



Highlights from 2015 Market-Based Solutions for Used Agricultural Plastics Part 2: Survey of Municipal Waste Authorities

Agricultural plastics are used in a wide variety of applications on Alberta farms and ranches. These include grain bags, twine, net wrap, silage bags and many others. Once these materials have served their intended purpose, their post-use management becomes a challenging and complex issue.

The volume of plastic used in agriculture is significant. According to the 2013 report entitled Alberta Agricultural Waste Characterization Study: Final Report, between 6,600 and 14,000 tonnes of agricultural plastic waste are generated in Alberta every year. This estimate is conservative; the actual volume of used agricultural plastic waste could be even higher.

6,600 tonnes of used agricultural plastic = total combined weight of 77 fully loaded SuperBs with cabs



In the 2012 Agricultural Plastics Recycling-Municipal Waste Authorities Survey-Final Report 660, agricultural producers in Alberta used several approaches for the management of used agricultural plastics. The most common method noted in that survey was burning. It is important to note that the burning of plastics is associated with numerous harmful impacts. Burning plastics can release highly toxic substances, like dioxins, heavy metals and volatile organic compounds that have been associated with health impacts ranging from headaches and dizziness to lung disease, cancer and growth defects. Burning plastics can also leave behind toxic residues that impair soil and water quality. Because of these impacts on health and the environment, the burning of plastics is illegal under Alberta's Environmental Protection and Enhancement Act.

Other management methods noted in the 2012 survey for used agricultural plastics include sending them to a landfill, burying them on-farm, reusing them or sending them for recycling.

For proper disposal, several post-use management options are available. Used agricultural plastics can be buried in a landfill or diverted into other markets such as recycling for use in other plastic products, conversion into fuel, and conversion into electricity. Recycling used agricultural plastics is considered the most environmentally preferable way for municipalities and municipal waste authorities to deal with these materials at this time.



About the 2015 survey

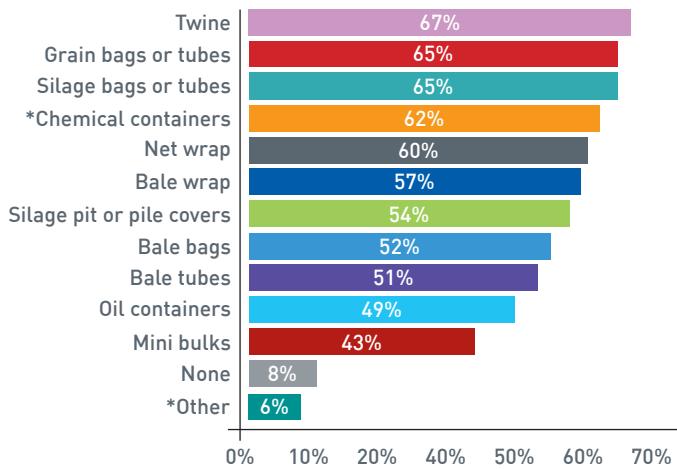
In 2015, Alberta Agriculture and Forestry (AF) conducted a two-part survey on market-based solutions for used agricultural plastics. In one part of the survey, AF gathered the responses of agricultural fieldmen representing 61 out of Alberta's 69 municipalities. In the second part of the survey, AF gathered the responses of 63 out of 74 municipal waste authorities (MWAs) in Alberta.

This factsheet is intended to highlight key findings of the 2015 Market-Based Solutions for Used Agricultural Plastics Part 2: Survey of Municipal Waste Authorities. The survey responses highlight the MWAs practices, experiences and barriers they face in dealing with used agricultural plastics.

Highlights of 2015 municipal waste authorities survey results

Municipal waste authorities (MWAs) currently accept several types of used agricultural plastics. In the survey of MWAs, respondents were asked to outline which types of materials they accept. The top-three most accepted materials were twine, grain bags and silage bags. Nine different types of used agricultural plastics were accepted by half or more of the 63 respondents to this question.

Figure 1. Used agricultural plastics accepted at municipal waste sites (n=63).



*Chemical containers are accepted through the CleanFARMS empty container recycling program

*Other: Hay tarps, windshield washer jugs, antifreeze jugs, plastic film

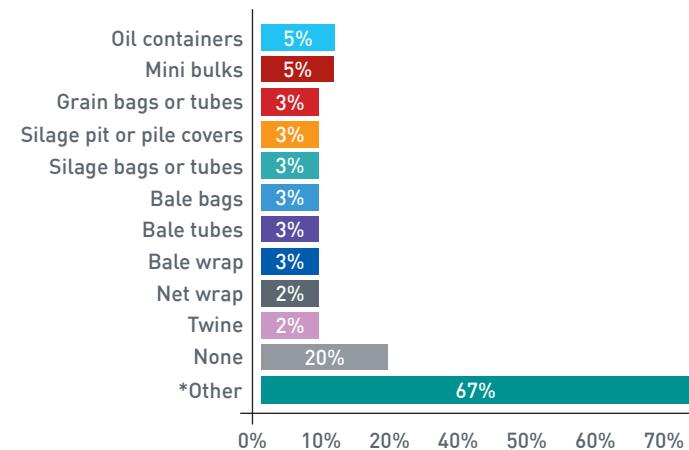
Note: Multiple responses permitted

A large proportion of these used agricultural plastics are delivered to MWAs by producers. The survey found that by far the most common source of used agricultural plastics delivery to disposal sites or transfer stations was agriculture producers themselves. Some of these materials were brought to the facility by a municipality.

Types of used agricultural plastics being accepted at MWAs. The survey found different views on which used agricultural plastics can be accepted at MWAs. Responses included used agricultural plastic either going into the waste site, being stored onsite or being marketed. Some respondents identified oil containers, mini-bulks and grain bags and tubes as types of used agricultural plastics not being accepted at their municipal waste sites, while other MWAs accepted these materials routinely.

If the options to properly dispose of used agricultural plastics are not completely understood by the producers, this could potentially be seen as a critical barrier for local producers wanting to properly dispose of their used agricultural plastics.

Figure 2. Used agricultural plastics not accepted at municipal waste site (n=30)



*Other: Hazardous materials, containers not clean, PVC pipe, fiber-weaved mini bulks, poly pipe, trailer tarp, hard chemical totes

Note: Multiple responses permitted

Most MWAs do not maintain records of used agricultural plastics. More than two-thirds of respondents indicated that they do not keep records of the type and volume of used agricultural plastics coming to their facilities. However, 20% of respondents indicated that they do keep such records and some are only recorded at the landfill.

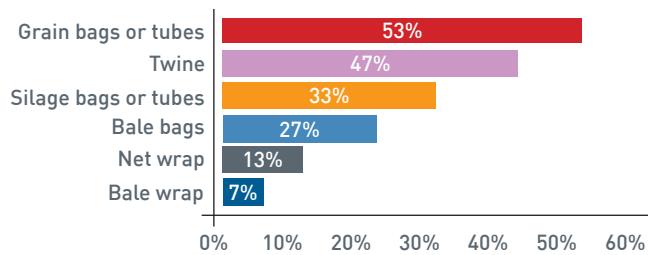
Most MWAs do not participate in markets for used agricultural plastics. Used agricultural plastics can have economic value and a number of companies are set up to purchase these materials, ship and resell them. However, among the MWAs surveyed, 73% indicated that they are not currently participating in a market for used agricultural plastics. For the MWAs who were participating in used agricultural plastics markets, the following recycling companies were listed:

- Capital Paper Recycling Ltd.
- Crowfoot Plastics Inc.
- Dock 7 Materials Group
- Eco Green International Service Ltd.
- Everclean Recycling
- Meridian Wealth Management Inc.
- SWA Developing Company Ltd.
- Vikoz Enterprises Inc.

The intent of sharing the survey results is to communicate and not to endorse one company over another. Municipal waste authorities interested in accessing markets for used agricultural plastics would need to contact the individual companies to find out what types of used agricultural plastics are being accepted.

Grain bags or tubes most commonly marketed materials. Of the 15 respondents indicating they currently participate in used agricultural plastics markets, six different types of materials are involved. The leading materials are grain bags or tubes (53%), twine (47%) and silage bags or tubes (33%).

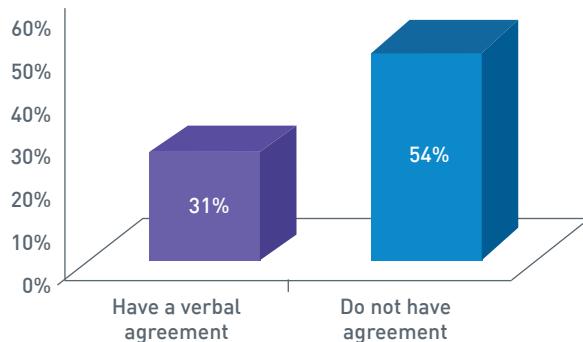
Figure 3. Used agricultural plastics entering market by type (n = 15).



Note: Multiple responses permitted

Formal marketing arrangements are rare. Most respondents indicated that they did not have an established agreement in place to market used agricultural plastics (54%), while 31% of respondents said they had a verbal agreement in place. Some respondents commented that they were able to arrange for the sale of materials on an occasional basis without a formal agreement being used.

Figure 4. Used agricultural plastics marketing agreement (n = 13)



Note: The remaining percentage not represented is from those who chose not to respond to this question.

Some MWAs receive payment for used agricultural plastics. Five MWAs indicated they received payment, while others indicated they received transport and/or associated labour at no cost to them. Respondents who received payment indicated they could receive up to \$30 per tonne for twine, up to \$65 per tonne for bale bags and up to \$500 per load for silage and grain bags.

These prices are only representative of the numbers shared at the point of the survey and can fluctuate due to changing economic situations.

Municipal waste authorities would need to contact the individual companies to find out their current prices.

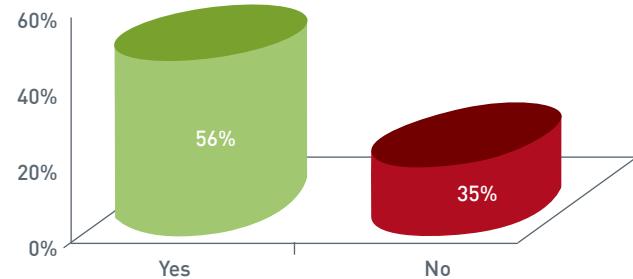
Most used agricultural plastics move via truck. When used agricultural plastics are transported from the MWA to another destination, trucking is the primary mode of transportation. Other modes of transport, such as container, train and ship, were also noted by respondents.



Greatest equipment challenge: proper packaging for shipment. Despite the availability of markets for used agricultural plastics, some MWAs find it difficult to participate. Thus 38% of respondents indicated that proper packaging for shipment posed a challenge. Other equipment-related issues were also identified as management challenges in this area. For MWAs, dealing with used agricultural plastics requires a variety of equipment which they might not already own. Respondents identified 23 types of equipment that may be needed.

Most MWAs are considering entering the market for used agricultural plastics. Currently a minority of MWAs participate in a market for used agricultural plastics but 56% of the respondents said they are considering entering the markets in the future.

Figure 5. In the future, are you considering entering into this/these markets? (n = 52)



Note: The remaining percentage not represented is from those who chose not to respond to this question.

Challenges and barriers to market participation

Most municipal waste authorities (MWAs) receive used agricultural plastics from producers. These MWAs are generally aware that markets exist for used grain bags, twine, silage bags and other materials. Used agricultural plastics are either sold for payment or taken away at no cost. In some cases, MWAs have to pay for these materials to be removed from their facilities.

How is it that some Alberta MWAs are aware of these markets, yet do not participate in them? In the 2015 survey, AF asked non-participating MWAs about what they considered the most significant challenges or barriers they face.

Costs, smaller quantities pose biggest barriers. Municipal waste authorities that were not active in the used agricultural plastics market were asked, why? While a variety of barriers were indicated, the highest ranked reason was costs associated with getting used agricultural plastic to market (11%), followed by no market opportunity available for smaller quantities (9%). Four other barriers to entry were also identified.

The table on the following page lists the key challenges and barriers to market participation identified by Alberta's municipal waste authorities.



Conclusions and next steps

The issue of managing used agricultural plastics after its primary use may seem straightforward; however, the framework for managing used agricultural plastics is more challenging and complex than it might first appear.

Many of the most common types of used agricultural plastics (such as grain bags, twine and silage bags) can be and are sold by MWAs to different companies for recycling. This marketplace then sells and ships these plastics to other companies that recycle them to make new plastics. Thus, producers avoid burying these materials on the farm, taking them to a landfill or (unlawfully) burning them.

In this survey, 73% of Alberta's MWAs indicated they do not participate in markets for used agricultural plastics. The primary reason is that, while many are aware of these markets, they face various challenges or barriers to participation. These can involve operating costs and lack of means to recoup them, lack of knowledge of the used agricultural plastics marketplace, labour shortages and processing and equipment considerations. Further details of the challenges and barriers are listed below in Table 1.



This factsheet is intended to highlight key findings of the 2015 Market-Based Solutions for Used Agricultural Plastics Part 2: Survey of Municipal Waste Authorities. Alberta Agriculture and Forestry will communicate the full results of the survey, as well as its companion survey that was completed with agricultural fieldmen from Alberta Municipalities.

Together, these surveys provide a useful portrait of how some municipalities and MWAs are successfully managing used agricultural plastics after their primary use. The surveys also highlight why many other municipalities and MWAs seem to be less engaged in managing these materials.



While cost is often a significant barrier, more municipalities and MWAs may participate if they had access to information about materials, markets and management processes. It is significant that 56% of MWAs indicated they are considering entering the used agricultural plastics marketplace in the future. As more information becomes available, more MWAs could begin to participate in the markets for used agricultural plastics.

Alberta Agriculture and Forestry will be looking for opportunities to help connect and build relationships among stakeholders so people can share information and ideas, and learn from others' experiences. Alberta Agriculture and Forestry looks forward to progressing together with stakeholders and partners as we continue to seek better ways to deal with used agricultural plastics.



Table 1. Examples of identified barriers to participation in markets for used agricultural plastics

Barriers to market entry	Challenges at waste management facilities	Local barriers
<p><i>These factors were identified by survey respondents as complicating or preventing their participation in markets for used agricultural plastics.</i></p> <ul style="list-style-type: none"> • Getting confirmation from company to accept ag plastic • Repackaging for seacan loading • Cleanliness levels of materials • No end-of-life strategy for ag plastics • Contamination levels • Finding markets • Ability to clean/wash it and do something with it • Criteria from other markets • Costs of getting ag plastic to market • Limited markets for specific ag plastics • Distance to market • Decent quality of ag plastics from farmers • Tight and heavy enough rolls • Farmers' knowledge of used ag plastic options 	<p><i>MWAs' success at receiving and handling used agricultural plastics is influenced by many factors, according to survey respondents.</i></p> <ul style="list-style-type: none"> • Storage space • Cleanliness of ag plastics • Finding market • Finding consistent market • Educating producers • Wear and tear on equipment • Lack of government leadership • Costs • Timely/reliable transportation and pickup • Need for more sites and bins • Contamination and management logistics • Ag plastic hard to work with/caught in equipment • Handling of ag plastics • Heavy manual labour project • Ability to make weight requirements • Large space (volume) taken up by ag plastics • Handling of ag plastics (in cold weather) • Disposal or marketing of ag plastics • Proper containment and consistency • No set program for ag plastics • Hard to bury 	<p><i>Some of the factors influencing MWAs' participation in markets for used agricultural plastics are local in nature. The following were identified by respondents as being relevant in their area.</i></p> <ul style="list-style-type: none"> • Distance to transport ag plastic • Cleanliness expectations • Need company to help with recycling program • Costs • Lower tipping fee doesn't encourage recycling • Infrastructure to house and handle ag plastics • Money to get equipment • Ability to separate ag plastics from loads • No incentive to bring in clean product • Nowhere to take it • Lack of participation/will • Costs are higher than the payment • Labour and time to manage project