Market Analysis

Review of existing plastics markets for agricultural plastics

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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.

Executive Summary

Alberta's agricultural plastics recycling landscape has evolved since 2019, shaped by global market disruptions, changing domestic policy, and expanded pilot programs. Provincial pilot programs have focused on grain bags and twine, with recent initiatives broadening to include silage plastic and bale wrap. Despite these advances, recycling markets remain volatile, challenged by oversupply and low demand for post-consumer recycled (PCR) content, and competition from inexpensive virgin resins. A major development is the planned establishment of a new recycling facility in central Alberta, which will provide local processing capacity for agricultural baler twine. The long-term success of such facilities will depend on reliable feedstock supply and supportive policy frameworks such as Extended Producer Responsibility (EPR). This report reviews market status, processing options, program performance, and the evolving policy landscape, offering recommendations to help Alberta build a resilient, sustainable recycling system.

Introduction

Recycling programs for agricultural plastics are built on two foundational components: efficient, convenient collection and the existence of stable, sustainable end markets. The balance between the supply of collected material and the demand from end markets is dynamic, influenced by local and global economic factors, regulatory changes, and industry innovation. Cleanfarms' experience since 2019 indicates that while collection infrastructure and producer engagement have improved, the market for recycled agricultural plastics remains volatile. The inclusion of silage plastic and bale wrap in current provincially funded pilot programs reflects a commitment to comprehensive solutions and the recognition that all major streams of on-farm plastics must be addressed.

Background – Markets for Ag Plastics

The global market for agricultural plastics has experienced considerable disruption over the past several years. International policy changes, such as the implementation of the Chinese National Sword (2018) and amendments to the Basel Convention (2021), have restricted the export of plastic scrap and reshaped the flow of materials worldwide. These developments have led to an oversupply of recyclable plastics in North America, placing downward pressure on prices and challenging the viability of recycling programs. Cleanfarms' permanent and pilot programs have responded by focusing on collection efficiency, contamination control, and working with partners to develop domestic processing capacity.

While recent Basel Convention processes allow for the export of certain low-contamination agricultural plastics for recycling, practical implementation remains complex. In Canada, obtaining Prior Informed Consent (PIC) through Environment and Climate Change Canada can present administrative and timing challenges. Cleanfarms continues to work within existing federal regulatory processes, with the objective of improving access to overseas recycling markets where appropriate and as needed where domestic markets are not available.

Impact on Price

Since the policy changes in 2018 and 2021, the export restrictions to international markets have had a significant impact on the price of recycled materials. A glut of material in the North American market has depressed prices of scrap plastics. In addition to the oversupply, low virgin resin prices and general economic softening in North America have caused major brands to postpone or abandon voluntary commitments to use PCR. Low demand for PCR, cheap virgin resin and increased transportation costs are all contributing to the 'perfect storm' that is affecting the price of materials today.

Market Pressures: Virgin Resin, International Politics, and Global Trends

One of the most significant challenges facing agricultural plastics recycling is the persistent pressure from inexpensive virgin resin. Over the past several years, global production of virgin polymers, driven by new facilities in North America, Asia, and the Middle East, has resulted in a steady oversupply of raw materials. Since 2022, oil and natural gas (the basic constituents of plastic resins) prices have fallen substantially in North America. The oversupply and low oil and gas prices have led to reduced prices for virgin resin, making recycled content less competitive and undermining the economics of recycling programs. The situation is further complicated by international political and economic factors, including

tariff policies, energy market volatility, and regulatory uncertainty. Global trade tensions, shifts in governmental monetary policy, and changes in oil and gas production have also contributed to fluctuating resin prices and unpredictable demand for recycled plastics.

These market pressures have real consequences for Albertan and Canadian recycling programs. When virgin resin prices fall and manufacturers switch away from recycled content, demand falls and, in some cases, recycling facilities close. Recycling trend reports repeatedly note that the recycling industry is not constrained by supply, but by a lack of willing buyers, especially when virgin resin is the cheaper option.

Current Market Status for Cleanfarms Materials

Market availability for agricultural plastics is largely determined by the requirements set by recyclers and the characteristics of the collected materials. Single stream, properly prepared plastic with low contamination of other foreign material makes it exponentially more marketable.

A particularly promising development is the potential establishment of a dedicated Alberta recycling facility for used plastics. A Saskatchewan based company has received Emissions Reduction Alberta (ERA) funding to create a new facility in central Alberta, designed to recycle used agricultural baler twine and FIBCs (Flexible Intermediate Bulk Containers). This project represents a critical step forward for Alberta and Canada, as it would create local processing capacity for materials that are currently shipped out of province or country for recycling. The success of this facility, and others like it, will depend on a reliable, steady supply of feedstock.

There is also growing interest in advanced chemical-recycling technologies that can address plastics which are difficult to recycle through conventional means. These processes include methods that convert mixed or contaminated plastics into usable hydrocarbon products, as well as depolymerization approaches that break polymers back into their original monomers, enabling the recovery of feedstock for new plastics. Current efforts include early pilot and demonstration phases in North America and Europe. One such pilot facility in Ontario is in the commissioning stage, focused on validating continuous operation, while a demonstration-plant project in Europe is undergoing site selection and due diligence, with readiness anticipated no earlier than 2027. While promising, these technologies remain pre-commercial and are considered longer-term options, most applicable to hard-to-recycle materials such as bale netting/netwrap or mixed-material bags.

Grain Bags, Twine, Silage Plastic, and Bale Wrap

Grain bags and twine were the primary focus of the ‘Alberta Ag-Plastic. *Recycle It!*’ pilot program at its onset, with established pathways for collection and processing. Markets for grain bags have remained stable, while those for twine have seen radical fluctuations since 2024, with unpredictable outlets. Silage plastic and bale wrap recently added to the pilot program present their own challenges, including higher contamination levels and more complex processing requirements. Cleanfarms is actively exploring solutions for these materials, including targeted collection tests and market development efforts as end markets for both materials fluctuates based on material quality.

Other Agricultural Plastics

Cleanfarms also operates permanent industry led and funded programs to collect a variety of other plastics, including high-density polyethylene (HDPE) containers and seed, pesticide, and inoculant bags. Additionally, there are plastics such as netting, greenhouse film, feed & mulch bags, and various other plastics used on Alberta farms. The market opportunities for each material vary, with some streams facing significant barriers to recycling due to contamination, mixed plastic types, and limited processing capacity. Netting and seed, pesticide, and inoculant bags, for example, are often sent for energy recovery, while greenhouse film and HDPE containers benefit from stronger domestic markets. Cleanfarms continues to monitor developments in these areas and seeks opportunities to expand recycling options where feasible.

An overview of known agriculture plastics recyclers can be found in Appendices A and B, while a list of acronyms can be found in Appendix C.

Policy and Market Architecture

Experience in Alberta and other jurisdictions suggests that recycling programs are most successful when supported by clear policy frameworks that align incentives and create predictable demand for recycled materials. Recycling trend reports consistently emphasize that policy interventions, such as recycled content targets and Extended Producer Responsibility (EPR), are essential to decouple the value of recycled material from the supply and demand dynamics of virgin plastics. Without these mechanisms, recycled content will always be at risk of being undercut by cheaper virgin resin, undermining the economics of recycling and threatening the viability of local processing infrastructure. Alberta's ongoing engagement with agricultural producers and industry stakeholders will be critical to the future success of these initiatives.

Conclusions

The recycling market for agricultural plastics remains subject to volatility and uncertainty, with risks related to end-market access, transportation, and processing capacity. Ongoing program adaptation, stakeholder engagement, and policy development will be key to addressing these challenges and ensuring long-term success. Cleanfarms' experience since 2019 highlights both the progress made and the work that remains to be done in building sustainable, comprehensive recycling systems for agricultural plastics.

Alberta stands at a pivotal moment in the evolution of agricultural plastics recycling. The province's progress, marked by expanded pilot programs, increased participation, and potential new local processing capacity, demonstrates leadership and commitment to sustainable solutions. Persistent market pressures and rising operational costs emphasize the need for coordinated action and supportive policy frameworks. Continued investment in education, communications, and site standards, along with collaboration among producers, industry, and government, will be essential for building a resilient recycling system for the future.

Appendix A: Recycling Facilities for Agricultural Plastics

Location	Material Types	Capacity	End-use applications	Visited? (Y/N)
Bashaw, Alberta	LDPE Grain Bags/LDPE Silage Film	150 MT+/month[1]	Pelletizing	Y
Hussar, Alberta	LDPE Grain Bags	80 MT+/month[1]	Pelletizing	Y
Bellefontaine, OH	PP Supersacks	80+ MT/month	Pelletizing	N
Trader (Shipping to Malaysia), Langley, BC	PP Twine, PP Supersacks	Unknown (Import Restrictions)	Pelletizing	N
Farnham, Quebec	PP Supersacks	80+ MT/month	Pelletizing	N
Concord, ON	PP Twine	40+ MT/month (intermittent demand)	Planters, Decking, Outdoor Furniture	N
Hazleton, PA	LLDPE	Unknown[2]	Pelletizing	N
Lachute, Quebec	LDPE/LLDPE	100+ MT/month (intermittent demand)	Pelletizing	Y
Burnaby, BC	PP Twine	Unknown (Testing PP Twine)	Pelletizing	Y
Glendale, AZ	PP Twine	100+ MT/month	Pelletizing	N

[1] Strict quality requirements
[2] Currently not accepting due to low market demand

Appendix B: Markets for Other Agricultural Plastics

Stream	Recycling (North America)	Recycling (Overseas)*	Incineration (energy recovery)	Tipping fee (recycling)	Cleanfarms program?	Comments
Grain Bags	Yes	Yes	N/A	N/A	Yes	Some recyclers in Canada/USA; Other recycling options are developing in Canada.
Bale Wrap	Yes	Yes	Yes – up to $150/MT**	Yes – up to $50/MT	Yes	One known recycler in Canada; other North American recyclers are not currently accepting bale wrap due to market constraints. Overseas markets exist but not currently accessible.
Silage Plastic	Yes	Yes	Yes – up to $150/MT	N/A	Yes	Two known recyclers in Canada. Similar to grain bags, must be kept separate from bale wrap and kept clean. Can also be incinerated where markets are not accessible.
Greenhouse Film	Yes	Yes	N/A	No	No	Managed through private sector
PP Twine	Yes	Yes	N/A	No	Yes	Some recyclers in Canada and USA; high quality standards, recyclers often report challenges with pre-processing and size reduction, which can reduce operational efficiency.
Net Wrap	No	No	Yes - up to $150/MT	N/A	Yes	No known recycling options; mixed plastic types (HDPE, LDPE, PP) and high contamination. Incineration is the only known option.
PP Supersacks	No	Yes	Yes – up to $150/MT	N/A	Yes	One known recycler in Canada, and one in the US. Cleanfarms is currently sending contaminated supersacks for incineration but actively seeking more recycling options in North America
HDPE Containers	Yes	N/A	N/A	No	Yes	Strong North American markets for HDPE plastic

*Facilities exist, but importation restrictions and pending Basel amendments limit trade

**Prices are FOB receiving facilities. Transportation costs can vary widely.

N/A denotes ‘not applicable’ where recycling markets currently exist

Appendix C: List of Acronyms

PCR – Post Consumer Recycled; describes resin made from post-consumer recycled plastic.

HDPE – High-density Polyethylene; ethylene polymer often used to produce rigid plastics.

LDPE – Low-density Polyethylene; ethylene polymer often used to produce film plastics.

LLDPE – Linear Low-density Polyethylene; LDPE with additive to promote stretch (shrink wrap).

PP – Polypropylene; propylene polymer used in production of twine and supersacks.

NGL – Natural gas liquids; hydrocarbons used to produce virgin plastic resins.

OTR – Over the road; describes transportation of materials via truck and trailer by road.

FOB – Free on board; shipping arrangement to include delivery costs to destination.

PIC – Prior Informed Consent (Basel Convention)