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# Better Farming

Mike Lishman



## COMPOST

from green-bin  
waste  
gaining traction

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# COMPOST

## from green-bin waste gaining traction

Farmers are using it and field trials are measuring effectiveness and testing for the best application rates

by MIKE MULHERN

The growth of municipal green-bin waste composting programs has created a new source of soil amendment for farmers that some believe has big benefits at a lower cost.

For farmers without livestock, manure can be hard to come by and as commercial fertilizers are going up in price, growers are eyeing alternatives. Compost producers can't keep up with demand from farmers, but there is a

mountain of potential in Canada's waste stream if farmers show enough interest. In addition, Ontario's compost rules are changing and two new grades are being added, something which may boost future compost options for farmers.

Four years ago, Jarvis-area cash crop farmer Mike Lishman started buying compost from AIM Environmental Group of Stoney Creek. It worked so well for him, he started selling it to his neighbours. In 2012, he used and distributed about 15,000 tonnes of the stuff – produced from green bin waste from the municipalities of Hamilton, Halton Region, County of Simcoe, City of Guelph and Waterloo Region.

One compost application, at 10 to 12

tonnes an acre every four years, is enough to allow Lishman to cut way back on commercial fertilizers.

"We buy very little commercial fertilizer now," Lishman says. "The only commercial fertilizer we buy for our operation is just for our starter source."

Lishman has applied compost after wheat in a rotation in which corn is followed by two years of soybeans before wheat. Without annual fertilizer applications, he's making fewer passes over his fields, seeing better soil health and improved yields.

Compost costs in Ontario range from \$5 to \$35 a tonne (some products are sold by the cubic yard), depending on the producer, but transportation can cost



Mike Lishman spreads compost on his farm near Jarvis.



more than the compost. Lishman's brand retails for \$6 a tonne but can cost twice that or more, depending on the distance it has to travel.

"Trucking is the biggest issue," Lishman says. "The product is quite light." In five-axle, 80-yard trailers, they are getting just 35 to 36 tonnes a load.

Lishman has three spreaders to help his customers get a "controlled, even spread" on their fields.

"We started with a leased spreader the first year," Lishman says, "now we're running three spreaders." His latest acquisition – he buys the spreaders now – is a German-made, 25-tonne Bergmann.

Most of Lishman's customers add three to five tonnes of compost per acre, but some are applying 10.

Lishman, a cash crop farmer, started participating in a study by researcher Christine Brown, nutrient management field crop lead for the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), to help quantify compost's benefits and establish best-practices for its use.

Surprisingly, it was livestock farmers who were the fastest to volunteer to participate in her in-field testing of compost made from municipal green bin



**Lishman claims the organic matter has boosted crop yields from his heavy Haldimand clay fields.**

waste. "They don't have enough manure for their land base and they know the value of manure," says Brown.



**Christine Brown**

"The objective," Brown says, "is to show farmers the benefits of organic matter and to a smaller extent nutrient potential."

She is working with a number of compost producers under the umbrella of the Compost Council of Canada, the Soil and Crop Improvement Association, the Fertilizer Council of Canada and OMAFRA.

Using compost donated by producers, Brown is testing what is the best rate and timing. She is including fields that had applications as early as 2010 and she expects to continue the research for three more years, or a full crop rotation,

## Manure more valued, not as available

Fewer small herds spread throughout the countryside are creating the perception of a manure shortage in Ontario. And, with livestock producers putting more value on the manure their animals produce, cash crop farmers may have trouble sourcing the product they need.

Christine Brown, nutrient management field crop lead for the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), believes it's not that there is less manure in the province, it just feels that way. Some farm neighbourhoods have lost manure sources. Larger producers tend to have a bigger land base and they can use everything they produce on their own land.

"Before," Brown says, "you had a lot more small farms distributed through the countryside. There's less

of that, so the perception is there is less manure around." She also believes, in the past, there was more trading between farmers and manure wasn't valued as a resource as much as it is now. "Now that fertilizer prices are going up," Brown says, "people are looking at manure and saying, 'Oh, it's got micronutrients and it's got organic matter benefits.' I think people are starting to make better use of it so they are not as interested in selling it or giving it away."

Brown says the exception may be areas of the province where a concentration of livestock operations means farmers may have more manure than they can use. "That's the only place you're going to see people a little more interested in selling or sharing manure," she says.

Looking at the numbers, the beef

cow herd has declined 19.4 per cent since 2003 and currently stands at 321,000 beef cows in Ontario. Between 2006 and 2011, there was also a decline in the number of dairy cows in Ontario, down 3.5 per cent to 318,158.

The number of pigs has declined 22 per cent to 3.1 million since the population peak of four million in October, 2005. Between the 2006 and the 2011 Statistics Canada census, the number of Ontario farms where pigs were raised dropped from 4,070 to 2,556.

On the other hand, Ontario's goat herd grew 52.7 per cent between 2006 and 2011. Ontario now has the country's largest goat herd at 116,260 head. Ontario's sheep herd also increased 13.4 per cent to 352,807 head. **BF**



and beyond, if funding is available.

"Part of it is, 'What are the yield benefits over a rotation?' so not just the year it's applied but the year after the year after that," she says.

The economics are important too. Brown says they are trying to figure out whether there is more cost benefit to a 10-tonne-per-acre application once every three years or five tonnes, two out of three years.

Because 2012 was a dry year, Brown says she saw benefits regardless of the rate of application.

"In trials where we tried 10 tonnes or 20 tonnes, it didn't look like there was a significant difference in the 20 tonnes over the 10 tonnes but there was significant difference between any compost compared to none," she says.

Brown cautions that nutrient levels vary from product to product. She says farmers should always know what they're dealing with. "You should always be asking for an analysis," she says. "What's in the material? What kind of fertilizer credits can I give this?"

Using the right spreader also is an issue Brown has identified. She is working with the Ontario Soil and Crop Improvement Association to set up a page on their website to identify and list a network of custom application equipment for either rental or custom work, although it is not ready yet. Because of the light weight of the material, Brown says you need spreaders designed more for poultry litter than heavy beef pack.

Brown also wants to work out a logistics system that could reduce transportation costs.

"Transportation has been the budget item that has caused us problems," Brown says. So far, she says, transportation has been covered by the compost companies donating the material or by the farmers receiving the material. Brown hopes to try compost in every growing region of the province, and she has 15 side-by-side trials in progress so far.

While they have used product from London's OrgaWorld, Brown says the primary participants in the trial are AIM Environmental Group, Peel Region and the Miller Group out of Markham.

One of the initial problems Brown

had with products coming into the trial was the level of plastic in the compost. "The first plot, you wouldn't believe how much plastic was in it. We complained and said, 'You know farmers aren't going to take this on a continuous basis.'" The improvement, she says, has been remarkable.

While Brown says results are three years away, she can see the potential for green bin waste as a nutrient source for soil.

"When you think about it, you've got all this food waste that is potentially going to landfill and we've got less and less livestock farms supplying manure to agriculture so here is a win win where we can take basically the waste food and take it back to the land and supply organic matter and nutrients," Brown says.

Farmers who want to try green-bin compost in some areas of the province have to get in line behind buyers in the landscape market.

Mike Koplansky, manager of Miller Compost, says they have very little material to offer farmers.

"We're involved in the trials," Koplansky says, "to support the whole compost industry . . . For our sector, if we can help create more demand for the compost product produced by some of our competitors who don't have as high a quality, then it just helps create more demand." Like the other producers, Miller sources its feedstock from municipal green bins. Their feedstock material comes from the Durham Region. Unlike other producers, however, Miller puts incoming material on a conveyor where workers pick out offending items such as plastic and glass before it is composted.

Koplansky says demand is starting to exceed supply, partly because there hasn't been a lot of incentive to increase supply until recently.

"If the agriculture industry can realize the value of it and pay for it," he says, "then people can put together business plans where companies like ours can increase our production of compost." Miller advertises premium compost, a finer screened product, for \$30 a cubic yard. Standard compost goes for \$20 a cubic yard.

Two of Ontario's green-bin compost producers, AIM and OrgaWorld, do





**Most municipalities don't bother to recycle organic material, which makes up half of the waste stream.**

produce primarily for the agricultural sector. However, production is not huge. OrgaWorld produces about 25,000 to 30,000 tonnes of compost a year at each of its facilities in London and Ottawa; both are sold out for the next year. Their product line includes a finer, dryer compost produced in the Ottawa facility and sold for animal bedding.

OrgaWorld compost sells for about \$12 to \$15 a tonne. The bedding is sold for \$10 a yard.

AIM produces 24,000 to 30,000 tonnes of compost a year for the agricultural market. Frank Peters, AIM's business unit

manager, says there is not enough compost to cover the agricultural market in Ontario, partly because of the decline in the availability of livestock manure.

The Region of Peel, which produces 60,000 tonnes of compost a year through its own green bin and yard waste program, sells a lot of its product to the landscape industry and to Peel residents. In November, Peel's website showed the order book for 2012 was closed. Peel was offering places on the waiting list for 2013.

Matthew Stevens, technical analyst for Peel's compost program, says they offer a range of products and services. Material screened to a half an inch is \$35 a tonne but coarser, 1.5-inch-plus material can be had for \$5 a tonne and that sometimes finds its way into the agricultural market, based primarily on price. He says the coarser material, derived from a more open screening process, has more wood waste but does not contain plastic or glass. He says Peel is working with Brown on the project to see whether there is a supply window that might suit everyone. "Maybe we can supply the compost (to farmers) every three years compared to every year." He also says more supply might be found if there is more demand from the farming community.

In fact, there is a mountain of potential in Canada's so-called waste stream. Susan Antler is the executive director of the Compost Council of Canada. She says organics make up to 50 per cent of the "waste stream" but most of the compost potential is lost, partly because most Ontario communities deal with blue box programs alone.



**Susan Antler**

"More than 200 communities are focused on the blue box program only," she says. "The 93 or so communities that have the combined blue box and organics (programs) almost achieve the same amount of (waste) diversion as the

## Ontario Compost Categories as of Jan. 1, 2013

The three new categories of compost (AA, A and B) have replaced the former single set of compost standards for unrestricted use compost in Ontario.

Standards for metals (feedstock and finished compost), pathogens, sharps (glass, metal bits) and other foreign matter (including plastics) and maturity apply for each category. This allows Ontario to align with nine other provinces.

**Category AA** has the highest quality standards. They are similar to former Ontario standards but with some modifications. Category AA continues the use of former zinc and copper standards, which are more stringent than the Category A standards and does not allow use of sewage biosolids, pulp and paper biosolids or

septage as feedstock. Category AA may be used without restrictions or approvals, both on and off farm.

**Category A** (new) compost standards meet the Canadian Council of Ministers of the Environment (CCME) Category A quality guidelines. They allow slightly higher concentration of zinc and copper than Category AA and allow the use of biosolids as feedstock (maximum 25 per cent of total feedstock), but feedstock must meet the metals standards on inputs. Category A must include labeling information including maximum application rates, identification of any biosolids and domestic septage used as feedstock, and a warning that the product should not be used on soils with elevated copper or zinc

concentrations.

Category A compost may be used without an Environmental Compliance Approval (ECA) or a NASM Plan (both on and off farm).

**Category B** (new) compost standards meet the CCME Category B quality guidelines plus Ontario's Cadmium and Copper standards. The standards are less restrictive for metals and foreign matter standards than Category AA and A, and the compost may contain biosolids. It must meet the same metals standards for feedstock as Category A. Category B compost requires government approval for use and transportation (i.e., ECA off-farm or an approved NASM Plan on-farm).

*Source, Ontario Ministry of the Environment*



over 200 (municipalities, combined) on the blue box. The key for waste diversion is to get the organics collected, so there's a long way to go and certainly a long way to go to make sure we are sustainable."

However, Antler believes the time is right for an increase in compost production and she says the regulatory climate in Ontario is also creating new opportunity.

In Ontario, there was just one grade of compost before 2013. However, on Jan. 1, 2013, the Ontario Ministry of the Environment updated Ontario's compost framework to allow for three grades of compost: AA, which equals the current, high standard of compost from green bin and yard waste; A, which can include 25 per cent sewage biosolids, pulp and paper biosolids and domestic septage in the feedstock blend; and B compost which is less restrictive for metals and foreign matter than Category AA and A. B may also contain biosolids but it must meet the same metals standards for feedstock as Category A.

No one currently produces Category B compost in Ontario. However, when it is produced, it will be listed as a Non-Agricultural Source Material (NASM) and require government approval for use and transportation (Environmental Compliance Approval off farm or an approved NASM Plan on-farm).

Antler says the updates put Ontario's regulatory framework in line with other provinces and gives the organics recycling business in Ontario new options.

"It's really important for the right compost to be put to the right use," she says. "There are different qualities like any product and the absence of flexibility in the standard prior to the recent changes really restricted the potential of organic recycling in the province."

If Mike Lishman's experience holds up in field trials, Ontario kitchens could be a huge source of soil amendments for Ontario farmers. Using the right grade, in the optimum amount at the right time in the rotation could be a win-win for farmers and waste diversion.

"I think every farmer has a budget for soil fertility and what they can re-invest in the land," Lishman says. "Obviously with commodity prices the last couple of years, guys are really starting to look to put something back." **BF**