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Assessing Municipal Lawn Care Reform:

The Case of a Lawn Pesticide By-Law in the Town of Caledon, Ontario, Canada

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There is an ongoing interest and debate about the effectiveness of an increased number of local initiatives to modify green consumer behavior; this is in light of the failure or ineffectiveness of global policies, such as, for example, the Kyoto Protocol on the reduction of carbon emissions. As a result, many municipalities are creating their own climate, recycling and conservation policies (Ellison, 2006). In Canada, municipal by-laws restricting the aesthetic use of pesticides on lawns fall into this category. According to Christie (2007), over the last decade the number of such by-laws adopted nationally has increased to 123. These include large and small municipalities, ranging from the City of Toronto with a population of 2.5 million to Lac-Saint-Joseph, Quebec, with a population of 229. In June 2001, the so called 'Hudson Decision', passed by the Supreme Court of Canada, strengthened municipalities' ability to implement such by-laws. After a ten-year battle, the Court ruled in favor of the Town of Hudson, Quebec, whose pesticide by-law was challenged by two lawn care companies who argued for their continued right to use government approved pesticides under provincial license in any location (Adkins, Griffiths, & Parr, 2002). In support of its decision, the Supreme Court referred to the 'principle of subsidiarity', recognizing the place for local individuality and responsibility, and the 'precautionary principle', which states it is better to be excessively careful than to create an impending risk to the environment (Adkins et al., 2002).

This paper reviews the empirical and theoretical context of the recent flurry of pesticide by-laws in Canada and then explores one pesticide by-law, passed in the Town of Caledon, Ontario, in 2003, in order to shed further light on the wider significance of the pesticide reform movement. We focus on the Town of Caledon's by-law because of its prominence in the town itself, our knowledge about the town in other aspects, its closeness to our university, and its apparent likeness to other by-laws in similarly-sized

communities in Ontario and other provinces. We use Caledon to ask a series of questions that can also be asked of other jurisdictions. What political and social forces lie behind the advent of pesticide by-laws? How do pesticide by-law proponents portray themselves, and how far do their calls for environmental reform go? Who is and who is not included? What are the provisions and limitations of the by-laws? Do they contain loopholes? Are they properly enforced? Do they, and by extension other local green policy initiatives, challenge consumer ideas and practices, and to the degree they do not, why not? Based on a literature review on critical studies of lawn management reform and our findings on the Caledon by-law, we hypothesize that there are differences between by-laws based on socio-economic context, location, and the comparative strength between urban and rural interests. This suggests that we not only consider the growth in the number of by-laws as a measure of environmental challenge to the industrial lawn, but also the social and historical processes behind the development and implementation of individual by-laws.

We base our account on the broader theoretical literature and a detailed reading of the Town of Caledon's history and municipal governance record, the specifics of its pesticide by-law, public statements for and against the by-law, participant observation, interviews of key informants, and general comparisons to by-laws in other jurisdictions. The unique factors supporting and challenging Caledon's by-law call for, we suggest, more detailed studies of individual by-laws in other places in order to understand their collective strengths and weaknesses.

SETTING THE STAGE

Bormann, Balmori, and Geballe (1992, p.62) define the industrial lawn on four principles: [1] it is composed of grass species only; [2] it is free of weeds and other pests; [3] it is, as far as possible, continuously green; and [4] it is regularly mowed to a low, even height. North American industrial lawns cover more land area than any agricultural crop. Sara Stein states pointedly that the industrial lawn, "though vegetal, is artificial in that it only attains its emerald splendor when subjected to a perpetual torture" (in Teyssot, 1993, p. 3). Such torture includes the use of fossil fuel energy to cut and tend it, water and fertilizers to grow it, and pesticides to keep it free from undesirable flora and fauna. In Canada, the federal government, the governing body that has the authority to register or ban a pesticide, and provincial authorities that determine who can use registered pesticides, are the agents that sanction such treatment. But in spite of their regulations and the so-called rigid tests to promote a safe environment, questions about pesticide safety exist at the local, regional, and national levels, prompting some local authorities, under public pressure, to restrict or limit the use of pesticides for aesthetic purposes.

Canadian environmental activists have labeled the Hudson decision of the Supreme Court one of their most significant achievements, a local environmental initiative that can spread spatially, and that can eventually be adopted by the provincial and federal governments. One environmentalist imagines local actions, such as pesticide by-laws, as having the potential to cascade horizontally and vertically to other municipalities and provincial and federal jurisdictions:

I think environmentalists now recognize that change is often most possible at the local level, and such local change may better trigger larger changes than attacking the problem at its highest level. ... The important piece to remember is that local change is but a vehicle, a stepping-stone to winning larger change on an issue like pesticides. We can't be satisfied with just bylaws. We must use the momentum to get provincial, federal and even global action on the issue, or we haven't really accomplished much at all (**Miller, 2005**).

The Hudson decision shows that a local pesticide by-law can cascade to the national level. But there are more signs that the by-law movement is having wider impacts. In the City of Halifax, an environmental group, the Ecology Action Centre, has been charged with enforcing the city's by-law, much to the chagrin of local lawn care companies. In the province of Quebec, a province-wide ban has recently been legislated (Hamilton, 2006). On the basis of these events, Pralle (2006) argues that pesticide by-laws collectively constitute a "mouse that roars" which has the potential to alter the agenda setting in Canadian pesticide politics. She further claims that they now provide, for the first time, American environmental and health groups with a Canadian example for inspiration and support (Pralle, 2006).

However, other theoretical and empirical literatures on lawn management suggest that in spite of the growth of such by-laws, chemical pesticides continue to be embraced, even amongst well-educated and environmentally conscious consumers who value a weed-free lawn aesthetic more than a pesticide-free environment. This literature suggests that there is a "value action gap" or "attitude-behavior inconsistency" (Barr, 2004) or "paradox of environmentally conscious consumer behavior" (Muldoon, 2006) between an environmental consciousness and practices (Feagan & Ripmeester 1999, 2001; Robbins, Polderman & Birkenholtz, 2001; Robbins & Birkenholtz 2003; Robbins & Sharp 2003a & 2003b). This gap is reinforced by both producers and consumers. Producers have thus formed a tight grip on the supply and marketing chain of pesticide products, and are involved in an aggressive marketing campaign to capture more consumers (Robbins & Sharp, 2003a). Consumers, on the other hand, see the alternative lawn as "out of place" while the industrial "manicured lawns are the natural state of the residential environment and it is the homeowners' job to keep it up" (Feagan & Ripmeester, 1999). The industrial lawn here provides a common aesthetic while also maintaining property values. Robbins and

Sharpe (2003a, p. 445) still maintain, however, that "lawn dissenters" may provide "the critical possibility of uniting *meaningful work* with sustainable suburban landscapes" (emphasis in the original).

Sandberg and Foster (2005) provide yet another perspective on pesticide reform. They question its significance for both environmentalism and broader environmental justice issues, arguing that the lawn pesticide debate itself is limited, focusing on the relatively wealthy who can afford to own private homes and lawns. Alternative lawns and ecologies are only available to such people, and may in fact trigger new profit-making ventures in organic and alternative garden care for the rich. Meanwhile, such efforts obscure and marginalize the environmental struggles and concerns of the vast majority of the world's population.

These accounts provide useful perspectives for interrogating individual pesticide by-laws, both in order to begin comparing their similarities and differences, as well as to evaluate their potential for wider social and environmental change.

THE TOWN OF CALEDON, ONTARIO: PRODUCING A NATURAL LANDSCAPE AESTHETIC

The Town of Caledon is a community of 50,595 residents enveloped by rocks, rolling hills, rivers and forests. Though it encompasses a number of urban areas, villages, towns and hamlets, it is facing pressures of urban sprawl through its close proximity to some of Ontario's largest urban centers such as Toronto, Mississauga, and Brampton. Commuting to downtown Toronto takes only one hour. Caledon is an affluent community. Census data reveal growing trends towards higher incomes and education levels (Chambers & Sandberg, 2007). Housing costs are high, many Caledonians reside in estate homes on three acres lots or more, and there is a limited amount of rental housing (Chambers & Sandberg, 2007; Running-Horan, 2005). The town also hosts a growing number of institutions that have established bases in the countryside, among them non-profit and international organizations, and religious communities based on specific ethno-cultures. Along with these relatively recent residents, there are also older residents who are connected to farming and resource extractive activities.

It is from this position of privilege that the Town's residents pushed for the development of a pesticide by-law. Residents actively construct Caledon as an environmentally aware community whose nature aesthetic and rural lifestyle is portrayed as highly worthy of protection. According to a survey in 2004 (**Environmental Issues, 2004**), environmental concerns are a top priority. Most respondents claimed awareness of the pesticide by-law and various other green initiatives, such as efforts to reduce the emission of green house gases, smog and other harmful air contaminants by planting and stewarding small groves of trees on private lands, and the sale, at a subsidized price, of rain barrels to catch rainwater to use on lawns and gardens (Region of Peel Website, 2004). Prominent local organizations are currently fighting a local stone quarry proposal and promoting awareness amongst developers and citizens who wish to sell or purchase open land (Chambers & Sandberg, 2007). The Town recently won the epithet the "greenest" town in Ontario in a competition set up by a public TV station.

With Caledon's high tax base, the Town Council has been able to adopt what it calls highly innovative governance forms and technologically advanced modes of research. The Town claims to be the first local municipality to take a scientific ecosystem approach to planning (Salter, 2004). A unique growth management strategy is focused on concentrating growth in three nodes, minimizing sprawl, maintaining rural areas and taking advantage of community services where they currently exist. In addition, Caledon has an extensive recycling program (organics, plastics, styrofoam, etc.), an Environmental Progress Officer, and a diverse group of citizens, the Caledon Environmental Advisory Committee, whose mandate is to advise and assist both Council and citizens in the protection, enhancement, restoration, management, and appreciation of Caledon's natural heritage.

Residents, citizen groups, Council members, and governmental groups alike draw on narratives that lay claim to their Town harboring some of the greatest natural settings in Southern Ontario. The Niagara Escarpment (a UNESCO World Biosphere Reserve), the Oak Ridges Moraine (a provincially designated natural heritage feature), and the Credit and Humber River Watersheds (the sources of 65 headwater tributaries) offer a mixture of passive and active recreational activities, from swimming, camping, hiking and fishing. Residents often express an obligation and a unique sense of attachment to the land. Karen Hutchinson (2005), executive director of the Caledon Countryside Alliance, states:

Caledon is blessed with a lot of natural geographic features...because of that, there is an overwhelming sense of responsibility that may or may not be here forever. It is in our face forever.

Paddy Running-Horan (2005), another activist, echoes: "Caledon is such a rural community and we're surrounded by nature and we are more aware...[than] people in the city [who] are surrounded by cement." Nicola Ross, a member of the Caledon Countryside Alliance, also contends that "... we like to think of ourselves as being a very green community and a very caring community." She continues: "...if I've learned anything in the number of years that I've been working on the projects that we work on, it's hard to get people to change their actions. And we work very hard at it" (Public Information Meeting, 2003). Significantly, the past Town Council was very proactive in campaigning for the protection of the environment and the support of grassroots community programs and Environmental Non-Governmental Organizations (ENGOS). When asked about what it means to be 'green', one resident (Hutchinson, 2005) felt that Caledonians are compelled and obligated to act as stewards because the natural environment is demanding that it should be protected. She further explained that being 'green' means "keeping the environment natural, supporting the mobilization and achievements that have been made by a number of groups and showing how that attitude has developed into their daily practices."

Caledonians' constructions of a unique sense of place often have an insular and protective bent toward the surrounding world. They typically reflect less on the energy and environmental costs involved in pursuing a wealthy lifestyle, such as living in large homes and commuting long distances. This suggests a large value-action gap in some aspects of their daily behavior while they still are active in protecting their most immediate nature. Indeed, they often use their wealth and higher levels of education as a means to further their environmental cause. Hutchinson (2005) stated many residents like her have left Caledon, gained an education and returned because they feel "tied to their home, their land. While away, they developed an attitude... to conserve their environment...and connect with others like them to act as wardens to their unusual landscape". Residents have easy accessibility to influential people such as politicians and many wealthy stakeholders. Many citizen groups (to which some of these influential people belong) and ENGOS actively take advantage of these connections. One resident states: "We don't want to see what is happening around us happen in Caledon" (Hutchinson, 2005). In this context, Caledonians insist they are not 'NIMBYist', as they see their actions as an active campaign for the protection of some of Ontario's most notable landforms.

In spite of Caledonians insistence that they are not NIMBYists, there is no denying that the town's residents set themselves apart and promote a specific settlement and landscape aesthetic that is exclusive, an image that is maintained and supported by reference to the economic growth and built-over landscapes that surround them.

CONSTRUCTING A PESTICIDE BY-LAW WITH QUALIFICATIONS

Caledon is one of the five municipalities in Ontario that has enacted a by-law restricting the use of pesticides for aesthetic use (Cobalt, Perth, Thorold and Toronto also have a pesticide by-law). The Healthy Horticultural Landscapes By-law was formally passed by Council in April 2003 and officially took effect on May 1, 2004. The by-law is described to guarantee the safe use of pesticides, encourage unconventional techniques for the management of pests such as weeds and insects, and to reduce the environmental impacts of their use.

Healthy Lawns Healthy People, an organization founded by local resident Paddy Running-Horan, and other local ENGOs led the initiative. Running-Horan was at first motivated in her actions by a lawn care company that mistakenly sprayed her lawn in the summer of 1997. Cisco, her five-year-old blue merle collie, was in the yard at the time. Not long after the pesticide application, the dog became seriously ill and had to be put down, leaving Running-Horan and the two veterinarians who treated her convinced that the dog was poisoned by the lawn pesticides (N. Knight, 2005). The initial actions of Healthy Lawns Healthy People were inspired and supported by the 'Hudson decision' (Industry Focus Group Session, 2001) and the provisions in the Ontario Municipal Act that state that Councils can pass by-laws and regulations for the health, safety, morality and welfare of its inhabitants. Their lobbying efforts were first successful in instigating pesticide free weeks until the by-law was finally passed in 2003. Mayor Marolyn Morrison then stated that the bylaw was enacted to promote good environmental practices and to ensure commercial applicators servicing Caledon are experienced in providing a lawn maintenance program that reduces, or in many cases, eliminates the use of pesticides (Town of Caledon, 2004).

The Mayor's comments betray some of the weaknesses in the by-law. These become evident in the extensive two year public process before a by-law was presented to Council for enactment. During this time, the Town held focus group meetings and a Pesticide Symposium and formed a Pesticide Advisory Group with stakeholder groups, including golf course and tree nursery operators, landscapers and lawn care managers who opposed the by-law. These powerful actors, who support pesticide use, provided strong narratives that now temper the effectiveness of Caledon's pesticide by-law. The most recent version of the Caledon Town Council is also in many ways sympathetic to these sentiments. The pest management and retail stakeholders' focus groups constructed common narratives in support of pesticides. They were thus concerned about a "misinformed" public who fails to appreciate that pesticides go through arduous tests before being registered. A member from Orangeville Weed Man argued that "...Canada's pesticide regulatory system is one of the most stringent in the world" (Focus Group Meeting, 2001). Dr. John Purdy, a research scientist on pesticides and safety with 23 years experience, proposed that the science behind pesticides is solid:

You may want to have a by-law in your community, but don't hide behind the science. The science just simply isn't behind you on this....the by-law ...represents an alteration of the use of pesticides and therefore it's likely to overlap with and confuse the proper use of these pesticides according to the product label which is put forward by the Pest Management Regulatory Agency (Public Information Meeting, 2003).

The industry also constructed a negative image of the piecemeal implementation of by-laws. Jackie Fraser (2005), representing a farmers' group, for example, argued that "if the current system is not working, then shouldn't we change the entire system, not just protect the odd municipality here and there?" She thus referred to the problems that "arose from three municipalities where some municipal staff had difficulty interpreting their own by-laws and in one case,... received different interpretations of the same by-law by two different staff members on the same day." She further explained that instructors teaching the Grower Pesticide Safety Course (a mandatory course for all farmers) experience great difficulty teaching what municipal by-laws affect them because they teach within large geographic areas with many municipalities. Fraser (2005) also maintained that many municipal councilors had felt "bullied" into passing by-laws. She claimed that one councilor, clearly frustrated, pleaded with her: "How can I say no to a by-law when they accuse me of being a baby killer? They are accused of being anti-environment if they don't support a by-law". Such stories portray Town Councils as ill-prepared and ill-equipped to handle complex questions surrounding pesticide by-laws, and deeply pressured by environmentalists to make decisions that go against the public interest.

Industry stakeholders also told stories about the impossibility of policing pesticide applications made by unlicensed and untrained homeowners while the industry receives unwarranted scrutiny (Industry Focus Group Session, 2001). Moreover, industry stakeholders were also concerned about the lack of clarification on the meaning of the terms like 'cosmetic' and 'organic', asking, for example, whether hobby gardening, garden clubs (such as the Canadian and American Rose Club) and golf courses be considered 'cosmetic'? They consequently argued that the word 'regulate' be lifted from the by-law and replaced with the word 'control'. They also called for more outreach and educational programs for homeowners who formally relied on lawn care companies, and who were forced to seek alternative remedies for their desired landscapes.

The lawn care companies also contended that the adoption of organic pesticide-free methods is not a viable option because it is far too expensive and, more importantly, it delivers poor results. One operator, Dr. Green Services, claimed that it offers a pesticide-free and organic program but only 1% of their customers have chosen it because of its ineffectiveness (Pest Management Industry Group Session, 2001). The only possible solution, other operators argued, is Integrated Pest Management (IPM) which encourages the reduction of pesticides but sanctions their use in conjunction with good horticultural practices (Pest Management Industry Group Session, 2001). The industry's ultimate position was opposition to any kind of pesticide by-law (Industry Focus Group Session, 2001). Though the industry has obviously not been accommodated on the last and some other points, its influence is clearly contained in the many loopholes in the Caledon by-law, and the allowance, indeed encouragement, of accredited persons in Integrated Pest Management to implement lawn maintenance programs in an "environmentally responsible manner."

As a consequence of the intervention and pressures of the industry, Running-Horan (2005) has argued that the by-law is not up to par and not very effective when compared to other municipal pesticide by-laws, such as in the City of Toronto, where there is a complete ban. Her fellow supporters similarly complain that the by-law as a whole is extremely difficult to comprehend and interpret for an individual who is not accustomed to reading by-laws or legal documents (Knight, 2005; Hutchinson, 2005). As well, supporters of the by-law feel that many community resident groups are difficult to reach, such as commuters, who do not have time to spend tending their lawns but instead hire lawn care managers (Environmental Focus Group Session, 2001).

Local residents also identify weaknesses in the time and space provision of the by-law. The by-law only applies to the months of July and August. From April to June it allows for spot treatment of 20% of the horticultural landscape. Moreover, the 'horticultural landscape' is defined as "maintained turf, ornamental plantings, but does not include a golf course, natural areas, a vegetable garden or fruit trees." The allowance for 20% spot spraying from April-June has confused people. According to Running-Horan:

We had to fight very hard to get the July and August ban. Spot spraying is reducing the use of pesticides but it gets convoluted when they added the 20% bit. So, people are spraying 20% in April, 20% in May, 20% in June, etc. and that is not what was supposed to happen. I am totally against spraying toxins at all for cosmetic reasons!!!

Meanwhile, the pesticide by-law continues to allow homeowners to spray their lawns, as long as a sign is placed before the application and remains for 48 hours. Rather than offering a complete ban on cosmetic pesticides, the by-law offers options that allows residents to choose when and how much to spray.

Another reason cited by the promoters of the by-law for its weakness is the relative lack of outreach facilities and personnel provided by the Town, including a hotline and website resources similar to that of Windsor, Kitchener-Waterloo and Toronto. Instead, the Town relies on the Weedgee Kidz, an educational program started through the efforts of Paddy Running-Horan, to fill the void. The program runs in partnership with Healthy Lawns Healthy People and the Citizens for a Clean Caledon. The Weedgee Kidz consist of university and high school students who conduct house visits to demonstrate viable and healthy alternatives to lawn care. The program receives some support from the Town Council, the provincial and federal government, though the student volunteers are not paid. This is justified by them gaining valuable volunteer and outdoor education experience. Skid Crease, a member of Earth Rangers and a resident of Bolton explains that "by bringing the Weedgee Kidz in, not only does my lawn but the five neighbors on either side of me who have all signed up with me, are going to have our lawns weeded for free by a group of eco students" (Public Information Meeting, 2003). Since the 2002 pilot year, 700 home visits have been completed in Caledon. Significantly, there are no other environmental outreach programs that work in conjunction with the municipal pesticide by-law.

The Weedgee Kidz organizes three major informational events: a Dandelion Festival, an Organic Lawn and Garden Tour, and a Children's Day. The Dandelion Festival constructs the dandelion in a positive light. It involves consuming dandelion products, such as sausages, salad, ice cream, coffee and wine. There are also demonstrations by local elementary school children, bands, vendors and ENGOs who promote organic gardening products and backyard diversity, and tell histories of the many benefits of the dandelion. "Dandelions are rich in vitamin A and C and even has medicinal purposes," one participant proclaimed. Every skit, vendor and product at the festival carried powerful messages of environmentalism, encouraging back and front yard diversity, and that dandelions should no longer be considered a "weed" or an unwanted plant. One very important observation that was made at the festival was that children be introduced to the natural environment, wildlife and recycling at a very young age.

The Weedgee Kidz, while honoring the dandelion, initially had a logo that contained an illustration of a human hand with a fistful of dandelions seemingly yanked from the ground in a very forceful suggestion. Running-Horan (2005) explains that the logo was meant to demonstrate raising the hands up in the air and shouting 'hooray...hooray for the dandelion!' However, the logo may also suggest that dandelions on

lawns are still unacceptable to many residents, echoing the deeply held values in favor of the weed-free lawn aesthetic more generally. Running-Horan (2005) elucidates:

...some homeowners, especially when they first start on the non-toxic route of lawn care, still want the dandelion-free lawn. I think as their environmental education progresses, they stop worrying about the biodiversity in their lawn and realize that it is a sign of health and nature at work. We attempt, through the Weedgee Kidz, to get them to take that first step into the world of no-pesticide lawn care. We use great instruments for weed pulling like the Weed Hound to show them that they don't even have to bend down to pick them out. We do leave lots of great information on clover lawns, native flower gardens, etc. also. In the future, I hope that the dandelion is totally accepted for what it is but, unfortunately, that day hasn't come for a lot of people. We hope to be the bridge between these two realities.

Running-Horan challenges the industry's claim that citizens are protected adequately from the toxicity of lawn chemicals (Public Information Meeting, 2003). Citing the Environment Commissioner of Canada, Johanne Gelinac, she argues that the 405 active ingredients that have been mandated for retesting (of which 150 were approved before 1960 when standards of health and safety were far lower than today), only 17 have been re-evaluated against current health and environmental standards (Public Information Meeting, 2003).

Running-Horan is also skeptical of IPM, labeling it 'Intelligent Public Maneuvering', and arguing that it is in fact "at the core of the pesticide industry's strategy to keep using pesticides in the urban areas" (Running-Horan, 2001). She would like to see Caledon adopt the following policy (Running-Horan, 2001):

...public health shall be the primary determinant as to whether or not a toxic substance shall be used on Caledon property, including private land. Pesticide use shall be limited to cases where the health risks of application of the pesticide are clearly less than the risk to human health resulting from no action, and where the pesticide to be used poses less risk to health than any other practical method or solving the problem.

After reviewing these narratives, it is clear that industries and environmentalists exert strong political and economic influences on municipalities. The lawn has essentially become politicized, or an object under constant discussion over the rejection or adoption of pesticide by-laws. Caledon shows the progressive steps taken by citizen concerned about pesticide use on lawns and the changes taken to introduce a by-law restricting pesticide use for cosmetic purposes. At the same time, however, a closer look at the by-law shows there is considerable continuity in the powerful status of lawn care managers and farmers who favor the continued use of pesticides, and local residents who are still imbued with an industrial lawn aesthetic.

CONCLUSION

The case study explored in this paper, the Town of Caledon's pesticide by-law, confirms the power of local democratic forces in the form of a proactive and environmentally aware group of citizens' ability to influence and push local powers to implement pesticide by-laws in conjunction with environmental education and outreach programs. Yet the question remains - how significant are local pesticide by-laws in affecting a broader group of pesticide consumers, producers, and pesticide use itself?

In this study, we have explored the extent and significance of the Town of Caledon's Healthy Horticultural Landscapes By-law - one of the first municipalities in Ontario to restrict the use of pesticide for cosmetic purposes. We document the positive and constructive efforts of the citizens of Caledon to obtain a pesticide by-law. We conclude that the by-law has been supported by a wealthy, educated and politically well connected community that sees itself as a guardian of a unique natural landscape. The local residents' objective is primarily about protecting their own community, though there are some attempts at building bridges to other communities. This raises the specter of class and power as important aspects to consider in the pesticide reform discourse, asking questions surrounding who is behind, who benefits, and who may not be affected by pesticide reform (Sandberg & Foster, 2005).

The by-law is also impacted by the broader political economy of the pesticide industry sector. As a consequence of the lobbying of farmers groups, golf course operators, and chemical companies, Caledon's pesticide by-law is ambiguous and incomplete, allowing spot spraying, the use of Integrated Pesticide Management, and the private purchase and use of pesticides. These groups refer to science and scientific experts to support their claim that pesticide use is safe for humans and wildlife, and that the Canadian pesticide regulatory system is one of the most rigorous in the world. The Town also appears

not fully committed to a strong educational and enforcement policy of the by-law. These activities have been left to a local community effort, the Wedgee Kidz, who, though receiving some funds from local and federal sources, relies heavily on the volunteer work of high school and university students.

These conclusions suggest the importance of evaluating the significance of lawn pesticide reform in a larger theoretical and empirical context. It also points to the value and urgency of further research and assessments of individual by-laws and their influence on consumers and producers, and their impacts on the ground and across society.

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