

TACKLING THE AG PLASTIC DILEMMA

WITH NO BONA FIDE RECOVERY PROGRAM IN PLACE TO CAPTURE USED AGRICULTURAL PLASTIC MATERIAL, A CANADIAN ORGANIZATION SETS OUT TO DETERMINE THE FEASIBILITY OF ESTABLISHING SUCH A SYSTEM.

BY DAVE WHITFIELD AND CHRISTINA SEIDEL

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PLASTIC RECYCLERS HAVE LONG KNOWN ABOUT THE UNTAPPED SOURCE OF MATERIAL GENERATED BY THE AGRICULTURAL SECTOR, WHICH, UNTIL RECENTLY, APPEARED TOO CHALLENGING TO RECOVER. AT THE SAME TIME, FROM THE FARMER AND RANCHER'S PERSPECTIVE, SUCH MATERIALS AS BALING TWINE, BALE WRAP, SILAGE WRAP, AND VARIOUS SIZES OF FEED BAGS, ARE USUALLY LABELLED AS PROBLEMATIC WASTES. IN FACT, MANY LANDFILLS WILL NOT ACCEPT AGRICULTURAL PLASTICS BECAUSE OF THE HANDLING CHALLENGES AND POTENTIAL RISKS THE MATERIAL POSES TO EQUIPMENT.

Due to a lack of alternatives, these materials often end up being incinerated in a burn barrel or on a burn pile, and, from a health and environment perspective, such practices are downright unacceptable. Not only is it dangerous to directly inhale smoke generated from combustion, generally, particulates from the open burning of plastics will descend quickly to the ground – typically within 1,600 feet of the combustion source – contaminating the soil below. Potentially toxic constituents of these particulates, including dioxins and furans, accumulate in the soil, and bio-accumulate in fat, as they move up the food chain. As a result, the current management practices for waste ag plastics present both health and environmental concerns.

Addressing the issue

In 2007, the Recycling Council of Alberta (RCA) set out to determine if it was possible to develop a recycling program to manage the agricultural plastic waste stream. To achieve this, a working group was established, which includes representatives from the Alberta Plastics Recycling Association (APRA), the plastic manufacturing sector, retailers, recycling project operators, Alberta Agriculture, Alberta Environment and recycling processors. It also should be noted that, since the group's establishment, there's been some involvement with agencies in the Province of Saskatchewan, where similar issues exist within their agricultural sector. The working group has received input from recycling program operators and processors, and a picture is emerging of the nature of the material entering the market and its recycling potential.

The first task established by the working group was to gain understanding of the volumes of ag plastic waste generated within the province. Thanks to research primarily undertaken by APRA, with input from retailers of agricultural products, estimates of the amount of available material were developed. In 2007, the amount of polypropylene (PP) products (twine and cord) sold in Alberta was in the range of 6.5 to nine million pounds, while polyethylene (PE) material (sheet materials and silage bags) was estimated at 9.5 to 11.5 million pounds. Although not captured in the above numbers, PP also is used extensively in the manufacture of bulk bags, feed sacks and lumber wrap, while PE is used extensively in the horticultural

industry. This volume continues to grow because of the introduction of additional products, such as large storage bags for grain. Based on these initial estimates, there's little question that volumes of waste agricultural plastics present a serious waste management issue, as well as a potential recycling opportunity.

The next hurdle for the working group was to assess the potential of collecting materials of sufficient quantity and quality, to warrant a full-fledged recycling program. As with any other commodity, sorting and contamination levels are key factors in the marketability of the material. Between plant matter, mud, manure, and just plain bulkiness, ag-based plastics present serious collection and handling issues. Data taken from progressive Albertan communities with existing collection programs for ag plastics, including Mountain View County, Brooks and the Municipal District of Rocky View, provided for a valuable starting point; however, additional information was needed from other areas of Alberta, where agricultural operations and climatic conditions differ. Thus, with the cooperation of the Evergreen Regional Waste Management Services Commission, as well as the concentrated feedlot region of Lethbridge, in partnership with the County of Lethbridge, additional trial programs were established in 2008.

The results are in

Though the report on the recent trials is not complete, some preliminary observations were made available. For example, there is strong interest in the recovered plastics from both Canadian and U.S. firms looking to potentially include the material in the manufacture of new twines and bags (PP) and a range of consumer goods (PE). However, despite the inherent value of the material, cleanliness and separation by material type presents concerns to most processors.

Some plastics reclaimers are investing in facilities with washing capability to specifically handle agricultural materials. This capacity to clean the material is very important, as all indications are that some degree of contamination will always be a factor. With that, preliminary results indicated a horizontal baler provides the best alternative for intermediate handling and preparation for shipping the material. It's interesting to note that some smaller balers and rollers (for long sheets of PE) are possible tools that also could be very

helpful.

Local initiatives have demonstrated innovative approaches to improve participation. Examples of this included:

- Mountain View County offered \$100 to the first 100 farmers to deliver at least 220 pounds of plastic. This promotion generated very strong participation the first day of the campaign, and served as an effective marketing tool in the community.
- The M.D. of Rocky View developed a clear PE bag that fit easily into a 55 U.S.-gallon drum, and was distributed to farmers to use in the collection of agricultural plastics. Stamped with instructions on how to prepare, store and deliver the materials, the bags provided the benefit of making the materials easily visible to collection site staff members. The bags were successfully utilized in the Lethbridge trial, as well.

The agricultural community is keen to participate; however, if a viable recycling program is to be created, strong education must be established to encourage cleanliness and sorting of materials. Education needs to be directed at daily management practices to collect, and store, clean, separated product, as materials left in the elements for any length of time become highly contaminated with foreign materials. This education process will take some time and effort, as existing behaviors will need to change.

Even with careful preparation and storage, waste agricultural plastics inevitably contain foreign materials, such as plant matter, dirt and manure. To make matters worse, this material is often frozen to the plastics over the winter months, making it virtually impossible to remove during collection. This level of contamination greatly reduces the demand for the material, as only a select group of processors have the equipment required to undertake the necessary cleaning.

Where to go from here

The trial programs have certainly shown that the demand for a recycling program exists. Wherever trials have been conducted, the programs have been popular. In fact, farmers, ranchers and local program operators, alike, all want to see the program succeed.

Moving forward, the RCA will be

compiling results from its 2008 agricultural plastics collection trials, and developing a series of recommendations to take back to the working group. Anticipated in these recommendations are the roles stakeholders must undertake, in order for an agricultural plastics management program to be successful.

For example, industry would have to provide products of known resin types that could be easily identified for separate collection, and preferably not comprised of composite materials. With that, manufacturers would, too, have to participate in an extended-producer-responsibility plan, in order to provide program sustainability.

Agricultural operators would be accountable for managing plastic wastes to maintain optimum cleanliness, which includes sorting materials by resin type. Once operators deliver the generated material to a local drop-off site, collection facilities would then be responsible for keeping the resin types separated and contained, eventually compacting the collected material to optimize transportation. Lastly, processors would need to develop cleaning capacity to


remove residual agricultural contaminants, as well as process plastic into resin suitable for industry use.

As the value of the collected material is unlikely to cover the costs to collect, process and transport it to market, some type of funding mechanism will ultimately be required to create the level of ongoing stable support required to keep the

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program financially sustainable through fluctuating market conditions. One approach with a strong history in Alberta is product stewardship. In looking at stewardship options, the working group will have several models of stewardship programs to consider, including a long-standing program that supports the collection and processing of pesticide containers, as well as the existing programs

for tires, used oil, electronics and paint.

The RCA intends to continue its work, in partnership with other working group stakeholders, to develop a model for a provincial recycling program for agricultural plastics, eventually engaging provincial ministries or agencies that can help make the program a reality. Using the lessons learned from the regional recycling trials, an implementation plan will be developed in early 2009 to shift practices from burning of waste plastics to recycling a valuable resource. Stay tuned for more results. 

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