Factors Affecting School Grounds and Athletic Field Quality after Pesticide Bans: The Case of Connecticut

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Abstract. Pesticide laws focused on school grounds/athletic fields are beginning to take shape around the United States. A body of literature has examined the health implications of pesticides on school children and faculty and staff. However, little research has examined the impact of changing pesticide regulations on grounds/field quality and expenses. Our research indicate that school grounds/field managers have perceived decreased quality after the Connecticut kindergarten to eighth grade pesticide ban went into effect in 2010. Furthermore, we find that educational sessions or increased expenditures on school grounds/fields can increase the probability of maintaining field quality at integrated pest management levels. However, we see that lower income areas are more likely to experience decreased grounds/field quality after the lawn care pesticide ban took effect.

School grounds and athletic fields are an integral part of many students' lives. Consistent exercise is a fundamental integral component contributing to the health of children (Boreham and Riddoch, 2001). Therefore, athletic fields (and school grounds) not only serve as homes to athletic teams, but are also used as recreation areas for children to play throughout the day. For this reason, a clear understanding of how pesticide bans have changed both grounds maintenance expenses and field quality is essential for gauging player safety and also educating local and state policymakers about budget impacts. As many school systems look to reduce their budgets for grounds and athletic field upkeep, financial support for school grounds care is a prime target for budget reduction. However, little, if any, research has examined how athletic field budgets and grounds quality have changed as pesticide bans have been implemented.

Pesticide use on food crops, ornamentals, and turf has come under increasing scrutiny over the past two decades. Recently, pesticide use on school grounds has received special attention given the potential health risk to students, faculty, and staff (Alarcon et al., 2005; Gilden et al., 2012). These and

similar studies have led to 35 states proposing or enacting some type of regulation that addresses pesticide use on school grounds (Owens, 2009). The state regulations vary in scope with some limiting specific pesticide use (e.g., California, Louisiana, and Maine) and others focused on limiting application periods (e.g., Georgia and Illinois) (Owens, 2009). However, several states such as Connecticut and New York have enacted full pesticide bans on the school grounds used by children in day care and students in kindergarten to eighth grades.

Connecticut has had some form of pesticide regulation for school grounds for over two decades. The first Connecticut legislation Public Act (PA) 99-165 (codified under Connecticut General Statute Section 10-231) was passed into law with an effective date of 1 July 1999. PA99-165 required 1) pesticide applicators to have supervisor or operator certification; 2) local board of education to establish pest control policy (traditional or integrated pest management); 3) at the beginning of each school year, issue a policy statement to parents and indicate that they could register to be notified of pesticide applications and advised of emergency notification procedures; 4) each school to maintain a registry of parents requesting notification; 5) notify parents of treatments; 6) each school to maintain a record of application for 5 years; 7) placed restriction on timing of applications—Public Act codified under assigned enforcement responsibility to the

State Department of Education (State of Connecticut, 1999).

In 2005, PA05-252 defined “lawn care pesticide” and “integrated pest management.” Lawn care pesticide was defined as “a pesticide registered by the United States Environmental Protection Agency and labeled pursuant to the Federal Insecticide, Fungicide and Rodenticide Act for use on lawn, garden and ornamental sites or areas.” Integrated pest management (IPM) was defined as the “use of all available pest control techniques including judicious use of pesticides, when warranted, to maintain a pest population at or below an acceptable level, while decreasing the use of pesticides.” Furthermore, PA05-252 banned lawn care pesticide use on school grounds used by kindergarten to eighth grade students and on the school grounds of day care centers. A grace period from 1 Jan. 2006 through 1 July 2008 was given for lawn care pesticides to be used on school grounds in accordance with IPM plans (consistent with plans developed by the Commissioner of Environmental Protection) maintained by each school district's board of education and monitored by the Connecticut Department of Energy and Environmental Protection (DEEP) (State of Connecticut, 2005). The grace period was extended to 1 July 2010 at which point all lawn care pesticides were banned from kindergarten to eighth grade public/private schools and day care centers. The only exception is in the case of an imminent threat to human health, whereby pesticides could be applied with the authorization of the Commissioner of Public Health, the Commissioner of DEEP, or the school superintendent of a public elementary school.

Decreased pesticide use has been shown to make it difficult to control weeds, insects, and diseases in newly seeded and established turfgrass stands (Miller and Henderson, 2012). This is particularly a challenge on athletic fields and other intensively used, recreational turfgrass areas as a result of their high use and intensity of traffic. Persistent turfgrass wear and reduction in turfgrass cover create an environment that is favorable for pest encroachment that can severely reduce playing surface quality (Dest and Ebdon, 2011; Henderson et al., 2013). Athletic fields and school grounds are an integral part of many students' lives, notably their use for activities incorporating exercise. Turfgrass areas not only serve athletic teams, but are also used to conduct physical education classes and as recreation areas for children.

Sport injuries have been linked to playing surface quality and conditions (Chomiak et al., 2000; Harper et al., 1984; Orchard, 2002). Therefore, lower turfgrass quality on athletic fields and school grounds has the potential to adversely affect the health and safety of children participating in required classes and other popular recreational activities. As noted by testimony given to the Connecticut Committee on Public Health and the Connecticut Environment Committee by representatives of the Connecticut

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Association of Athletic Directors (2014), Connecticut Association of Public School Superintendents (2014), Connecticut Council of Small Towns (2014), Connecticut Environmental Council (2014), among others, playing surfaces in Connecticut have been negatively impacted by the pesticide ban leading some to be potentially hazardous to children. For this reason, a clear understanding of how pesticide bans have changed athletic field/grounds quality is essential for gauging potential impact to user safety. As pesticide regulations become more commonplace, several studies have examined turfgrass management methods to help managers adapt to limited or no pesticide use regulations (Bingaman and Christians, 1995; Koppenhöfer and Fuzy, 2008; Liu and Christians, 1997; Miller and Henderson, 2012, 2013). However, the change in management costs associated with implementing the best management practices for managing pesticide-free cool-season turfgrass has not been definitely determined (Henderson et al., 2013). Assessing the effect of pesticide bans on management expenses is essential for educating local and state policymakers about budget influences. Additionally, as many school systems look to reduce their budgets for athletic fields and general grounds management, financial support for managing high-quality turfgrass areas is a prime target for budget reduction. However, little, if any, research has examined how athletic field/grounds quality and management budgets have changed as pesticide bans have been implemented. Overall, there has been little effort devoted to understanding the impact of these regulations on playing surface quality of athletic fields, the overall quality of school grounds, and management expenses. Additionally, no study has examined how a grounds manager's experience and level of education may impact the overall quality of school grounds.

The overall objective of this research was to determine the role of school grounds/athletic field management expenses and median household income of the school district on the perceived quality of school grounds/athletic fields as assessed by the school grounds manager. Of note, the school grounds manager indicated how they perceived quality had changed. Because no quantifiable measures (i.e., amount of disease/insect pressure, color, or hardness of the grounds/fields) was undertaken, the results are based on the overall quality of the grounds/fields as perceived by the school grounds manager. The specific objectives of this research were to: 1) test the hypothesis that increased expenditures would have a positive impact on school grounds/athletic field quality while decreased expenditures would have a negative effect; and 2) to test the hypothesis that areas with higher median household incomes would have higher school grounds/athletic field quality compared with areas with lower median household incomes. The first hypothesis was driven by the fact that we expected school grounds/athletic field managers who devoted more budget toward the grounds/

fields, whether to cover potential labor cost increases and/or more costly cultural remedies, and to have either no change or increased grounds/field quality. The second hypothesis is based on the likelihood that schools in more affluent areas potentially have greater means and resources to manage school grounds/athletic fields given these drastic restrictions as well as increased expectations about their school grounds/athletic field quality. This research focused on management practices as they transitioned from conventional pest management (calendar-based pest management) to IPM to pesticide-free management practices. In this article, reference to "pesticide-free" refers to the lack of ability to use U.S. Environmental Protection Agency-registered pesticides as part of school grounds/athletic field management practices. The relative quality of school grounds/athletic fields under each pest management regime was also examined.

Materials and Methods

In the fall of 2012, school grounds/athletic field managers in Connecticut were surveyed to ascertain how school grounds/athletic fields under their care had changed under different pesticide regulations. Connecticut was chosen for several reasons. First, Connecticut banned pesticide use in the areas of interest, thereby allowing for the effects of a full pesticide ban to be examined. Second, given the nature of Connecticut regulations over the past two decades, the impact of various regulations and alternative management practices on school grounds/athletic field quality and management budgets could be examined. Finally, school grounds/athletic field managers in Connecticut have indicated the need to understand how athletic field quality has changed post-pesticide ban.

Questions within the survey focused on three areas of interest: 1) budgetary; 2) pest management practices in place pre- and post-ban; and 3) demographics and experience of the manager. The budgetary questions focused on the manager's budget and how it changed as managers moved from conventional pest management to IPM and from IPM to pesticide-free management. In the survey, managers were asked to indicate if their budget had increased, stayed the same, or decreased as they moved from conventional management to IPM and then from IPM to pesticide-free management. Pest management questions posed to managers assessed how they monitored and addressed pest issues under conventional management, IPM, and pesticide-free management practices. Finally, managers were asked about their years of experience in care of school grounds/athletic fields, level of education, and how they stayed current on changing management practices. The school district was recorded and then matched with information on median household income and population density at the city/town level.

Surveys were mailed to school grounds/athletic field managers throughout Connecticut.

The list of managers was identified by first consulting with various associations' memberships including, the Connecticut Association School Business Officials, Connecticut Association of Public School Superintendents, Connecticut Association of Boards of Education, Connecticut Recreation and Parks Association, Connecticut Parks Association, New England Sports Turf Managers Association, Connecticut Schools Building Grounds Association, and Connecticut DEEP, Pesticide Management Division. Individual managers were consulted in several towns/cities to add and/or refine contacts for the list. Finally, if we had no contact in a specific city/town, we called the city/town clerk's office and asked them to identify the school grounds manager. A total of 151 managers were identified (there are 169 towns in Connecticut), most working for the Public Works Department, the Parks and Recreation Department, or the Board of Education.

The survey instrument was pre-tested with five school grounds/athletic field managers before mailing to the entire list. We followed a similar surveying format as discussed in Salant and Dillman (1994). Initial contact was made with a letter informing the potential respondents that a survey would be forthcoming in a week and requesting their participation. Each of the 151 managers on the list was then mailed a cover letter, survey, and postage-paid return envelope. The cover letter informed participants about the survey, indicated that the survey was voluntarily, and that data would be kept confidential and presented only in the aggregate. After 2 weeks, a reminder card was sent to managers, who had not returned the survey. A second notification was sent 2 weeks after the reminder card to those who still had not responded. We also encouraged managers attending workshops sponsored by the University of Connecticut Departments of Extension, Plant Science and Landscape Architecture and Connecticut DEEP to fill out the survey. Additionally, phone calls were made to most ground managers who had not responded to encourage their participation and to answer a question that was accidentally left out of the mailed survey. Some managers reported that they were told by their superiors not to participate or feared repercussions if they responded to the survey honestly and therefore did not respond.

Of the 151 managers surveyed, 47 surveys or 31% were completed and returned. This response rate is in line with other mail/Internet surveys (Kaplowitz et al., 2004; Shih and Fan, 2008). Furthermore, given our survey was limited to Connecticut and all direct implications are related to Connecticut, having only 47 respondents (31% of target population) is enough to make viable inferences if significance is found in the model. With respect to representativeness of the sample, we do not know how our respondent characteristics compare with the Connecticut population of school grounds managers because there are no quantitative measures available to compare with the average school

grounds manager. However, using town population and demographic estimates, we can take a more in-depth look at how our sample compared with all towns in Connecticut. Notably we see that the mean population density for towns represented in the survey was 1453 (compared with 738 for Connecticut as given by the Census Bureau estimates). This implies that the survey respondents were caring for school grounds and athletic fields at some of the more populous school systems in the state. Furthermore, on average a school grounds manager in our sample worked in a town that had a median income (\$81,517) that was higher than the median income (\$69,519) of the state (United States Census Bureau, 2014). Statistical tests cannot be used to examine significance between the sample and Census Bureau population estimates because no variance is given for the Census Bureau estimates. Our sample tends to overrepresent higher density and higher income towns so caution should be used in generalizing our results to populations outside our sample characteristics.

To answer the questions of interest, differences between budget and quality under varying pesticide regulations were examined first. A χ^2 test was used to determine if frequency differences were present. The effect of various school and manager characteristics on athletic field/grounds quality after moving from IPM to pesticide-free was examined. As noted in Table 1, no manager reported increased quality after the change, thereby leaving a binary choice (no change or decreased quality). Given the binary nature of the dependent variable, we used a binary logit model, which was specified as

$$P(Y = 1|X) = \frac{e^{\beta'X}}{1 + e^{\beta'X}} \quad [1]$$

where P_i is the probability the i^{th} respondent's quality stayed the same and x_i is a set of manager and departmental demographics, city characteristics, and expenditures associated with the i^{th} respondent. Given the initial logit model estimates are log odds, the interpretation is not straightforward; therefore, the marginal effects were calculated. For our model, the marginal effect for a dummy variable can be interpreted as the increased/decreased probability of having a specified athletic field quality level given a move from the base to the non-base-coded variable (e.g., from female to male). Marginal effects for continuous variables are interpreted as the increased/decreased probability of having a specified athletic field quality level given a one-unit change from the mean.

Results and Discussion

Fifty-one percent of school grounds/athletic field managers reported that their school grounds expenses stayed the same when they converted from conventional management to IPM practices (Table 1). However, a similar percentage of managers (23% vs. 26%) stated that their budgets had decreased/increased.

These results are consistent with Williams et al. (2005) where conventional and IPM pesticide regimes were found to have similar total costs in public schools. With respect to quality, 45% of managers reported that quality of their school grounds stayed the same, whereas 36% indicated quality had decreased as a result of moving from conventional to IPM.

Examining the impact of the move from IPM to pesticide-free, 40% of managers indicated that their expenses stayed the same, whereas 40% of managers indicated that expenses increased (Table 1). Comparing the move from conventional management practices to IPM and from IPM to pesticide-free, there was a 14% increase in the number of managers indicating their expenses increased. None (0%) of the managers indicated that quality had increased after the change from IPM to pesticide-free management; however, 77% of the managers reported a decrease in quality. These results clearly indicate that the implementation of the pesticide ban has decreased the quality of kindergarten to eighth grade school grounds/athletic fields throughout Connecticut. Please note that the comparison of quality and expenses of maintaining grounds/athletic fields on kindergarten to eighth grade vs. high schools in this study does not detail how quality changed or the expenses that changed; we only examine perceived quality changes by the person in charge of maintaining the grounds/fields as well as total expenses related to grounds/field care.

The results from Table 1 provide only a cursory view of what is happening as expenditures change. The argument could be made that managers experiencing different budget situations might have different quality results. Forty-two percent of managers indicated that converting from conventional management to IPM increased

expenditures but reported a decrease in school grounds quality (Table 2). Another 42% of the managers indicated school ground quality had stayed the same leaving 17% of the managers to believe quality had improved. However, 55% of managers reported lower expenses and lower quality when converting from conventional management to IPM. Fifty-four percent indicated that when their expenses stayed the same, the quality of the grounds stayed the same. Examining the impact of expenditures on quality when converting from IPM to pesticide-free management, we see that 68% of managers reported higher expenses with decreased quality. Fifty-six percent of managers who indicated decreased expenses also reported decreased quality. Forty-four percent reported no change in quality after they converted from IPM to pesticide-free management. The majority of grounds managers (95%) who reported no change in expenses also reported a decrease in school grounds quality. Furthermore, unlike the move from conventional management to IPM, no manager reported increased grounds/turf quality after the move from IPM to pesticide-free management.

No common standards exist for evaluating the quality of school grounds. Therefore, quantifying the quality of school grounds is subjective. However, our results do provide clear evidence that school grounds quality has been directly impacted by the changing pesticide regulations, most notably with the implementation of the pesticide ban. Along with the introduction of the pesticide ban, results indicate that school grounds maintenance expenses have increased. This is most likely the result of managers having to increase labor costs and use an increased proportion of cultural and alternative management practices. As noted by the Connecticut Conference of Municipalities (2014) in

Table 1. Effects of varying pesticide use policies on expenses and quality kindergarten to eighth grade school grounds and athletic fields in Connecticut.^z

	Decreased	Stayed the same	Increased
Expenses			
Conventional to IPM	23% ^a	51% ^b	26% ^a
IPM to pesticide-free	19% ^a	40% ^b	40% ^b
Quality			
Conventional to IPM	36% ^a	45% ^a	19% ^b
IPM to pesticide-free	77% ^a	23% ^b	0% ^c

^zSuperscripted letters indicate significant difference at the 0.1 level or below using a χ^2 test of frequencies. IPM = integrated pest management.

Table 2. Effects of varying school grounds/athletic field maintenance practices and expenses (or budgets) on school grounds/athletic field quality in Connecticut.^z

	Quality		
	Decreased	Stayed the same	Increased
Conventional to IPM			
Expenditure increase	42% ^a	42% ^a	17% ^b
Expenditure decrease	55% ^a	27% ^b	18% ^b
Expenditure stay the same	25% ^a	54% ^b	21% ^a
IPM to pesticide-free			
Expenditure increase	68% ^a	32% ^b	0% ^c
Expenditure decrease	56% ^a	44% ^a	0% ^b
Expenditure stay the same	95% ^a	5% ^b	0% ^b

^zSuperscripted letters indicate significant difference at the 0.1 level or below using a χ^2 test of frequencies. IPM = integrated pest management.

their testimony to the Connecticut Committee on Public Health, labor and material costs have increased as a result of pesticide bans on kindergarten to eighth grade school grounds and athletic fields.

Who has been impacted? Our results indicate that the recent regulatory ban has had a detrimental impact on school grounds quality. However, a critical question is whether the regulations have had an equal impact across school districts or are some school districts impacted more significantly? Using a logit model with school manager, departmental characteristics, expenditure levels, and city characteristics of the school district (Table 3) as explanatory variables, we answer this question. For interpretation of the marginal effects, we need to reiterate that no manager indicated quality had increased after the pesticide ban, thereby our dependent variable is either decreased quality (coded 0) or stayed the same (coded 1).

Examining the school manager's characteristics, we see that the manager's education level does not impact the quality of the school grounds. However, we see a negative impact with respect to the number of years the manager has been in his or her current position (Table 4). For every year the manager has been in his or her current position above the mean (11.4 years), there is a 1.5% decrease in the probability that the manager's school grounds quality stayed the same (implying a decrease in grounds quality) after moving from IPM to pesticide-free management. Our hypothesis is that more experienced managers are less likely to embrace new techniques that may mitigate the impact of the pesticide ban given they are potentially more entrenched in how they have done the job in the past. However, more research is needed to assess this hypothesis. We do see that pesticide certification programs and association meetings dramatically increase the probability of grounds quality staying the same, whereas winter workshops tended to have a negative impact. This lends credence to the positive effect of many extension activities where networking and idea exchange occurs.

Characteristics of the department where the manager is housed such as total areas maintained can have a large impact on the quality of school grounds. Results indicate that as the number of areas the department maintains increases, quality decreases. For every new area (e.g., athletic field, sidewalk, parking lot, etc.) of grounds the department has to maintain above the mean (8.2 areas), there is a 4.5% decrease in the probability school grounds quality has stayed the same. Most likely this is the result of increased labor requirements as the number of areas maintained increases. As a result of the pesticide ban, the time required to maintain each pesticide-free area is increasing (Connecticut Association of Public School Superintendents, 2014).

The characteristics of the city/town where the school district is located also play a role in the quality of the school grounds. As the median household income of the city/town increases by \$10,000 from the mean, there is

Table 3. Descriptive statistics of variables included in the logit model used to assess factors impacting changing quality levels before (using integrated pest management) and after the kindergarten eighth grade school grounds/athletic fields pesticide ban went into effect.

	Mean	SD
Quality: IPM to pesticide-free ^z	0.23	0.43
Number of years in current position	11.4	8.7
Education		
2-year degree	0.21	0.41
4-year degree	0.49	0.51
Greater than 4 years	0.11	0.31
Methods of information ^y		
Winter workshops	3.9	2.0
Pesticide training/certification	3.8	2.2
Association meetings/certification programs	2.9	2.1
Vendor support and seminars	3.4	2.0
Trade shows	4.5	1.7
Other	4.8	2.1
Departmental characteristics		
Number of areas department maintains	8.2	3.9
City/town characteristics		
Median household income 2011	\$87,227	\$31,373
Population density 2011	1,453	1,789
Budget expenditures: IPM to pesticide-free		
Increased	0.19	0.40
Decreased	0.40	0.50

^zThe quality change from IPM to pesticide-free is binary as there are no responses for increased quality, only decreased (coded 0) and stayed the same (coded 1).

^yRespondents were asked to rank which method they used most frequently to get information, implying rankings are from 1 to 6.

IPM = integrated pest management.

Table 4. Coefficients (and marginal effects) of variables in the logit model examining the influences on school grounds/athletic field quality before (using integrated pest management) and after the kindergarten to eighth grade school grounds/athletic fields pesticide ban went into effect.

	Logit model results			
	Log odds	P value	Marginal effect	P value
Constant	-2.534	0.507	—	—
Number of years	-0.152	0.031	-0.015	0.027
Education				
2-year degree	2.457	0.259	0.274	0.270
4-year degree	0.952	0.641	0.094	0.610
Greater than 4 years	-1.278	0.626	-0.109	0.572
Methods of information				
Winter workshops	-0.622	0.121	-0.062	0.084
Pesticide training/certification	0.601	0.019	0.060	0.010
Association meetings/certification programs	0.438	0.080	0.043	0.085
Vendor support and seminars	-0.620	0.186	-0.062	0.134
Trade shows	0.488	0.338	0.048	0.332
Other	-0.155	0.615	-0.015	0.597
Number of areas department maintains	-0.456	0.014	-0.045	0.008
Median household income 2011 ^z	0.000	0.109	0.038	0.074
Population density 2011	0.000	0.898	0.000	0.898
Budget expenditures: IPM to no pesticide				
Increased	5.165	0.025	0.554	0.001
Decreased	0.140	0.915	0.014	0.916

^zThe marginal effect for median household income represents the addition of \$10,000 from the mean.

IPM = integrated pest management.

a 3.8% increase in the probability that school grounds stayed the same after moving from IPM to pesticide-free management. These results provide potentially significant policy ramifications given that wealthier towns are less likely to feel the same impact from the pesticide ban as less wealthy towns. Our results suggest that the regulatory ban on pesticides may impact lower income school districts to a greater degree than their wealthier counterparts. This is particularly concerning given that lower turfgrass quality on athletic fields and school grounds has the potential to affect the health and safety of children [see testimony by the Connecticut

Association of Athletic Directors (2014), Connecticut Association of Public School Superintendents (2014), Connecticut Council of Small Towns (2014)] participating in required classes and other popular recreational activities. More research is needed to quantitatively measure differences in grounds quality (especially athletic fields) at school districts with different wealth levels.

In examining our main variable of interest, when controlling for other factors, we see that as expenditures on grounds quality increase, there is, as expected, an increased probability that school grounds quality will stay the same after moving to pesticide-free

management from IPM. A manager that indicated their grounds expenditures increased is 55.4% more likely to indicate that their grounds quality stayed the same. This result is most likely driven by the manager devoting more labor to the school grounds.

Conclusions

Many states have begun limiting/eliminating the use of pesticides on school grounds. Connecticut, in particular, has enacted strict regulations that restrict the use of U.S. Environmental Protection Agency-registered pesticide use on school grounds of kindergarten to eighth grade students. Results indicate that the move from conventional management practices to IPM practices resulted in a smaller reduction in grounds and athletic field quality as compared with the move from IPM to pesticide-free management. Budgetary expenditures, on the other hand, increased with the move to pesticide-free management practices as compared with the move from conventional management to IPM. This is most likely the result of the increased labor requirements, increased cultural practices, and/or increased cost of products necessary to maintain school grounds and playing fields. These results are not unexpected because we anticipated that managers will continue to struggle with demands for acceptable school grounds and athletic field quality and balancing expense, especially given the limited literature and resources currently available that address the management of school grounds without pesticides.

The major finding of this survey, that has a direct impact to policymakers, is that cities/towns with higher median incomes are more likely to have higher school grounds quality and potentially safer recreation and athletic fields. In a vacuum, this is understandable, because more resources equate to an improvement of school grounds. However, given that the current pesticide ban is a mandated policy put in place by state legislation, there is concern that lower income school districts may be impacted to a greater degree than their wealthier counterparts. From this survey, it is clear that more research is needed to truly understand the role of school grounds quality on communities with varying demographics. Furthermore,

more research is needed to understand uptake of lawn care pesticide alternatives as well as determining how quality is declining (i.e., purely aesthetic or grounds/field condition) as well as the examining whether expenditures on labor are changing as a result of the new pesticide ban.

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