Statistics, Opportunities and Advocacy for Non-essential Pesticide Use

Recommendation:
That the September 19, 2011, Community Services report 2011CSP004 be received for information.

Report Summary

This report provides information regarding cosmetic or non-essential pesticide use.

Previous Council/Committee Action

At the February 23, 2011, Transportation and Public Works Committee meeting, the following motion was passed:

> That Administration provide a report to Transportation and Public Works Committee with additional information on:
>
> a) up to date statistics on the performance of the pesticide-free control sites and whether more work is needed to improve their condition
> b) opportunities to go further within the Integrated Pest Management framework to further reduce the amount of pesticides, including strategic opportunities, to create more pesticide-free sites
> c) a survey of other large Canadian municipalities that ban or restrict non-essential pesticide use, including the service level and cost changes at each municipality, as well as qualitative data on public turf performance
> d) the potential for advocacy to the provincial government for a review of the pesticide ingredients banned in other provincial jurisdictions, and determine applicability in Alberta

Report

- This report addresses management of broadleaf weeds, such as dandelions in turfgrass in public parks and open spaces. It does not include more intensely managed, specialized turf surfaces, such as golf greens.
- Within the Integrated Pest Management framework, turf management without the use of pesticides demands greater emphasis on cultural plant health care practices. These practices help maintain soil and turf health and build resistance to invasion by weeds through:
  - adequate water supply
  - fertilization to stimulate growth
  - proper mowing height
  - aeration for healthy root growth
  - top-dressing for soil health
  - over-seeding to build turf density
- To rely exclusively on plant health care requires considerable investment but in cases where these practices are adequately applied, broadleaf weed control may not be required.
- Specific turfgrass species are used for sportsfields, parks and lawns since they are hardy, resilient and adaptable. This makes turfgrasses capable of out-competing most other plants under good growing

conditions thus often eliminating the need for weed control.

Performance of Herbicide-free Sites

- Evaluation of 36 herbicide-free areas in Edmonton over the past seven years shows the majority, almost three-quarters, have increased amounts of weeds. More analyses of the plant health care treatments concluded that fertilizer applications help reduce weed density; however, the proximity of a herbicide-free site to a more weedy area affects weed density. More focused study will provide sound direction to improve the effectiveness of current Integrated Pest Management weed management programs (Attachment 1).

Opportunities for Pesticide Reduction

- Opportunities to reduce pesticide use include:
  - Researching biological and horticultural controls for problem weed species to create more sustainable weed management practices.
  - Co-delivering fertilizers and sticker-spreaders with herbicides to improve weed management.
  - Exploring newer and improved Integrated Pest Management technologies e.g., over-seeding equipment and cut and swipe herbicide applicators.
  - Planning for more sustainable sports field irrigation such as the re-use of water from water parks and spray parks.
  - Considering the suitability of more herbicide-free sites targeting new locations within neighbourhoods that have petitioned for herbicide free parks.
  - Improving public education on pesticide reduction through re-instating the budget for the Good Growing Neighbours campaign (Attachment 2).

Survey for Impacts on Canadian Cities with a Pesticide Ban

- Generally, in larger cities where pesticide use has been banned, we found no evidence that budgets have increased to support greater servicing of municipal turf inventories. However, the information suggests that in some cases, pre and post ban turf servicing standards reflect higher maintenance inputs than those in Edmonton. In particular, these higher standards often support much smaller inventories of more heavily used all-season sportsfields and despite wetter climates are typically well supported with irrigation capacity.
- Indications are that several years following implementation of a pesticide ban, un-irrigated turf inventories have experienced escalating weeds. Whereas there has typically been a very modest budget increase for investment into plant health care resources, cost intensive and non-sustainable sod replacement may be emerging as one of the main alternatives for conventional turf herbicides when weed densities become unacceptable. With sod replacement being unsustainable for larger, weedy inventories, another expensive alternative, “the permitted” turf herbicide, Fiesta™, is now being considered in Toronto. Failure to

adapt funding levels for herbicide-free plant health care has demanded strategies to increase public tolerance for more common weeds like the dandelion (Attachment 3).

Advocacy for Provincial Pesticide Restriction

- Canada's anti-pesticide movement has emerged as a powerful driver of municipal bylaws restricting "cosmetic" or "non-essential" pesticide use and has influenced provincial pesticide legislation in eastern Canada. This movement challenges the statutory authority and scientific integrity of the national system for pesticide safety, managed by Health Canada. Some unsettlement in the foundation of Canada's pesticide bans emerged in 2011, with the Province of Quebec announcing a reversal of its position on the carcinogenicity of the conventional turf herbicide, 2,4-D. Quebec now states that 2,4-D does not pose an unacceptable risk to human health and the environment (*Settlement Agreement re: Arbitration under Chapter 11 of NAFTA: Dow Agrosciences LLC vs. Government of Canada*).
- In Alberta, the Provincial Ministry of Environment has no intention of restricting the sale of pesticides beyond the prohibition of "Weed and Feed" combination fertilizer-herbicide products. Furthermore, both provincial Health and Environment Ministries support the City of Edmonton's Integrated Pest Management Policy C501, where following the application of preventive biological, cultural, and mechanical treatments, Health Canada-approved pesticides are used to manage pest populations to acceptable levels. (Attachment 4, Appendices 1A/1B).

Policy

- Integrated Pest Management Policy C501
- Environmental Policy C512

Corporate Outcomes

The Way We Grow Strategic Goal - Natural Environment

Budget/Financial Implications

- Further work to improve Integrated Pest Management of turfgrass in Edmonton requires increased field research capacity ($50,000). This includes both in-house resources for technical investigations, as well as expansion of partnerships with professional turf research groups, such as the Prairie Turfgrass Research Centre at Olds College.
- Re-instatement of the Good Growing Neighbours budget ($100,000) to continue achieving overall pesticide reduction in Edmonton.

Attachments

1. Performance of Pesticide-free Control Sites
2. Integrated Pest Management Opportunities
3. Municipal Survey Results
4. Province of Alberta Jurisdiction and Review

Others Reviewing this Report

- R. G. Klassen, General Manager, Sustainable Development
- L. Rosen, Chief Financial Officer and Treasurer

Performance of Pesticide-free Control Sites

To avoid confusion, it is important to point out that these sites were selected to be herbicide-free and not pesticide-free. To demonstrate the difference, an analysis of pesticide application throughout the 159 hectares of herbicide-free sites right through 2010 revealed a total of four insecticide treatments – one site was treated for the control of mosquito larvae in standing water and an outbreak of yellow-headed spruce sawfly on spruce trees, and stinging wasp nests were controlled at two other sites.

An evaluation of the herbicide-free sites is based on 36 of the original 45 "herbicide-free" park, school ground and boulevard sites designated by City Council in 2004. Five sites were excluded since they were replaced in 2007 due to extreme weed growth and turf damage. Data on another four sites was excluded due to inconsistent data collection; therefore, results are based on 36 parks and school sites that have been maintained herbicide-free since 2004.

An important parameter to determine the performance/condition of a park site is the level of weed infestation in the turf, so, the focus of the evaluation is on weed pressure (number of weeds) on these sites.

All sites are considered "*School grounds/neighbourhood parks*" with a Council approved Integrated Pest Management weed action threshold of six weeds/m^2 over 50% of the parks area[1]. Accordingly, the number of weeds on 50% of the park area was monitored in 2004 - 2007, 2010, and 2011.

Performance analysis included evaluation of three of Parks' current herbicide-free maintenance techniques: aeration, topdressing, and fertilization. To evaluate their efficacy in reducing weed pressure in an herbicide-free environment, we compared the weed development in the year after treatment. For example, on every site where fertilizer was applied in a given year, we determined whether the number of weeds had increased or decreased in the following year.

Results of the evaluation showed a high variation in weed density, between sites, but also on a given site over the investigation period (Fig 1 a, b). Fourteen sites never exceeded the Integrated Pest Management weed action threshold, while the other 22 sites exceeded this threshold in at least one year. Looking at the trend-lines of both groups, only a few fields show decreasing numbers of weeds and, on the majority (almost three-quarters) of sites, the number of weeds has increased over the years.

Further investigations show that one reason for higher numbers of weeds on sites seems to be the proximity to other green infrastructure with lower weed action thresholds (e.g. pipeline corridors, boulevards) (Fig 2).

[1] Exceeding this threshold would trigger a herbicide treatment in a regular field

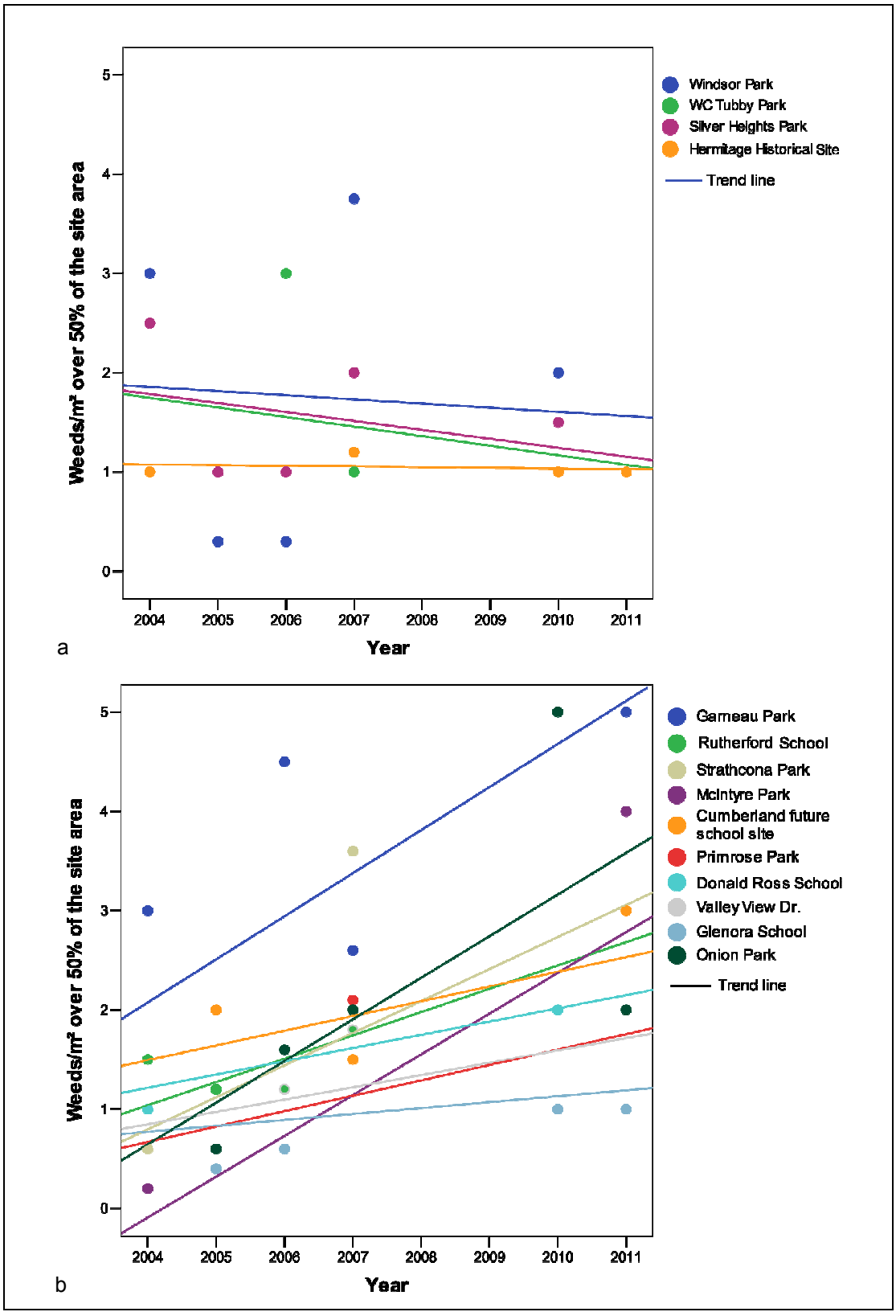

Fig 1a: Weed infestation development – Sites which never exceeded the IPM weed action threshold, a) decreasing weed numbers, b) increasing weed numbers

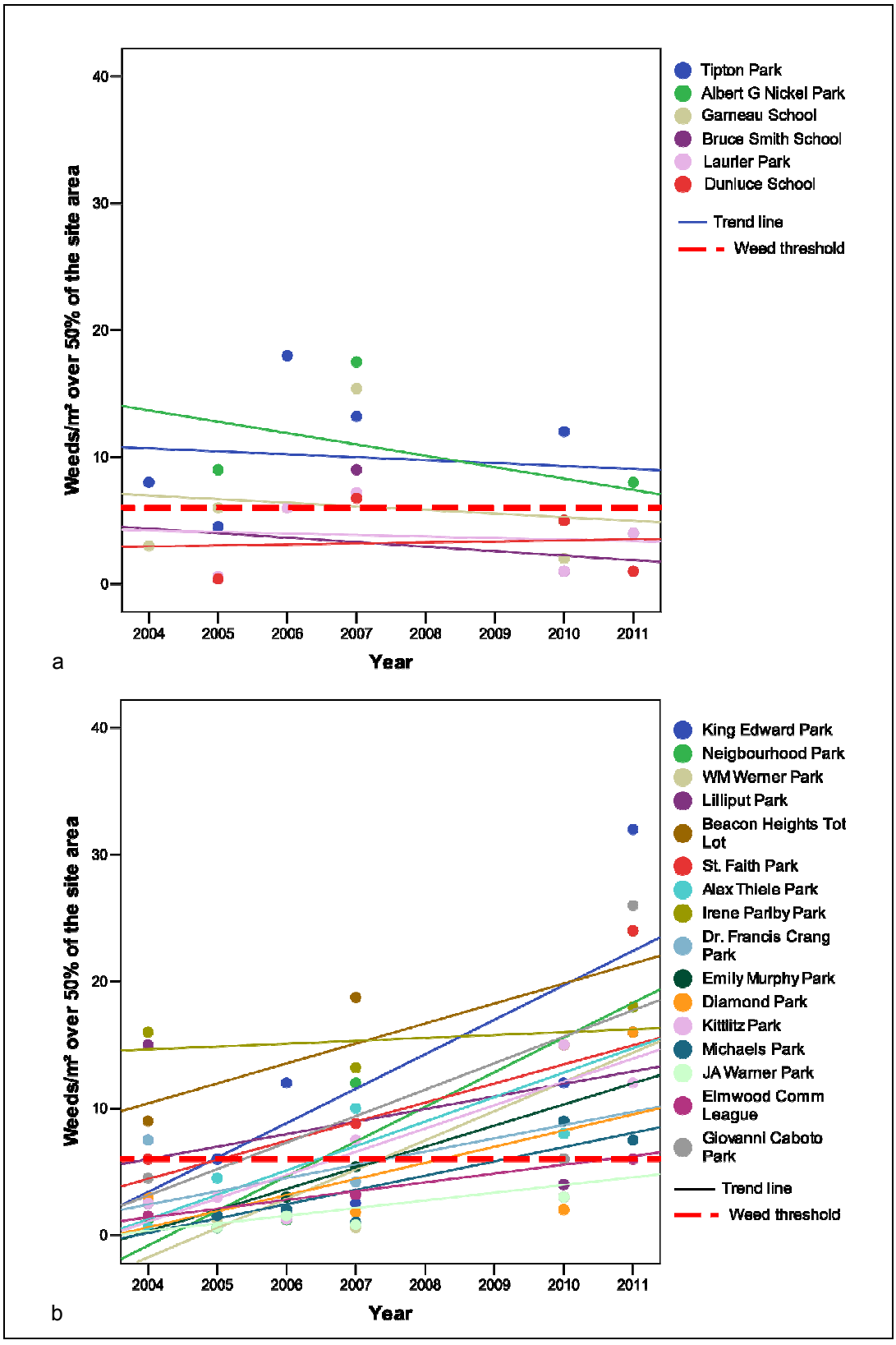

Fig 1b: Weed infestation development – Sites which exceeded the IPM weed action threshold in at least one year, a) decreasing weed numbers, b) increasing weed numbers

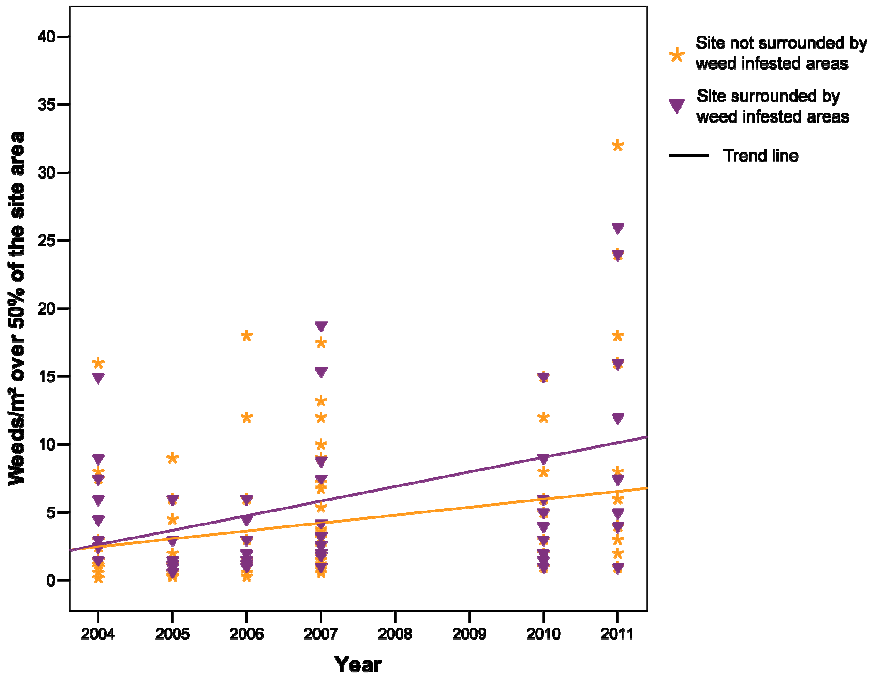

Fig 2: Weed infestation and the influence of the proximity to sites with lower maintenance regimes

The evaluation of the efficacy of our current maintenance techniques shows that fertilizing can potentially reduce the numbers of weeds, particularly in low infested areas (Fig 3). Aeration does not seem to have an effect on weed numbers in the following year. Topdressing was done on only a few fields and not more than two times in the investigation period: therefore, data are insufficient to allow any conclusions.

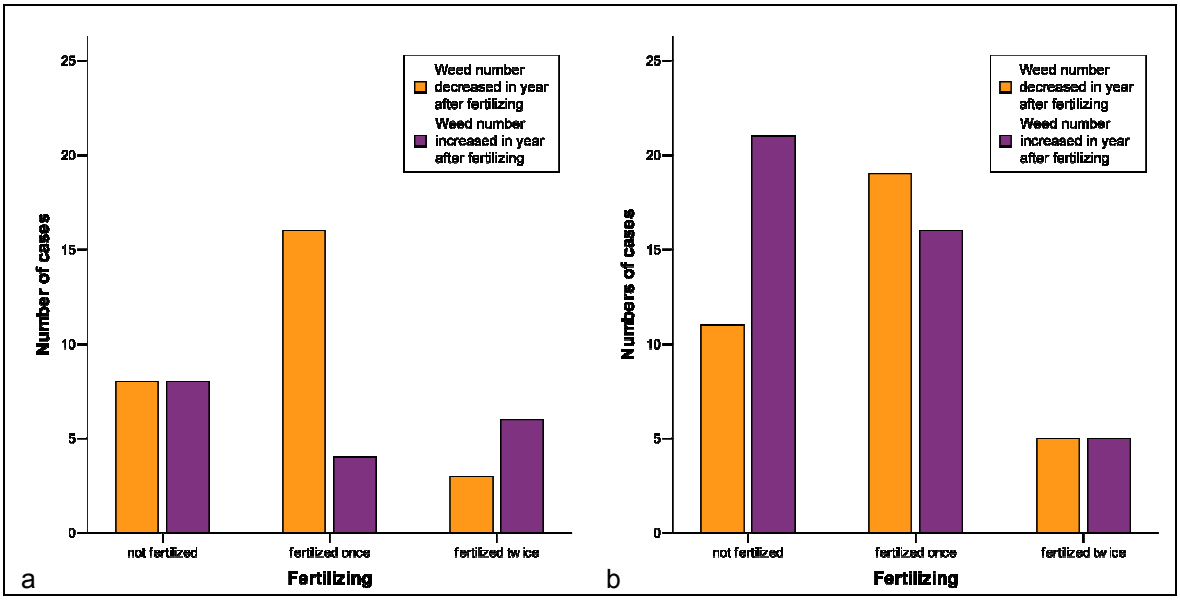

Fig 3: Effect of fertilizing on weed infestation a) Sites which never exceeded the IPM weed action threshold, b) – Sites which exceeded the IPM weed action threshold in at least one year

Discussion

Two-thirds of all sites with increasing weed numbers showed the highest numbers in 2011. Looking at climate and weather data, 2010 and, especially, 2011 are clearly the two years with the most rainfall in the investigation period and provided the best conditions for plant growth in the last decade. Very dry conditions over the last 10 years reduced turf health and provided room (i.e. open, disturbed areas) for weeds to establish. With wetter, more favourable conditions for plant growth, germination rates of these weeds increase and very likely resulted in higher weed numbers. Facing climate change and increasing temperatures in future years, this trend is very likely to continue and, with current practices, it is difficult to keep turf strong and healthy, which is necessary to prevent weed establishment. Therefore, even sites currently below the Integrated Pest Management action threshold are likely to exceed this threshold in future years. Continuous work is definitely needed to improve site conditions and maintenance techniques.

The high variation in weed numbers between sites is somewhat expected in a very dynamic and diverse urban environment. Different demographic patterns throughout the city result in different user groups and, in turn, different user pressure on parks and school sites. A site's age and history are also most likely factors when it comes to the differences in weed infestations between sites. Another assumed factor was each site's surrounding environment - weeds could invade into sites from surrounding green infrastructure with lower weed thresholds, like boulevards and pipeline corridors. Our results support this hypothesis and conclude that strategic spatial planning of herbicide-free sites could improve the site's overall performance and reduce maintenance costs. Work towards a better understanding of the drivers of weed infestations needs to be continued to allow better planning and management of the herbicide-free sites.

Our results suggest a positive effect of fertilization on turf heath and its support to minimize weed pressure is well in line with other turfgrass research results. A strong and healthy turf can prevent further seed germination of weeds and can out-compete existing weak weed plants. Aeration, another often recommended technique to improve turf health, did not show an effect in reducing the numbers of weeds in the year after application, which does not necessarily mean that aeration cycles should be reduced. The positive effect of aeration on turf health could be a long-term and just not detectable in the year after the application.

The fact that different treatments have different effects on weed infestations demonstrates room for further investigations to increase the understanding of our turf management techniques. For example, cumulative effects, combined methods, and different application times could be considered and tested in field trials to further improve and optimize turf management.

Conclusion

1) Under the current management regime, the weed numbers are increasing, which means that further improvement of site conditions and maintenance techniques need to be made.

2) It is important to increase the understanding of different site performance and use the gained knowledge in strategic spatial planning when establishing future herbicide-free sites.
3) The application of fertilizer shows potential to reduce weed pressure, but further, more tailored investigations need to be conducted. Investigations of other applications should follow to further improve and optimize turf management.

The results show the importance of continuous monitoring and evaluating of sites and current methods. It also speaks to the importance of testing new techniques under our local conditions in order to further reduce the amount of herbicides, enhance site conditions, and improve Integrated Pest Management. More detailed opportunities to improve site conditions and Integrated Pest Management in general are discussed in Attachment 2.

Integrated Pest Management Opportunities

Opportunities to further reduce conventional herbicide use within the Integrated Pest Management framework come from greater understanding of the biology of problematic weed species. This understanding includes their vulnerability to natural controls capable of reducing weed population growth, such as specific biological control organisms. These organisms take the form of selected weed-feeding insects, similar to those introduced for noxious weed control in Edmonton, and disease organisms like fungal diseases that attack weeds. One such promising fungal organism, *Phoma macrostroma*, is on track for registration as a low risk, broadleaf herbicide in the next year or two. These so-called myco-herbicides will provide "lower risk" alternatives to control dandelions and other broadleaf weeds in turf.

In addition, further knowledge on horticultural practices can be gained from more rigorous field testing and experimental design to evaluate individual and combined effects of plant health care practices. This would help to steer improved Integrated Pest Management programming for both herbicide-treated and herbicide-free sites and help to formulate best management practices for turf on Edmonton's private and public lands.

Following a decade of drought, the dramatic return of more normal moisture conditions in 2010 and 2011 sparked a resurgence of broadleaf weeds, like dandelions, throughout the City. Drought stress has reduced the vigor of turf throughout the area, most noticeably on well-drained areas where the grass has died out causing open patches of soil and tendencies for soil erosion. This demonstrated change in moisture shows our vulnerability to changing climatic conditions, and the need for more regular water availability.

Compared to other larger Canadian cities, Edmonton's inherently lower normals for precipitation, large inventory of parkland with minimal rates of turf irrigation (Table 1) and clay based soil types makes for excellent conditions for weed invasion and herbicide-free turf management more challenging. Two key opportunities to increasing moisture availability in times of need, and thus reduce turf stress, are to build greater water infiltration and water holding capacity in the soil, and to improve landscape irrigation capacity when summer precipitation falls below normal. By focusing on plant health care practices, including an adequate water supply, opportunities for further, more successful herbicide-free sites become a distinct reality. As in the case of Edmonton's premier irrigated sportsfields, weed control is rarely required since turf growth is vigorous and turf stem density is high enough to prevent weed establishment. This makes for safer, more even field surfaces with less slip and trip potential and greater resistance to wear and tear - both basic requirements for more active sportsfield turf.

Strategically, Parks is investigating re-use of higher quality wastewater resources such as water park and spray park effluent from sanitary sewer disposal to field irrigation in

times of need. This can improve the condition of and increase the inventory of herbicide-free sites, particularly in areas surrounding the water parks and spray parks. This change will attract higher field servicing costs but also provide more resilient turf that will stand up to more intensive use.

To increase herbicide-free areas in more passive parkland, Parks could increase the neighbourhood herbicide-free areas in communities that have petitioned for their park to be herbicide-free. Parks would still need to respond occasionally with a pesticide to control noxious/poisonous weeds, tree pests, mosquito larvae or troublesome wasp nests.

Further gains in turf herbicide reduction can be expected through investment in newer IPM treatment delivery technologies. Beyond more advanced cultural control equipment, such as turf over-seeders, Parks could reduce the necessary rate of herbicide application through:

- cut-and-swipe application technologies that minimize drift effects of herbicide spraying;
- herbicide product enhancements such as sticker-spreader products that can increase the retention of herbicides on weed leaf surfaces allowing better uptake of the herbicide and the confidence to use lower rates of application; and
- co-delivery of fertilizer and herbicide to stimulate the turf to quickly grow into the void left by a dying weed.

Perhaps one of the greatest opportunities for Parks is to continually evaluate the City's ongoing needs for sportsfield and other turf requirements. Where high-quality turf is required for premier sports and other activities, these sites must be managed with higher plant health care inputs. Currently, Edmonton's large inventory of lower quality turf, which is managed with considerably less inputs, would demand much higher levels of servicing if pesticides are further reduced. Strategies to convert some of this large turf inventory fit well with other strategic goals, such as doubling of the urban forest canopy, increased connectivity of natural areas, and the expansion of community gardens and other urban agriculture concepts. This aligns well with Council-approved strategic plans, including *The Way We Green, The Way We Grow* and the *Urban Parks Management Plan*.

Municipal Survey Results

Responses from a survey of municipal parks staff from 10 larger cities across Canada are provided in Tables 1 – 3. In addition to seven cities that operate with a pesticide ban (Victoria, Vancouver, Kelowna, Hamilton, Toronto, a borough of Montreal and the Halifax Regional Municipality (HRM)), three operate without one (Edmonton, Regina and Winnipeg).

Table 1 demonstrates variability in natural precipitation, turf inventory sizes, irrigation practices, turf herbicide use and sportsfield line marking practices. Interestingly, Edmonton is the only city in this group that maintains all school board property. In fact, this property represents more than ¼ (28%) of the turf maintained by Parks. School board lands in all other cities surveyed are maintained at least in part by school board staff (not included in the survey). Comparisons between other larger cities and Edmonton may therefore not represent the whole picture on public lands. For example, City of Edmonton Parks maintains 1,669 sportsfields compared to 148 by Vancouver Parks and 333 by HRM Parks.

For drier climates, such as Kelowna, and, to a greater extent, much of the southern prairies, investment in irrigation of park, sportsfield and other green infrastructure is essential for turf to exist. Without it, turf cannot resist weed invasion during drier periods. Surveyed cities from British Columbia (Victoria, Vancouver and Kelowna) show small inventories of sportsfields with relatively higher amounts of irrigated fields (40-100%). Irrigation is a key factor in the successful management of turf health without pesticides. The notably lower amount (<3%) of irrigation of Edmonton's sportsfield inventory points to an area of improvement to support pesticide reduction.

Before pesticide bans came into existence, the more permanent chemical line marking of sportsfields with a residual herbicide was common practice to reduce the frequency of paint applications. As Table 1 shows, Edmonton is the only city in this group of 10 that has retained some form of this practice. Except where small sportsfield inventories allow this, the responsibility for routine line marking in other large cities has been transferred to sports associations or user group volunteers in some form or another. As an alternative to increasing the budget, the City of Edmonton could eliminate its use of pesticides for its sportsfields line marking program by placing greater responsibility on user groups for repeated applications of paint.

Table 2 indicates a trend in surveyed cities of very modest to no budget increases with the onset of a pesticide ban. Limited budget increases have occurred to help to establish, coordinate and implement increased capacity to build turf heath, incorporating the suite of plant health care treatments of irrigation, fertilization, mowing, aeration, topdressing, and over-seeding.

Halifax, a municipality with 10-years experience in pesticide-free turf management, reported that weed problems in their parks and sportsfields became more noticeable

three to four years after the ban and these continued to escalate for a number of years. This forced greater weed tolerance and the need for more focused effort and understanding of weed control methods to reverse declining turf quality. Following suit, both Toronto and Hamilton report that their post-ban increase in turf weeds is heaviest in the larger inventory proportions of lower class turf where investment in irrigation and adequate turf enhancement practices is lower or non-existent.

Whereas Table 1 shows that most cities surveyed with a pesticide ban have not used permitted turf herbicides, Toronto has started to consider the possibility. On the west coast, where turf IPM has been practiced for many years prior to ban implementation, indications are that an increasingly focused effort on smaller, more highly irrigated pesticide-free turf inventories may be more successful. Trends of increasing mechanical plant health care techniques to battle weeds with tools such as aerators and slicers may work for the most part on well irrigated fields when the weed outbreak exceeds acceptable thresholds. However, for heavier weed infestations, turf managers in Vancouver and Victoria seem more inclined to cut out heavily infested sportsfield turf and replace it with new weed-free sod, rather than use a permitted herbicide.

Unlike in Edmonton, many of the surveyed cities that operate under a pesticide ban have little opportunity to rest their sportsfields with heavy use pressures over a longer season. Growing population pressures exist in many of these cities to maintain a sufficient number of high-quality fields. Sportsfield expansion needs are therefore not only met with artificial turf, but also with capital upgrades of lower class soil fields to fully irrigated sand-based fields that drain quickly to allow play within hours of a heavy rain.

Table1 – Comparative Precipitation, Inventory, Irrigation, Broadleaf Weed Herbicide Usage and Sportsfield Line Marking Processes in Ten Canadian Cities

City	Normal Annual Precipitation (mm) (30 yr average '71-'00)	Municipal maintenance of School Board Property	Maintained (Mowed) Turf Inventory (Ha)	Percentage of park turf irrigated	Percentage of natural turf sportsfields irrigated	Percentage mowed turf herbicided (2010)	Sportsfield line marking
Vancouver	1199	None	148 fields & <1700 Ha parks	??	41% of 148 multi-use sportsfields	0%	Paint only, by Sport Association or user groups
Victoria	883	None	12 sportsfields sites & <100 ha of parks	extensively irrigated	100% of 14 multi-use sportsfields	0%	Paint only, by City staff
Kelowna	381	None	138 (900)	100%	100% of 64 sportsfields	1%	Paint only, weekly by City staff
Edmonton	477	All	4208	<3%	<3% of 1669 sportsfields	8%	Semi-permanent marking process with herbicide to reduce line marking frequency, except on premier irrigated fields where lines are paint-only
Regina	388	Some	775 (1550)	75%	96% of 83 fields & est. 50% of 103 turf diamonds	7%	Paint only, either by 1) City charge-out to user groups or 2) Sports Association contractor
Winnipeg	514	Some	Data not available at time of this report	<1%	<10%	Data not available at time of this report	Paint only, twice a year by City staff. User groups maintain all other lines
Hamilton	910	Some	1145	0%	15% of large rectangular fields	0%	Paint only, 17/yr by volunteer
Toronto	793	Some	4300	only some high profile parks	All class A & B fields, diamonds	0%, but trialling Fiesta	Paint only, premier fields by City staff. All A-C sportsfields by user group volunteers
Borough of Montreal*	979	Some	Data not available at time of this report	0%	Data not available at time of this report	0%	Paint only, weekly by City staff
Halifax Regional Municipality	1452	Only sportsfields on school property	2611 Ha	0%	3% of 194 ball diamonds & 139 fields	0%	Paint only, weekly in class A, biweekly in B,C by City staff. User groups maintain class D

*Borough of Côte De Neiges/Notre Dame de Grace

Cities with normal annual (n.a.) precipitation < 400 mm

Cities with n. a. precipitation between 400 - 699 mm

Cities with n. a. precipitation between 700 - 1000 mm

Cities with n. a. precipitation > 1000 mm

Table 2 - Comparison of Impacts on Practices, Turf Quality and Budgets in Larger Canadian Municipalities with a Pesticide Ban

City	Year of municipal turf pesticide ban	Year of provincial ban	Impact of Restriction/Ban on Practices by Municipality	Impact of Restriction/Ban on field/turf quality	Budget Increase to offset turf pesticide use
Vancouver	2007	NA	No real impact as municipal ban came a decade after introduction of more rigorous horticultural practices and turf IPM. Sportsfield issue with plantain weeds are mechanically treated by repeated slicing of infestation. This may take 5 years of treatment to control the plantain	No impact identified	$120K to improve top dressing funded in part by user groups. Also a Capital Improvement plan to upgrade 2-3 soil-based fields into irrigated sand based fields each year
Victoria	2008	NA	Weed infestations are treated by mechanical aeration and over-seeding. Heavy infestations may be replaced by removal of that section of turf and replacement with weed-free sod	No recognizable change	$100K to replace heavy wear areas of sportsfields and turf exceeding IPM weed threshold
Kelowna	2008	NA	Replace residual herbicide-based sportsfield line marking program with weekly line marking	No real impact since for the most part weeds are not an issue for the maintained park and sportsfield turf since they are fully irrigated	$150K for improved cultural controls, aeration equipment and IPM coordination
Hamilton	2007	2009	1) Implement IPHC action thresholds, enhanced turf mgmt, equipment and a coordinator 2) Replaced residual herbicide-based line marking with user group line marking responsibility	Increased weediness throughout inventory esp in C class sportsfields and general parkland. Line marking has become inconsistent in C fields. Concern that without pesticides, may have to replace turf with weed treated sod when threshold is exceeded	1) $496K (2002) unfunded, 2) $150K (2010) unfunded

Table 2 - Comparison of Impacts on Practices, Turf Quality and Budgets in Larger Canadian Municipalities with a Pesticide Ban – continued

City	Year of municipal turf pesticide ban	Year of provincial ban	Impact of Restriction/Ban on Practices by Municipality	Impact of Restriction/Ban on field/turf quality	Budget Increase to offset turf pesticide use
Toronto	2004	2009	Focused effort on formal Integrated Plant Health Care program with objective to maintain service levels with existing resources while remaining compliant with pesticide legislation. Moved away from chemical burning of sportsfield lines to a largely user group-based line painting program	Increased weediness (esp dandelions) in generally maintained parkland and class B,C sportsfields with insufficient Plant Health Care practices - most noticeable over a 3 week spring flowering period	$175K for Integrated Plant Health Care (IPHC) Coordinator and program
Montreal Borough of Côte Des Neiges\Notre Dame de Grâce	2004	2003	No change identified	Negligible impact as weeds are a relatively minor issue compared to sportsfield wear and tear from heavy over-use	None
Halifax Regional Municipality	2000	2010	Currently all mowing is contracted out allowing staff to focus on working with the Nova Scotia Agricultural College to implement a program of prescriptive turf health treatments to counter weeds in turf	Nothing significant until 4 to 6 years after ban when noticeable turf decline and escalating dandelion outbreaks, drew public attention. Some sense that weed outbreaks have levelled off since more focussed effort on turf health	Budget remained the same. Pesticide program costs re-allocated to turf enhancement equipment and resources

Cities with normal annual (n.a.) precipitation < 400 mm

Cities with n. a. precipitation between 400 - 699 mm

Cities with n. a. precipitation between 700 - 1000 mm

Cities with n. a. precipitation > 1000 mm

Table 3 - Comparative Service Standards of Rectangular Sportsfields in Different Canadian Cities

City	Season	Watering	Fertilizing	Mowing	Aerating	Slicing	Over-seeding	Sodding	Top-dressing	Line Marking
Category B										
Edmonton	May - Sep	a.r.	max 3 per year (a.r.)	1 per week	a.r.	none	a.r.	a.r.	a.r.	max. 6 per year (a.r.)
Regina	May - Sep	3 per week	3 per year	2 per week	2 per year	2 per year	1 per year	1 per 3years	1 per year	a.r.
Toronto	May - Oct	1 per week (adjusted for nat. precip.)	1 per year	1 per week or a.r.	1 per year	1 per year	1 per year	a.r. (goal mouth)	1 per year	none
Halifax	May-Oct	a.r. during dry periods	2 per year (based on soil testing)	1 per 10 days	4 per year	Data not available at time of this report	1 per year, as required budget permitting	1 per 2 years (goal mouth, worn areas)	Data not available at time of this report	1 in 2 weeks
Kelowna[1]	Data not available at time of this report	Data not available at time of this report	3 per year	2-3 per week	2-3 per year	Data not available at time of this report	1 per year	Data not available at time of this report	1 per year	1 per week
Category C										
Edmonton	May - Sep	none	1 per year	1 per 12 days	a.r.	none	a.r.	a.r.	a.r.	a.r.
Regina	May - Sep	none	1 per year (if in park)	1 per week	1 per year	none	a.r.	none	a.r.	a.r.
Toronto	May - Oct	1 per week (adjusted for nat. precip.)	1 per year	1 per week or a.r.	1 per year	1 per year	1 per year	a.r. (goal mouth)	a.r.	none
Halifax	May-Oct	none	2 per year (based on soil testing)	1 per 12 days	2 per year	Data not available at time of this report	a. r., 1 per 3 years	a. r. every second year	Data not available at time of this report	1 in 2 weeks

[1] Kelowna operates a field-specific maintenance regime

a.r. - as required

Cities with normal annual (n.a.) precipitation < 400 mm

Cities with n.a. precipitation between 400 - 699 mm

Cities with n.a. precipitation between 700 - 1000 mm

Cities with n.a. precipitation > 1000 mm

Province of Alberta Jurisdiction and Review

In response to this question, Alberta Environment has provided a letter from the Assistant Deputy Minister (APPENDIX 1A) and a review of pesticide active ingredients banned in other provinces (APPENDIX 1B). The Ministry's response indicates no intent to ban the sale of any pesticides in Alberta beyond the previous action prohibiting the sale of "weed and feed" combination herbicide/fertilizer products.

APPENDIX 1A

Government of Alberta
Environment

Policy Division
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Edmonton, Alberta T5K 2G8
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Telephone: 780-415-8183
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August 9, 2011

The City of Edmonton
City Council
Community Services Committee
City Hall
1 Sir Winston Churchill Square
Edmonton AB T5J 2R7

Attention: Councillors K. Leibovici, K. Krushell, T. Caterina, B. Henderson, D. Iveson

Subject: Review of Pesticides Banned in Other Provinces and Applicability in Alberta

Alberta Environment was requested to respond to a Transportation and Public Works Committee motion developed at the Restriction on Pesticides Hearing, held on February 23, 2011. The motion was for the provincial government to review the ban of pesticide ingredients in other Canadian provinces and to determine the viability of a similar approach in Alberta.

A summary is attached for your review describing the approaches to pesticide bans that have occurred to date in Canada. The information is recent; showing bans in effect in eastern Canada. Our review notes that municipal and provincial governments struggle with the shifting attitudes in public concern towards risk associated with pesticide use in urban landscapes. We also observe the public is dealing with a wide variety of conflicting information on this topic.

Although several municipalities across Canada have imposed bans on pesticide use within their jurisdiction, they do not have the authority to restrict sales and have looked to their provincial governments for such action. Alberta Environment has monitored pesticide bans over the past few years and the approaches taken by other jurisdictions, and has found the basis for municipal action confusing and inconsistent. To achieve a more unified approach within their jurisdictional boundaries some provincial governments have responded to the municipal bans, which has created further confusion and inconsistency.

Alberta Environment has the mandate for pesticide management in Alberta, which involves the classification of pesticides and the authorizations required for their sales and use. The Pest Management Regulatory Agency of Health Canada has the mandate for approval of pesticides for use in Canada. We rely on and direct all individuals, agencies or governments to this federal body of expertise regarding the health and safety assessments and/or toxicological concerns for the pesticides approved for use in Canada.

To date, Alberta Environment has imposed a ban only on the sale and use of lawn care products that have been formulated with coupled fertilizer and herbicide (in particular, those containing the pesticide active ingredients 2,4-D, Mecoprop and Dicamba commonly referred to as “weed and feed”). Our action, which involved the assessment of years of water monitoring data and sales and use data from the two major cities in Alberta, was science-based and designed to remove a pesticide formulation (and not the active ingredients) that contributed to unnecessary over-application causing impact on our surface water downstream from urban centres. This action was supported by all provincial governments, Alberta municipal governments and industry. In addition, the federal government is no longer supporting such “weed and feed” coupled formulations for lawn and turf use and these products will no longer be available in Canada after December 31, 2012.

Alberta Environment will continue to strongly support using science-based evidence and will not create restrictions or laws that conflict with the federal government, who we rely on for health and safety assessments. Restricting access to products that are designed and approved to be used safely conflicts with our assessment of the public’s need for access to all tools available for controlling a variety of pests.

Alberta Environment has monitored the sales and use of pesticides in the major urban landscapes and our information reflects a continued need and support for such products, whether it be for weed, insect or disease control. The variation in geography and type of pests, and the episodic nature of pest outbreaks (particularly in municipalities comprised and/or surrounded by agricultural influence) requires flexibility and continued access to pesticide products. The pesticide bans in eastern Canada have resulted in a range of activities, from the introduction of many new lower-risk pesticides to some manufacturers no longer marketing their products in Canada, and to the cross-border transport of pesticides that may or may not be approved for use in

Canada. Whether favourable or not, the impact on the consumer is contributing to great confusion and is leading to compliance and enforcement challenges.

Alberta Environment does not intend to move to prohibit the sale of pesticides beyond the current prohibition we have on “weed and feed” lawn care products.

If you require further information, please let me know.

Yours sincerely,

Ernie Hui
Assistant Deputy Minister
Policy Division

APPENDIX 1B

Appendix 1B - Summary of Provincial Pesticide Prohibitions Across Canada
July 2011

PROVINCE / TERRITORY	PROVINCIAL GOVERNMENT DEPARTMENT WITH PESTICIDE MANDATE	PROHIBITION IMPLEMENTED	NATURE OF PROHIBITON	NOTES
BC	British Columbia Ministry of Environment	Under Review		Government of British Columbia has formed a Special Committee on Cosmetic Pesticides to review issue. 37 Municipalities with Bylaws (13 have created specific lists of permitted products).
AB	Alberta Environment	Jan 2010	Applies to products with fertilizers and herbicides coupled at formulation. The intent was to target over-use (unnecessary broadcast application) of certain herbicide active ingredients, such as 2,4-D, mecoprop, dicamba & dithiopyr, as determined by product sales and use statistics, and urban water quality monitoring.	Government of Alberta is not supporting a ban on sales or use of any active ingredients in products approved by Health Canada. No municipalities have enacted bylaws to date.
SK	Saskatchewan Ministry of Agriculture			Government of Saskatchewan conducted a review in 2006 which did not support any form of a ban and maintains current position. No municipalities have enacted bylaws to date.
MB	Manitoba Agriculture, Food & Rural Initiatives And Manitoba Conservation	To be reviewed in late 2011.		No rural municipalities have enacted bylaws to date. A Winnipeg bylaw requires notification prior to and after use of select pesticides. A Brandon bylaw prohibits pesticide use on sensitive areas (e.g. schools, hospitals, daycares, universities, etc).
ON	Ontario Ministry of Environment	Apr 2009	Implemented one set of rules to apply province-wide, and developed guidelines for an 11 Schedule classification system. Ban applies to pesticides used for cosmetic purposes on lawns, vegetable and ornamental gardens, patios,	35 Municipalities enacted bylaws prior to Government of Ontario implementing provincial legislation on "cosmetic" pesticide sales and use (which were rescinded by provincial law).

Appendix 1B - Summary of Provincial Pesticide Prohibitions Across Canada
July 2011 - continued

PROVINCE / TERRITORY	PROVINCIAL GOVERNMENT DEPARTMENT WITH PESTICIDE MANDATE	PROHIBITION IMPLEMENTED	NATURE OF PROHIBITON	NOTES
			driveways, cemeteries, parks & school yards. Over 250 products banned and about 145 products controlled for cosmetic use. About 900 "low risk" products remain for home/personal/pet use.	Ban does not apply to agriculture, forestry or golf courses, or products promoting public health or safety.
QC	Minstère du Dèveloppement durable, de l'Environnement et des Parcs	Apr 2003 Apr 2004	2003 – implemented "Code" for green space maintenance pesticides (lawns and ornamental plants) & prohibited the active ingredients: carbaryl, dicofol, malathion, captan, chlorthalonil, iprodione, quintozene, thiophanate-methyl, 2,4-D, MCPA & mecoprop. Created list of allowable pesticides: currently (Jun 2011) contains 976 products 2004 – implemented ban on coupled fertilizer and herbicide and other mixed products.	Exempts pesticides used for golf courses, agriculture, natural resources, specialty sports turf, structural and public health purposes. Government of Quebec currently re-evaluating bans in order to base their identification on scientific criteria.
NL	Newfoundland & Labrador Department of Environment and Conservation	Apr 2007 *Spring 2012*	Apr 2007 – implemented prohibition on use of coupled fertilizer and herbicide products. 2012 - to apply to all "Domestic" use pesticides on lawns containing: carbaryl, 2,4-D, mecoprop, dicamba & MCPA.	Applies to the predominant products used for lawn care only.
NB	New Brunswick Department of Environment and Local Government	Dec 2009	Applies to lawn care pesticides (including products coupled with fertilizer and herbicides, granular spreadable weed killers, hose-end products, and others that require measuring, mixing or dilution by the homeowner. Created list of 242 banned "Domestic" use products and 35 "Commercial" products.	4 municipalities enacted bylaws prior to legislation. Exempts golf courses and professional services using IPM provisions. Does not apply to forestry and agriculture. Ban includes low risk products such as corn gluten meal.
NS	Nova Scotia Department of Environment	May 2010	Applies to lawns (Apr 2011); applies to trees, shrubs, flowers or ornamental plants (Apr 2012).	City of Halifax has had a bylaw since 2000 and it remains in effect.

Appendix 1B - Summary of Provincial Pesticide Prohibitions Across Canada
July 2011 - continued

PROVINCE / TERRITORY	PROVINCIAL GOVERNMENT DEPARTMENT WITH PESTICIDE MANDATE	PROHIBITION IMPLEMENTED	NATURE OF PROHIBITON	NOTES
			Does not apply to vegetable gardens, golf courses, agriculture, or forestry. Created list of 34 allowable pesticide active ingredients.	
PE	Prince Edward Island Department of Environment, Energy and Forestry	Apr 2010	Applies to **"Commercial"** use pesticides only containing **2,4-D** on lawns, parks, playgrounds, sports fields, specialty turf, driveways, walkways or patios (except golfcourses). Applies to **"Domestic"** use pesticides containing products coupled with fertilizers and herbicides (including corn gluten meal products), hose-end pesticides, concentrates requiring preparation, spreadable herbicide granules, and all herbicides containing 2,4-D. Created a list of 247 prohibited pesticide products.	No municipalities enacted a bylaw prior to province enacting legislation.
YK	Environment Yukon			No intent.
NT	Northwest Territories Environment and Natural Resources			No intent.
NU	Nunavut Department of Environment			No intent.