



Agricultural Plastics Pilot Program Data Report – 15 Month Completion October 2019 –December 2020

February 1, 2021



The pilot project is led by the multi-stakeholder Agricultural Plastics Recycling Group; funds were granted by the Government of Alberta and are administered by Alberta Beef Producers.

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1. Executive Summary

The purpose of this report is to provide background information on the Alberta Ag-Plastic. *Recycle It!* pilot program and data from the first 15 months of collection of grain bags and twine. It outlines the history of the project, stakeholders involved and information to help answer questions about the feasibility of a permanent program.

The Alberta Ag-Plastic. *Recycle It!* program is a three-year (2019 - 2022) pilot project that helps agricultural producers (farmers) recycle used grain bags and twine. The \$1 million in funding came from Alberta Agriculture and Forestry in early 2019. In addition to on-the-ground pilots that divert used grain bags and twine out of landfills and into new products, the program delivers a number of research projects that will help inform the potential transition of the pilots into a long-term, sustainable and self-funded program. A producer survey, waste characterization and market study were completed in 2019.

The program is led by the multi-stakeholder Agricultural Plastics Recycling Group (APRG). The APRG, a group made up of over 20 stakeholder organizations from sectors across Alberta, representing municipalities, producers, non-profits, recyclers and retailers among others, provides oversight of the program and a network to disseminate information and build support (a full list of members is available in Appendix A). This is a key element of the program, to welcome all groups to participate and be actively involved in the program.

Cleanfarms, Canada's agricultural stewardship organization; develops, implements and operates programs that help producers manage ag-waste. Cleanfarms manages and operates a number of programs Canada-wide including the Alberta Ag-Plastic, *Recycle It!* program. The first 15 months of material collection under the program operated from October 1, 2019 to December 31, 2020. The following table highlights 15-month collection totals.

Alberta Pilot October 2019 through December 2020:

Material type	Tonnage collected		
	Total	Legacy material ¹	Pilot material
Grain bags	759.3	263.6	495.7
Twine	43.4	24.5	19.0
Total tonnage collected ²	802.8	288.1	514.7

¹Legacy material' is defined as grain bags and/or twine that were collected and stored onsite by the pilot sites prior to program inception.

²The total tonnage excludes disposal waste contained in legacy material.

In addition to collection numbers, stakeholder feedback is also important to assess the viability of a permanent program. A producer survey completed in the Fall of 2019 is available at www.aprg.ca. There is a plan to conduct a follow up survey at the end of the pilot, in 2021, to assess how producers' opinions may have shifted during the pilot and to test assumptions based on participation. An initial assessment from 428 crop and livestock producers across the province highlights the following findings:

- Attitudes towards recycling are positive and supportive towards the pilot's objectives.
 - 77% of producers are very/somewhat concerned about how to deal with ag plastics and 92% of producers report that recycling ag plastics is very/somewhat important to them.
 - 83% of producers feel strongly that if a recycling program is convenient and easy to use, it is a good alternative to disposing of agricultural waste.

Producers indicated that recycling supports other values like building public trust, and environmental protection.

- 92% of grain bag users and 86% of twine users are very or somewhat likely to participate in the pilot if a site is in their area.
- 92% of twine or grain bag users are supportive (66% very supportive + 26% somewhat supportive) of making a recycling program for these items permanent.

As we look to advance the program in Alberta, there is value in exploring the permanent, industry-led program in Saskatchewan which Cleanfarms operates. As part of this report, Cleanfarms has provided an overview on the details of the logistics in that province, which has seen increasing participation amongst producers since its inception in the Fall of 2018.

The next steps of the pilot in Alberta include the addition of collection sites to test operations across the province. There are currently 26 sites heading into the second year of collection.

2. Introduction

The Alberta Ag-Plastic. *Recycle It!* program is a three-year (2019 - 2022), government funded pilot program that helps agricultural producers (farmers) recycle used grain bags and twine. In addition to on-the-ground pilots that divert used grain bags and twine out of landfills and into new products, the program delivers a number of research projects that will help the potential transition of the pilots into a long-term, sustainable and self-funded program. There is strong appetite for data and stakeholder feedback about the pilot.

This report summarizes the key activities from the pilot that took place in the first 15 months of the pilot collections (October 2019 to December 2020).

Agricultural plastics (ag plastics) recycling initiatives have been underway in Alberta for a number of years. These were primarily managed by individual municipalities and funded by ratepayers. These initiatives, combined with industry trends and the increased availability of ag plastics recycling across Western Canada, has led to a strong desire for a coordinated, province-wide approach to help producers and municipalities manage ag plastics.

The Alberta Ag-Plastic. *Recycle It!* program is led by the multi-stakeholder Agricultural Plastics Recycling Group (APRG). The APRG, a group made up of over 20 stakeholder organizations from sectors across Alberta, representing municipalities, producers, non-profits, recyclers and retailers among others, provides oversight of the program and a network to disseminate information and build support.

The program is being funded through a grant from the Government of Alberta (\$1 million over three years) and is financially administered by Alberta Beef Producers.

Cleanfarms is the program operator, responsible for identifying and accessing end markets, handling program logistics including the collection and transportation to recycle the materials and leading the research projects.

**in this report, the use of the word producers refers to the agricultural producers, or farmers.*

3. Agricultural Plastics Recycling Group (APRG)

The multi-stakeholder APRG aims to meet twice a year virtually or in person to keep members informed on the pilot updates and allow for feedback and engagement from members on key topics. An executive of five representatives is elected each year by the members and meets on a regular basis to interact with and oversee the program operator, advocate for a permanent program and report back to the group. All APRG members provide valuable input to the pilot from their unique perspectives and also play a key role in disseminating information back out to their members and partners.

The Committee was formed in 2017 with a mandate to assist in the development of recommendations to manage ag plastics including:

- Promote ag plastics recycling actions and programs that are sustainable, and
- Implement the terms as set out in the Alberta ag plastics pilot program business plan.

A list of members of the APRG is included in Appendix A.

4. Pilot

This section outlines how the pilot is intended to operate based on the planning phases of the program and key responsibilities of the stakeholders involved.

4.1. Year 1 objectives (October 1, 2019 to October 1, 2020)

- Identify 20 pilot locations throughout Alberta to operate as collection sites.
- Starting in October 2019, roll out collections of grain bags and twine at collection sites in a structured manner that accommodates individual collection site needs; this includes testing contractors, balers and transporters and other project aspects.
- Assist in finding end markets for legacy materials, which may present challenges due to the quality and quantity of the material.

4.2. Summary - how the pilot works

Roles

Producers – proper preparation to ensure recyclability

Materials must be prepared properly to ensure recyclability (visit Cleanfarms' [website](#) for full instructions):

- Grain bags must be tightly machine rolled and secured with twine prior to drop off.
 - Some collection sites may offer machine rolling or other services to assist producers.
- Clean twine must be placed in a clear recycling bag, which is tied closed. Recycling bags are provided to producers through the collection sites.

Rolled grain bags and bagged twine can then be dropped off, free of charge, at 26 collection sites across Alberta.

Collection sites – accessibility for producers, education, safe & clean storage

Collection sites help ensure that the producers have access to convenient drop off points and that the material is stored to minimize contamination. Their direct contact with producers and their communities assists with education and promotion. The majority of the collection sites in the pilot program are municipal locations, such as transfer stations or landfills. The program does have one private-sector collection site (Neeralta Manufacturing) and is open to piloting collection at different types of sites to assess future viability.

Collection sites have the following minimum requirements to ensure the program operates efficiently and to ensure that the material is recyclable:

- The ability to offer free drop off of machine rolled grain bags and/or bagged twine from producers
- Accessibility for a 53-foot semi-trailer
- All-season suitability
- Fencing
- Vector control
- Storage capacity:
 - The ability to store a minimum of 18 metric tonnes of material

- A storage area that is free of standing water
- Conditions that minimize contamination (mud, vermin)
- Private and general liability insurance

Collection sites are compensated \$55/tonne for the pilot material they collect (beginning when their site agreements are executed). Pilot material is defined as tightly machine rolled grain bags and bagged twine. The collection sites are also eligible for \$15/tonne if they have equipment available and choose to load the shipping container when material is transported to a recycler. The \$55/tonne and \$15/tonne compensation was set as an industry standard based on fairly compensating sites under the permanent Extended Producer Responsibility (EPR) program for ag plastics in Saskatchewan.

Some collection sites provide additional services to producers such as onsite baling or grain bag roller rentals for free or fee-for-service arrangements. For example, some collection sites might allow producers to drop off loose grain bags that can be baled or rolled onsite. In the event that the material a producer drops off is not suitable for recycling through the pilot, the collection site may, at their discretion, charge a tipping or other fee to the producer.

Collection sites will receive or have received the following tools to assist with collections:

- Signage – to ensure that grain bags and twine are stored properly and separately.
- Content, for use in websites and newsletters, that helps explain proper preparation steps to producers.
- Recycling bags – these clear plastic bags (printed with detailed instructions) are provided to producers to bag their twine.
- Educational presentations for frontline staff and other stakeholders.

Program operator – overall coordination, handling, logistics and marketing

The program operator's main role is to manage logistics and source end markets, which are two of the most challenging components to the recycling of ag plastics. Streamlining this process through a single resource maximizes program efficiency.

Cleanfarms works with the collection sites to build consistency across all sites to assist in securing long-term and reliable end markets. Pilots like this allow program operators and collection sites to test out different ways to build this consistency while accommodating regional site needs.

Handling and processing

Grain bags and twine require different handling and processing to ensure that the material will be accepted by a recycler.

Rolled grain bags are loaded and transported directly to a recycler once the collection site has accumulated a sufficient volume (~18 to 20 tonnes). Once the grain bags have reached the recycler, they are shredded, washed and pelletized. The pellets are then sold to an end market (in some cases, the recycler and end market can be the same company). The pellets are currently used in the manufacturing of plastic bags, while some end markets are researching the use of grain bag post consumer resin in the manufacturing of new grain bags.

Bags of twine are picked up from a collection site and transported to a processor where the material is consolidated, sorted, and baled. Once the processor has baled a sufficient volume (18 to 20 tonnes), the baled twine is loaded and transported to a recycler. Once the twine has reached the recycler, it is shredded and washed. At this point the recycler can (i) sell the clean shred to a recycler who will pelletize the clean shred or (ii) pelletize the clean shred and sell a pellet. The pellets are used in the manufacturing of new plastic products such as plant pots, car parts, and dimensional plastic lumber.

Pilot program education & awareness

Education and awareness help inform and motivate producers to properly prepare (to ensure recyclability) their used grain bags and twine, and then transport to a collection site for recycling.

An effective communications plan has been developed that maximizes earned and owned communication opportunities through APRG members, who are able to place messages in front of ag producers through newsletters, blogs and social media.

Markets

Where possible, the pilot looks to process material through local markets. The full report available at www.aprg.ca identifies known recycling markets for multiple types of agricultural plastics. This serves as a summary of those markets and where Alberta plastic is being processed. High-value material – such as rigid HDPE from pesticide and fertilizer containers – have stable markets in North America. Lower-value agricultural plastics, such as LLDPE and LDPE film (used to make grain bags) and polypropylene twine, are more expensive to process, have fewer end uses and fewer markets in Canada and the USA. Though, twine and grain bags are still easier to recycle than some more contaminated and difficult to process plastics such as silage plastic, netwrap and bale wrap.

Grain bags – As part of the launch of this pilot, and since the writing of the market report, one additional facility opened in Bashaw in early 2020. As such, there are now three facilities recycling grain bags; two in Canada and one in the USA. Current markets are washing and pelletizing grain bags for use in other blow-molding applications.

Twine – Two facilities in the USA are recycling twine. One recycler is washing and pelletizing for remanufacture and the other is cleaning and shredding for use in the roofing industry.

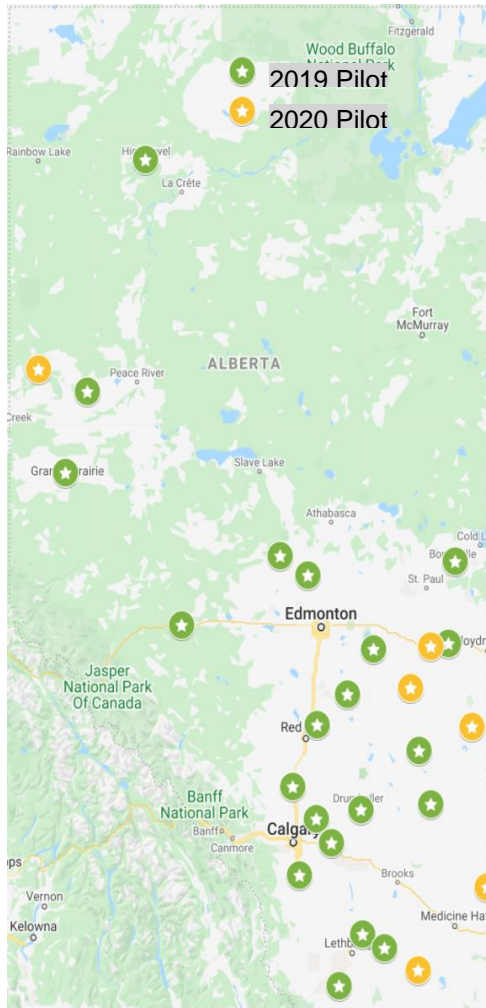
4.3. Collection site list (as of December 2020)

- Ryley Landfill
- West Dried Meat Lake Regional Landfill
- Cardston County Composting Yard
- Neeralta Manufacturing Recycling Depot/Westlock Regional Landfill
- Clairmont Landfill
- Coronation Transfer Station
- Vermilion Waste Transfer Station
- Drumheller & District Regional Landfill
- Prentiss Landfill
- Iron Springs Transfer Site
- Cleardale Transfer Station
- Foremost Transfer Station
- Mannville Waste Transfer Station
- Foothills Regional Landfill & Resource Recovery Centre
- MacKenzie Regional Waste Landfill
- Municipal District of Bonnyville Public Works Shop
- North Peace Regional Landfill
- MD of Taber Operations and Maintenance Building
- Mountain View County Ag Shop
- Irricana Transfer Site
- Youngstown Regional Landfill
- Wheatland County Agriculture Service Board Shop
- Edson and District Recycling Society
- Hilda Transfer Station
- Flagstaff Waste Regional Landfill
- Provost Regional Landfill

Collection site summary

Total number of collection sites	26
Sites collecting twine only	1
Sites collecting grain bags and twine	25

Note: There are 27 map points as Neeralta Manufacturing Recycling Depot & Westlock Regional Landfill are covered under one agreement and thus considered one collection site in the summary. More sites are coming onboard.



5. Key metrics – October 1, 2019 to December 31, 2020

Due to COVID-19, the Alberta Ag-plastic. *Recycle It!* pilot program was faced with unique challenges. However, pilot sites across the province took these challenges in stride and continued to safely and successfully implement the collection program.

Total collection sites in the first 15 months: 26

5.1. Cost Per Tonne Estimates

The cost per tonne calculations are important for forecasting logistical costs and for determining the appropriate costs to run a permanent program. The direct cost per tonne for collecting grain bags under the pilot program can be found in Table 3. The total cost per tonne is shown in Table 4.

Table 3 provides a breakdown of the direct costs for the collection and recycling of grain bags for the first 15 months of pilot collections (October 2019 – December 2020), while Table 4 provides a breakdown of the total cost per tonne since program inception for all material (April 2019 –

December 2020). As of this report, the direct cost to collect and recycle grain bags in Alberta is \$74.04 per tonne, while the cost to run the entire program is \$480.26 per tonne.

Table 3 – Year 1 Grain Bag Direct Cost Per Tonne Estimate (October 2019-December 2020)

AB Ag Plastics Recycling Pilot Program Grain Bag Cost Per Tonne Estimate (Oct 2019 through Dec 2020)	
Revenue	Oct '19 - Dec '20
<i>Recycling Revenue</i>	
Revenue from Marketing Materials	20,082
Total Recycling Revenue	\$ 20,082
Expenses	
<i>Collection Costs</i>	
Contractor Expenses	28,394
Incentive Payments	27,397
Total Collection Expenses	\$ 55,792
Net Collection Cost	\$ 35,710
Total Grain Bags Collected (kg)	482,296
Cost per Tonne	\$ 74.04

Direct cost per tonne estimates have been calculated for material collected under the official pilot program. All legacy material must be omitted from the calculation because of the following factors:

- No site incentive was paid to the collection sites for legacy material. Cleanfarms only coordinated the loading and transportation of 219.97 tonnes of the total 373.34 tonnes of legacy grain bags reported to Cleanfarms as received for recycling by the recyclers.
- For efficiency and cost savings, the legacy twine and legacy grain bags were loaded and transported at the same time by the same contractor and therefore the costs to manage these materials cannot be separated.
- A large volume of waste material (pieces of metal, tents, wood, and other plastics) contained within the legacy material was sent to landfill, significantly affecting the volume calculations.
- The direct cost per tonne calculation excludes costs associated with legacy material, indirect program expenses (studies, communications), as well as Cleanfarms' and APRG's administrative expenses and should be used only for logistical forecasting.

As of this report, there is insufficient data to estimate the direct cost per tonne to recycle twine.

Table 4 - Total Program Cost Per Tonne Estimate (Program Inception – December 2020)

AB Ag Plastics Recycling Pilot Program Total Program Cost Per Tonne Estimate (Program Inception - Dec 2020)	
Revenue	Program Total
<i>Recycling Revenue</i>	
Revenue from Marketing Materials	44,167
Total Recycling Revenue	\$ 44,167
Expenses	
<i>Studies</i>	
Ag Waste Characterization Study	10,000
Stakeholder Groups Survey	28,090
Market Analysis	7,500
<i>Communications</i>	
Brand Development	10,055
Printing Costs	13,641
Design Costs	10,000
<i>Collection Costs</i>	
Contractor Expenses ¹	68,423
Collection Bags	41,660
Incentive Payments ¹	30,323
Total Collection Costs	127,617
<i>Program Admin (Cleanfarms)</i>	102,500
Total Cleanfarms and Operational Expenses	\$ 449,810
<i>Committee</i>	
Secretariat - APRA ²	20,315
Technical Oversight - RCA ²	3,741
ABP Accounting/Grant administrator ²	2,100
Total Committee and Administrator Expenses	\$ 26,156
Total Program Expenses	\$ 475,966
Net Collection Cost	\$ 431,799
Total Grain Bags and Twine Collected (kg) ³	899,086
Cost per Tonne	\$ 480.26

- Notes: 1. Contractor Expenses and Incentive Payments include outstanding line items from 2020-Q3 Financial Report.
 2. Committee and Administrator Expenses only include costs which have been reported to Cleanfarms (April 2019 – March 2020).
 3. Includes all grain bags and twine sent to a recycler since program inception.

The total cost per tonne after the first 15 months includes all incurred expenses to-date. The total cost per tonne in Table 4 will decrease as the pilot progresses and collection rates increase. It should be stressed that the cost per tonne in either table is not currently indicative of the cost for a permanent program. At the end of year two, once more data is available, the total cost per tonne will be a more accurate representation of the cost to operate the program.

5.2. Tonnages collected

A total of 803 tonnes of material has been collected since the program's inception. 36 per cent of the volume picked up during the reporting period was considered legacy material.

Alberta Pilot October 2019 through December 2020:

Material type	Tonnage collected		
	Total	Legacy material ¹	Pilot material
Grain bags	759.3	263.6	495.7
Twine	43.4	24.5	19.0
Total tonnage collected ²	802.8	288.1	514.7

¹Legacy material' is defined as grain bags and/or twine that were collected and stored onsite by the pilot sites prior to program inception.

²The total tonnage excludes disposal waste contained in legacy material.

For the purpose of this report, 'legacy material' is defined as grain bags and/or twine that were collected and stored onsite by the pilot sites prior to program inception (October 1, 2019) and was transported to end markets under the pilot program. 'Program material' is defined as grain bags and twine that have been collected after site agreements were executed.

This distinction is important as it relates to financial reporting, particularly for this reporting period, because:

- Collection sites were not compensated for collecting legacy material.
- This material was collected outside of the program parameters and therefore the quality varies greatly. This impacts the potential revenue that can be generated from this material.

Please see Appendix B for a detailed breakdown of the volume collected by the collection sites.

Of the total legacy grain bag material (373.34 tonnes) sent for recycling in the first 15 months of the pilot, a total of 109.76 tonnes of other waste material (pieces of metal, tents, wood, and other plastics) that was contained within the legacy material was sent to landfill. In response to the large volume of waste material that was contained within the legacy grain bag loads, significant changes have been made to the inspection and acceptance criteria of legacy material, which will be implemented for newly onboarded collection sites.

Six of the 26 collection sites have only collected small volumes of grain bags, not enough to constitute a full truck load to send for recycling, while one of the six sites (MacKenzie Regional Waste Landfill) has not collected any material. There is a general assumption by the operators of these sites, that producers may be unaware of the pilot program. At the onset of any pilot program, it generally takes about a year for a collection site to accumulate sufficient volumes of material, and a lag in producer awareness is normal. To assist in increasing producer awareness, Cleanfarms has developed a communication strategy for Year 2 of the pilot.

Twine collection volumes have been low because of the lag in producer awareness mentioned above, and the time of year when advertising began at most collection sites. Cleanfarms expects that twine collection volumes will increase throughout the winter and early spring of 2020/2021, during the winter livestock bedding and feeding season.

Tonnages collected compared to how much is sold into the market

A characterization study was conducted in 2019 on sources of paper and plastic waste on Alberta farms, utilizing a combination of market information and field generation estimates. Manufacturers, retailers and distributors were contacted to estimate the average annual tonnage of each type of product sold into Alberta, but exact sales figures were not able to be collected. Estimated annual generation of twine (polypropylene plastic) is between 1320 and 3000 tonnes, while grain bags (low-density polyethylene) are between 1480 and 2500 tonnes – combined, these two products represent 55% of plastic used on farms in Alberta. 514 tonnes were collected in the first fifteen months of the pilot (not including legacy material). It should be noted that the purpose of any pilot program is to test logistics and to assess costs and resources for the implementation of a permanent program, not to collect all the material which is available for recycling. With this in mind, as the pilot expands collection sites, offering services to more regions, we anticipate the return of more materials.

6. Stakeholder feedback

Throughout the pilot, qualitative stakeholder feedback will be gathered by Cleanfarms through conversations with collection sites and producers.

The producer survey completed in the Fall of 2019 is another source of stakeholder feedback and is available at www.aprg.ca. The pilot plans to conduct a follow-up survey at the end of the pilot in 2021 to assess how producers' opinions may have shifted during the pilot and to test assumptions based on participation.

This section provides a high-level summary of a survey conducted in the summer of 2019 with 428 Alberta crop and livestock producers regarding disposal practices of agricultural plastics as they relate to a grain bag and twine recycling pilot project.

Key takeaways:

- The following plastics are most commonly used on Alberta farms: pesticide/fertilizer containers, twine, seed/pesticide bags, feed/supplement bags, silage wrap, net wrap and grain bags.
- The top three disposal methods reported for the following items:

Grain bags	Twine	Containers (benchmarking)
- Return for recycling (32%)* - Landfill (24%) - Store to deal with later (20%)	- Burn (46%) - Landfill (28%) - Return for recycling (13%)*	- Return for recycling (75%) - Return to a retailer (10%) - Landfill (7%)

- The majority of grain bag users (69%) and twine users (72%) report that it is either somewhat or very difficult to recycle these items.
- Satisfaction amongst users who recycle is high with 94% (twine users) and 81% (grain bag users) reporting that they are satisfied with this method.
 - Satisfaction with other disposal methods is lower. 61% of twine users who burn and 54% of twine users who landfill are satisfied with their disposal method. 27% of grain bag users who landfill and 19% of grain bag users who store to deal with later are satisfied.
- Attitudes towards recycling are positive and supportive towards the pilot's objectives.

- 77% of producers are very/somewhat concerned about how to deal with ag plastics and 92% of producers report that recycling ag plastics is very/somewhat important to them.
- 83% of producers feel strongly that if a recycling program is convenient and easy to use, it is a good alternative to disposing of agricultural waste. Producers indicated that recycling supports other values like building public trust, and environmental protection.
- 92% of grain bag users and 86% of twine users are very or somewhat likely to participate in the pilot if a site is in their area.
- 92% of twine or grain bag users are supportive (66% very supportive + 26% somewhat supportive) of making a recycling program for these items permanent.
- Concerns related to long-term program financing were raised.
 - 58% of producers either strongly or somewhat agree that users of the materials (grain bags or twine) should contribute to the cost of the recycling program.
 - 82% of producers either strongly or somewhat agreed that while there is a need to support a recycling program, producers don't like additional costs.
 - 50% of producers strongly or somewhat oppose to paying an environment handling fee.

7. Next steps

- Pilot collections at the 26 current collection sites will continue to further test logistics, handling and other aspects of the program.
- An additional five collection sites will likely be recruited in the next year of the program to increase accessibility and test larger scale logistics.
- Communications efforts to producers, emphasizing proper preparation and collection site locations, will continue.

8. Saskatchewan Grain Bag Program

The information from this section was provided by Cleanfarms.

Since 2018, Cleanfarms has operated Saskatchewan's government-approved, industry-led grain bag recycling program. The recycling program was approved under [*The Agricultural Packaging Product Waste Stewardship Regulations*](#), which transferred financial and physical responsibility for proper disposal of grain bags away from government-sources (government-funded pilots ran from 2011 to 2017) to 'first sellers,' which are businesses that supply grain bags into the market. Because of this full financial and physical responsibility passed on to the first seller, the program in Saskatchewan is considered full Extended Producer Responsibility (EPR).

In order to be compliant with the regulation, first sellers can operate their own government-approved recycling program or delegate this responsibility to a collective or producer responsibility organization (PRO), like Cleanfarms, to operate a government-approved program on their behalf. In Saskatchewan, all first sellers have joined Cleanfarms rather than take on the responsibility themselves.

First sellers include one manufacturer, several distributors and retailers of various sizes. In almost all cases, the manufacturer or distributor has taken on the regulatory responsibility on behalf of their retail network to minimize administration for smaller businesses and to facilitate compliance.

Under Cleanfarms' program, first sellers have quarterly reporting and financial obligations. They have the option of being part of the Saskatchewan Agricultural Stewardship Council, a committee of first sellers that oversees the program, makes key decisions, and approves the annual budget. More details are available in the [Product Stewardship Program](#).

In Saskatchewan, first sellers chose to pass on the cost of the program to those purchasing the grain bags. As such, this program is funded through an Environmental Handling Fee (EHF) that is applied at the point of purchase. Producers pay the EHF when they purchase a grain bag, first sellers transfer the EHF to Cleanfarms (quarterly) and Cleanfarms is responsible for all costs associated with the program. The EHF, which is presently 25 cents per kilogram, is about five to seven percent of the cost of a grain bag and helps cover the cost of transportation, loading, education and promotion, and compensating collection sites for their role in the program. Sites are primarily municipalities, but some are from the private sector and both are compensated equally.

The EHF is often the most highly visible and controversial component of a recycling program, especially at the onset. In Saskatchewan, the EHF started on November 1, 2018 and has therefore been in effect through two growing seasons.

Based on discussions with government officials and first sellers, direct outreach to growers at trade shows, and an analysis of customer data, Cleanfarms staff report there has been very little dialogue surrounding the EHF and that the farmer reaction is neutral. Anecdotally, when pressed on their attitudes towards the EHF, producers express an appreciation for 'having a place to take these things' and very little concern about the EHF, which amounts to about five to seven percent, or \$50, on a 10-foot by 300-foot grain bag, which can weigh close to 200 kilograms.

First sellers have indicated that the existing program in Saskatchewan is viewed positively by their customers and has not negatively impacted their business. First sellers report that they would support a similar, harmonized program in Alberta because of the program's positive environmental outcomes and to create a level playing field amongst all first sellers (many of which supply grain bags into both Saskatchewan and Alberta).

In terms of program performance, collection tonnages have increased significantly since the program's launch in 2018:

Year	Tonnages collected
2018	1,257
2019	2,256
2020	2,818

Because Cleanfarms typically recommends using a three-year rolling average recovery rate (materials sold into the market compared to what is collected) for products used on Canadian farms (to properly adjust for purchasing and disposal habits), a recovery rate is unavailable at this time.

Appendix A - APRG Member Organizations

Organization	Sector/Representation
Agricultural Service Board	Board Representation
AB Association of Agricultural Fieldmen	Agricultural Fieldmen
Alberta Agriculture & Forestry	Government (ex officio)
Alberta Barley	Barley Producers
Alberta Beef Producers	Livestock
Alberta Cattle Feeders Association	Livestock
Alberta CARE	Recycling and Waste Management
Alberta Environment & Parks	Government (ex officio)
Alberta Federation of Agriculture	Producers
Alberta Milk Producers	Dairy Producers
Alberta Plastics Recycling Association	Plastics Recycling
Alberta Urban Municipalities Association (AUMA)	Urban Municipalities
Committed Ag Supply	Retailer
Crop Sector Working Group	Crop Producers
Merlin Plastics	Recycler
Olds College	Academia
Peavey Mart	Retailer
Recycling Council of Alberta	Recycling and Resource Conservation
Berry BPI Agriculture	Material Manufacturer
Rural Municipalities of Alberta (RMA)	Municipalities
South/Central Waste Collaboration Group	Rural Municipalities
TAMA Canada	Retailer
Tractorland	Retailer

Appendix B - Collection site list and volumes to December 31, 2020

Grain Bags and Twine Sent for Recycling Oct 2019 - Present					
Site Name	County	Legacy Material (kg)		Pilot Collection (kg)	
		Grain Bags	Twine	Grain Bags	Twine
Ryley Landfill	Beaver County	-	-	6,040	-
Youngstown Regional Landfill	Special Areas 2, 3 & 4	-	-	-	-
Cardston County Composting Yard	Cardston County	-	-	-	-
Clairmont Landfill	County of Grande Prairie	22,020	-	-	-
Vermilion Waste Transfer Station	County of Vermilion River	9,780	-	31,625	-
Iron Springs Transfer Site	Lethbridge County	-	-	11,650	3,500
Drumheller & District Regional Landfill	Drumheller	-	6,320	27,838	3,060
Foothills Regional Landfill & Resource Recovery Centre	M.D. of Foothills	-	-	49,340	-
Prentiss Landfill	Lacombe County	-	7,110	22,405	2,068
MacKenzie Regional Waste Landfill	Mackenzie No. 23	-	-	-	-
Mountain View County Ag Shop Twine Collection	Mountain View County	N/A	-	N/A	-
Municipal District of Bonnyville Public Works Shop	MD of Bonnyville	10,670	-	-	1,580
MD of Taber Operations and Maintenance Building	MD of Taber	-	-	37,650	1,670
Neeralta Manufacturing & Westlock Regional Landfill	County of Barrhead & Westlock County	-	2,000	-	330
North Peace Regional Landfill	MD of Fairview	57,870	-	78,260	-
Coronation Transfer Station	County of Paintearth	-	-	-	-
Imicana Transfer Site	Rocky View County	64,139	7,800	46,310	6,300
West Dried Meat Lake Regional Landfill	Camrose County	49,250	1,250	49,330	-
Wheatland County Agriculture Service Board Shop	Wheatland County	-	-	111,043	458
Edson & District Recycling Society	Yellowhead County	37,860	-	-	-
Cleardale Transfer Station	Clear Hills County	-	-	-	-
Foremost Transfer Station - South Forty Waste	County of Forty Mile No. 8	-	-	-	-
Mannville Waste Transfer Station	County of Minburn	33,060	-	-	-
Hilda Transfer Station	Cypress County	11,520	-	-	-
Flagstaff Waste Regional Landfill	Flagstaff County	-	-	4,985	-
Provost Regional Landfill	MD of Provost	33,060	-	-	-
Farm (non-pilot site)	MD of Willow Creek	-	-	19,260	-
Wainwright (non-pilot site)	MD of Wainwright	44,115	-	-	-
Totals		373,344	24,480	495,736	18,966
Total Grain Bags		869,080		Total Twine	43,446
		Total Grain Bags and Twine		912,526	

Disposal Waste Contained in 2019 Legacy Grain Bag Material

PolyAg Recycling Ltd.	(109,760)	-	-	-
Total Grain Bags Subtract Legacy Waste		759,320	Total Twine	43,446
		Total Grain Bags and Twine Subtract Legacy Waste		802,766

*The volume collected from Wainwright was reported to Cleanfarms by the recycler who arranged for the loading and transportation of this material. Under direction and approval from the APRG, Cleanfarms is open to assisting organizations that aren't part of the pilot program to market their material where possible and report the recycled volume. The non-pilot organization is responsible for covering any costs involved.