

Agricultural Waste Management in Canada, United States, New Zealand and Australia

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CANADA and SOLID WASTE

Canada, a country of ten provinces and three territories, has had a poor record on waste according to an international ranking of OECD countries by the Conference Board of Canada⁽¹⁾. Nationally, the amount of non-hazardous total waste (residential and non-residential) sent to disposal was the highest of all 17 countries noted in 2009. A close second was the United States.

While Canada's per capita waste generation was extremely high overall, some areas of Canada had generation rates that were very low. The province of Nova Scotia⁽²⁾, for instance, rivals the lowest of all OECD countries⁽³⁾ in waste generation. Not surprisingly, Nova Scotia has a holistic approach to waste-resource management, with disposal bans on materials such as organics and most recyclable materials. The province also has many extended producer responsibility (EPR) and other regulated stewardship programs. Its rules apply both to municipal solid waste as well as commercial waste.

There are many reasons for Canada's overall high waste generation rates. They include consumer purchasing habits, cheap disposal options and, most notably, an absence of federal rules regarding solid waste management. Unlike the EU, where broad directives are given to member countries, Canada's federal government has limited power to impose rules on its provinces and territories. Each of these regions are sovereign with respect to non-hazardous waste rules and, effectively, each province and territory is required to implement its own legislation for landfills, incinerators and EPR as they see fit.

In comparison to other countries, like the United States, Australia and New Zealand, Canada is very similar. Many major cities have extensive solid waste diversion programs for residents with curbside recycling and composting systems that divert millions of tonnes of waste to beneficial use. Rural communities are less likely to have the full extent of these programs. But unlike its southern neighbor, the United States, Canada has embraced EPR with regulated programs addressing common items like used tires, electronics, household hazardous waste, beverage containers, paint, used oil, oil containers and in many cases, all consumer packaging.

There can also be extensive rules in some regions governing what can be landfilled or incinerated. In those cases, it is usually very expensive to dispose of wastes resulting in a considerable incentive to divert waste towards composting and recycling. In contrast, in other regions landfilling may be free to both residents and businesses, paid through general tax rates. Composting and recycling may be very expensive in comparison in these areas, if facilities exist at all. This results in a serious lack of harmonization amongst Canadian provinces and territories with many inefficiencies in delivering effective programming.

1. <http://www.conferenceboard.ca/hcp/details/environment/municipal-waste-generation.aspx>
2. <https://www.novascotia.ca/nse/waste/strategysummary.asp>
3. <http://www.conferenceboard.ca/hcp/provincial/environment/waste.aspx>

AGRICULTURAL WASTE IN CANADA

It is estimated that 40,000 tonnes of agricultural plastics are generated in Canada each year⁽⁴⁾ and currently Cleanfarms collects only about 10% of those wastes. However, from a hazard perspective, Cleanfarms' impact is much greater, ensuring that the majority of hazardous agricultural wastes are appropriately managed through its pesticide container and obsolete pesticide and animal health programs.

The most common plastic agricultural wastes in Canada include film plastics (bale/silage wrap, grain bags, mulch film, greenhouse film), twine, netting, bags (polypropylene), containers, drip tape, maple syrup tubing, trays and pots. Many of these products are classified as 'packaging' as regulators seek EPR programming to address these materials. For instance, even bale/silage wrap, twine and netting, while sold as a product and used by the farmer, are being classified as a 'package' because they are used to wrap a product in their end use.

It was the agricultural chemical industry who implemented one of the oldest EPR programs in Canada. In 1989, the crop protection industry in Canada agreed to voluntarily collect empty commercial pesticide containers for recycling. They didn't limit their collections, agreeing to collect all the containers that farmers would return. The network began in western Canada where 80% of these containers were generated, which soon spread across the entire country. Costs were paid by industry, though municipalities often provided free collection sites.

The program expanded to include obsolete pesticides in 1998 and pesticide bags (up to 1,000 kg bags) on the east coast of Canada in 2006. When the program began in 1989, EPR was relatively unknown in Canada. By 2006, however, the crop protection industry recognized that EPR laws were coming and new EPR laws were addressing more than just packaging. The industry also recognized it needed to establish a more rigorous approach to managing agricultural wastes, before new rules were imposed on industry. Cleanfarms was therefore established in 2009 and launched in early 2010. With a mission to address all agricultural waste with the highest environmental standards, Cleanfarms has expanded its programming to offer five programs across the country with a vision to address all agricultural waste from coast to coast. Current programming includes:

- Commercial pesticide and fertilizer container collections – 65% recovery rate
- Bulk pesticide container collections – 80% recovery rate
- Seed and pesticide bag collections – 25% recovery rate
- Obsolete pesticide and animal health medication collections
- Grain bag collections – New in 2018

(4) <http://cleanfarms.ca/about-us/public-resources/ag-waste-studies/>

Grain bags, one of Cleanfarms' newest products being managed, are not really a bag at all, but a flexible plastic tube. Common sizes are 3 meters wide by 75 meters long weighing about 150 kgs each. Used to store grain directly on the ground once harvested, the tube once emptied cannot be reused. Cleanfarms has begun collecting the bags and is currently sending the plastic to markets overseas. In the long term, the company hopes to see recycling facilities closer to home and with the development of these programs, volumes will incent new facilities to develop.

It is interesting that more focus has been placed on the recycling of grain bags rather than other agricultural plastic wastes like bale/silage wrap, mulch film etc. The drive to collect grain bags and not bale/silage wrap is one of practicality rather than actual environmental impact: Grain bags are emptied all at once posing a huge challenge for farmers to manage a large volume of plastic all at once. In contrast, bale/silage wrap is generated day by day throughout the winter when animals are not grazing. Small amounts of bale/silage wrap, twine and netting that can be disposed of easier by the farmer, most commonly by open burning. Regardless, there is more and more pressure from municipalities and the general public to end these old methods of disposal. The dairy industry in Canada, in particular, has also committed to better management of its waste and therefore the next largest agricultural waste streams to be collected in Canada will likely be bale/silage wrap, twine and netting.

CANADA AND REGULATED AGRICULTURAL EPR

When the crop protection industry began its collection program in 1989 in Canada, regulated EPR programs didn't exist. Today, there are over 120 organizations managing EPR programs in the country addressing a multitude of products. Agricultural packaging is now also regulated under EPR regulation in two Canadian provinces. Grain bags (which are not really packaging at all) are regulated in a third province. Other provinces have also produced enabling legislation and expect to add all packaging in the next few years. Cleanfarms foresees that at some point, all of its current programs and many more may fall under some type of EPR regulation. Starting programs effectively at the beginning under voluntary initiatives results in harmonization of programming and far better efficiencies through a national approach.

UNITED STATES, NEW ZEALAND AND AUSTRALIA

New Zealand and Australia both have programs for empty pesticide, fertilizer and dairy sanitation containers similar to Canada. The United States also has a similar program though it is focused on pesticide containers only. Recovery rates are around 50% for New Zealand and Australia, with only about 36% for the United States. Though, if collections included under 23 litre blow-moulded containers only, the United States program would probably drop to only a 25% recovery rate. Except for the State of California, there are no EPR requirements in the United States on agricultural products. New Zealand's container program is also a voluntary initiative, though Australia's program is mandatory.

Other types of agricultural waste is addressed only on a voluntary basis by various companies, all of which are private sector. New Zealand's program is probably the most extensive country-wide program where Plasback operates a collection program for eight separate streams of agricultural waste including bale/silage wrap. Plasback began its operations about ten years ago in New Zealand. Its flagship

product is bale/silage wrap though they do also collect twine, big bags and other products. Plasback claims a 25% recovery rate in New Zealand for its bale/silage wrap program. Plasback also operates in Australia.

INCENTIVES TO RECYCLE

What Canada, United States, New Zealand and Australia all share is a coordinated, country-wide initiative to address all agricultural wastes. They also have substantively varying costs for waste disposal, sometimes reasonably high while in other areas very low or non-existent. With a lack of rules, cheap disposal costs and often limited options in rural areas where farms are located, it is easy to understand why all four countries have limited success in achieving better waste diversion in the agricultural industry.

While Canada appears to be leading the group in terms of EPR programs Canada-wide, few of them currently address agricultural wastes. What that means is that farmers who generate these wastes turn to alternate methods of disposal, the most damaging of which is open burning. Even when open burning of plastics is illegal, it is still a key method of disposal for farms in rural areas. The same issue exists in all four countries.

CONCLUSION

It is just a matter of time before EPR will exist on all waste products in Canada. The same is expected to occur in New Zealand and Australia, though it is difficult to predict how this may spread in the United States where administration from the top down has been slow to acknowledge and address environmental issues caused by overconsumption and poor disposal practices.

What is clear is that there are a number of key drivers that result in better waste diversion practices and more efficient management of resources. Examples can be found throughout Europe and also in isolated areas in Canada (like Nova Scotia), United States, New Zealand and Australia. These drivers include:

- Federal leadership – i.e. EU waste directives;
- Disposal restrictions on recyclable and compostable materials;
- Full cost accounting of disposal costs – i.e. absence of free disposal; and,
- Regulated EPR and other stewardship programming.

There are also drivers specific to the agricultural industry that could dictate a ‘sea change’ in waste management. Two of the most important include:

- Voluntary EPR programming such as the crop protection industry’s approach to pesticide containers; and,
- Agricultural producer specific commitments – A good example is the Dairy Farmers of Canada’s ProAction⁽⁵⁾ program which includes a commitment towards environmental protection. It currently isn’t very specific regarding proper waste disposal however it may in the future. When

it does, this would require the voluntary establishment of appropriate collection and disposal of bale/silage wrap, twine, netting and an end to the harmful practice of open burning.

Cleanfarms was created to address all agricultural waste in Canada and is well positioned to address all wastes to ensure the proper management of these resources from coast to coast.

5. <https://www.dairyfarmers.ca/proaction>