

Agricultural Plastics Recycling Municipal Waste Authorities Survey

Final Report

October 2012

TABLE OF CONTENTS

KEY TAKEAWAYS	1
BACKGROUND AND METHODOLOGY	2
TYPES AND AMOUNTS OF AGRICULTURAL PLASTICS ACCEPTED	5
Incidence of Accepting Agricultural Plastics	5
Reasons for Not Accepting Agricultural Plastics	6
Incidence of Turning Farmers Away who Wanted to Dispose of Agricultural Plastics	7
Types of Agricultural Plastics Accepted	8
Amounts of Agricultural Plastics Accepted	9
Trends in the Amounts of Agricultural Plastics Accepted	10
Incidence of Charging a Tipping Fee for Accepting Agricultural Plastics	11
MANAGEMENT OF AGRICULTURAL PLASTICS	12
Challenges in Managing Agricultural Plastics	13
Past Participation in an Agricultural Plastics Recycling Program	14
Recycler Sold To	15
APPENDIX A: AGRICULTURAL PLASTICS WEIGHT ESTIMATES	16
APPENDIX B: QUESTIONNAIRE	17

KEY TAKEAWAYS

1. The majority (71%) of Municipal Waste Authorities (MWAs) in Alberta currently accept agricultural plastics (that is, 45 of the 63 MWAs interviewed). It is notable that 60% of those that accept agricultural plastics say they are not charging a tipping fee.
2. Among the 18 MWAs (29%) that do not accept agricultural plastic waste from agricultural producers, key reasons given are lack of a perceived need (that is, “no farmers delivering to us”, n=4), they “focus on industrial and residential” (n=4), and “it requires a site set up for storage and safety” (n=4). It is notable, however, that 5 of the 18 MWAs that do not accept agricultural plastics said that in the past 12 months they turned away agricultural producers who wanted to dispose of their agricultural plastics at their facility.
3. For the most part, MWAs do not discriminate between the specific types of agricultural plastics accepted with nine-in-ten (87%) or more saying they accept each type of plastic evaluated. Further, the majority (roughly 55%) of MWAs that accept agricultural plastics did not know the weights of the agricultural plastics they accepted in the past year.
4. Given that most MWAs do not keep accurate records of the amount of agricultural plastics they accept, and more than half cannot even offer estimates, it is not possible to provide an accurate weight of the total amount of plastics accepted in 2011.
5. MWAs did report that the amount of agricultural plastics accepted, particularly plastic grain bags or tubes, has been trending upwards in the past three years.
6. The reported incidence of shipping agricultural plastics (of any type) to a recycler is low at 33%. Conversely, incidence of burying agricultural plastics in a landfill is high (84%).
7. The most frequently identified challenges with regards to managing agricultural plastics are “bulky or difficult to handle” (38%) and that it “damages or is hard on equipment” (24%).

BACKGROUND AND METHODOLOGY

Background and Objectives

Agricultural plastic use, particularly grain storage bags, is increasing and concern over managing it as waste is rising in Alberta. Indeed, a recent survey conducted by Ipsos found that within the livestock sector, less than half of Alberta agricultural producers recycled plastics such as baler twine, feed bags, silage wraps and/or bale wraps. As some stakeholders have looked to the Government of Alberta (GoA) for leadership, Alberta Environment and Sustainable Resource Development (ESRD) and Alberta Agriculture and Rural Development (ARD) wished to further scope the issue.

Specifically, ESRD and ARD wanted to conduct two surveys – one with Alberta agricultural producers and another with waste management authorities – to collect statistically significant, Alberta-specific data to inform potentially policy options on the issue for Ministers' consideration.

For the purposes of the surveys, agricultural plastics were defined as plastic baling twine, plastic bale wrap, plastic bale tubes, plastic bale bags, plastic silage bags or tubes, plastic silage pit or pile covers and plastic grain bags or tubes. Other plastics were out-of-scope.

Primary objectives of the surveys were to identify:

- The types and amounts of agricultural plastics used in Alberta (including perceived trends to see if usage is going up over time);
- Current end-of-life management practices;
- Willingness and challenges associated with handling and recycling agricultural plastics;
- The level of awareness and activity related to recycling agricultural plastics; and,
- Characteristics of producers who use agricultural plastics (e.g. age, type of operation, gross farm sales, census area, etc.).

This report presents findings from the Municipal Waste Authorities survey. Findings from the survey with agricultural producers are provided under a separate cover.

Methodology

Ipsos Reid conducted a telephone survey with 63 of the 74 Regional Municipal Waste Authorities (MWAs) in Alberta between June 11th and July 11th, 2012. The average interview length was 7.2 minutes.

The sample was provided to Ipsos by ESRD, and ESRD sent all MWAs a pre-notification letter informing them about the survey and encouraging their participation. ESRD also updated contact information (names, telephone numbers) as required, and made reminder phone calls

to non-respondents after three weeks in field.

Each MWA was called by Ipsos until contact was made – and they either completed an interview or refused – or they had been called at least ten times over the four week field window. Of the 11 MWAs that were not interviewed, 5 declined to participate while the other 6 could not be reached after ten or more attempts.

The margin of error for the total sample of 63 is ± 4.8 percentage points, nineteen times out of twenty (this takes into account the finite population of 74 MWAs). The table below shows the number of interviews per region and associated margins of error.

Sample Stratification

Region	# of MWAs	Number of Interviews	Maximum margin of error
South	11	9	$\pm 14.6\%$
Central	21	16	$\pm 12.3\%$
North East	14	12	$\pm 11.1\%$
North West	15	14	$\pm 7.0\%$
Peace	13	12	$\pm 8.2\%$
Total	74	63	$\pm 4.8\%$

The following MWAs took part in the survey:

South	Central
<ul style="list-style-type: none"> ● Medicine Hat Landfill ● South Forty Waste Services Commission ● Lethbridge Regional Landfill ● Lethbridge Regional Waste Management Services Commission ● Newell Regional Solid Waste Management Authority Ltd. ● Redcliff/Cypress Regional Waste Management Authority ● Taber And District Regional Waste Management Authority ● Chief Mountain Regional Solid Waste Authority ● Crowsnest/Pincher Creek Landfill Association 	<ul style="list-style-type: none"> ● Big Country Waste Management Commission ● Drumheller & District Solid Waste Management Association ● Vulcan District Waste Commission ● Airdrie Recycling Depot ● City of Calgary Landfills ● Foothills Regional Services Commission ● Flagstaff Regional Solid Waste Management Association ● M.D. #52 Waste Management Authority (Provost) ● Paintearth Regional Waste Management Ltd ● Stettler Regional Waste Management Authority ● Wainwright Regional Waste-To-Energy Authority ● Lacombe Regional Solid Waste Authority ● Ponoka County ● Red Deer Waste Management Facility ● Rocky Mountain Regional Solid Waste Authority ● Bow Valley Waste Management Commission

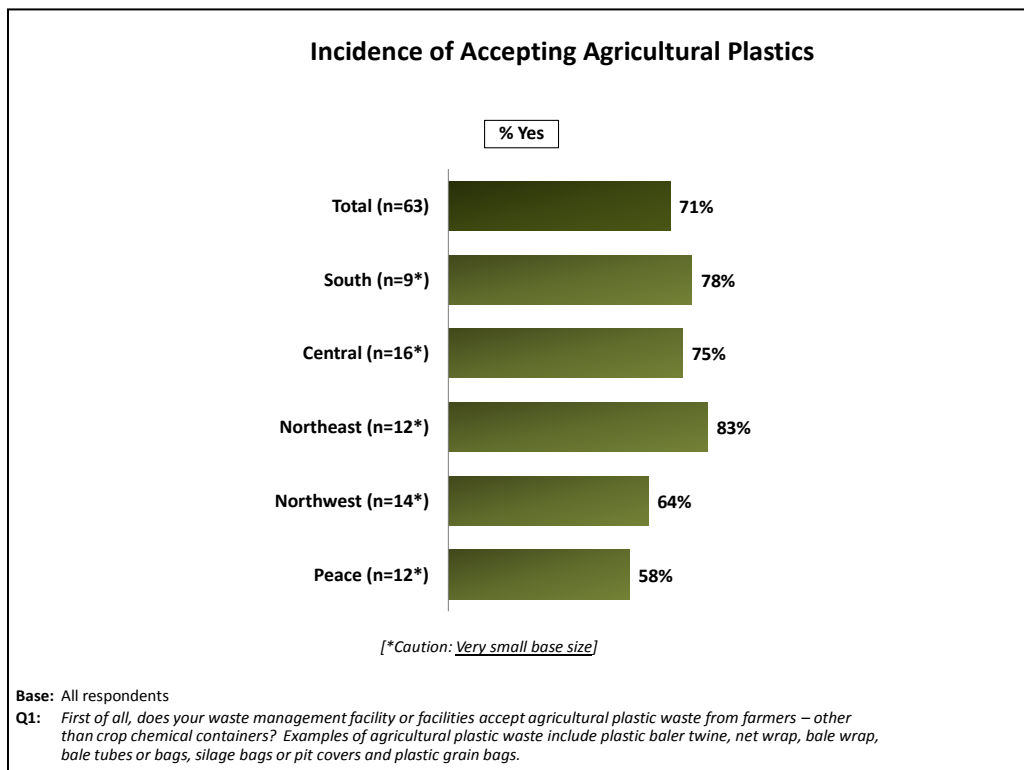
<p>Northeast</p> <ul style="list-style-type: none"> ● Beaver Regional Waste Management Services Commission ● Camrose Regional Solid Waste Authority ● Lamont County Regional Solid Waste Commission ● Lloydminster Landfill ● Mannville Modified Landfill ● Two Hills Regional Waste Management Commission ● Vegreville Sanitary Landfill ● Vermilion River Regional Waste Management Services Commission ● West Dried Meat Regional Landfill Authority ● Beaver River Regional Waste Management Services Commission ● Evergreen Regional Waste Management Services Commission ● M. D. of Bonnyville No. 87 	<p>Northwest</p> <ul style="list-style-type: none"> ● Cloverbar Landfill ● Drayton Valley Regional Landfill Authority ● Fort Saskatchewan Transfer Station ● Leduc & District Regional Waste Management Authority ● Parkland County ● Roseridge Waste Management Services Commission ● Waste Management of Canada Corporation ● Wetaskiwin Regional Sanitary Landfill ● Athabasca Regional Waste Management Services Commission ● Barrhead Regional Landfill Authority ● Highway 43 East Waste Commission ● Westlock Regional Waste Management Services Commission ● Whitecourt Regional Waste Management Authority ● West Yellowhead Regional Waste Management Authority
<p>Peace</p> <ul style="list-style-type: none"> ● High Prairie & District Regional Solid Waste Management Authority ● Lesser Slave Lake Regional Waste Management Services Commission ● Mackenzie Regional Waste Management Commission ● Grande Cache Landfill ● Greenview Regional Waste Management Authority ● Grande Prairie Landfill (Aquaterra) ● Griffin Creek Landfill ● Long Lake Regional Waste Management Services Commission ● Northpeace Regional Landfill (Formerly Fairview) ● Smoky River Regional Waste Management Commission ● MD of Spirit River Landfill (operated by CCS Landfill Services) ● West Grande Prairie County Regional Landfill Authority 	

TYPES AND AMOUNTS OF AGRICULTURAL PLASTICS ACCEPTED

Incidence of Accepting Agricultural Plastics

Seven-in-ten (71%) of the participating MWAs indicated that they accept agricultural plastics. That is, of the 63 MWAs interviewed, a total of 45 MWAs do *accept* and 18 MWAs do *not accept* agricultural plastic waste from agricultural producers.

Though not statistically different, acceptance of agricultural plastics is seemingly lower in the Northwest and Peace regions of Alberta.



Reasons for Not Accepting Agricultural Plastics

For the 18 MWAs that do not currently accept agricultural plastics, the main reasons are lack of a perceived need, logistics and resources associated with doing so, and challenges with recycling agricultural plastics.

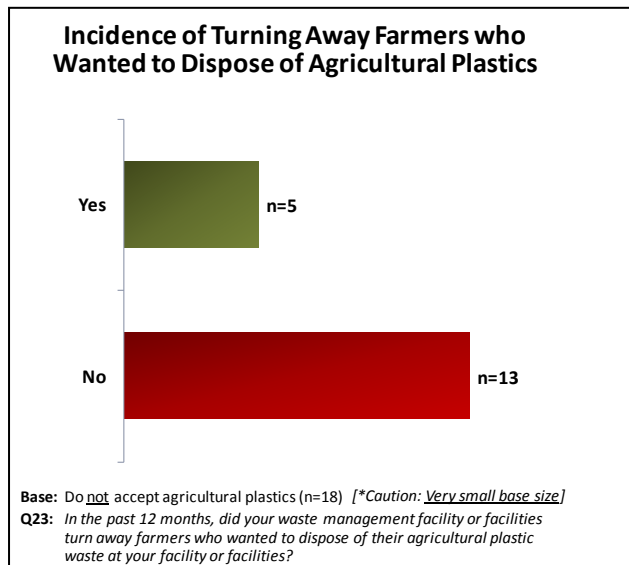
Specific reasons provided for not accepting agricultural plastics are shown in the table below.

Reasons for Not Accepting Agricultural Plastics	
	# of respondents
No farmers delivering to us/ no need	n=4
Focus on industrial & residential/ not in that line of business	n=4
Requires a site set up for storage and safety	n=4
Bulky/ difficult to handle	n=3
Recycling is not a viable option in our county/municipality	n=3
Lack of resources	n=3
Cost of collection and preparation for shipment to recycler	n=2
Material is not clean enough for recycling	n=2
Material is too wet for recycling	n=1
Municipal landfill ban	n=1
Not set up for collection and sorting	n=1
Lack of equipment to handle it	n=1
Finding a market	n=1
Lack of manpower/ labour	n=1
Other	n=2

Base: Do not accept agricultural plastics (n=18*) [**Caution: Very small base size*]
Q10: What are the main reasons why your waste management facility or facilities has decided not to accept agricultural plastics?

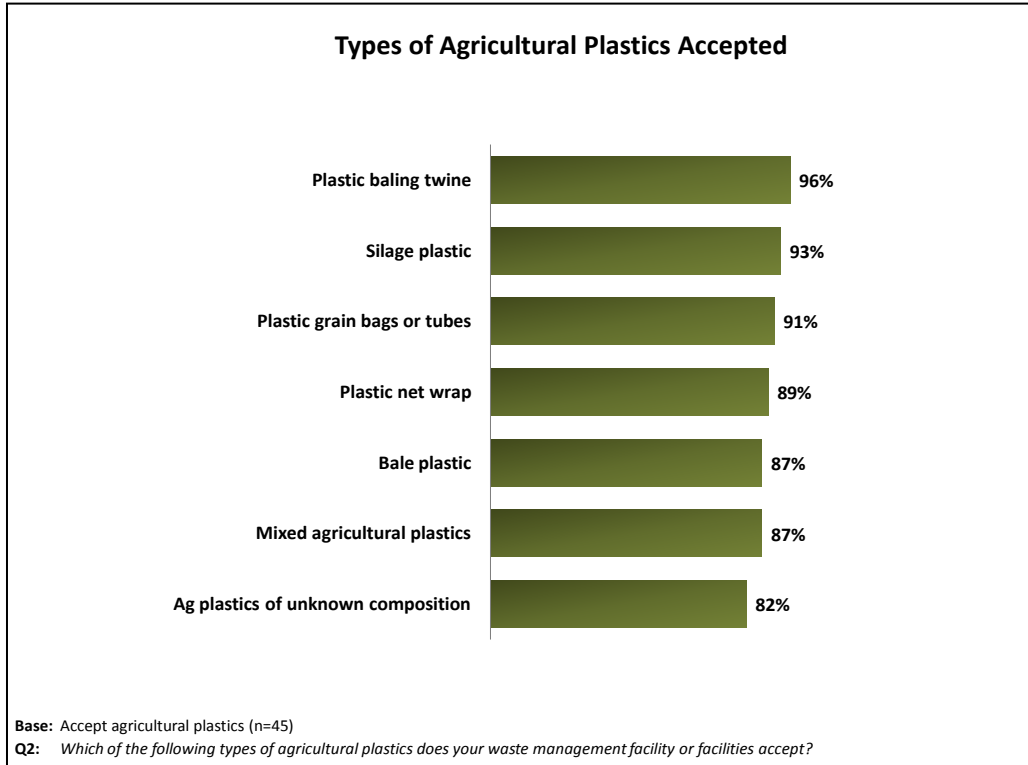
Incidence of Turning Farmers Away who Wanted to Dispose of Agricultural Plastics

The 18 MWAs that do not currently accept agricultural plastics were also asked: *In the past 12 months, did your waste management facility or facilities turn away farmers who wanted to dispose of their agricultural plastic waste at your facility or facilities?* A sizeable minority – 5 of the 18 – said yes, they did turn away agricultural producers who wanted to dispose of their agricultural plastics at their facility (i.e. because they do not accept them).



Types of Agricultural Plastics Accepted

For the most part, MWAs do not discriminate between specific types of agricultural plastics accepted. Among MWAs that accept agricultural plastics, virtually all (96%) accept plastic baling twine, while 87% to 93% say they accept each of the other specific types of plastics assessed.



Amounts of Agricultural Plastics Accepted

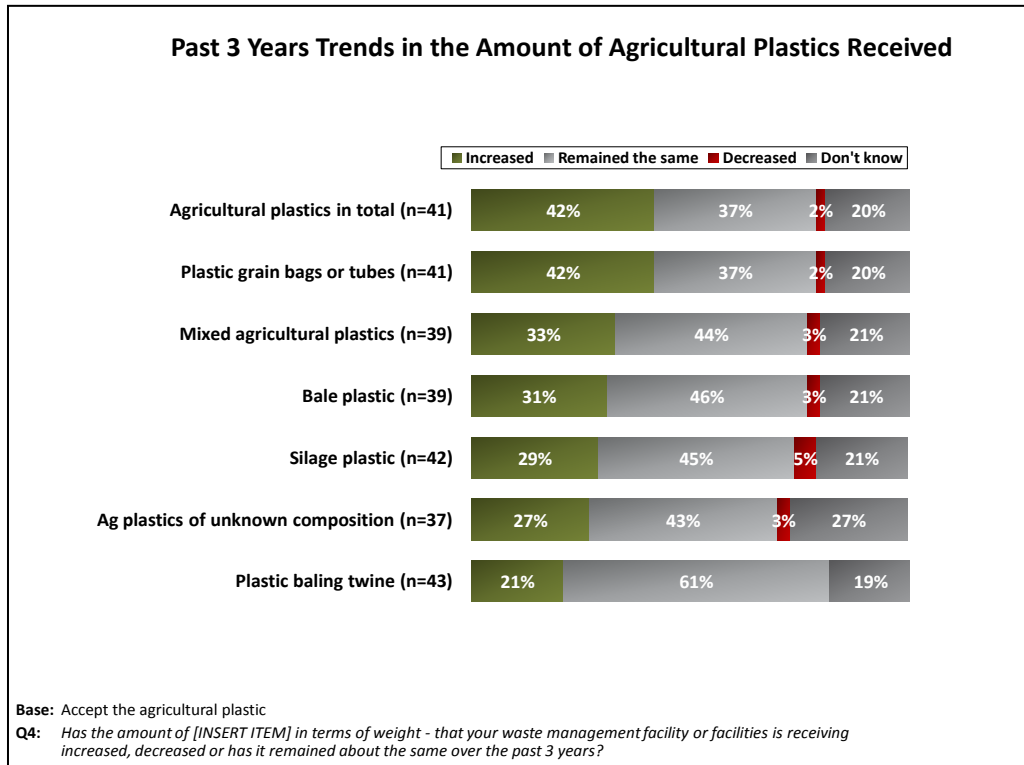
The majority of MWAs that accept agricultural plastics don't know the weight of the plastics accepted in the past year – this holds true for agricultural plastics in total as well as specific types of plastics.

With regards to the amount of agricultural plastics accepted, MWAs were asked to provide estimates using 2011 as a timeframe. As most MWAs do not keep accurate records of the amount of agricultural plastics they accept, and more than half cannot even offer estimates – that is, respond “don't know” – it is not possible to provide an accurate weight of the total amount of plastics accepted in 2011.

Based on estimates provided (i.e. by 16 to 20 respondents, depending on the type of plastic), it appears that the quantity of plastic baling twine collected is the highest, followed by silage plastic and plastic grain bags or tubes, with the amount of bale plastic notably lower. Further details can be found in Appendix A.

Trends in the Amounts of Agricultural Plastics Accepted

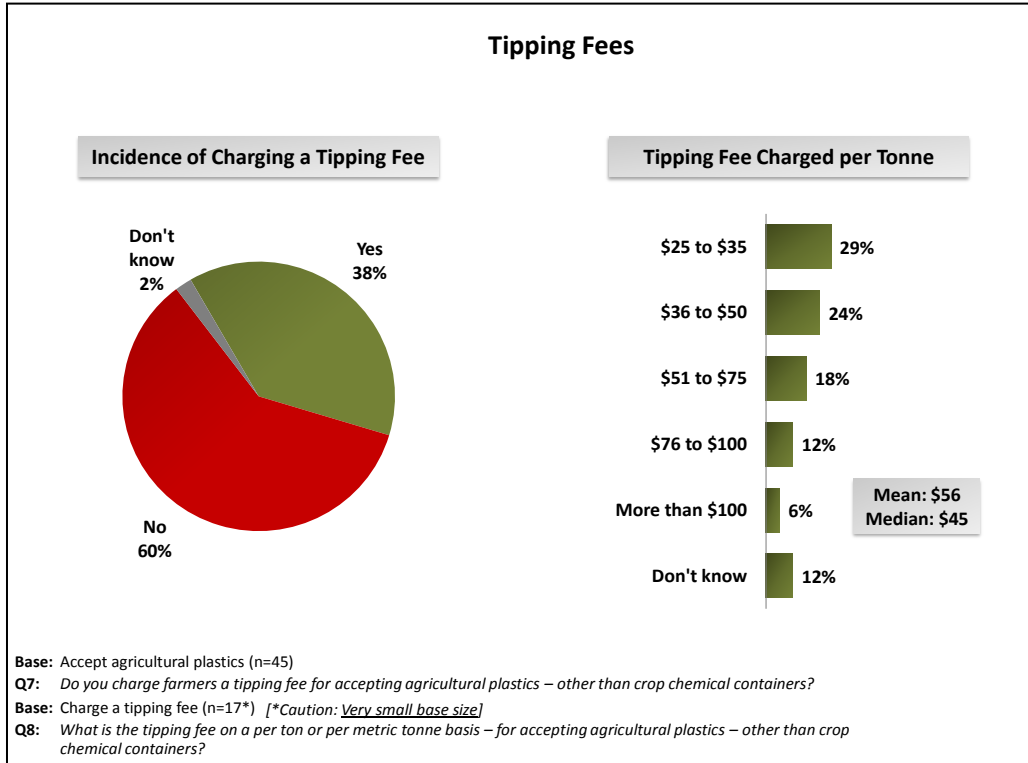
The amount of agricultural plastics accepted – particularly plastic grain bags or tubes – appears to be trending upwards. Among MWAs able to offer an opinion, the majority say the amount of agricultural plastics in total and the amount of plastic grain bags or tubes accepted in the past three years has increased, while for other types of specific plastics, most say the amount accepted has stayed the same. Very few MWAs report decreases in the amount of any type of agricultural plastics accepted. It is notable that roughly one-in-five MWAs are not able to comment on past three years trends (i.e. respond ‘don’t know’).



MWAs who indicated the amount of a specific type of agricultural plastic had increased in the past three years, were asked to approximate the percentage increase. The mean percentage increase is highest for plastic grain bags or tubes (48%) and silage plastic (34%).

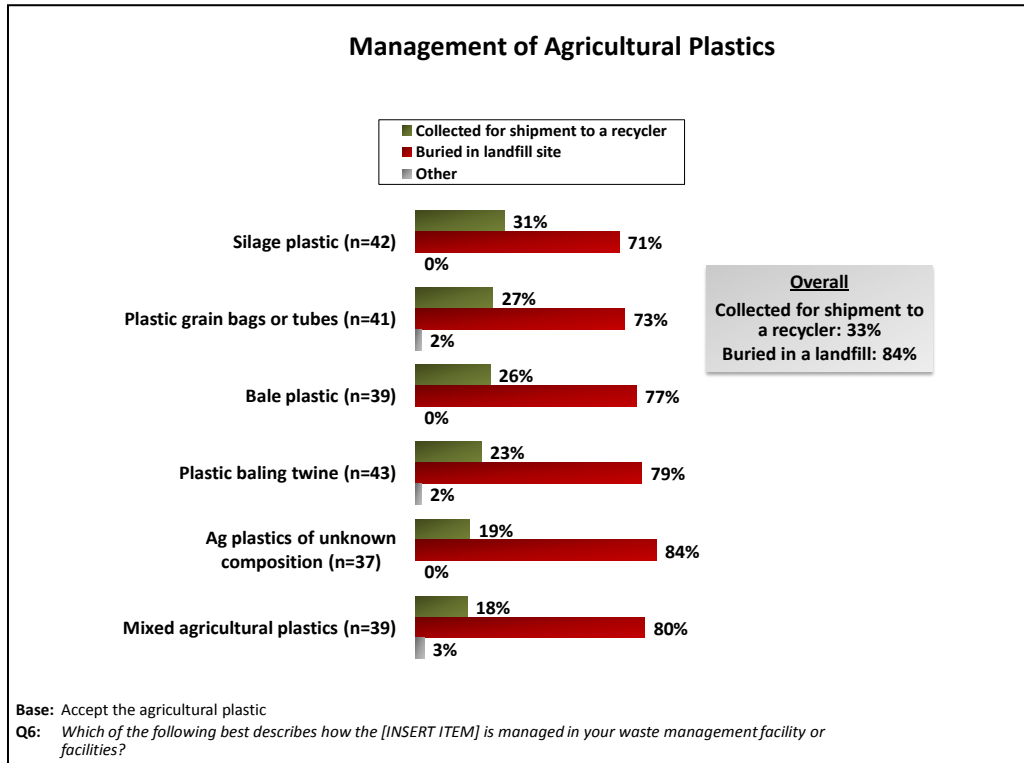
Incidence of Charging a Tipping Fee for Accepting Agricultural Plastics

The majority (60%) of MWAs that accept agricultural plastics do not charge agricultural producers a tipping fee. Among those who do, the mean tipping fee charged is \$56 per metric tonne.



MANAGEMENT OF AGRICULTURAL PLASTICS

Incidence of shipping any type of agricultural plastics to a recycler is low at 33%. With regard to specific types of plastics, reported incidence of collecting for shipment to a recycler is highest for silage plastic (31%), followed by plastic grain bags or tubes (27%) and bale plastic (26%), and then plastic baling twine (23%). Burying agricultural plastics in a landfill site is by far the most common means of managing agricultural plastics at MWAs in Alberta.



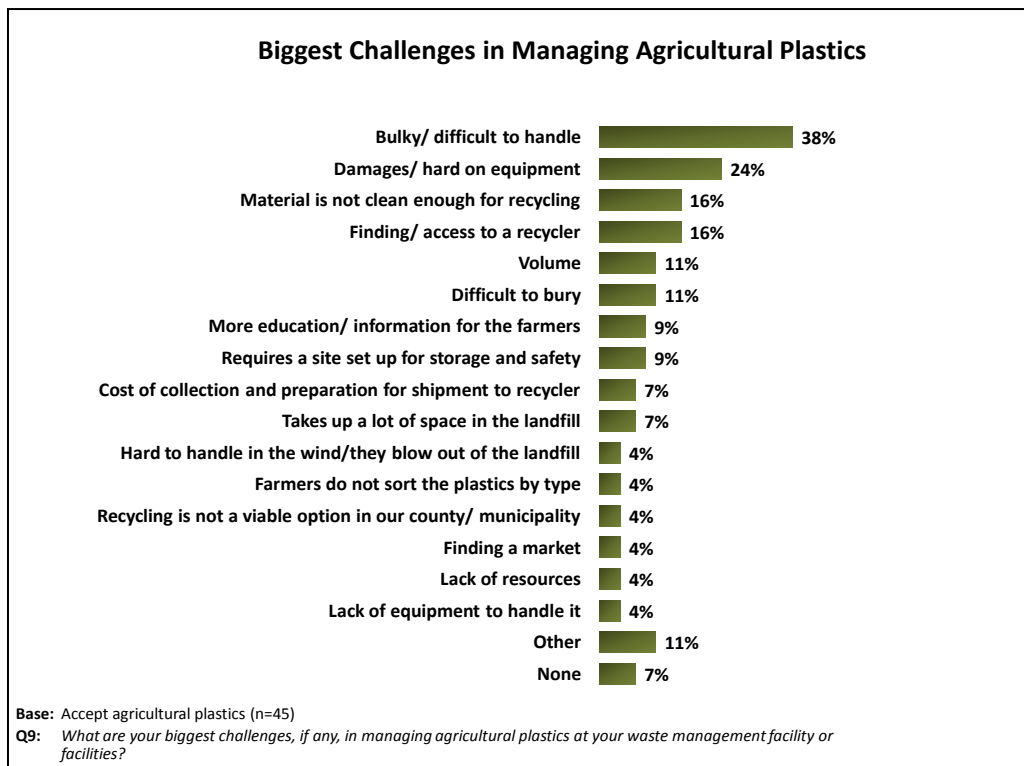
While incidence of *accepting* agricultural plastics is lowest in the Peace region (58%), among the seven Peace MWAs who do so, five (71%) say they have collected agricultural plastics for shipment to a recycler. This is notably higher than the Northwest (22%), Central (25%), South (29%) and Northeast (30%) regions of Alberta.

Challenges in Managing Agricultural Plastics

The most frequently identified challenge with regards to managing agricultural plastics is “bulky or difficult to handle” (38%), followed by “damages or is hard on equipment” (24%).

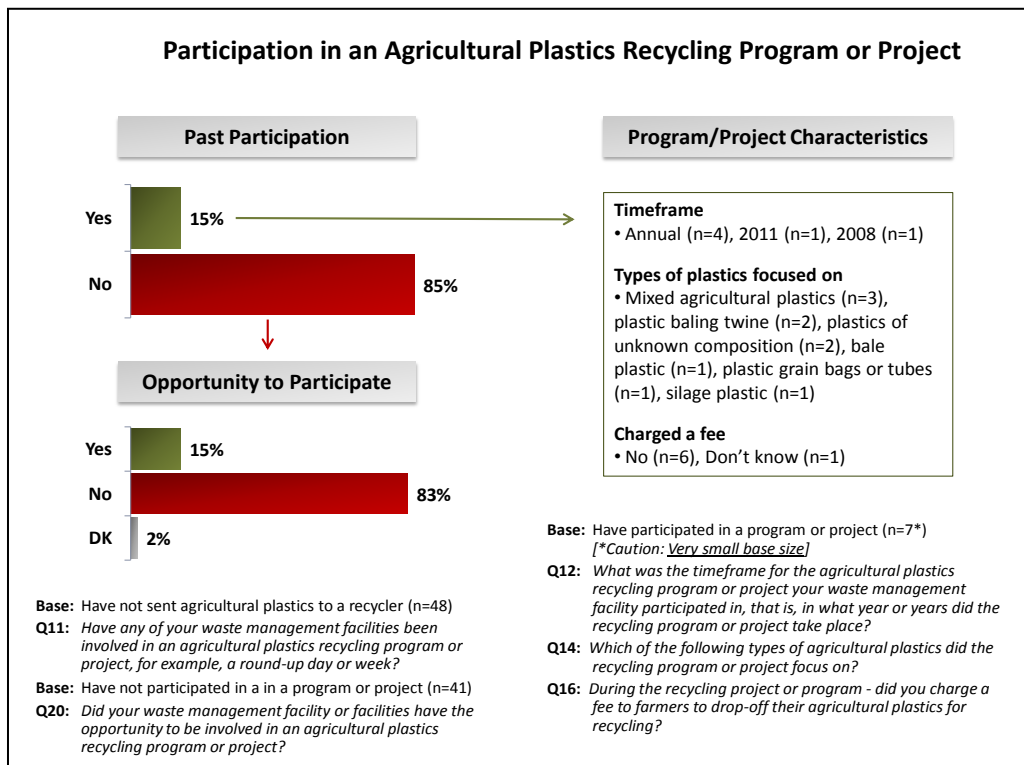
Issues associated with recycling are also key challenges: “material is not clean enough for recycling” (16%), “finding or access to a recycler” (16%), “cost of collection and preparation for shipment to a recycler” (7%), “recycling is not a viable option in our county or municipality” (4%) and “finding a market” (4%).

A variety of other challenges – related to volume, handling the plastics and the need for agricultural producer education – are also mentioned.



Past Participation in an Agricultural Plastics Recycling Program

MWAs who do not currently accept agricultural plastics as well as those who do accept agricultural plastics but have not collected them for shipment to a recycler, were asked if they had ever been involved in an agricultural plastics recycling program or project. Just 15% had done so. Among the 85% who had not, only 15% said they had had the opportunity to be involved in such a project or program. **Overall, roughly one-quarter (27%) of ‘non-recycling’ MWAs had the opportunity to participate in an agricultural plastics recycling program or project.**



MWAs that had been involved in a project but do not currently collect plastics for recycling were asked why that was the case. Responses included:

- “We don’t have an end market. No end use. Who is processing it into another product?”
- “Nobody wants it and I don’t know who to send it to. Cost and it costs us a lot to ship it. Short on employees to separate it.”
- “We don't have any recycling bins here, we are a private facility, we get no subsidies from the province, it is all out of pocket here. Also to get anyone here to pickup anything is difficult, we are off truck routes, no one comes out here. From our understanding there are also so many types of plastics out there and our understanding is they cannot be stored in the same place and certain companies only pickup certain plastics. There are different numbers and they are not standardized.”

MWAs that had the opportunity to participate in an agricultural plastics recycling program but decided not to participate, we asked the reasons why. Responses included:

- *“There is no agricultural waste around the area but we would accept it.”*
- *“We are not in agricultural area so no demand.”*
- *“We would be very interested in a program if someone would tell us. The farmers can choose where to go and we operate in a municipality and there is about half a million tonnes here a year and a farmer has a choice to come to us to recycle the material.”*
- *“We don’t know the information of what can be done with it. All of stuff goes to BFI and if they turn around and say we can use it we will take a bin.”*
- *“Whenever we went to recycle it the market disappeared.”*
- *“The feasibility of cost effectiveness and it is substantially cheaper to bury. In our county they have started up a recycling program and we are not involved yet. We are in a very rural area. One issue is that the farmers burn plastics and there are no regulations to stop them and no incentive”.*

Recycler Sold To

Many different recyclers are sold the agricultural plastics collected by MWAs. When the 23 MWAs who had collected agricultural plastics for shipment to a recycler or had been involved in an agricultural plastics recycling program or project, were asked to who the plastics were sold to, only two recyclers are mentioned by more than one MWA – Merlin Plastics and Evergreen Ecological. It is notable that 9 MWAs (40%) responded “don’t know”.

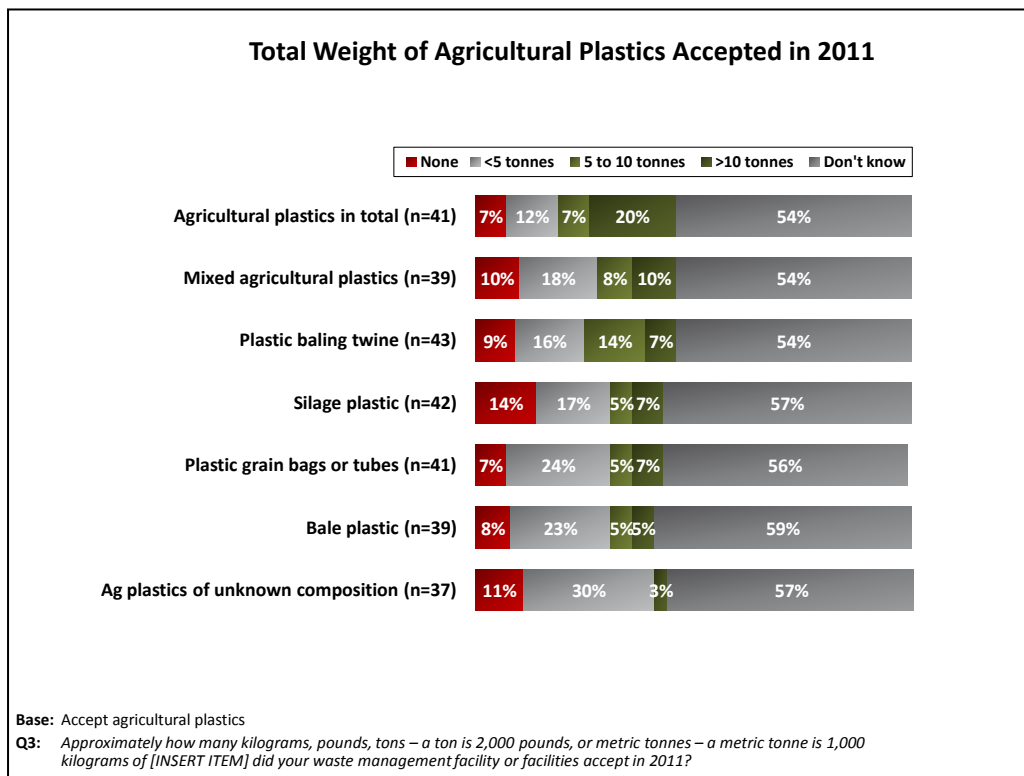
- Merlin Plastics [in Calgary] (n=3)
- Evergreen Ecological (n=2)
- Metro [in Calgary] (n=1)
- Cascade (n=1)
- Blue Planet (n=1)
- Capital Paper (n=1)
- Alberta Care (n=1)
- Crowfoot Plastic [in Hussar] (n=1)
- C and D Plastics (n=1)
- Recycle Logic (n=1)
- Curtis Construction [in Naicam, SK] (n=1)
- Hutterites [in Brooks] (n=1)
- US or offshore for twine (n=1)
- Don’t know (n=9)

APPENDIX A: AGRICULTURAL PLASTICS WEIGHT ESTIMATES

With regards to the amount of agricultural plastics accepted, MWAs were asked to provide estimates using 2011 as a timeframe.

As stated earlier, given that most MWAs *do not* keep accurate records of the amount of agricultural plastics they accept, and more than half cannot even offer estimates – that is, respond “don’t know” – it is not possible to provide an accurate weight of the total amount of plastics accepted in 2011.

The graph below shows survey responses. It is important to keep in mind that only 16 to 20 respondents – depending on the type of plastic – were able to provide an estimate.



APPENDIX B: QUESTIONNAIRE

ARD/ESRD:
2012 Municipal Waste Authorities Survey
Final Questionnaire: June 14, 2012

INTRODUCTION

Hello, my name is (FIRST NAME) and I'm calling from Ipsos Reid. Alberta Environment and Sustainable Resource Development, and Alberta Agriculture and Rural Development have commissioned Ipsos Reid to conduct a survey with municipal waste authorities and landfill managers regarding agricultural plastics. Recently Alberta Environment and Sustainable Resource Development sent you a letter indicating that they are conducting a survey with municipal waste authorities and landfill managers and supervisors to get their feedback and input. The overall purpose of the survey is to determine current policy, practices, challenges and trends regarding waste management of agricultural plastics.

The survey will take approximately 10 minutes and all your responses will be kept completely confidential.

(INTERVIEWER NOTE: IF RESPONDENT SAYS THEY DON'T ACCEPT AGRICULTURAL PLASTICS - LET THEM KNOW THAT ONE OF THE SURVEY OBJECTIVES IS TO UNDERSTAND KEY REASONS FOR DECIDING NOT TO ACCEPT THEM – AND THEREFORE THEIR PARTICIPATION IN THE SURVEY IS IMPORTANT)

S1. May I please speak to [INSERT RESPONDENT NAME]?

Yes, speaking
Yes, I'll get them
No, not available

[IF YES SPEAKING, CONTINUE]

[IF YES, I'LL GET THEM, REINTRODUCE]

[IF NO, NOT AVAILABLE, SCHEDULE CALLBACK]

S2. Do you have time now for the interview or should we set up another date and time that would be more convenient?

Time now [CONTINUE]

Interview later [SCHEDULE A CALLBACK INTERVIEW]

Not interested in participating in the survey [THANK AND TERMINATE]

S3. The survey does not ask for any personal information and no personally identifiable information will be provided to either Alberta Environment and Sustainable Resource Development or Alberta Agriculture and Rural Development. Information about the types and amounts of agricultural plastic waste accepted and how it is managed by your facility is being collected on an individual basis and will be reported on both an individual as well as consolidated basis to estimate the total amount of agricultural plastic managed and prevailing management practices across the province. Please note, if requested, this data will be made publically available.

(IF RESPONDENT WISHES TO VERIFY SURVEY LEGITIMACY THEY MAY CONTACT: Scott Nicol at Alberta Environment – Edmonton: 780-422-2009 OR Toll Free: 310-0000 (no area code) then enter 780-422-2009)

QUESTIONNAIRE

1. First of all, does your waste management facility or facilities accept agricultural plastic waste from farmers – other than crop chemical containers? Examples of agricultural plastic waste include plastic baler twine, net wrap, bale wrap, bale tubes or bags, silage bags or pit covers and plastic grain bags.

Yes

No

Don't Know

[IF YES, CONTINUE]

[IF NO, SKIP TO Q.10]

[IF DON'T KNOW – ASK TO SPEAK TO PERSON WHO WOULD KNOW]

2. Which of the following types of agricultural plastics does your waste management facility or facilities accept? (READ LIST) (PLEASE PROVIDE THIS LIST ON A FLY SHEET SO INTERVIEWERS CAN REPEAT DEFINITIONS AS NECESSARY THROUGHOUT THE SURVEY)

Plastic **baling twine**

Plastic **net wrap** – to wrap dry hay bales

Plastic **grain bags or tubes** – long plastic bags that are about 9 to 10 feet in diameter and about 200 to 300 feet long

Silage plastic – this includes, bags, tubes, or pit or pile covers used to store silage

Bale plastic – this includes, wrap, tubes or bags used to cover or store straw or hay bales

Mixed agricultural plastics – that is, a load consisting of a mix of any of the in-scope plastics previously mentioned

Agricultural plastics of **unknown composition** – that is, a load that may consist of any of the in-scope plastics previously mentioned, however, the specific types are unknown.

Yes

No

Don't know

[IF YES TO NET WRAP ONLY, SKIP TO Q.10]

[IF NO TO ALL ITEMS IN Q2, SKIP TO Q.10]

[IF DK/REF TO ALL ITEMS IN Q2, THANK & TERMINATE]

[FOR EACH ITEM - OTHER THAN NET WRAP - "YES" IN Q.2 ASK:]

3. Approximately how many kilograms, pounds, tons – a ton is 2,000 pounds, or metric tonnes – a metric tonne is 1,000 kilograms of **[INSERT FIRST ITEM]** did your waste management facility or facilities accept in 2011? **[SCRIPT FOR SECOND ITEM ASKED IF SECOND ITEM IS PLASTIC BALING TWINE, PLASTIC GRAIN BAGS OR TUBES, SILAGE PLASTIC OR BALE PLASTIC READ: “Now, thinking about specific types of agricultural plastics, approximately how many kilograms, pounds, tons or metric tonnes of [INSERT SECOND ITEM] did your waste management facility or facilities accept in 2011?”]** How about **[INSERT NEXT ITEM]**? (REPEAT UNITS OF MEASUREMENT/QUESTION ONLY IF NECESSARY)

[ITEMS]

[INSERT AS FIRST ITEM FOR ALL RESPONDENTS ASKED THIS QUESTION] Agricultural plastics in total
Plastic baling twine
Plastic grain bags or tubes
Silage plastic – this includes, bags, tubes, or pit or pile covers used to store silage
Bale plastic – this includes, wrap, tubes or bags used to cover or store straw or hay bales
Mixed agricultural plastics
Agricultural plastics of unknown composition

[UNITS OF MEASUREMENT – ACCEPT ONE UNIT ONLY]

[RANGE: 0 TO 999,999,999] Pounds
[RANGE: 0 TO 999,999,999] Kilograms
[RANGE: 0 TO 999,999] Tons
[RANGE: 0 TO 999,999] Metric tonnes
Don't know

[FOR EACH ITEM - OTHER THAN NET WRAP - “YES” IN Q.2 ASK:]

4. Has the amount of **[INSERT FIRST ITEM]** in terms of weight - that your waste management facility or facilities is receiving increased, decreased or has it remained about the same over the past 3 years? **[SCRIPT FOR SECOND ITEM ASKED IF SECOND ITEM IS PLASTIC BALING TWINE, PLASTIC GRAIN BAGS OR TUBES, SILAGE PLASTIC OR BALE PLASTIC READ: “Again, thinking about specific types of agricultural plastics, has the amount of [INSERT SECOND ITEM] in terms of weight – that your waste management facility or facilities is receiving – increased, decreased or has it remained about the same over the past 3 years”]** How about **[INSERT NEXT ITEM]**? (REPEAT SCALE/QUESTION ONLY IF NECESSARY)

TYPE OF AGRICULTURAL PLASTIC

[INSERT AS FIRST ITEM FOR ALL RESPONDENTS ASKED THIS QUESTION] Agricultural plastics in total
Plastic baling twine
Plastic grain bags or tubes
Silage plastic
Bale plastic
Mixed agricultural plastics
Agricultural plastics of unknown composition

Increased
Decreased
Remained about the same
Don't Know

[FOR EACH TYPE OF AGRICULTURAL PLASTIC IN Q.4 INCREASED OR DECREASED ASK Q.5] [IF INCREASED OR DECREASED NOT MENTIONED FOR ANY ITEM IN Q.4, SKIP TO Q.6]

5. In percentage terms, approximately how much has the amount of **[INSERT TYPE OF AGRICULTURAL PLASTIC INCREASED IN Q.4 “increased”**; **INSERT TYPE OF AGRICULTURAL PLASTIC DECREASED IN Q.4 “decreased”**] in terms of weight - over the past 3 years? How about **[INSERT NEXT ITEM]**?
(REPEAT QUESTION ONLY IF NECESSARY)

[NUMERIC RESEPNSE – RANGE: 0 TO 10,000] %

[FOR EACH ITEM - OTHER THAN NET WRAP - “YES” IN Q.2 ASK:]

6. Which of the following best describes how the **[INSERT ITEM]** is managed in your waste management facility or facilities? (READ LIST) How about **[INSERT NEXT ITEM]**? (REPEAT LIST/QUESTION ONLY IF NECESSARY) (ACCEPT MULTIPLE RESPONSES)

TYPE OF AGRICULTURAL PLASTIC

Plastic baling twine
Plastic grain bags or tubes
Silage plastic
Bale plastic
Mixed agricultural plastics
Agricultural plastics of unknown composition

Collected for shipment to a recycler
Buried in landfill site
Incinerated for energy recovery
Other (specify)

7. Do you charge farmers a tipping fee for accepting agricultural plastics – other than crop chemical containers?

Yes
No
Don't know

[IF YES, CONTINUE – OTHERWISE SKIP TO Q.9]

8. What is the tipping fee on a per ton or per metric tonne basis – for accepting agricultural plastics – other than crop chemical containers?

[NUMERIC RESPONSE – ACCEPT DECIMALS. RANGE: \$0.01 TO \$999.99] Per ton
[NUMERIC RESPONSE – ACCEPT DECIMALS. RANGE: \$0.01 TO \$999.99] Per metric tonne
Other (specify)

9. What are your biggest challenges, if any, in managing agricultural plastics at your waste management facility or facilities? (DO NOT READ LIST) (ACCEPT MULTIPLE RESPONSES)

Bulky – difficult to handle
Lack of equipment to handle it
Damages/hard on equipment
Takes up a lot of space in the landfill
Material is too wet for recycling
Material is not clean enough for recycling
Cost of collection and preparation for shipment to recycler
Too expensive to manage agricultural plastics for recycling
Not set up for collection and sorting
Farmers do not sort the plastics by type
Recycling is not a viable option in our county/municipality
Lack of manpower/labour
Lack of resources
None
Other (specify)

[IF NO IN Q.1 OR YES TO NET WRAP ONLY IN Q.2, CONTINUE – OTHERWISE SKIP TO Q.11]

10. What are the main reasons why your waste management facility or facilities has decided not to accept agricultural plastics [IF YES TO NET WRAP ONLY INSERT: other than net wrap]? (DO NOT READ LIST) (ACCEPT MULTIPLE RESPONSES)

Bulky – difficult to handle
Lack of equipment to handle it
Damages/hard on equipment
Takes up a lot of space in the landfill
Material is too wet for recycling
Material is not clean enough for recycling
Cost of collection and preparation for shipment to recycler
Too expensive to manage agricultural plastics for recycling
Not set up for collection and sorting
Farmers do not sort the plastics by type
Recycling is not a viable option in our county/municipality
Lack of manpower/labour
Lack of resources
Municipal landfill ban
None
Other (specify)

[CONTINUE IF NO IN Q1 OR IF YES TO NET WRAP ONLY IN Q.2 OR IF NO TO ALL ITEMS IN Q.2 OR IF “COLLECTED FOR SHIPMENT TO A RECYCLER” NOT SELECTED OR MENTIONED FOR ANY ITEM IN Q.6, OTHERWISE SKIP TO Q.19]

11. Have any of your waste management facilities been involved in an agricultural plastics recycling program or project, for example, a round-up day or week?

Yes

No

Don't know

[IF “YES” IN Q.11, CONTINUE – OTHERWISE SKIP TO Q.19]

12. What was the timeframe for the agricultural plastics recycling program or project your waste management facility participated in, that is, in what year or years did the recycling program or project take place?

[VERBATIM RESPONSE]

13. Approximately how many farmers were involved in this agricultural plastics recycling program or project?

[VERBATIM RESPONSE]

14. Which of the following types of agricultural plastics did the recycling program or project focus on? (READ LIST) (ACCEPT MULTIPLE RESPONSES)

Plastic baling twine

Plastic net wrap

Plastic grain bags or tubes

Silage plastic

Bale plastic

Mixed agricultural plastics

Agricultural plastics of unknown composition

[DO NOT READ] Don't know

[FOR EACH TYPE OF AGRICULTURAL PLASTIC - OTHER THAN NET WRAP - MENTIONED IN Q.14, ASK:]

15. Approximately how many kilograms, pounds, tons – a ton is 2,000 pounds, or metric tonnes – a metric tonne is 1,000 kilograms of **[INSERT TYPE OF AGRICULTURAL PLASTIC MENTIONED IN Q.14]** was collected during the recycling program or project was recycled? How about **[INSERT NEXT ITEM]**? (REPEAT UNITS OF MEASUREMENT/QUESTION ONLY IF NECESSARY)

[ITEMS]

Plastic baling twine

Plastic grain bags or tubes

Silage plastic – this includes, bags, tubes, or pit or pile covers used to store silage

Bale plastic – this includes, wrap, tubes or bags used to cover or store straw or hay bales

Mixed agricultural plastics

Agricultural plastics of unknown composition

[UNITS OF MEASUREMENT – ACCEPT ONE UNIT ONLY]

[RANGE: 0 TO 999,999,999] Pounds

[RANGE: 0 TO 999,999,999] Kilograms

[RANGE: 0 TO 999,999] Tons

[RANGE: 0 TO 999,999] Metric tonnes

Don't know

16. During the recycling project or program – did you charge a fee to farmers to drop-off their agricultural plastics for recycling?

Yes

No

Don't Know

[IF YES, CONTINUE]

[IF NO – SKIP TO Q.18]

[IF DON'T KNOW – SKIP TO Q.19]

17. On a per ton or per metric tonne basis, what was the fee for accepting agricultural plastics for recycling during the recycling project or program?

[NUMERIC RESPONSE – ACCEPT DECIMALS. RANGE: \$0.01 TO \$999.99] Per ton

[NUMERIC RESPONSE – ACCEPT DECIMALS. RANGE: \$0.01 TO \$999.99] Per metric tonne

Other (specify)

[IF NO IN Q.16, CONTINUE – OTHERWISE SKIP TO Q.19]

18. And what were the main reasons for deciding not to charge farmers a fee for accepting agricultural plastics for recycling during the recycling project or program?

[VERBATIM RESPONSE]

[IF “YES” IN Q.1 AND “YES” TO ANY ITEM OTHER THAN NET WRAP IN Q.2 AND “COLLECTED FOR SHIPMENT TO A RECYCLER NOT SELECTED OR MENTIONED FOR ANY ITEM IN Q.6 AND “YES” IN Q.11, CONTINUE – OTHERWISE SKIP TO Q.20]

19. Although your waste management facility or facilities participated in a recycling program or project for agricultural plastics, I notice that none of the agricultural plastics that your facility or facilities accepts is currently being collected for recycling. What are the main reasons why?

[VERBATIM RESPONSE]

[IF “NO” IN Q.11, CONTINUE – OTHERWISE SKIP TO Q.22]

20. Did your waste management facility or facilities have the opportunity to be involved in an agricultural plastics recycling program or project?

Yes

No

Don’t Know

[IF “YES” IN Q.20, CONTINUE – OTHERWISE SKIP TO Q.22]

21. What are the main reasons why your waste management facility or facilities decided not to participate in any recycling programs or projects for agricultural plastics?

[VERBATIM RESPONSE]

[IF “COLLECTED FOR SHIPMENT TO A RECYCLER SELECTED OR MENTIONED FOR ANY ITEM IN Q.6 OR “YES” IN Q.11, CONTINUE – OTHERWISE SKIP TO Q.23]

22. To whom [INSERT “is” IF COLLECTED FOR SHIPMENT TO A RECYCLER SELECTED OR MENTIONED FOR ANY ITEM IN Q.6; INSERT “was” IF YES IN Q.11] the agricultural plastics you [INSERT “collect” IF COLLECTED FOR SHIPMENT TO A RECYCLER SELECTED OR MENTIONED FOR ANY ITEM IN Q.6; INSERT “collected during the project or program” IF YES IN Q.11] for recycling sold to?

[VERBATIM RESPONSE]

[IF “NO” IN Q.1 OR YES TO NET WRAP ONLY IN Q.2, CONTINUE – OTHERWISE SKIP TO CLOSE]

23. In the past 12 months, did your waste management facility or facilities turn away farmers who wanted to dispose of their agricultural plastic waste [IF YES TO NET WRAP ONLY IN Q.2 INSERT: other than net wrap] at your facility or facilities?

Yes

No

Don’t know

[IF YES, CONTINUE – OTHERWISE SKIP TO CLOSE]

24. Approximately how many farmers – who wanted to dispose of their agricultural plastics waste – did your waste management facility or facilities turn away in 2011?

[VERBATIM RESPONSE]