Pesticide ban impacts:
Three perspectives from Canada

THE REVISED REGULATIONS under Canada's Pesticides Act that eliminated the "cosmetic" use of pesticides in Ontario came into effect on Earth Day 2009. Municipalities have now had one full season to adapt to the changes in operations which have resulted from the new legislation. This article provides perspectives from three different municipalities as to the impacts and costs of these changes.

CITY OF WATERLOO

For Waterloo, what are the true costs of the pesticide ban? This is an interesting question for a city that has a strong knowledge and service-based economy. Waterloo is a community of 120,000 people that has 814 hectares of green space. If you have visited Waterloo, you may have experienced RIM Park that offers a major indoor recreation facility, a mix of multi-use fields and baseball diamonds, a golf course and an abundance of natural areas along the Grand River.

Understanding and investigating the questions surrounding pesticide use began for Waterloo some 30 years ago when both citizens and staff recognized that routine grounds maintenance practices were both fiscally and environmentally undesirable. Alternatives were explored and researched. The result was a Plant Health Care Program designed to work with nature, not against it. It encouraged creative deployment of horticultural practices and recognized that we are working with living plants/organisms, not sterile mechanical products. The program included the same elements that so many communities are now using today: monitoring/scheduling, mowing, fertilizing, aerating, topdressing, overseeding, irrigating, dethatching, alternatives, and education and training.

The outcome of Waterloo's efforts can be demonstrated by the fact in 1979 we sprayed 36% of our green spaces. By the year 1993 it was down to 0.5%, and today, of course, we do not spray at all in accordance with the ban.

Table 1 summarizes the base program costs (excluding overheads) for the City of Waterloo in 2008 on non-irrigated and irrigated multi-use fields and on an irrigated baseball field. The pesticide ban has had minimal impact on our most recent years operating budgets as we have programmed the cost into our operations since the 1980s.

We continually monitor, inspect and renovate our turf. We look for alternative ways of doing things including sand injection, utilizing a Blec Sandmaster, building fields to recommended standards, and investing in artificial turf fields.

The Plant Health Care Program at the City of Waterloo has been successful as a result of the involvement and commitment of staff, redefining how we work, political will, citizen involvement, and requesting the necessary budget when opportunities were available. In doing so, the pesticide ban has had a minimal effect on City of Waterloo operations.

CITY OF OSHAWA

Oshawa has 150,000 residents. The city maintains 126 parks comprising 953 acres (maintained parkland), 50 rectangular fields, 54 ball diamonds, 7,766 linear meters of landscape buffer

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Table 1. A summary of base program costs (excluding overheads) for the City of Waterloo in 2008 on irrigated and non-irrigated multi-use fields and on an irrigated baseball field.

Maintenance Activity	Non-Irrigated Multi-Use Field	Irrigated Multi-Use Field	Irrigated Baseball Field
Inspections	$100	$100	$100
Spring Repairs & Divot Overseeding	$525	$650*	$400
Aerating	$275	$400	$300
Fertilizer & Soil Amend.	$800	$800	$600
Topdressing & Overseeding	$3,500	$3,500	$600
Mowing	$400	$800	$1,000
Irrigation	-	$500	$500
TOTAL	**$5,600**	**$6,750**	**$3,500**

*Includes crease overseeding and turf blanket

Table 2. Additional costs incurred by the City of Oshawa due to alternative practices under Ontario's Cosmetic Pesticides Ban.

2009	Cost	Items
Agricultural & Botanical Alternatives	$57,500 $50,000	seed, fertilizer, topdressing mycorrhizae, corn gluten, alfalfa, worm castings, kelp, gypsum …
Vegetation Control	$62,400	vinegar, mulch

Table 3. Costs for cultural practices, labour and equipment, City of Oshawa.

Year	Core Aer.	Slit Aer.	Overseed	Topdress	Fertilize	Alternatives	TOTAL
2006	$8,270	$15,537	$11,402	$4,400	$27,132	$32,863	**$99,640**
2007	$3,237	$10,252	$25,137	$14,474	$25,620	$24,310	**$103,030**
2008	$3,336	$11,827	$25,248	$6,142	$42,892	$12,206	**$101,651**
2009	$6,597	$12,000	$17,695	$2,500	$20,414	$23,410	**$82,616**

strips, 67 shrub/perennial beds and 91 annual beds.

Oshawa instituted a Pest Management Program, approved by Council, in 2003. This was put in place as an alternative to a pesticide ban and had the goal of reducing or eliminating the use of pesticides while maintaining quality turf. As a direct result of this program, an additional $400,000 was added to the base budget to cover equipment, facilities, three additional staff, materials, and education and outreach. Because of this, Oshawa was well prepared for the 2009 pesticide legislation and the impacts were less than they may have been otherwise.

The new pesticide legislation resulted in some additional costs to Oshawa related to alternate practices. These are summarized in Table 2.

In order to better focus efforts to promote healthy turf, Oshawa engaged the Guelph Turfgrass Institute to carry out a $50,000 study. This provided for a comprehensive report and included recommendations for:

- Procedures
- Monitoring techniques
- Fertilizing schedule based on soil tests
- Maintenance schedule for compaction, overseeding and topdressing
- Field use (open/close dates)
- Education and outreach programs
- Equipment purchases
- Drainage improvements
- Development standards
- Provision for skilled staff
- Staff training

A summarized report was provided for user groups.

The City of Oshawa has implemented use of a number of alternative products to replace traditional pesticides. These include:

- Calcium powder for compaction
- Corn gluten to prevent weed germination
- Compost: nutrients, bacteria, fungi
- Worm castings: nutrients, bacteria, fungi
- Crumb rubber to prevent damage
- Granular and liquid fertilizers
- Gypsum to prevent salt damage, compaction
- Kelp for nutrients
- Seed: endophytic, sun/shade, rhizomes, perennial rye (fast germination but clumps)
- Topdressing to match native soil
- Horticultural vinegar (hard surfaces)

In addition a number of cultural practices have been used: 3" cutting height, overseeding and topdressing, fertilizing (granular and liquid), aerating (core and solid tine), soil tests, and monitoring of fields and customized maintenance based on conditions.

Costs for these cultural practices are shown in Table 3. Because of the previous Pest Management Program, the pesticide ban did not significantly change these costs. Table 4 illustrates the practices and costs for a typical high end grass field in Oshawa.

While overall implications and costs have been minimal, the pesticide ban has had major impacts on how Oshawa treats hard surfaces. Standard practices include the use of horticultural vinegar for downtown areas every two weeks, including treatment of warning tracks, tennis courts, intersections, walkways and sidewalks. Monthly newspaper ads were used in place of posting signs. Incremental costs for hard surface treatments were $1,875 monthly ads, $11,000/year product and $12,800/yr wages, equipment for a total of $25,675. Cost comparisons are provided in Table 5.

CITY OF MISSISSAUGA

Mississauga Parks and Forestry serves 700,000 residents. The city has 500 parks (includes greenbelts and woodlands), 253 sports fields, 138 ball diamonds and 250,000 street trees. In 1995, Mississauga Council approved a policy which resulted in a 95% reduction in pesticide use. The policy included:

- No pesticide use for general parkland
- Spot spraying only for sports fields
- Use for high end horticulture
- Use for hard surfaces and boulevards
- Use for harmful/invasive plants

In addition, Mississauga proactively initiated increased development of artificial fields (currently have six). The 1995 changes also resulted in increased hand weeding of beds, more mulching, and the institution of cultural practices similar to those used in Oshawa. As a result of the 2009 provincial legislation, some operational practices have been modified. These are summarized in Table 6.

Table 4. Typical costs for a rectangular field, City of Oshawa, 2009.

Item	Quantity	Product	Man Hours	Equipment	TOTAL
Soil test	1/year	$15	$5	$20	$40
Aerate	2/month	n/a	$130	$120	$256
Overseed	2/year	$1,440	$78	$100	$1,618
Fertilize G*	1/month	$560	$364	$231	$1,155
Fertilize L**	1/month	$500	$364	$231	$1,095
Compost	1/year	$20	$156	$100	$276
Grass cutting	1/week	n/a	$348	$1,363	$1,711
TOTAL					**$6,151**

* G, granular ** L, liquid

Table 5. Cost comparisons for hard surface treatments, City of Oshawa.

	Product Cost	Wages & Equipment	TOTAL
Roundup 2007	$1,000	$7,428	**$8,628**
Vinegar 2009	$12,000	$11,643	**$23,643**

Table 6. Modified practices due to the pesticide ban, City of Mississauga.

Location	Existing Practice	New Practice
Specialized Horticultural Beds	Pesticide treatment to deal with diseases, fungus etc.	Class 11 pesticides
Shrub & Perennial Beds	Hand weeding, mulching	No change
General Parkland	Periodic cultural practices	No change
Minor Fields	Periodic cultural practices	No change
Lit Irrigated Fields	Cultural practices, spot spraying	Cultural practices, periodic resodding
Baseball Warning Tracks	Roundup	Roto tilling; alternate surface
Boulevards	Bi-annual spraying	Cultural practices, Class 11 pesticides
Hard Surfaces	Bi-annual spraying	Class 11 pesticides
Forest Infestations	Treatment as needed (e.g. BTK)	No change
Invasive/Harmful Plants	Treatment as needed	No change, MNR approval required

As noted previously, cultural practices (fertilizing, aeration, topdressing and overseeding) have been embedded in our operating budgets since the mid 1990s so the pesticide ban did not impact operating costs from this perspective. The average cost for a major lit field remains at $8,700. It is anticipated however that major turf renovations may be required eventually for some fields. This would represent a periodic cost of $200,000.

A major impact of the 2009 legislation has been changes in the maintenance of baseball warning tracks. This job now requires six staff for 2-4 hours. Previously, using Roundup, one staff person could treat a warning track in an hour. This represents incremental labour costs of $500 per diamond per treatment.

Another cost increase that has to be budgeted for is hard surface maintenance. Treating twice per year with horticultural vinegar results in incremental costs of $50K. Lastly, the impact on specialized horticulture like roses and rhododendrons has yet to be determined, though no major problems have surfaced as of yet. Overall, the history of pesticide policy in Mississauga put the city in a good position to deal with the new provincial legislation

All three municipalities implemented pesticide reduction programs prior to the Cosmetic Pesticides Ban Act. As a consequence, many of the practices and alternative products to allow for effective maintenance under the new legislation were already in use. So while there were incremental costs in some specific areas, impacts were not as severe as they might have been.

All Ontario municipalities and other turf managers will need to continue to adapt to the changing "tool kit" available to them as a result of legislative changes. It is hoped that research and innovation on the part of turf managers will allow for more effective alternative products and practices for the future. ■

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