

Manitoba Agricultural Film and Twine Collection - Phase III

Final Report

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Executive Summary

In 2016, Green Manitoba provided Cleanfarms a grant of \$100,000 over two years (plus \$5,244 of unused funding from the Phase II grant) to continue to expand the agricultural film and twine collection program (Phase III).

The first half of Phase III of the pilot program began in 2016 at 7 collection sites, and grew to 16 collection sites by the end of Phase III in early 2018. In total, over 61 metric tonnes of film and twine were collected through Phase III.

Phase III focused on 7 objectives:

- 1) **VOLUMES** – Generate truckload volumes of agricultural film and twine that can be shipped directly to the end market (at least 20,000 kg);

Material collection was completed as-needed upon request by the collection sites. Three collection runs took place during Phase III; one in June 2017 (15.09 metric tonnes), one in April 2018 (25.06 metric tonnes), and one in May 2018 (1.77 metric tonnes). In total, over 61,000 MT of material was collected throughout Phase III.

- 2) **CONTAMINATION** – Ensure collected materials are stored appropriately to minimize contamination and vector infestation; and
- 3) **FARM-LEVEL PREPARATION** – Minimize contamination through proper preparation of materials at farm level;

Overall, contamination levels seem to be improving due to better farm-level preparation of materials. Storage on site remains an issue in some areas, with improperly prepared materials being dumped by growers.

- 4) **LARGE-SCALE LOGISTICS** – Develop effective logistics for a large-scale collection program;

A new relationship was formed with VR Contracting based out of Regina, Saskatchewan as a collection contractor who can service the entire province in a cost-effective manner, however scheduling remains a challenge. The first load of material (12 MT of ag film) was shipped to an overseas recycler in 2017.

- 5) **NET WRAP** – Explore opportunities to recycle net wrap;

No options currently exist for recycling net wrap. Cleanfarms continues to work on developing recycling or energy recovery options.

- 6) **STAKEHOLDER FEEDBACK** – Collect and analyze feedback from stakeholders (farmers, RMs, processors, etc.) to develop a list of challenges and lessons learned;

Feedback from growers and collection sites about the pilot program has been positive. Comments regarding improved sites signage and sorting procedures have been addressed, and feedback about underserved areas is being taken into consideration as the pilot expands into new areas.



7) EXPANSION – Efficiently expand pilot to include more collection sites under current budget.

By the end of 2017 the number of collection sites had doubled - from 7 in 2016 to 16 by the end of 2017 - making the program available to more farmers across the province.

Although the cost per kilogram of the pilot continues to decrease as collection volumes increase, a major cost-centre for the program is the manufacture and delivery of collection bags.

Based on the lessons learned during Phase III, the next phase of the pilot will focus on maximizing the reach of the program through expansion of collection sites while further minimizing contamination/increasing the quality of the collected materials. A province-wide communications strategy, collection and recycling options for net wrap, alternative on-farm collection methods and engagement of new stakeholders will also be explored in the future.

About Cleanfarms

Cleanfarms is best known for its empty pesticide container recycling program; an approved program under the Packaging and Printed Paper Stewardship Regulation of the Waste Reduction and Prevention (WRAP) Act. This recycling program has been delivered in partnership with municipalities across Manitoba since 1989.

The organization also operates stewardship programs on behalf of the seed, animal health medication and fertilizer industries. Cleanfarms is also the organization responsible for delivering the province-wide grain bag recycling program in Saskatchewan on behalf of the manufacturers of grain bags.



1.0 Introduction

Cleanfarms has been operating a pilot program for the collection and recycling of agricultural film plastic and twine under funding from Manitoba Sustainable Development (formerly Green Manitoba) since 2013. The collection program has grown significantly over the past five years, from three collection sites during Phase I (2013) to sixteen by the end of Phase III (2017/2018). A proposal has been submitted to the Ministry for a three-year plan to transition the pilot into an industry funded-program, to be completed by the end of 2020.

2.0 Background

The Ag Film and Twine Pilot program followed [extensive agricultural waste research](#) aimed at quantifying and analyzing the agricultural waste materials generated on Manitoba farms and evaluating the feasibility of establishing stewardship programs to manage these materials.

The 2011 [Agricultural Waste Characterization Study](#) (the Study) revealed that there are approximately 6,000 tonnes of agricultural wastes generated on farms annually in Manitoba. These waste streams are comprised of a number of different materials – namely film plastics, cardboard and boxboard and feed/seed bags. Of the total waste generated, the Study estimated the following amounts of waste film plastics:

Product	Estimated Volume (tonnes)
Grain Bags	272.2
Silage Film	246.3
Bale Wrap	160.2
Plastic Twine	268.5 to 362.5
Net Wrap	118.1 to 128.4
Greenhouse Film	13.5
Mulch Film	0.4

The Study also included a representative survey of Manitoba farmers to understand current disposal habits. The following table summarizes the percentage of waste plastics being disposed of by means of burning, on-farm burial or landfilling:



Material Type	Burn	On-farm Burial	Landfill	Total
Grain Bags	5%	0%	9%	14%
Bale/Silage Wrap	66%	0%	14%	80%
Ag Twine/Net Wrap	56%	2%	19%	86%

The research results were inconclusive regarding disposal of grain bags. The study indicated a high level of re-use of grain bags, which may account for the discrepancy in the data. Grain bags that are re-used for other purposes will still require disposal at end-of-life.

The use of plastic products, such as grain bags and silage wrap, is increasing in Manitoba and across the Prairies. Cleanfarms' research shows that when convenient and cost-effective stewardship programs are available, farmers will overwhelmingly use them, as demonstrated through Cleanfarms' existing programs. Pilot programs are an important building block for the development of a longer-term, permanent stewardship program.

Agricultural films (bale and silage wrap, and grain bags) and twine were targeted for the pilot program because of the high usage rates (as shown in the Study) and to test out programs that are already available in Alberta and Saskatchewan. Net wrap (netting) has been excluded due to high contamination rates and a lack of recycling options, although efforts are underway to find suitable end uses for net wrap.

3.0 Pilot Objectives

Phase III of the ag film and twine collection project was designed to expand upon the lessons learned from Phase I and II, and fulfil the following objectives:

- **VOLUMES** - Generate truckload volumes of agricultural film and twine that can be shipped directly to the end market (at least 20,000 kg);
- **CONTAMINATION** - Ensure collected materials are stored appropriately to minimize contamination and vector infestation;
- **FARM-LEVEL PREPARATION** - Minimize contamination through proper preparation of materials at farm level;
- **LARGE-SCALE LOGISTICS** - Develop effective logistics for a large-scale collection program;
- **NET WRAP** - Explore opportunities to recycle net wrap;
- **STAKEHOLDER FEEDBACK** - Collect and analyze feedback from stakeholders (farmers, RMs, processors, etc.) to develop a list of challenges and lessons learned;
- **EXPANSION** - Efficiently expand pilots to include more collection sites under current budget.



Fine tuning logistics, an emphasis on efficiencies and exposing more users and collection sites to the pilot program should facilitate the transition from a government-funded to industry-funded model.

4.0 Operations

Program Operations

There were no major changes to the way the program was delivered during the second half of Phase III. Material pickups and collection bag deliveries are scheduled on an as-needed basis based on requests from collection sites.

In late 2016 Tammy Shields (formerly Myers) was no longer able to provide consulting services to Cleanfarms due to other commitments. A new independent consultant – David Lane – was contracted to provide on-the-ground support for the program. David was responsible for communicating with collection sites, arranging the delivery of collection bags and receiving requests for material collection. David was paid an hourly rate plus expenses.

In fall 2017, Tammy Shields was hired full-time by Cleanfarms as the Western Region Program Coordinator. Along with the Saskatchewan grain bag program, Tammy also became responsible for the day-to-day management of the Manitoba pilot program.

5.0 Final Results and Discussion - Objectives

Volumes

Phase III of the pilot concluded in early 2018 when the final loads of material were collected. In total, over 61,600 kg of agricultural film and twine plastics were collected throughout Phase III.

During the second half of Phase III (between the beginning of 2017 and May 2018), over 41,900 kgs of agricultural film and twine were collected, bringing the total Phase III collection volume to over 61,600 kgs. The average collection per site has increased substantially since the program's inception.

Phase	# sites	Total collected (kg)	Avg. collection per site (kg)	Increase over previous year (per site)
I	3	4,400	1,467	-
II	7	11,000	1,571	7.1%
III (first half)	7	19,700	2,814	79%
III (second half)	16	41,900	2,619	-6.9%*

* The new sites added in 2017 have not yet generated material for collection. Material from the new collection sites will be collected during Phase IV.



Site-specific collection information is not very accurate because of the milk-run style collection by the contractor. However, overall collection totals are accurate. During one collection run, up to 4 sites are visited at a time and materials are co-mingled on the truck. The material is dropped off at Evergreen Technologies in Neepawa for sorting and baling.

Not every collection site has generated material to-date – the strongest collection sites continue to be the oldest collection sites that were developed during Phase I and II. This indicates that it takes a year or more from the time a site is established to communicate the new program to growers, distribute collection bags, and begin receiving materials from growers. As the program matures, it is expected that collection volumes at the newer collection locations will continue to increase.

Contamination and Farm-Level Preparation

Although contamination remains a concern with agricultural plastics, the quality of the material returned for recycling seems to be increasing overall as the pilot program progresses. The importance of keeping the material as clean as possible and keeping the types of plastics separate has been communicated consistently to the municipalities as well as the growers through the communications tools and site signage.



Examples of clean and properly prepared materials, June 2017

At some collection sites where the material drop-off was not supervised, there were instances of improperly prepared and excessively dirty materials dumped by growers. Steinbach and Portage La Prairie both had issues with materials being dumped. In this case, the site supervisors were notified, and any of the material that could not be salvaged was landfilled. The site managers were notified and confirmed that unsupervised dumping would be monitored to prevent this from happening in the future. To address the issue of on-site sorting and storage, Cleanfarms developed steel signs and sign holders to direct farmers on where to drop off materials. This should help with on-site material management in the future.



Improperly prepared materials dumped at Steinbach and Portage La Prairie, June 2017

One key point of feedback from the collection sites is that improved site signage would help to inform program participants and help keep the sites organized. New site signs were developed and will be distributed in the coming weeks (see Appendix A).

Large-scale Logistics

At the beginning of Phase III a new contractor relationship was developed with VR Contracting out of Regina, Saskatchewan. The material is loaded onto a truck using a bobcat and grapple and delivered to Evergreen Technologies in Neepawa where the material is baled and stored for shipment to a recycler. Although this arrangement works well, VR Contracting is primarily collecting tires and grain bags in Saskatchewan. It has been difficult to arrange collection through VR Contracting in a timely manner due to other commitments in Saskatchewan. Cleanfarms continues to search for a Manitoba-based collection contractor who is able to service the entire province.

The cost per kilogram to run the pilot program has decreased significantly since the inception of the pilot program as the number of collection sites increase and the tonnage of materials collected increases. More efficient contractor arrangements (through VR Contracting) have also helped to decrease the cost to pick up and consolidate the materials.

Cost per KG breakdown

Phase	Total cost (\$)	Total collected (KG)	Cost \$/KG*
Phase I	25,655	4,400	\$5.83
Phase II	47,255	11,000	\$4.30
Phase III	88,909	61,600	\$1.44

**total expenditures/kgs collected*



During Phases I and II of the pilot, the small amounts of material that were collected were shipped to Saskatchewan and consolidated with other agricultural film shipments. In 2017, Cleanfarms shipped the first full truckload of bale and silage wrap to a recycling facility overseas. There were some significant challenges loading the shipping container because of equipment issues, resulting in an underweight load. Evergreen Technologies has committed to working with Cleanfarms to solve the issues moving forward. Approximately 12 metric tonnes of film plastic were loaded and shipped.

Net Wrap

One ongoing concern based on feedback from collection sites is the increasing prevalence of net wrap (netting). Netting is being co-mingled in collection bags with film and twine, representing a major source of contamination. Currently, net wrap is not included in the collection program due to a lack of end markets for processing and recycling, though growers continue to return netting to the collection sites. Cleanfarms is actively searching for and developing recycling and/or waste to energy options for netting.



Bags of properly prepared netting (photos 1&2), twine contaminated with netting (photo 3)

Stakeholder Feedback

Overall, feedback about the pilot program from both growers and collection sites has been positive. Some considerations include: improved communications to help growers understand what is acceptable and what is unacceptable under the program; site signage to direct growers on where to drop off materials to make loading and unloading more efficient; and establishing sites in underserved areas.

In response to the stakeholder comments, new site signs were developed to illustrate the 'dos and don'ts' of the program (Appendix A), as well as sturdy steel signs to help with on-site storage and sorting. There are several Municipalities who have expressed interested in setting up collection sites in currently underserved areas, which will take place in 2018 under Phase IV of the program. Two key underserved areas include the Virden/Russel area, as well as the West Interlake region. Cleanfarms is actively pursuing participation in those areas.



Expansion

During Phase III of the pilot, the number of collection sites more than doubled – growing from 7 in 2016 to 16 sites by the end of Phase III. Additionally, there are another 6 municipalities who have inquired about participating in the program and are expected to join as collection sites in 2018.

The 7 existing sites were located in:

- Neepawa: Evergreen Environmental Technologies Landfill
- RM of Portage La Prairie: Portage La Prairie Landfill
- RM of Two Borders: Pierson Nuisance Grounds
- RM of Norfolk-Treherne: Rathwell Transfer Station
- RM of Norfolk-Treherne: Treherne Transfer Station
- RM of Steinbach: Steinbach Landfill
- RM of Dauphin: Sammy's Farm Supply

In 2017, an additional 9 sites were added in the following locations:

- RM of Cartwright-Roblin: Waste Transfer Station
- RM of Stuartburn: Landfill Site
- RM of Lakeshore: Ochre River Landfill
- RM of Lakeshore: Makinak Landfill
- RM of Lakeshore: Rorketon Landfill
- RM of Stanley: SWAMP Landfill
- RM of Armstrong: Meleb Waste Disposal Grounds
- RM of Ethelbert: Mink Creek Transfer Station
- RM of Victoria: Holland Waste Disposal Ground

The combination of increased farmer awareness of agricultural plastics recycling and word-of-mouth communication between municipalities about the pilot program has increased the demand for pilot sites without broad solicitation for participants by Cleanfarms. This is an extremely positive indicator that demand for these types of farm stewardship programs is growing along with increasing grower support.



To date, all participating municipalities are operating on a voluntary basis without remuneration from Cleanfarms. This program allows municipalities offer a new waste diversion program to their ratepayers, as well as avoiding the WRARS levy on each tonne of agricultural plastics.

6.0 Other Key Findings

Distribution of Collection Bags

The single greatest expense of the pilot program has been the manufacture and distribution of collection bags. Currently, the bags are distributed by the collection sites to the farmer participants. Bag supplies are delivered to the collection sites by mail or dropped off by Tammy or David on an as-needed basis. Collection bags are an important component of the program for several reasons:

- Keeping material clean and dry during storage (on-farm or at the collection site);
- Reminding growers to keep material separate (colour-coded bags with printed instructions);
- Ease of handling (loading and transportation);
- Ease of participation for growers (movement of material from field to collection site).

Eliminating the use of collection bags is not currently an option, but Cleanfarms is looking at ways to minimize the expense of manufacture and shipping. Working through a central bag supplier to supply all Cleanfarms collection bags for all programs is one strategy Cleanfarms is exploring to lower the overall cost through volume discounts. Minimizing the expense of delivery by having Tammy Shields and/or David Lane drop off collection bags to collection sites during meetings is another way to minimize expenses.

Ultimately, developing a relationship with a contractor that can deliver new collection bags when on site to pick up material for recycling would be the most efficient and low-cost method of distribution. This is the model used in other provinces for Cleanfarms' Container Management Program.

Communications

Lower-cost but effective communications methods were explored during the first half of Phase III. Cleanfarms developed a 'toolkit' consisting of standard format wording and messaging that could be inserted into newsletters and direct-mailing notices, pre-form social media posts and wording for their websites. While it is difficult to measure the impact of this method, increasing collection volumes and lower rates of contamination are an indication that the message is being disseminated.

During the second half of Phase III based on feedback from the collection sites and continued challenges with contamination, new site signage was developed to communicate the 'do's and don'ts' when preparing the material for recycling (Appendix A). This aspect was also added to the postcard that was



used as a mailout with tax statements or provided as a take-home piece when participants picked up collection bags from the collection sites.

Aside from print communications materials, Tammy Shields and David Lane attended several conferences and meetings to talk about the program logistics and benefits. Face-to-face meetings with municipal councils and RM representatives to discuss participation were attended throughout the year. A meeting with Keystone Ag Producers (KAP) in December, 2017 led to a resolution to work closely with Cleanfarms to support the pilot program (<https://www.kap.ca/single-post/2018/04/10/KAP-meeting-passes-resolutions-relating-to-the-environment-and-to-grain-transportation>), and networking with municipal councillors at the Assiniboine River Basin Initiative conference led to further discussions on setting up collection areas in underserved areas in 2018.

7.0 Path Forward – Phase IV

Manitoba Sustainable Development has expressed interest in transitioning to a permanent, province-wide stewardship program funded by industry by 2020. A plan has been developed in conjunction with Ministry staff outlining a timeline for the next two years. Operationally, Cleanfarms will focus on continuing the natural growth of the pilot program experienced during the past three phases.

In 2018 and 2019 the primary goals of the pilot program will be:

- 1) Increase the number of collection sites between 2018-2019 to ensure all growers in Manitoba have reasonable access to the program in preparation for an industry-led stewardship program; and,
- 2) Minimize contamination of collected materials (mixed materials, excessively dirty materials, and non-program materials)

Other areas of exploration will include strategies for a province-wide communications plan, alternative collection methods (feasibility of on-farm collection, bins vs. bags, etc.), recycling solutions for bale netting, and engaging new stakeholders to help elevate the status of the program among grower communities.



Appendix A – Postcard and Poster

Postcard - Front

RECYCLE
bale or silage wrap,
twine and grain bags

It's free and easy.

For more information: **1-877-622-4460** cleanfarms.ca

Postcard - Back

It's free and easy.

Please note that this is a pilot program and only available in select regions. Drop off times may vary by site. Check online for collection site hours of operation.

Only clean, dry and separated plastics (twine, bale or silage wrap and grain bags) will be accepted.

No unrolled grain bags, loose twine, nylon twine/netting, feed or seed bags.

- 1 Shake to remove debris** and keep as clean as possible.
- 2 Roll grain bags** and tie securely with twine or use a grain bag roller (where available).
- 3 Bag your bale or silage wrap and twine.** Collection bags are available from your RM office or collection site.
- 4 Return to your nearest collection site.** Visit cleanfarms.ca to find a site near you.

For more information: **1-877-622-4460** cleanfarms.ca



Poster

RECYCLE
bale or silage wrap, twine and grain bags

cleanfarms

It's free and easy.

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- 2 Roll grain bags** and tie securely with twine or use a grain bag roller (where available).
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For more information: 1-877-622-4460 cleanfarms.ca

Outdoor sign (Do's and Don'ts)

Recycle your AG film & twine

Yes please! 



No thanks! 



For more information: 1-877-622-4460

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