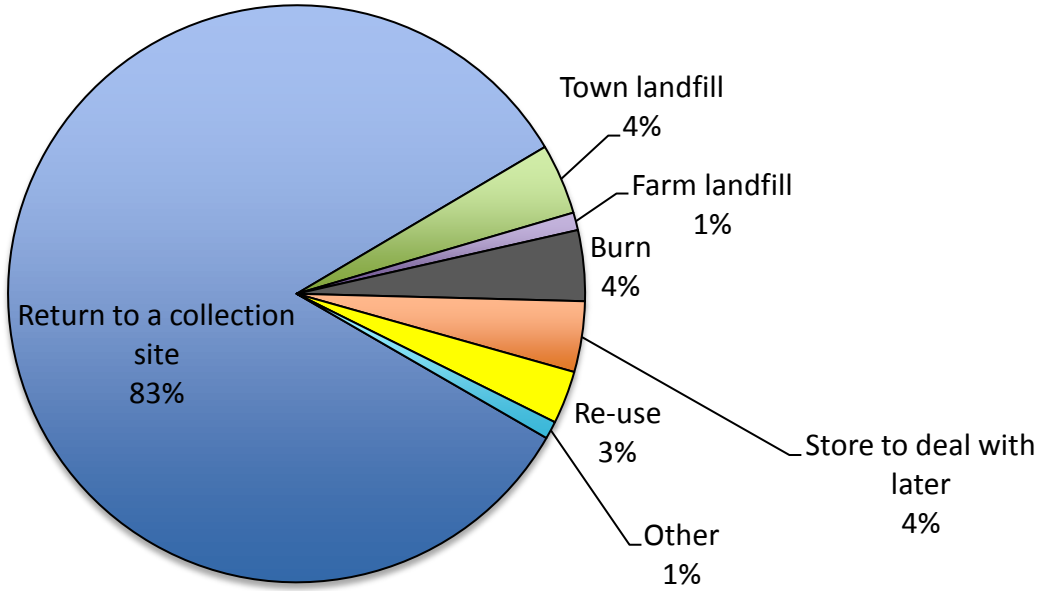
What is done with unwanted tires?

Portion of farmers who have: 69%
N=223



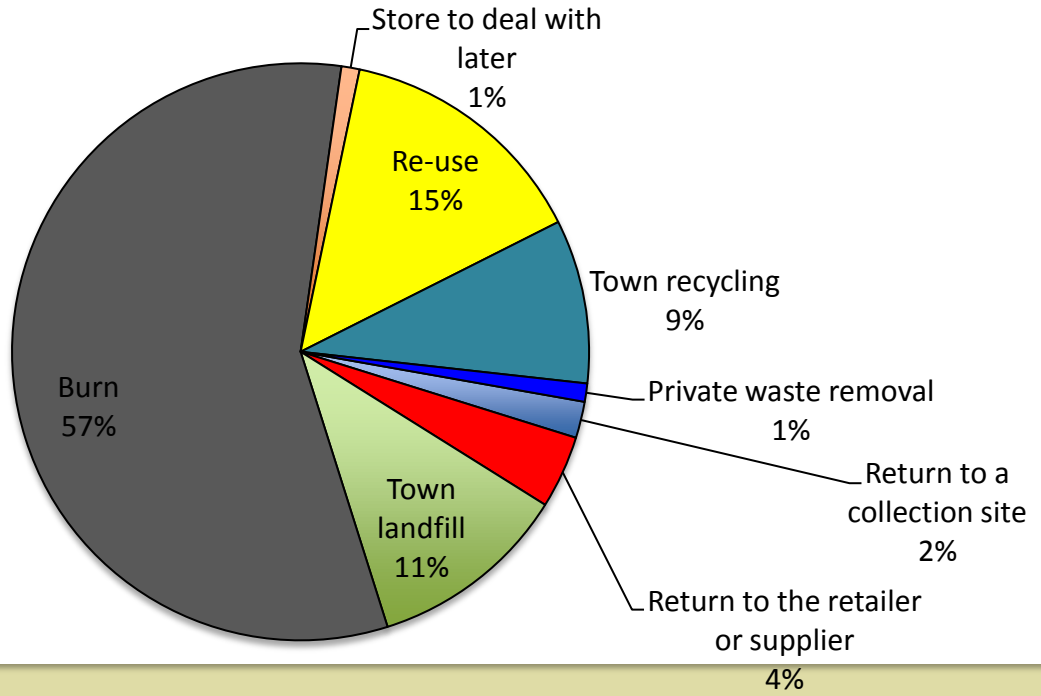
What is done with empty 10L size-range containers?

Portion of farmers who have: 66%
N=217



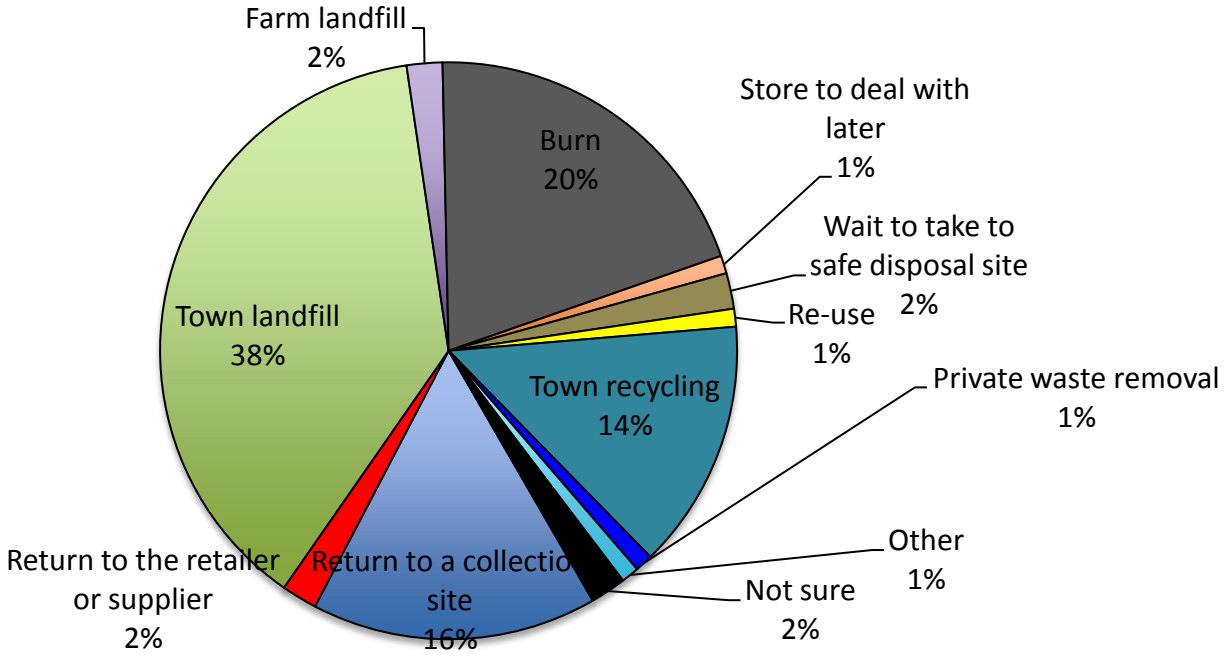
What is done with empty seed bags?

Portion of farmers who have: 63%
N=203



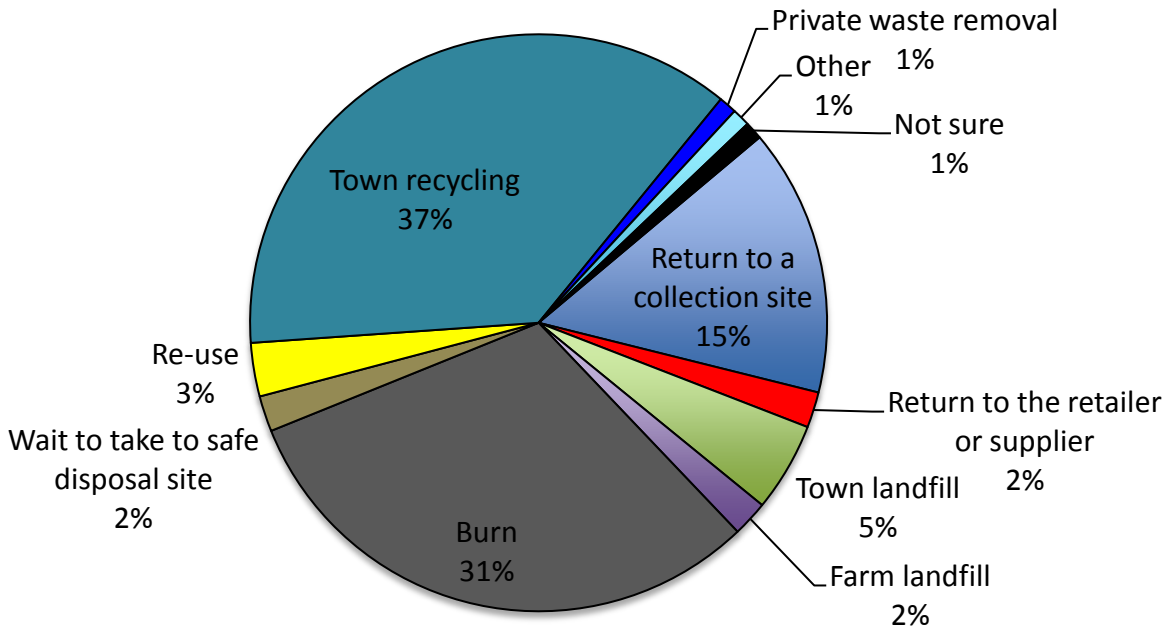
What is done with plastic wrap or packaging from ag products?

Portion of farmers who have: 56%
N=180



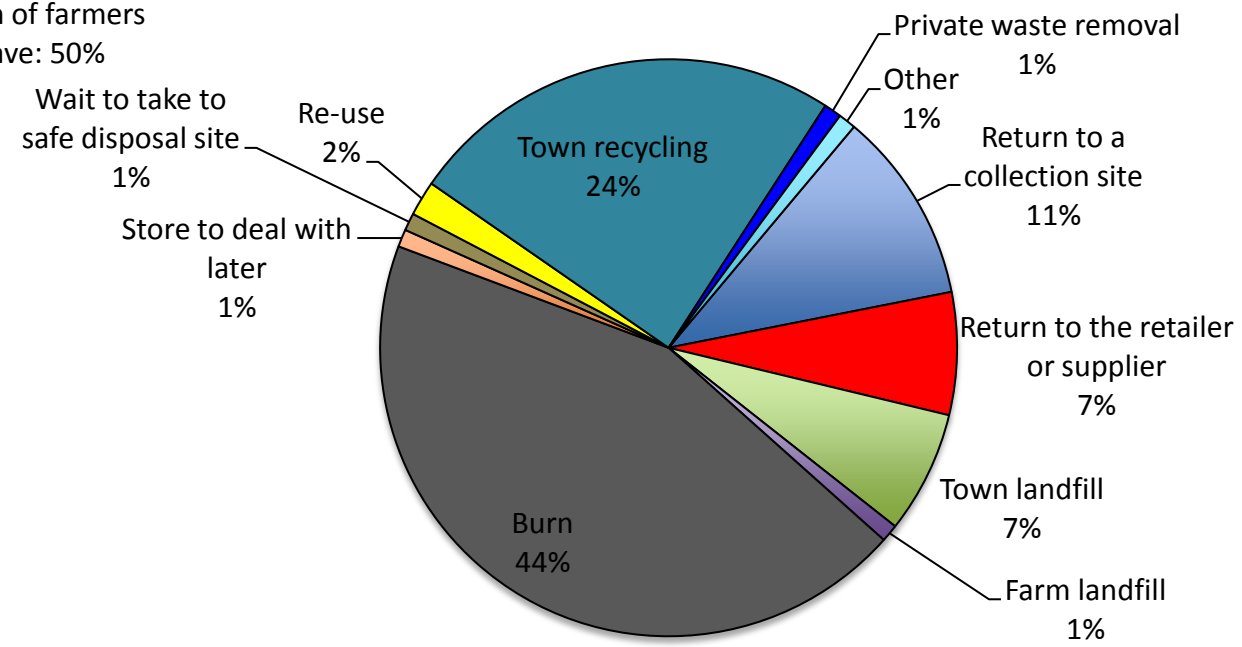
What is done with cardboard packaging from other ag products (not pesticides)?

Portion of farmers who have: 54%
N=176



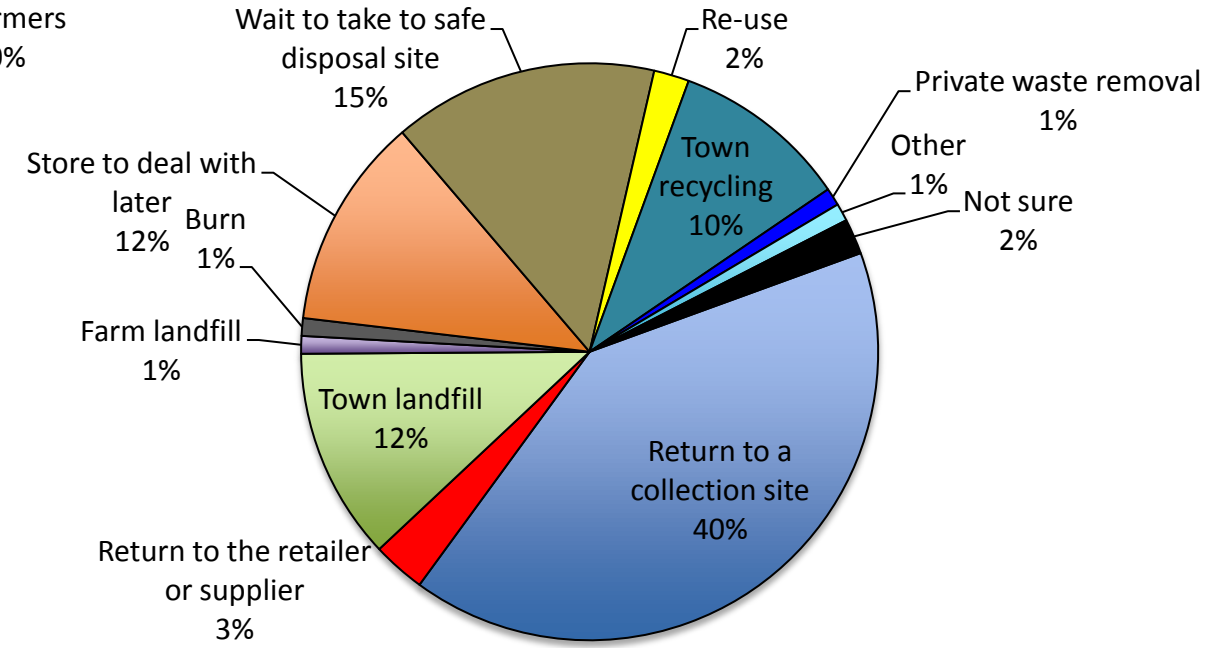
What is done with cardboard packaging from pesticides?

Portion of farmers who have: 50%
N=164



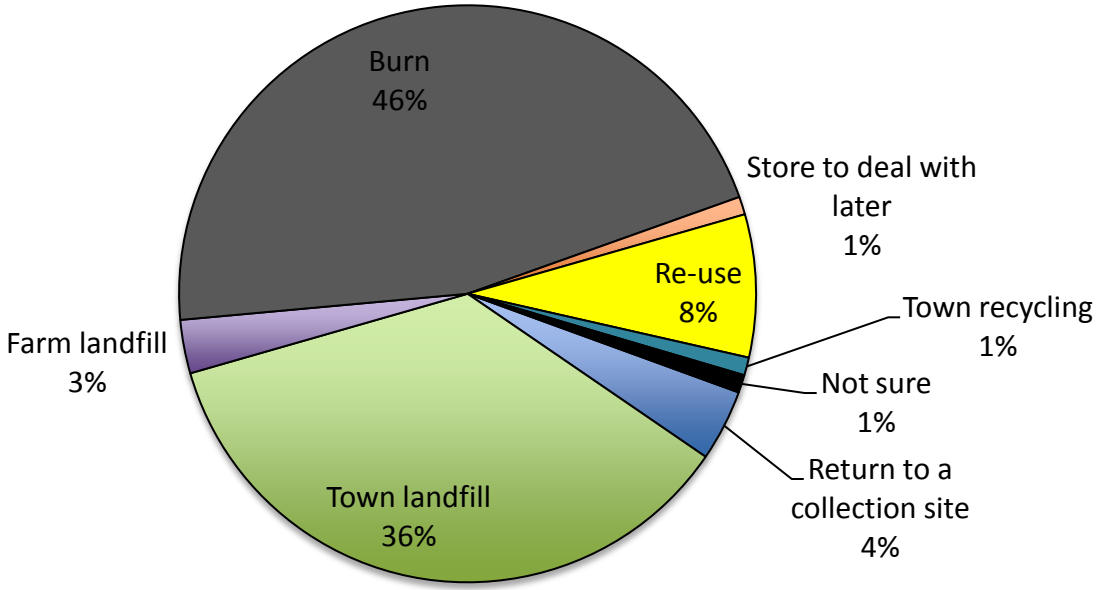
What is done with unwanted paint and solvents?

Portion of farmers who have: 50%
N=164



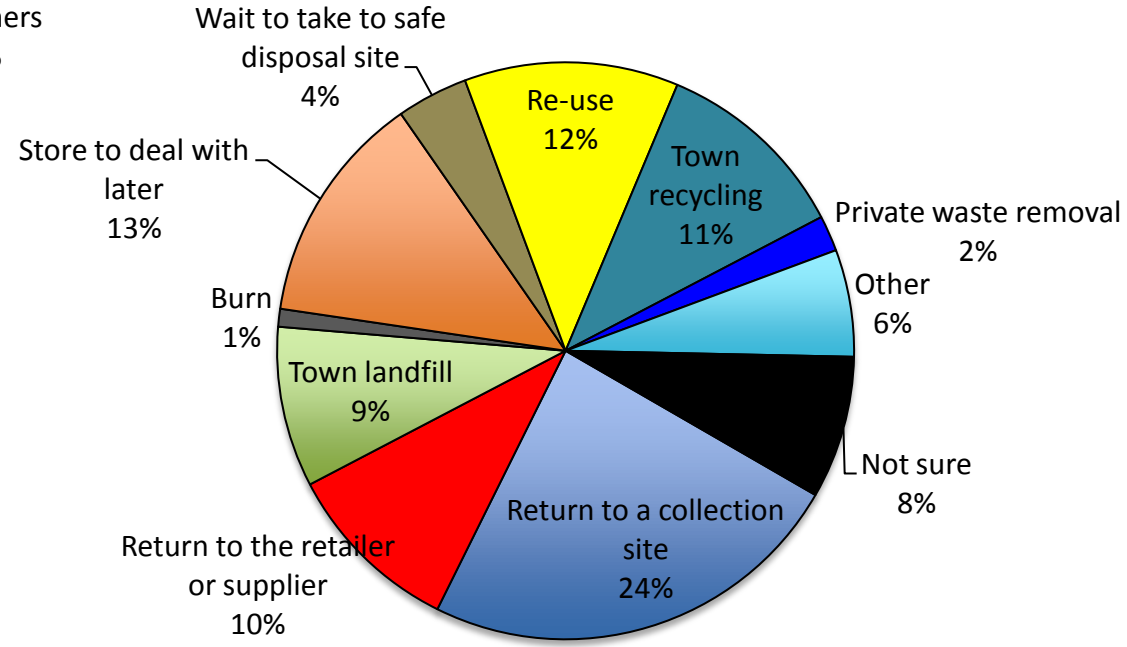
What is done with used twine or net wrap?

Portion of farmers who have: 36%
N=139



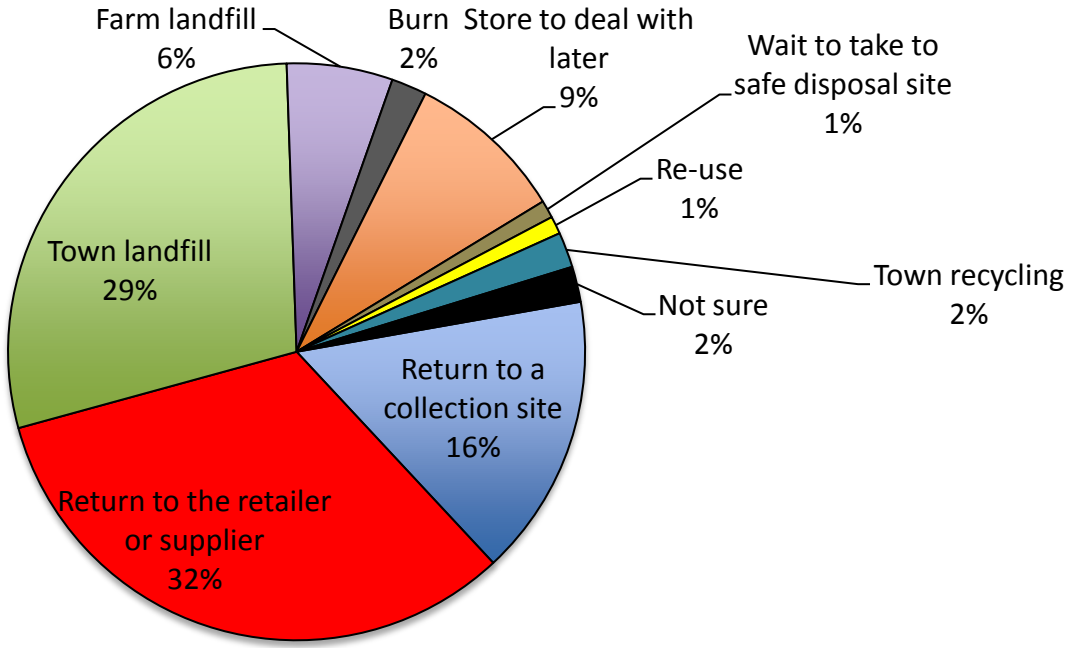
What is done with used antifreeze?

Portion of farmers who have: 34%
N=107



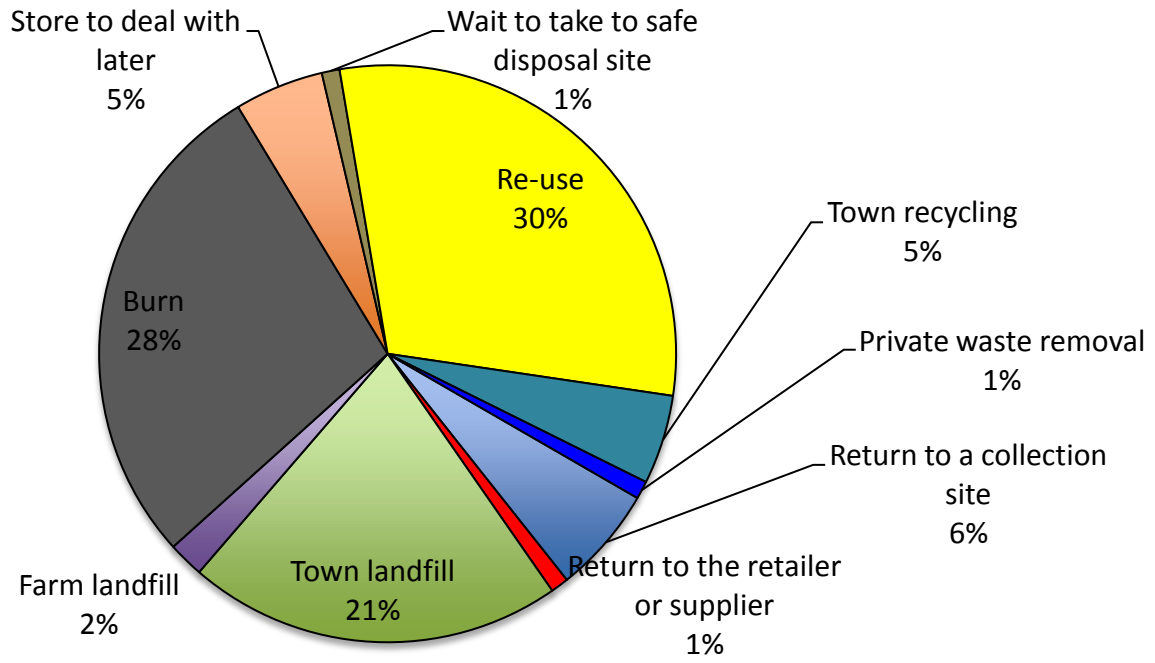
What is done with sharps or needles from livestock?

Portion of farmers who have: 31%
N=121



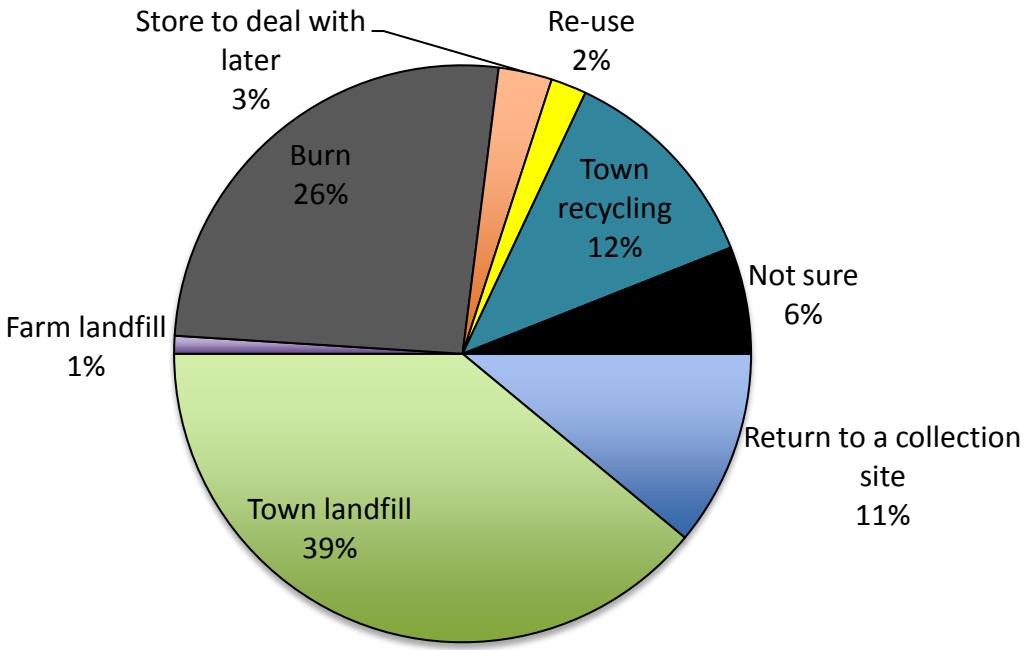
What is done with empty feed bags?

Portion of farmers who have: 31%
N=118



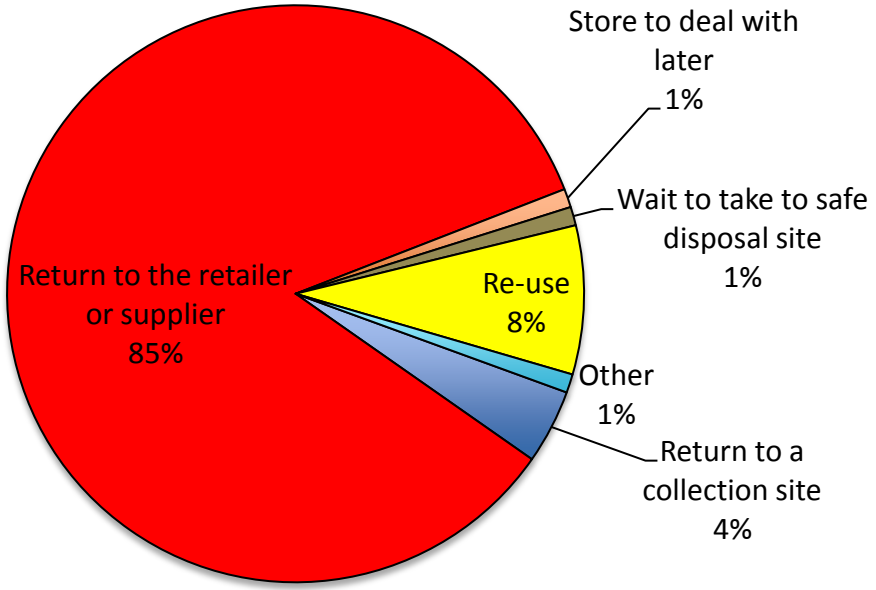
What is done with plastic wrap from silage or hay bales?

Portion of farmers who have: 24%
N=89



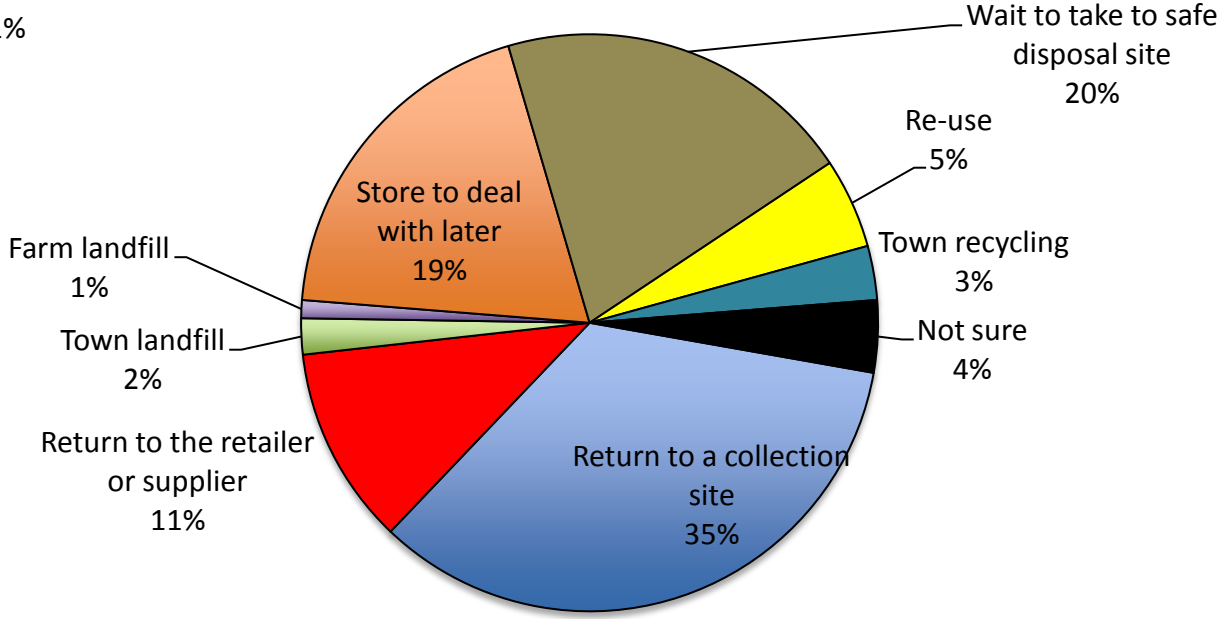
What is done with empty large containers (totes, drums)?

Portion of farmers who have: 21%
N=70



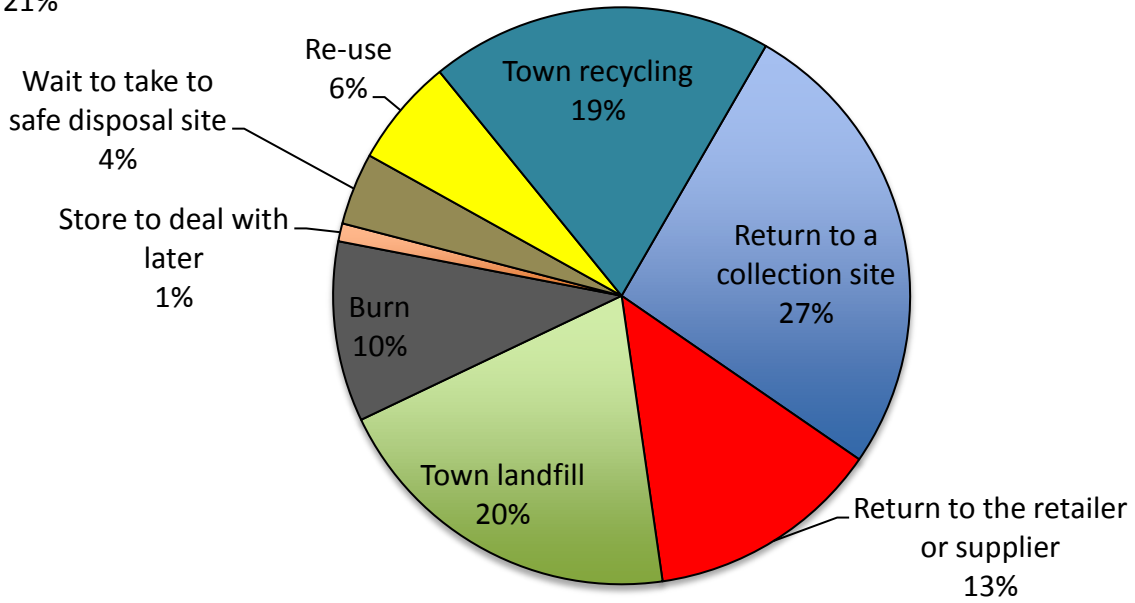
What is done with unwanted, old or obsolete pesticides?

Portion of farmers who have: 21%
N=69



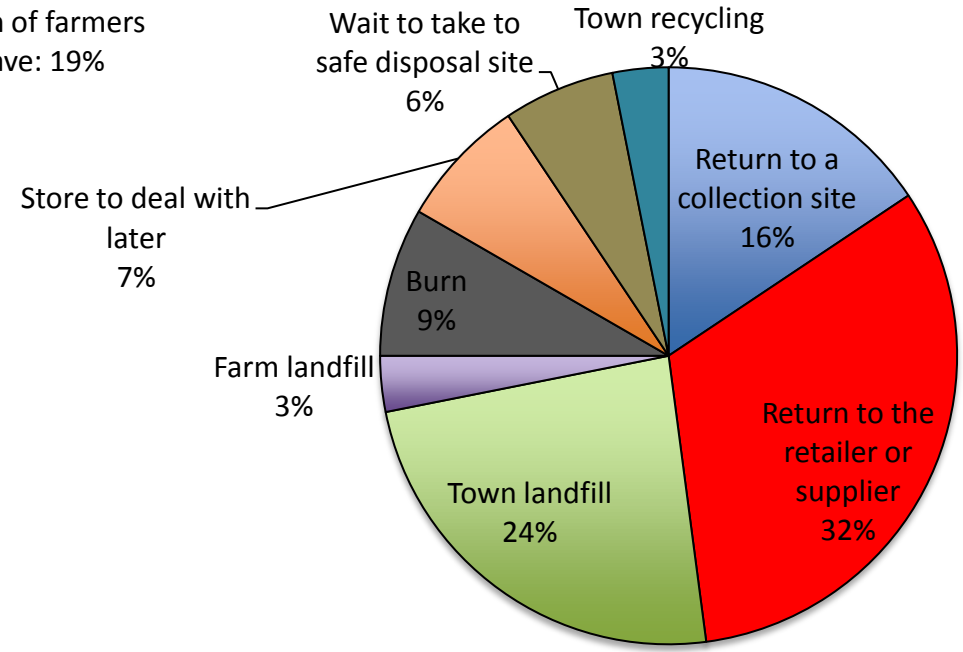
What is done with empty plastic livestock disinfectant product containers?

Portion of farmers who have: 21%
N=64



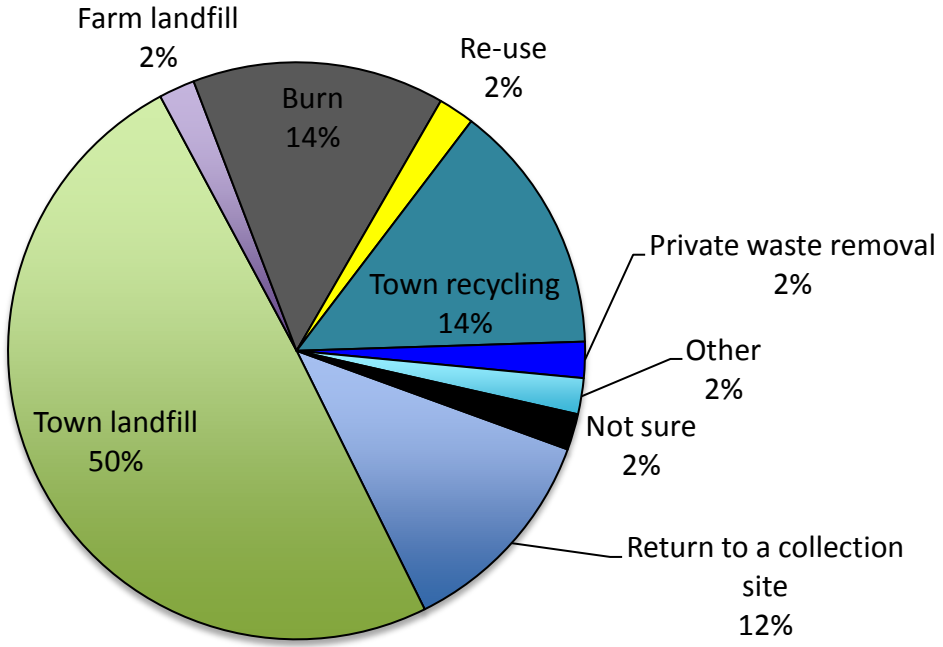
What is done with unwanted animal health products or pharmaceuticals?

Portion of farmers who have: 19%
N=58



What is done with Styrofoam packaging from ag products?

Portion of farmers who have: 17%
N=55



Summary – main ways farmers dispose of each waste material

N=328	Percent who have	Main ways they dispose of this material (Percent of farmers who mention first)
Waste oil and filters	79%	Reuse (26%), collection site (21%), town landfill (10%)
Plastic oil or antifreeze containers	76%	Town landfill (25%), collection site (24%), town recycling (21%)
Unwanted tires	69%	Collection site (24%), town landfill (17%), town recycling (12%), reuse (12%), store to deal with later (12%)
10 litre size range containers	66%	Return to a collection site (83%)
Empty seed bags	63%	Burn (57%), reuse (15%)
Plastic wrap or packaging	56%	Town landfill (38%), burn (20%), collection site (16%), town recycling (14%)

Continued…

Summary – main ways farmers dispose of each waste material

N=328	Percent who have	Main ways they dispose of this material (Percent of farmers who mention first)
Cardboard pkg'g from other ag prods	54%	Town recycling (37%), burn (31%), collection site (15%)
Cardboard packaging from pesticides	50%	Burn (44%), town recycling (24%), collection site (11%)
Paint and solvents	50%	Collection site (40%), wait to take to collection site (15%), town landfill (12%), store to deal with later (12%)
Used twine or net wrap	36%	Burn (46%), town landfill (36%), reuse (8%)
Used antifreeze	34%	Collection site (24%), store to deal with later (13%), reuse (12%), town recycling (11%), return to supplier (10%)
Sharps or needles	31%	Return to supplier/vet (32%), town landfill (29%), collection site (16%)
Empty feed bags	31%	Reuse (30%), burn (28%), town landfill (21%)

Continued…

Summary – main ways farmers dispose of each waste material

N=328	Percent who have	Main ways they dispose of this material (Percent of farmers who mention first)
Used plastic wrap from silage or hay bales	24%	Town landfill (39%), burn (26%), town recycling (12%), collection site (11%)
Drums, totes, shuttles	21%	Return to retailer (85%), reuse (8%)
Unwanted pesticides	21%	Collection site (35%), wait for mobile collection (20%), store to deal with later (19%), return to retailer (11%)
Empty containers from livestock cleaning products	21%	Collection site (27%), town landfill (20%), town recycling (19%), return to retailer (13%), burn (10%)
Unwanted animal health products	19%	Return to supplier (32%), town landfill (24%), collection site (16%), burn (9%)
Styrofoam	17%	Town landfill (50%), town recycling (14%), burn (14%)

Summary of possibly detrimental methods of disposal

Following are the waste materials that may be being stored or disposed of in less than ideal and potentially hazardous ways:

- Storing on farm – having some products stored on farm may create hazards such as fire, leakage, etc. The materials with the highest portion storing them on farm include: waste oil and filters, unwanted tires, paint and solvents, antifreeze, pesticides
- Burning – The materials with the highest portion burning them include: seed bags, plastic wrap, cardboard packaging, twine or net wrap, feed bags, plastic silage and bale wrap
- Farm or town landfill – plastic oil or antifreeze containers, plastic wrap, used twine or net wrap, sharps or needles, empty feedbags, plastic silage and bale wrap, empty plastic livestock cleaning containers, unwanted animal health products and pharmaceuticals, Styrofoam

What is done with used plastic mulch film and used irrigation drip pipe?

Only 3% of the sample generate used irrigation drip pipe, and 2% generate used plastic mulch film. Of these, most dispose of it in the town landfill.

Only a very small portion generate used bird netting, greenhouse film or greenhouse pots and trays, and the results are not conclusive as to how they dispose of it.

Because of the small representation of some of these specialized operations in our sample, it may be advisable to conduct research specifically with these segments. Previous research (Ontario Waste Characterization Study Addressing Ag Film and Plastics) showed that there is significant concern among these types of operations about disposing of plastics.

Differences between segments in how they dispose of waste

The following differences are seen in responses between the various regions or farm types:

- Farmers in Eastern Ontario are more likely to burn plastic packaging and plastic silage and bale wrap.
- Farmers in Northern Ontario are much more likely to take their unwanted tires to the landfill, while those in Southern Ontario are more likely to store or save the tires to deal with later.
- Farmers in Northern Ontario are more likely to take their twine and net wrap and empty livestock sanitation containers to the landfill.
- Farmers in Central Ontario are more likely to take their waste oil and filters to a collection site for recycling, as are fruit farmers.

Continued…

Differences between segments in how they dispose of waste

- Farmers in Eastern Ontario and livestock farmers are more likely to reuse their waste oil and filters.
- Those with primarily livestock operations are more likely to burn their silage and bale wrap. They are also more likely to have 10L containers accumulating on their farm, rather than taking them back to a collection site (likely because they use a minimal amount of 10L containers).

Some of the regional differences likely reflect differing use patterns, practices and economic factors, e.g. more bale wrap and silage wrap used in Eastern Ontario, possibly lower tipping fees and easier to sneak tires into a landfill in Northern versus Southern Ontario, etc.

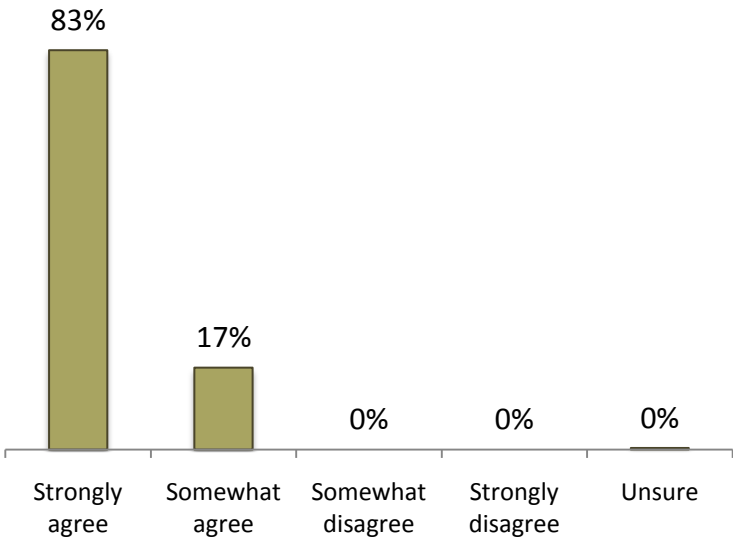
Attitudes towards responsible disposal of agricultural waste

Respondents were asked a series of agree-disagree questions to explore their attitudes about disposal of agricultural waste. As seen on the next two slides:

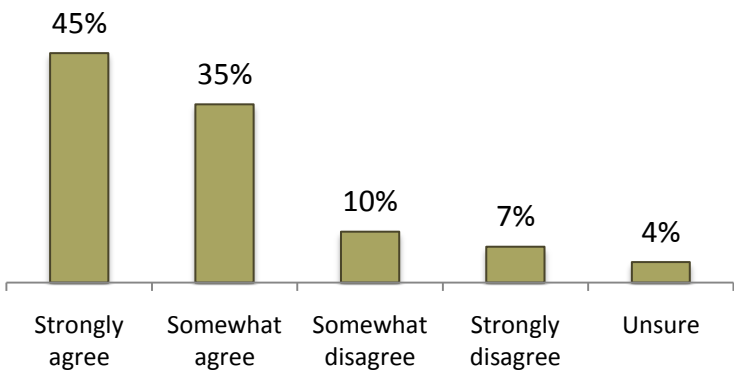
- Farmers consider this to be a highly important issue, with all agreeing that responsible disposal of agricultural waste is very important, and 83% strongly agreeing.
- While a high portion generally agree that the agricultural industry is doing enough to ensure that there are responsible ways to dispose of their products, agreement is "moderate" with 45% strongly agreeing and 35% somewhat agreeing. Further, 17% disagree (7% strongly and 10% somewhat) that the industry is doing enough.
- Just over 1 in 5 farmers have waste materials on their farm of which they are unsure of how to safely dispose.
- Over half of farmers say they are not comfortable burning or putting certain wastes in the landfill, but don't see an alternative. This seems to indicate a significant level of engagement and concern about this issue.

Attitudes towards responsible disposal of agricultural waste

Responsible disposal of agricultural waste is very important to me (N=328)

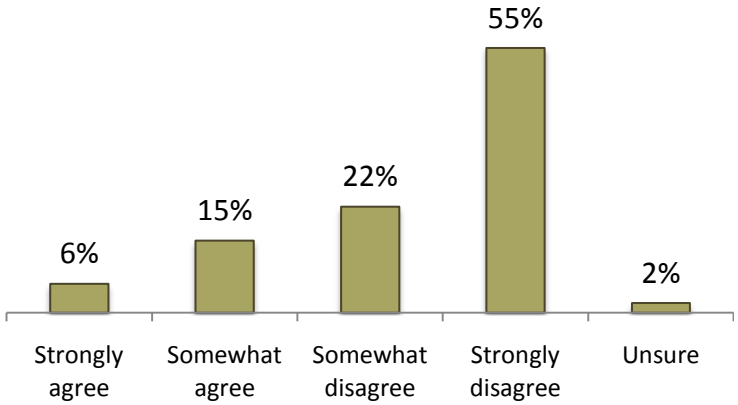


The ag industry is doing enough to ensure there are responsible ways to dispose of the waste from their products (N=328)

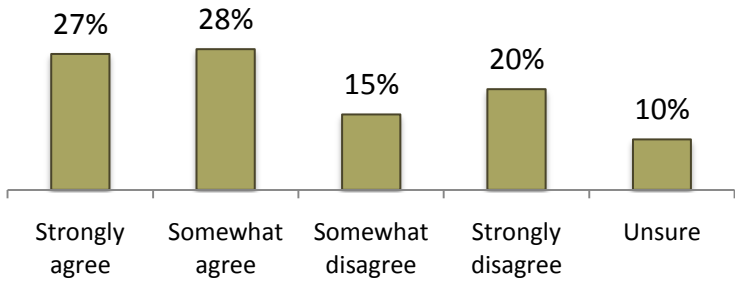


Attitudes towards responsible disposal of agricultural waste

I have a lot of waste materials around my farm that I am unsure of how or where to safely dispose of (N=328)



I am uncomfortable burning or putting certain products in my own or other landfills, but don't see any alternative (N=328)



Differences in attitudes between segments

The following differences between segments are seen in attitudes towards responsible disposal of agricultural waste:

- Horticultural and orchard farmers more strongly agree that responsible disposal of agricultural waste is very important to them.
- Farmers in Southern Ontario are more likely to feel that the ag industry is doing enough to provide options for responsible disposal, while those in Eastern Ontario are less likely to agree with this – about a third of those in Eastern Ontario either somewhat or strongly disagree.
- Those with primarily livestock operations are less likely to agree that the industry is doing enough to provide waste disposal options, with 20% disagreeing that they are doing enough.

Continued…

Differences in attitudes between segments

- Growers in Eastern Ontario and those with primarily livestock operations are more likely to agree that they have a lot of waste materials around their farm that they are uncertain how to dispose of, and also more likely to agree that they are uncomfortable burning or putting items in the landfill, but don't see an alternative.
- Those with orchards and farmers in Southern Ontario are less likely to have waste materials around that they don't know how to dispose of.

Do farmers have materials they don't know how to dispose of?

Eighteen percent (18%) of farmers mentioned specific waste materials that they are not sure how to safely dispose of. As seen on the following slide, there is not any one type of waste product that stands out, with 3% mentioning plastic wrap, 3% mentioning oil, and 2% mentioning a variety of other materials.

Do farmers have materials they don't know how to dispose of?

Do you have any material on your farm that you are concerned about recycling or safely disposing of, or that you are unsure of how to dispose of? (N=328)	
Plastic wrap and film, silage wrap, bale wrap	3%
Oil	3%
Antifreeze	2%
Chemicals, pesticides	2%
Containers	2%
Oil filters	2%
Seed, feed, sand bags	1%
Animal health items	1%
Tires	1%
Other	2%
Nothing, no concerns	82%

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Survey

Container Recycling

Awareness of Container Recycling Program

Among those farmers who generate 10L size-range containers, 90% are aware that there is a collection and recycling program for these containers.

- Interestingly, of the 10% who say they are not aware of the program, when asked what they do with their containers, about half of these say that they return the containers to a collection point. So they may not be aware of a formal “program” but they are aware that they can take their containers back to their retailer.
- Taking the above point into account, we could conclude that about 95% are aware that they can recycle their containers, whether or not they are aware of a “program.”
- Awareness is high across the various segments, but especially high among horticultural, fruit and vineyard operations.

Distance to collection site

Of those who are aware of the program, 92% are aware of where the collection site is.

Most (86%) have 25 km or less to drive to get to their collection site, while another 12% have to drive 26 – 50 km. The vast majority (97%) feel that their collection site is a reasonable distance away.

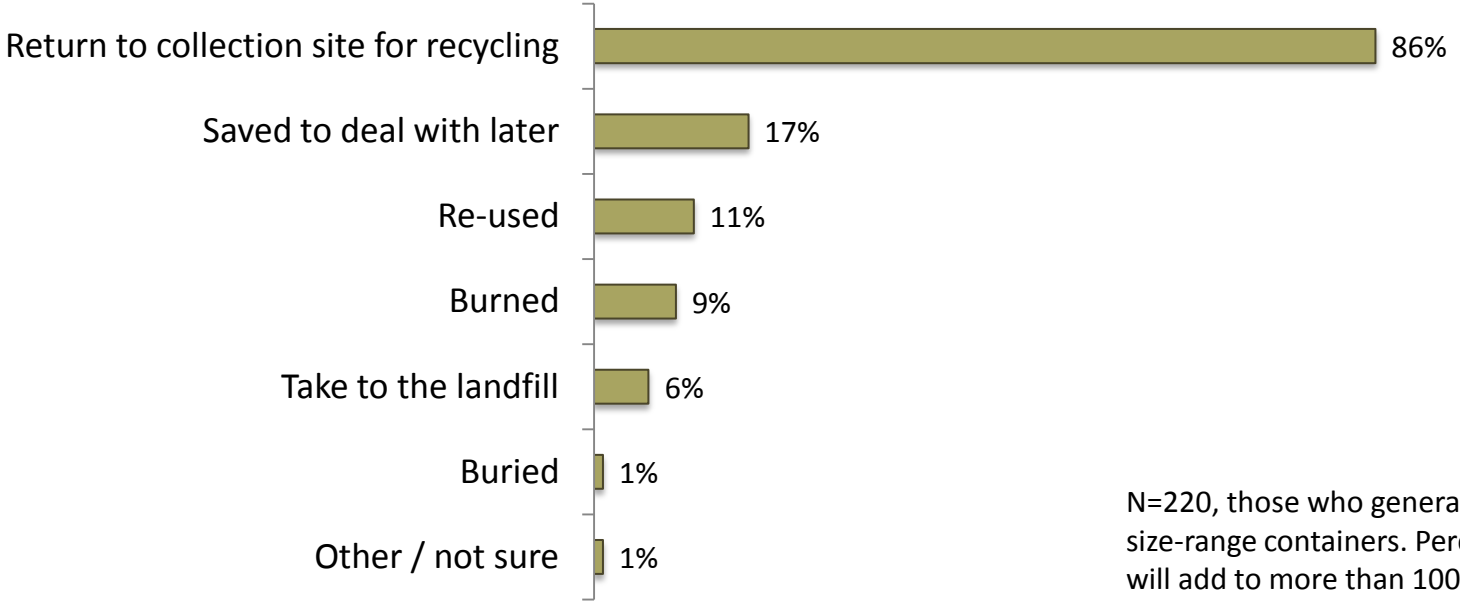
- Farmers in Southern Ontario generally have a shorter distance to drive, while those in Eastern and Northern Ontario have farther to drive.

How are 10 litre containers disposed of?

As seen on the following two slides:

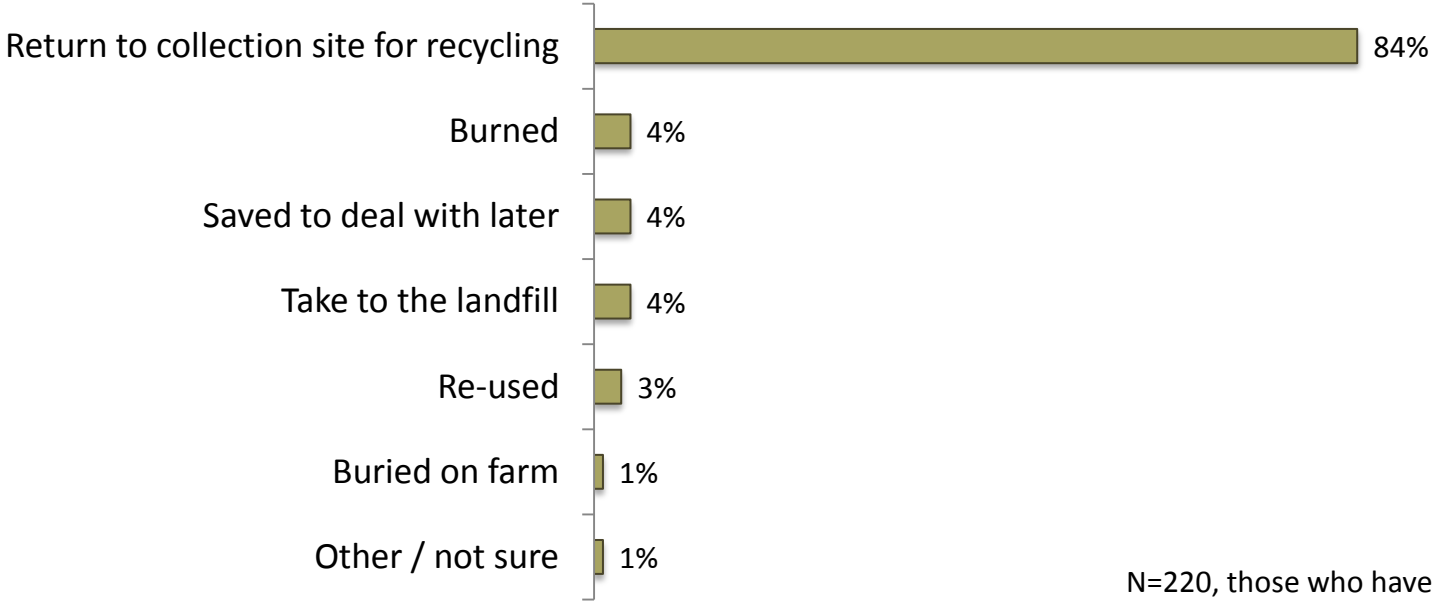
- 86% of farmers return at least some containers to a collection site.
- About 17% of farmers save up their containers to deal with later (and weren't able to specify how they would deal with them).
- Just over 1 in 10 farmers reuse some of their containers, and about the same portion burn some of their containers.
- Some containers also get taken to the landfill, with about 6% of farmers saying they do this with some containers.

Various ways that farmers dealt with their containers over the past year (total mentions)



N=220, those who generate 10L size-range containers. Percentages will add to more than 100% as multiple responses were allowed

Main way that farmers dealt with their containers over the past year (first mention)



N=220, those who have or generate 10L size-range containers

What motivates farmers to take their containers to be recycled?

The following slide shows that just over 40% of farmers who return their containers are primarily motivated by a desire to be environmentally responsible – they feel that returning containers is just "the right thing to do." Another 9% cite a related reason of liking the idea of recycling and making something new out of the used materials.

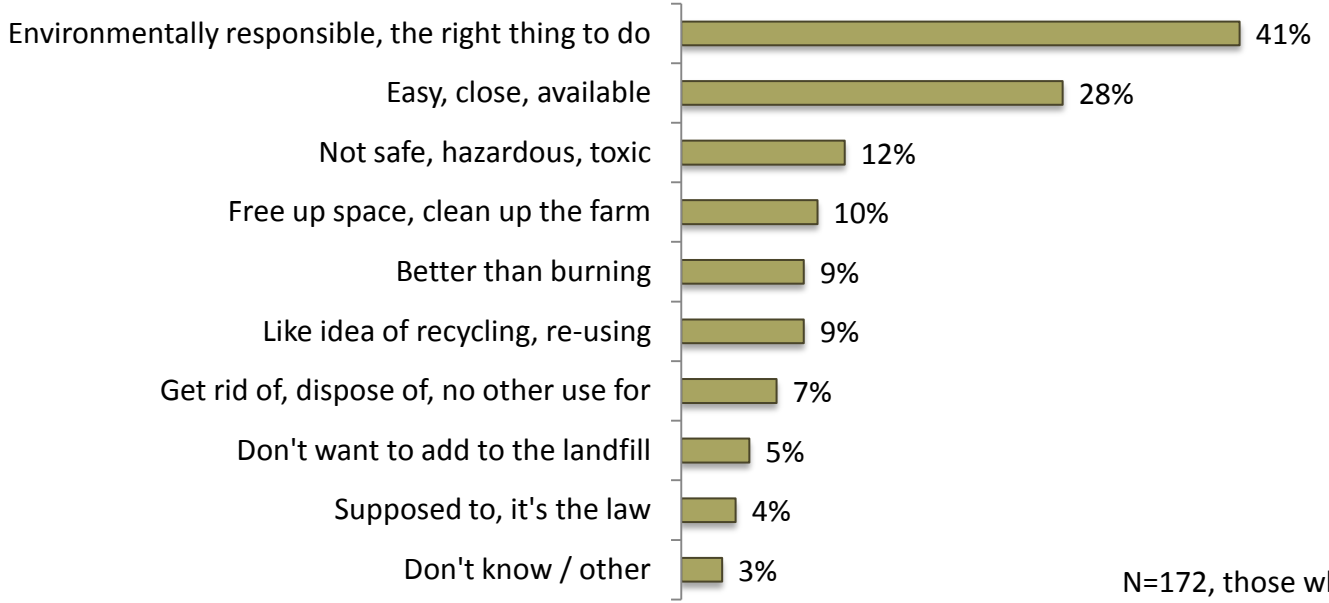
About 30% return their containers because it is simple for them to do so. Basically, it is more convenient to return the containers than to do anything else with them.

About one in ten want the containers off their farm due to safety concerns, and about the same portion return their containers because it cleans up the farm and frees up space.

There is a group who say they return their containers because they don't like the alternative of burning (9%) or putting them in the landfill (5%).

Only a small portion of farmers are motivated to return their containers out of a feeling of compulsion or fear of breaking the law (4%).

What motivates farmers to take their containers to be recycled?



N=172, those who have returned containers for recycling

Sample comments – reasons why farmers recycle containers

Environmentally responsible

- “Try to be a good farmer and do your part for the environment.”
- “Because you don't want to wreck your grandchildren’s land.”
- “Just good stewardship.”

Easy, close, available

- “Good way to get rid of them, facility available.”
- “Just so convenient to take them in.”
- “Easiest thing to do because the site is so close and costs nothing.”

Sample comments – reasons why farmers recycle containers

Free up space, clean up the farm

- “To get rid of them, clean the place up.”
- “Don't want a whole bunch of empty containers sitting around here.”
- “I get tired of looking at them.”

Not safe, hazardous, toxic

- “Because of the chemical residue that's still in the jugs, they'll take care of it and safely dispose of it.
- “You don't have hazardous chemicals on your farm and saving the environment.”
- “I don’t want them around for safety issues.”

Sample comments – reasons why farmers recycle containers

Better than burning

- “The black smoke was frowned upon.”
- “Partly I don’t approve of burning and I don’t believe in burying them either.”
- “Easier to take them back than to find a place to burn them safely.”

Like the idea of re-using, recycling

- “Because it makes use of the material.”
- “They can be reprocessed and turned into fence posts.”
- “Useful to someone else, they might as well have them.”

Portion of containers recycled

As seen previously, two-thirds of farmers in Ontario generate 10L size-range plastic pesticide containers on their farms.

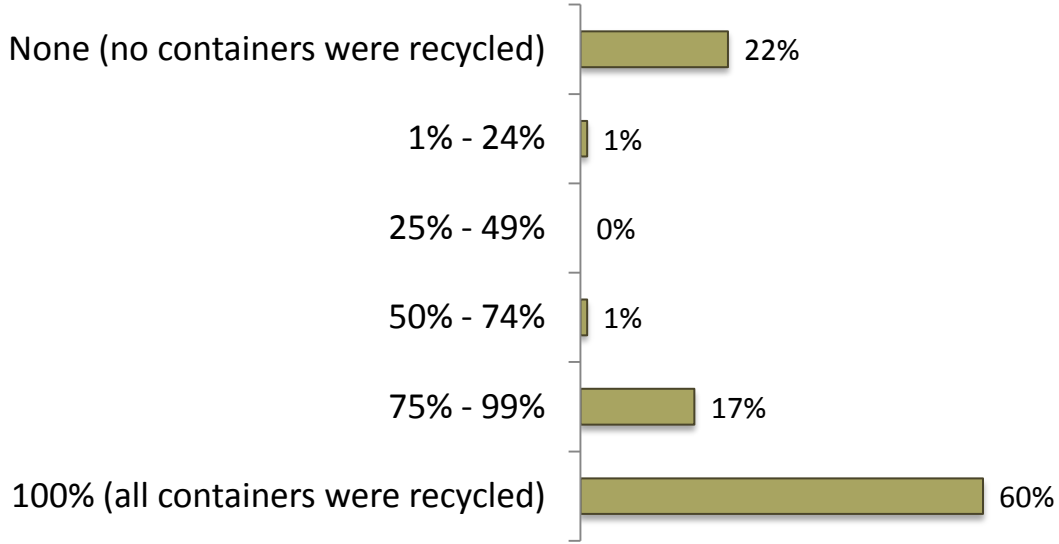
- Of these farmers, we saw that 86% return at least some jugs for recycling.

We asked farmers about what portion of their jugs they return for recycling.

Including all farmers who generate these jugs and considering those who don't return any as well as those who return some or all, on average 76% of jugs are returned.

As seen on the following slide, 60% of Ontario farmers return 100% of their jugs. However, 40% return less than 100%, and 22% don't return any.

Portion of containers recycled



N=220, those who generate 10L size-range containers

Which segments are more or less likely to return containers?

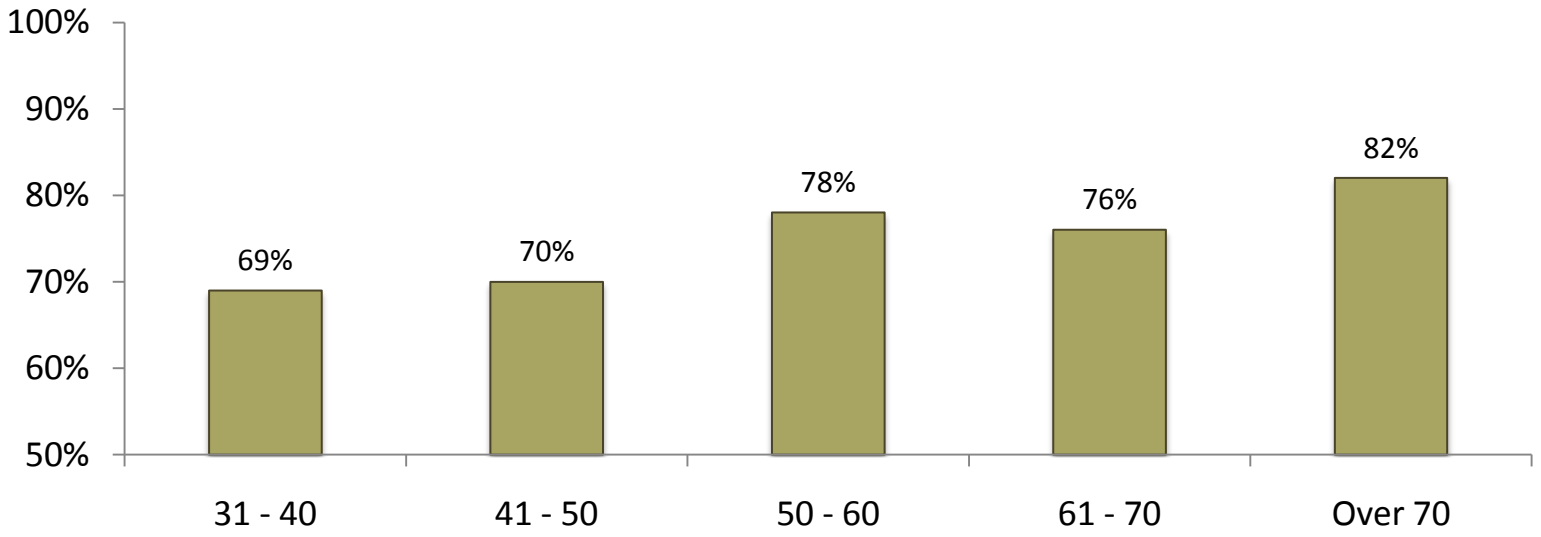
Those whose operations are “primarily livestock,” but who do generate 10L containers on their operation, are less likely to return empty containers. Only about a third return 100% of their containers (compared to the 60% average), and over 40% don’t return any (compared to the 22% average). We would expect, however that these type of operations might typically produce fewer containers.

Although the number of horticultural operations in the sample is small, it appears that they are more likely than other types of operations to return 100% of their containers, with 82% doing so, compared to the 60% average.

There is a slight tendency for farmers in higher age categories to return more containers, with those over 70 years of age returning an average of 82% of their containers, compared to farmers between 31 and 50 years of age, who return an average of around 70% of their containers.

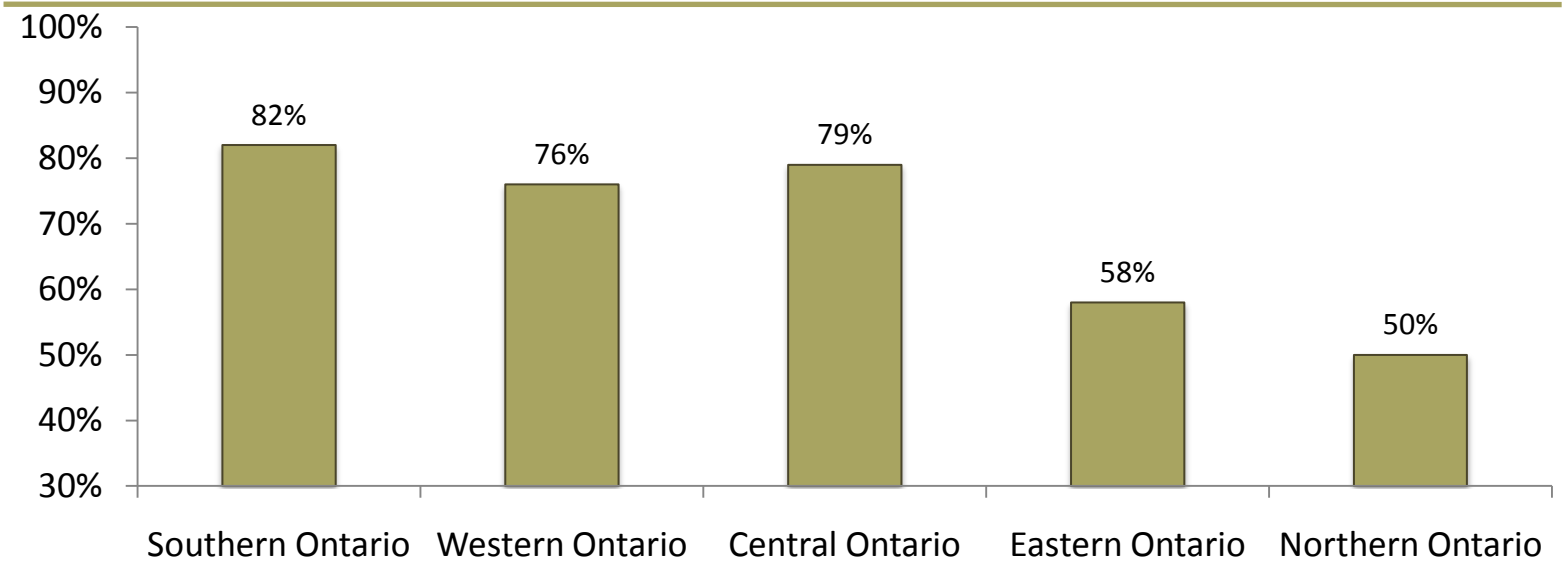
Southern, Central and Western Ontario farmers recycle a higher portion of containers, on average (76% - 82%), than those in Northern and Eastern Ontario (who return 50% and 58%, respectively) . As seen previously, those in Northern and Eastern Ontario have farther to drive to a collection site.

Average portion of containers recycled by age category



N=220, those who have or generate 10L size-range containers

Average portion of containers recycled by region



N=220, those who have or generate 10L size-range containers

Why do farmers who return some containers not return 100% of their containers?

Those who do not return 100% of their containers were asked why. About two-thirds indicate that they reuse some of their containers.

Another 14% said they didn't return some containers because they couldn't get them clean.

There was a small number of "other" responses such as:

"They're damaged and can't be re-used."

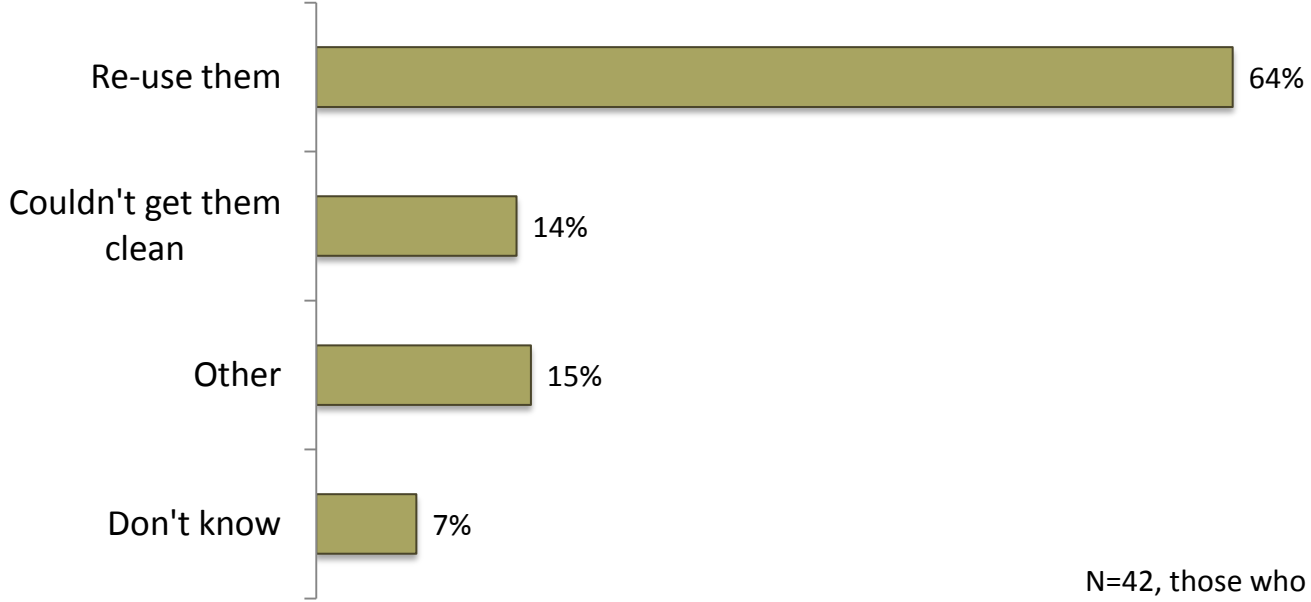
"Labels do not come off."

"Some containers were stuck in a bush and could not retrieve them."

"Not enough to do it."

"Usually a cut off date as to when we can return them, have to wait till next year."

Why do farmers who return some containers not return 100% of their containers?



N=42, those who don’t return all of their containers

What are containers re-used for?

With “reuse” being the main reason that not 100% of containers are returned, we looked into the responses as to what they are being used for. Following are some of the responses:

- Holding oil or fuel
- Still have pesticide in them / store other pesticides in them
- Use for other things
  - “Cut the bottom off and use them as a scoop--they are a handy jug to use that way--10 litre size.”
  - “Use for storage and boats.”
- Re-use, use for storage
- Holding water

Note, total of 11 comments

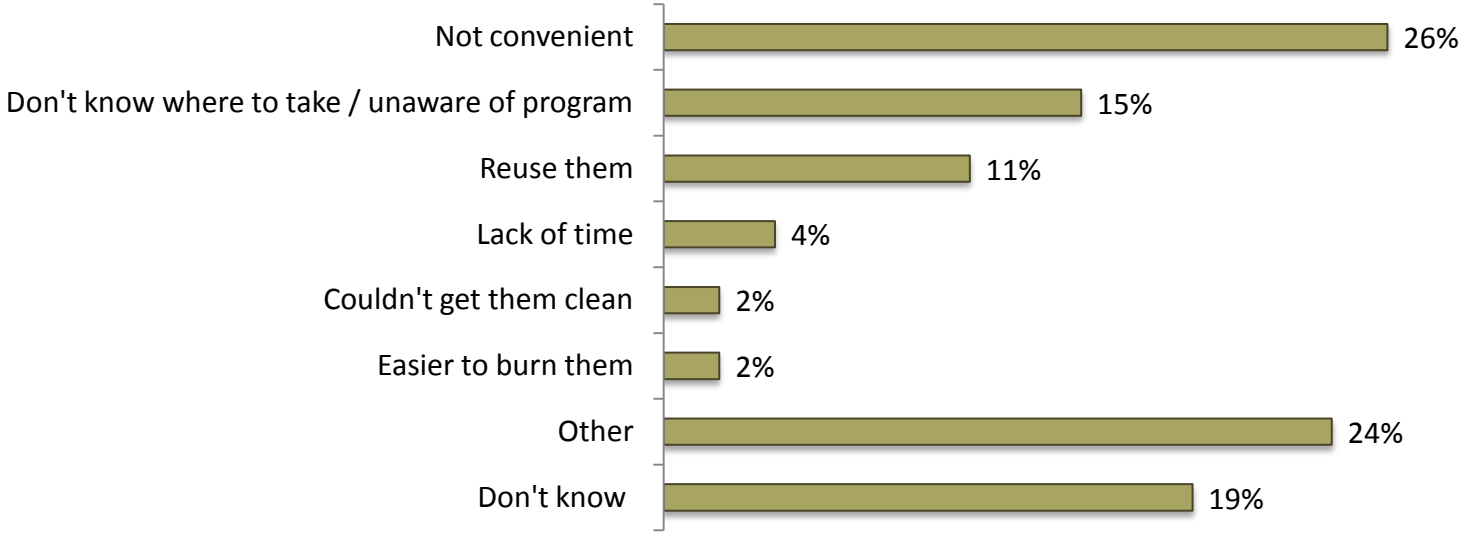
Why do some farmers not return any containers?

About one in five farmers (22%) who generate 10 litre containers do not return any containers. As seen on the next slide, about a quarter of farmers who don't return any containers (26%) feel that it is not convenient to return any of their containers. Most of these mention that the site is too far away.

Another 15% are unsure where to take the containers, or weren't aware there was a recycling program.

Among the 24% giving an "other" reason, some of these farmers take the containers to the retailer, but don't consider this to be "recycling."

Why do some farmers not return any containers?



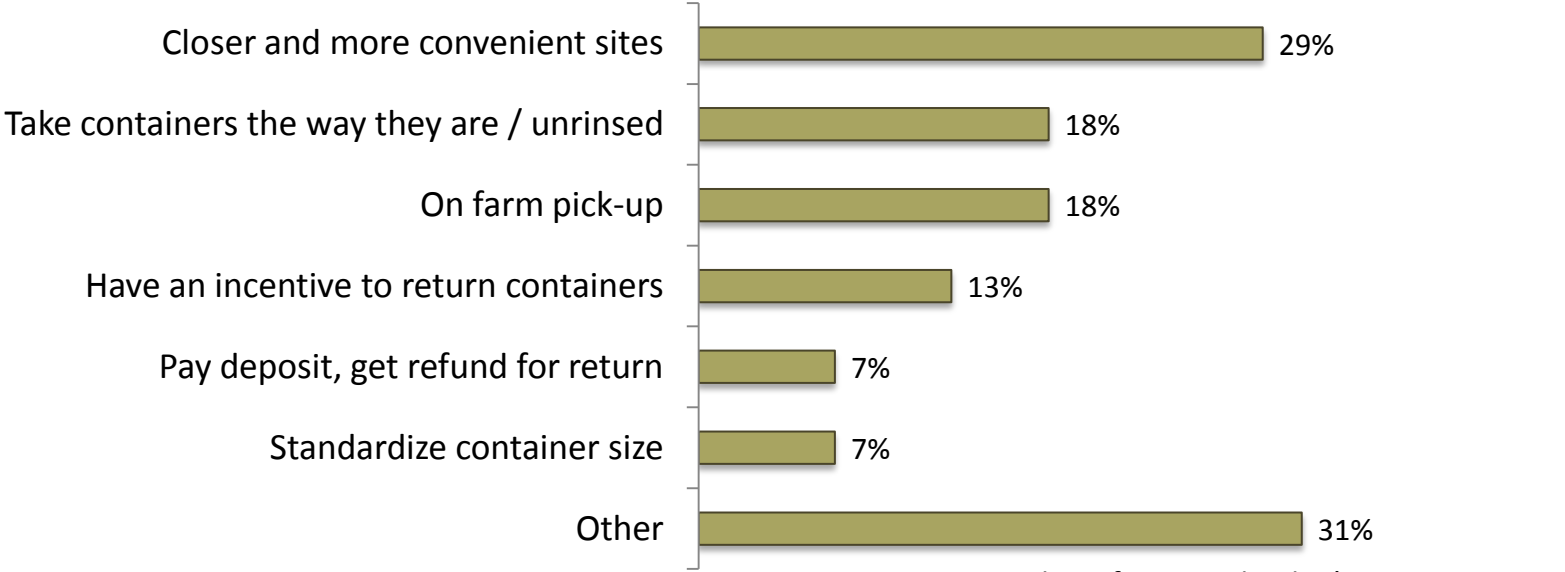
N=48, the 22% of farmers with10L size-range containers who don’t return any of them

What would encourage farmers to return more containers?

When asked what would encourage them to return more containers, the largest portion of respondents mentioned having closer or more convenient sites.

Other suggestions were to let farmers return the containers “as is,” and a few others suggested on-farm pick-up or having an incentive to return containers.

What would encourage farmers to return more containers?



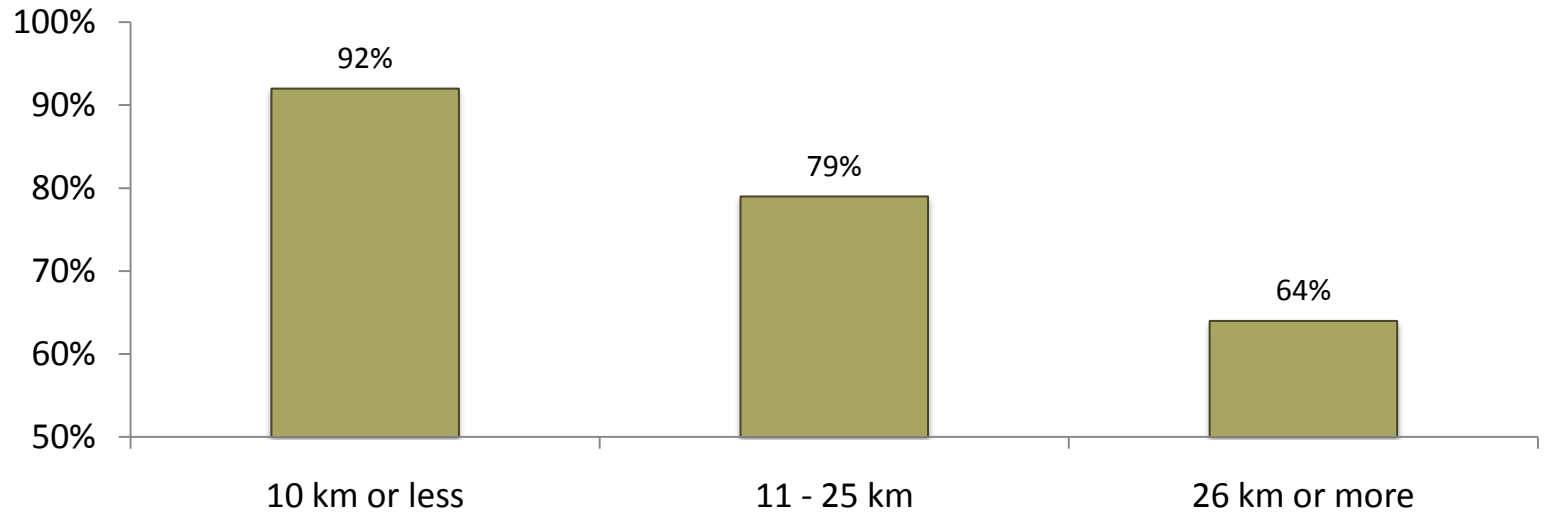
N=45, those farmers who don't return some or any containers, who had suggestions

What would encourage farmers to return more containers?

The largest portion of suggestions relate to having closer or more convenient sites.

- This is supported by analysis showing a strong correlation between distance to site and portion of containers returned:
  - Of those who know where their collection site is and the collection site is 10 km or less away, 93% of their containers are returned.
  - For those whose site is 10 – 25 km away, 79% of containers are returned.
  - For those whose site is 26 km or more away, 64% of containers are returned.
  - Correspondingly, the closer the site, the more likely the farmer is to return 100% of his containers.

Portion of containers returned by distance to collection point



N=170, those farmers who are aware of program and know where their recycling point is

What would encourage farmers to return more containers?

A few of the “other” comments relate to communication – farmers wanting to know where they can return the containers. Again, this does not amount to a large “groundswell” but is a suggestion by a handful.

> “Notification of pickup dates over email or through brochures.”
>
> “More advertising.”

Other farmers mention that some containers are not recyclable – they would like there to be clearer labeling on the containers, as to whether they are recyclable, or for containers to be biodegradable.

A few farmers also mention that the plastic wrap on the jugs is a problem.

> “Plastic bags is the biggest issue and no one takes in the Barrie area - cider jug bags.”

Attitudinal factors that affect the return of containers

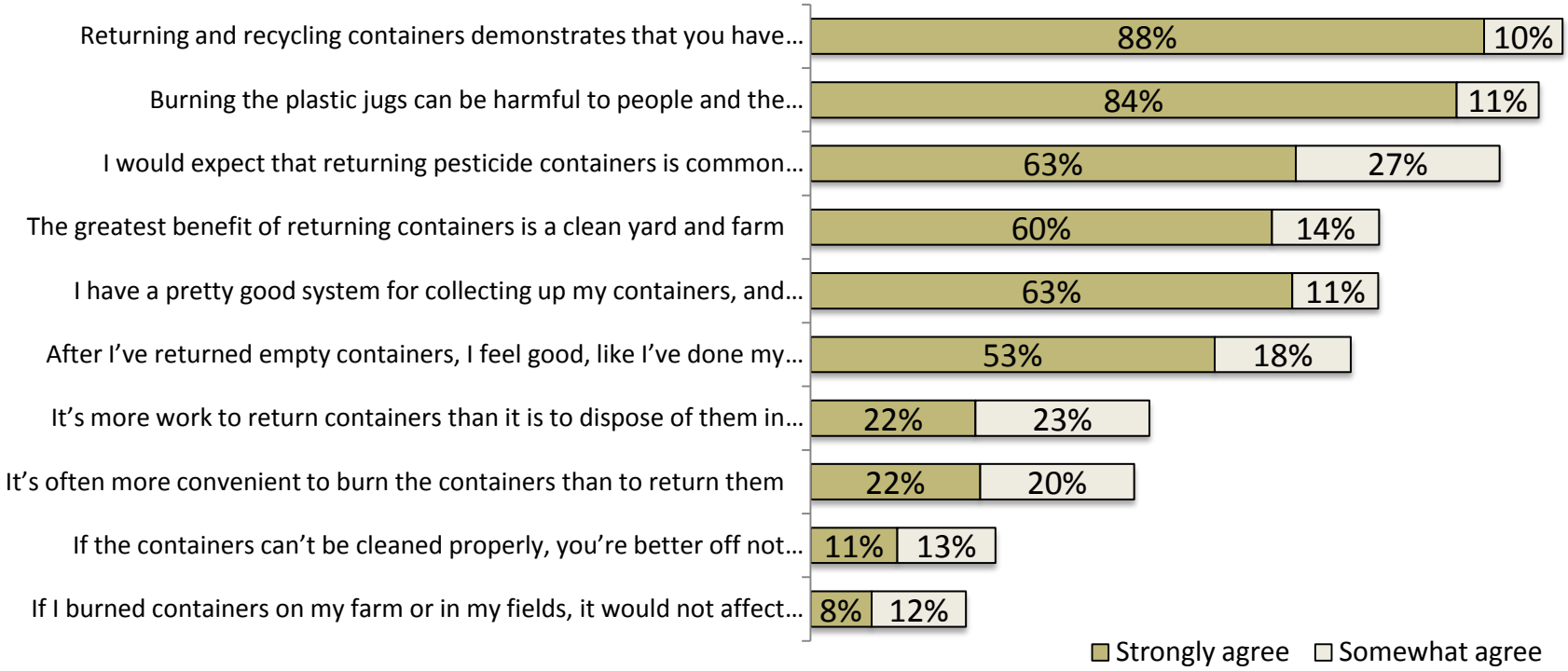
A number of agree-disagree statements were read to respondents to measure attitudes related to container recycling.

The statements with the highest level of agreement included:

- Returning and recycling containers demonstrates that you have good stewardship practices
- Burning the plastic jugs can be harmful to people and the environment
- I would expect that returning pesticide containers is common practice among the farmers in my province

All of the statements (see next slide) correlate with whether or not farmers are returning their jugs.

Attitudinal factors that affect the return of containers



Differences in attitudes between segments

Those in Eastern Ontario are more likely to agree that it is more work to return containers than it is to dispose of them in other ways. 72% feel this way, versus the 45% average. They are also more likely to believe that it is often more convenient to burn the containers than to return them (68% versus the 42% average).

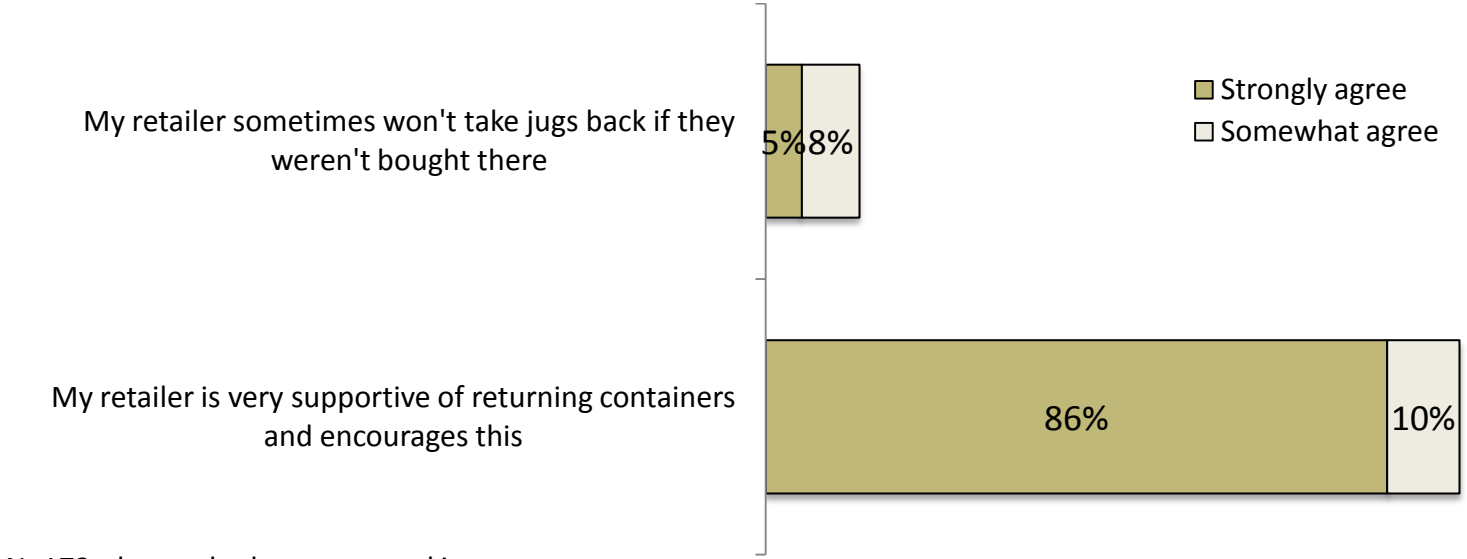
Those with orchards or horticultural operations and those with under 125 acres are more likely to strongly agree that returning containers demonstrates that you have good stewardship practices.

Those in Northern Ontario and those with fruit more strongly believe that burning is harmful.

Retailer support of container collection

A few agree-disagree statements addressed whether or not the retailers are seen to be supportive of recycling. As seen on the following slide, almost all feel that their retailers are supportive, and only 13% indicate that their retailer won't take jugs back if they weren't purchased there.

Retailer support of container collection



N=172, those who have returned jugs

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Unwanted Pesticides

Unwanted pesticides currently on farm

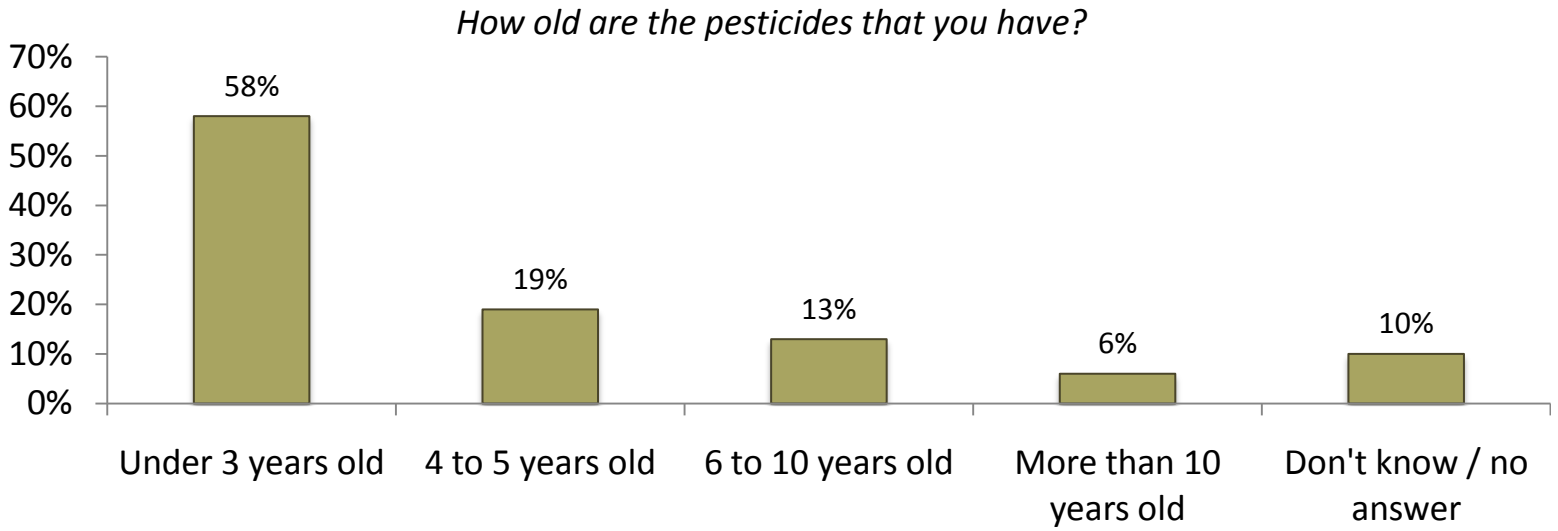
	Portion who have (N=328)	Average number
Containers	6%	3.4
Litres	11%	20
Kilograms	3%	12
Gallons	1%	7

- As previously noted, about 21% of respondents generate unwanted pesticides in a typical year or have unwanted pesticides on their operation. About 15% currently have unwanted pesticides on their farm. Respondents estimate that about 84% of the unwanted pesticide is liquid, and 16% is dry.
- As seen above, much of this is in containers or liquid form. Extrapolating these numbers, we estimate Ontario farmers have approximately 258,000 litres plus 21,000 kg of unwanted pesticide on farm. This is a midpoint of a range, and when we apply the margin of error to these numbers, we obtain a range of between 169,000 and 346,000 litres and 10,000 and 32,000 kg.

How old are the unwanted pesticides?

As seen on the next slide, about 60% of farmers with unwanted pesticides say these pesticides are 3 years old or less, while about 40% of farmers with unwanted pesticides have pesticides that are more than 3 years old.

How old are the unwanted pesticides?

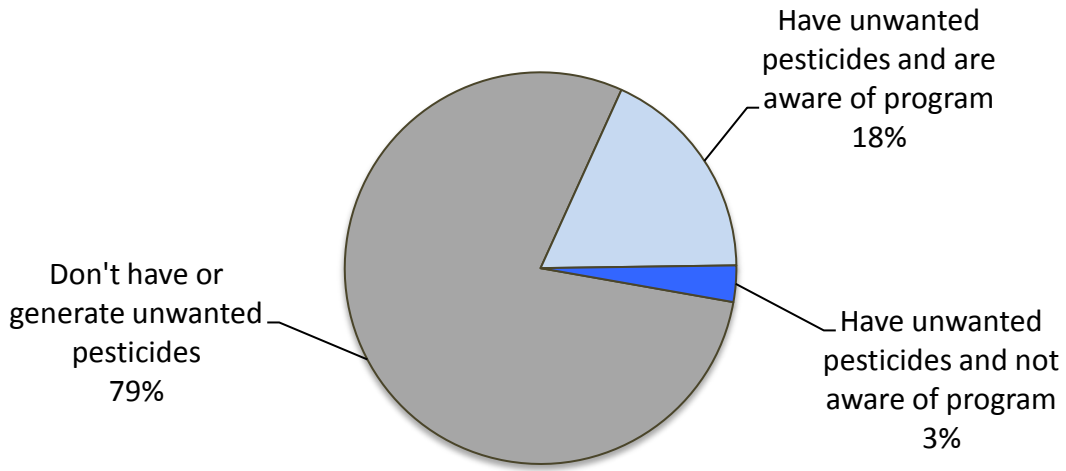


N=69, those with unwanted pesticides. Percentages add to more than 100, as respondents could have pesticides in more than one age category

Awareness of pesticide collection program

The next slide shows that the vast majority of farmers who have unwanted pesticides are aware of the pesticide collection program. Only 3% of all respondents had unwanted pesticides but were not aware of the program.

Summary of portion who have unwanted pesticides and awareness of program



N=328, the entire sample

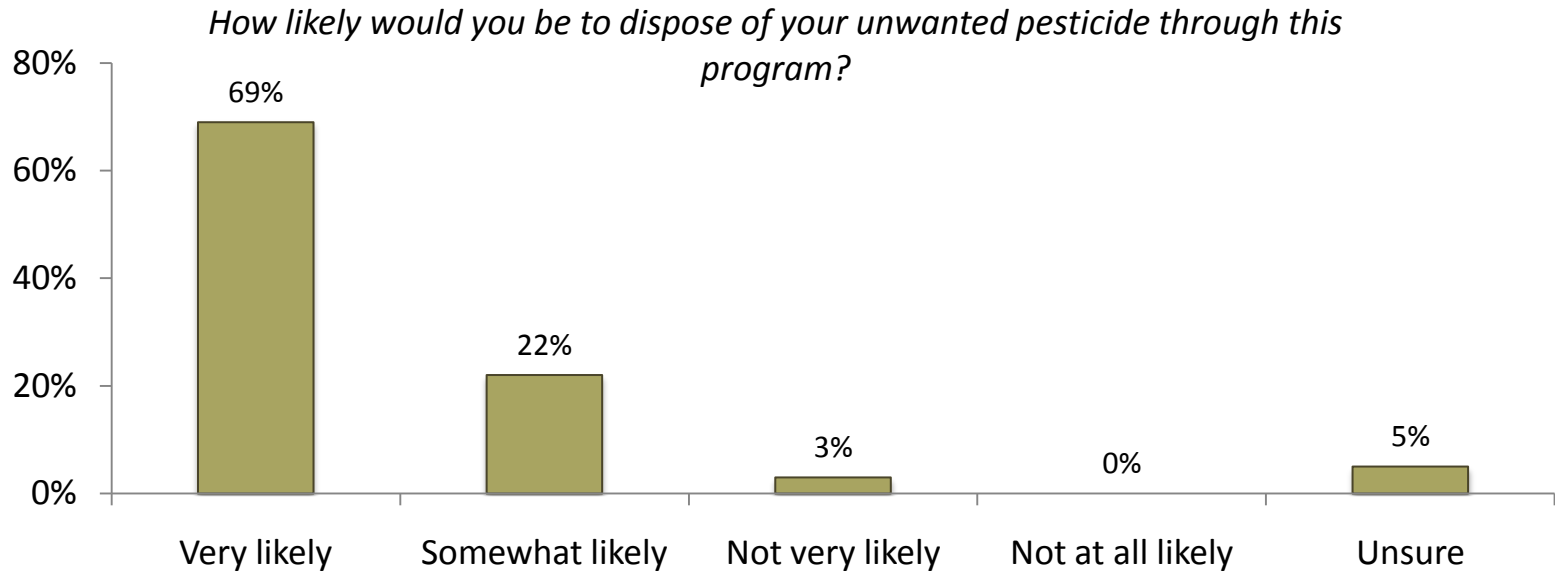
Likelihood of using the pesticide collection program among current non-users

Among those who had unwanted pesticide who did not say they would dispose of it through the program, almost 70% said they would be very likely to use it and another 22% said they would be somewhat likely to use it. Only 3% said they would not be likely to use it.

Of the very few who said they would not use the program, all said that they would plan to eventually use the pesticide.

> "Usually because most of the chemical I can use for my own uses around the yard site."
>
> "I anticipate that I would eventually use the pesticide."

Likelihood of using the pesticide collection program among current non-users



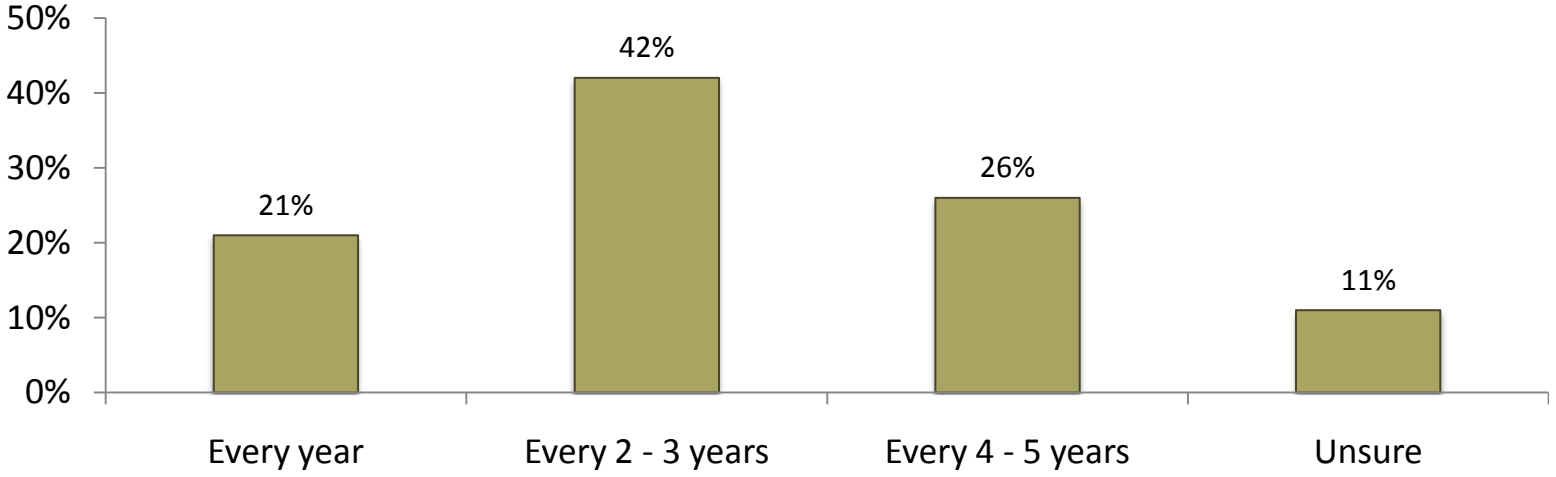
N=34, those who didn't mention returning their pesticide through the return program

How often should a pesticide collection program be run?

Respondents who typically generate unwanted pesticide, or who have some on their farm currently, were asked how often they would accumulate enough unwanted pesticides that they would want to dispose of them. The largest group, at 42%, indicated that they would want to dispose of unwanted pesticides every 2 to 3 years, while another 26% said every 4 to 5 years. Just over one in five (21%) said they would generate enough pesticides that they would want to be able to dispose of them every year.

How often should a pesticide collection program be run?

How often would you accumulate enough unwanted pesticide that you would like to dispose of it?



N=69, those who have unwanted pesticide on their farm, or generate it in a typical year

CleanFARMS
Ontario Farmer
Survey

Communications

How are farmers most likely to find out about recycling or safe disposal programs?

Farmers were asked an open ended question about where they are most likely to find out about recycling or safe disposal programs. As seen on the following slide, the most common responses were: farm newspapers, crop input retailers, or farm magazines.

There are only a few differences between segments in their use of communications sources:

- Those with primarily livestock operations are more likely to use farm newspapers, while orchard and farmers in Northern Ontario are less likely to do so.
- Southern Ontario farmers, larger acreage farmers and horticultural farmers are more likely to use their crop input retailer as a source of information.
- Farm magazines and provincial extension advisors are more likely to be used by horticultural farmers. Those in Eastern Ontario are also more likely to use provincial extension.
- Those with primarily crop operations are more likely to use brochures and flyers.

How are farmers most likely to find out about recycling or safe disposal programs?

How are you most likely to hear about recycling and waste disposal programs? (Open-ended responses) (N=328)	First mention	Total mentions*
Farm newspapers	34%	50%
Crop input retailer	18%	28%
Farm magazines	14%	27%
Provincial extension, government	6%	10%
Brochures, flyers	6%	11%
Mailed information	5%	8%
Radio	3%	10%
Other farmers	3%	8%
TV	1%	4%
Chemical company reps	1%	4%
On line	1%	3%
Other	5%	7%
Don't know	4%	4%

* Percentages for total mention add to more than 100, as multiple responses were allowed

Differences in information source for recycling or safe disposal program between segments

	Percent who use	Who is more likely to use as an information source	Who is less likely to use as an information source
Farm newspapers	50%	Livestock	N ON, fruit
Crop input retailer	28%	S ON, 500+ acres, horticultural	Livestock
Farm magazines	27%	Horticultural	
Provincial extension, gov't	10%	E ON, horticultural	
Brochures, flyers	11%	Primarily crops	

Continued…

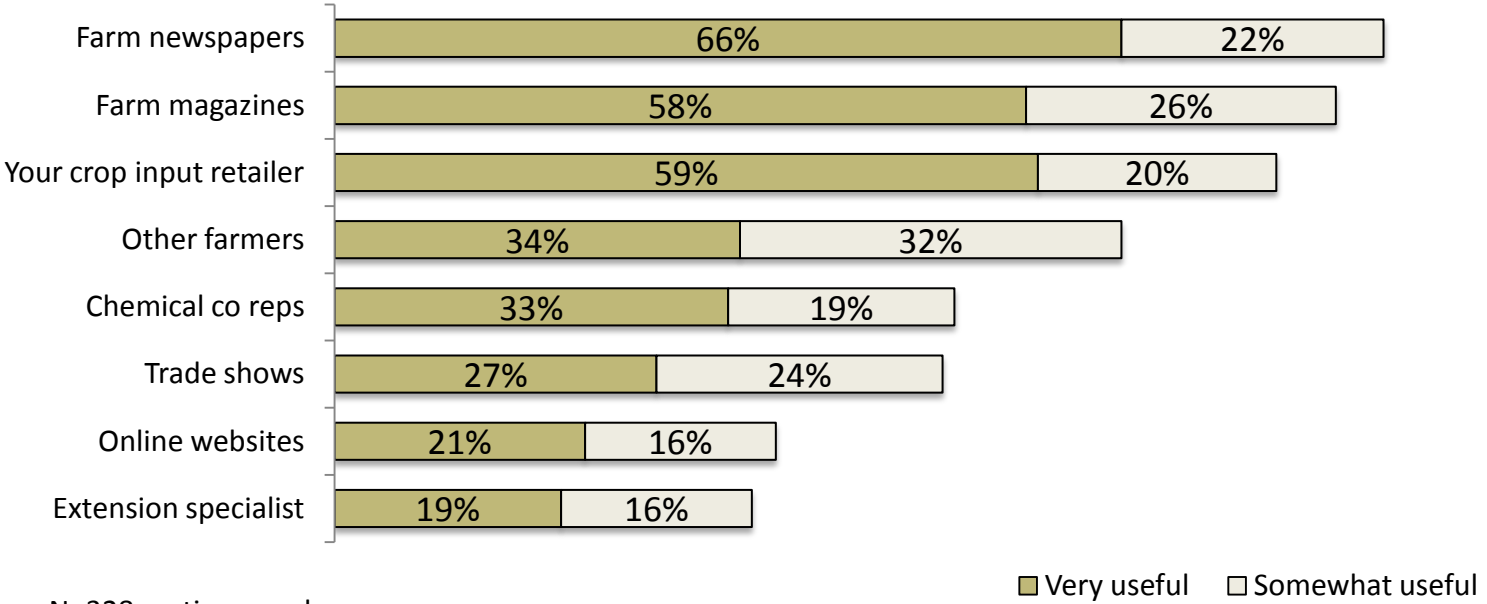
Usefulness of various information sources

Respondents were read a list of various information sources and asked to rate the usefulness of each. Their ratings are consistent with what they told us in the open ended question about where they would typically get information on recycling programs. Farm newspapers and magazines are most highly rated, followed by crop input retailers. Other farmers are also seen to be a useful source of information.

There are only a few differences between segments in ratings of the usefulness of the information sources:

- Orchard farmers are more likely to consider trade shows to be very useful.
- Those with mixed crop and livestock operations are more likely to consider farm magazines to be very useful.
- Those with primarily livestock and those with horticultural operations are more likely to consider farm newspapers to be very useful.

When you want to learn about issues that can affect your farm, how useful are the following information sources?



N=328, entire sample