The Journal of Extension

Volume 46 | Number 1 Article 7

2-1-2008

Relax! It's Just a Dandelion: Perceived Benefits and Barriers to Urban Integrated Pest Management

Mrill Ingram
University of Wisconsin- Madison, mingram@wisc.edu

John Stier
University of Wisconsin- Madison, jstier@wsic.edu

Elizabeth Bird
Montana State University, ebird@montana.edu

Recommended Citation

Ingram, M., Stier, J., & Bird, E. (2008). Relax! It's Just a Dandelion: Perceived Benefits and Barriers to Urban Integrated Pest Management. *The Journal of Extension, 46*(1), Article 7. https://tigerprints.clemson.edu/joe/vol46/iss1/7

This Feature Article is brought to you for free and open access by the Conferences at TigerPrints. It has been accepted for inclusion in The Journal of Extension by an authorized editor of TigerPrints. For more information, please contact kokeefe@clemson.edu.

February 2008 // Volume 46 // Number 1 // Feature Articles // 1FEA4

Relax! It's Just a Dandelion: Perceived Benefits and Barriers to Urban Integrated Pest Management

Abstract
Pesticide misuse in urban gardens contributes to pollution of lakes and rivers, ill health of humans and other organisms, and disruptions of ecological balances. Integrated Pest Management (IPM) has been successfully used in agriculture for over 20 years, but its adoption by landscaping professionals has been slow. The 2-year project described here undertook baseline research into attitudes about IPM in the Lake Monona watershed, Wisconsin. Resulting data led to a social marketing strategy including prototype materials to assist professional landscapers in discussing IPM with clients. Materials were piloted on a Web site <http://www.askaboutipm.info> and with watershed groups.

Mrill Ingram
Research Scientist
University of Wisconsin-Madison
Madison, Wisconsin
mingram@wisc.edu

John Stier
Associate Professor
Department of Horticulture
University of Wisconsin-Madison
Madison, Wisconsin
jstier@wisc.edu

Elizabeth Bird
Director Extramural Funding Support
College of Education, Health & Human Development
Montana State University
Bozeman, Montana
ebird@montana.edu

With glacial lakes situated in the very heart of the city, Madison, Wisconsin is blessed with water resources. As is true for many urban watersheds, however, Madison has growing water pollution issues. One important pollution source is runoff from fertilizer and pesticide misuse in urban landscapes. Data from the U.S. Geological Survey indicate that urban watersheds may be more contaminated with pesticides than agricultural watersheds (USGS 1999). Inappropriate use of lawn chemicals, landscape designs that fail to lay the groundwork for plant health, and grounds-keeping practices that ignore integrated options for maintaining attractive landscapes are all part of the problem.

Supported by the US EPA Pesticide Environmental Stewardship Program, the goal of the social marketing project described here was to address these issues by developing strategies to promote urban Integrated Pest Management (IPM). IPM aims to reduce chemical pesticide use by maximizing plant health and minimizing pest damage through the use of a wide array of cultural and biological as well as chemical tools. The approach has been successfully used in agriculture for over 20 years, but its perceived adoption by landscaping professionals has been slow.

The Wisconsin Department of Natural Resources adopted a non-point source pollution rule (NR 151) addressing nutrient runoff from both agricultural and urban landscapes that becomes effective March 2008 (Wisconsin DNR, 2006). Initial drafts of the document would have required IPM prior to application of pesticides on any landscape greater than five acres. However, the

Wisconsin Department of Agriculture, Trade and Consumer Protection has jurisdiction on pesticide use in Wisconsin and will be assessing a potential mandate for IPM (J. Stier, personal observation).

We worked to identify the barriers and benefits of IPM as perceived by paid landscape managers in the Lake Monona watershed in the City of Madison and Dane County, Wisconsin. We surveyed landscapers and evaluated existing materials on IPM. We used this information and worked with urban watershed and neighborhood organizations and other collaborators to develop strategies and informational resources that support landscapers and residential landowners in choosing more environmentally friendly land care practices.

Approach and Methods

The "social marketing" approach is designed to go beyond a one-way strategy of expecting people to change their actions solely on the basis of information about negative consequences of their behavior (McKenzie-Mohr & Smith, 1999). Social marketing is a pragmatic, community-based strategy that begins with seeking to understand why people behave as they do and to identify what might support more sustainable behavior. The method assesses what people already know and believe, typically through surveys and focus groups, and then works with communities to redesign and provide appropriate tools to remove or circumnavigate barriers and to support new action (e.g. Snow & Benedict 2003).

Key to the "community-based" aspect is building a relationship with target audiences. Social marketing efforts try to "open the door" for people to pursue more sustainable action through attention-getting marketing efforts but also by removing barriers and providing education and motivation for change. Successful environmental social marketing campaigns have focused on such issues as composting, recycling, salmon hatchery protection, and natural lawn care (see <http://www.cbsm.com>).

Target Audience: Surveying Professional Landscapers

The project focused on establishing more clearly how a target audience--professional landscapers--view and use IPM. In general, the number of households employing professional lawn and garden care has been growing, making professional landscapers an appropriate target for research into the perceived benefits and barriers of IPM practices (Templeton, Zilberman, & Yoo, 1998). We capitalized on long-standing relationships between co-P.I. John Stier and members of the professional landscaping community in order to work with landscapers in developing and testing our survey, identifying landscapers to join a focus group, and disseminating our results. Institutional connections between the UW Environmental Resources Center and members of the Extension community were also critical in the testing and sharing of information.

We created and tested a survey using guidelines from social marketing literature as well as other survey research on landscape and IPM practices (e.g., Sellmer, Ostiguy, Kelley, & Hoover, 2004; Virginia Tech Entomology Department). Two student interns, Katie MacKendrick and Kelly Mischuck, made telephone calls to landscapers. With the support of staff at UW-Madison's Environmental Resources Center, we used SPSS to code and analyze survey data. Along with information about business size and longevity, we focused on elucidating information about four main areas:

- Landscapers' familiarity with and use of IPM;
- Perceived benefits of the use of IPM;
- Perceived barriers to the use of IPM; and
- Information and education needs.

We used Dane County telephone books to gather the names of 146 professional landscapers working in the Lake Monona Watershed in Wisconsin. This group was culled to 114 by weeding out landscaping businesses focusing more on "hardscapes" rather than plant care or pest management. Of the population of 114, a total of 86 landscaping companies were successfully contacted. Our contact efforts included five phone attempts and two mailed letters (the first letter sent in advance of the first telephone call). Out of 86 contacted, 66 agreed to participate in the survey. Of those refusing to participate, three did so because pesticide application decisions were made in out-of-state corporate headquarters; several others stated they were too busy. Ten of the people were reached by a mail survey, which we sent after several unsuccessful phone attempts along with a coupon for a free diagnostic turf test.

We analyzed data from these mail surveys as a parallel sample to boost and confirm indications in the data from the phone sample. In total, we had a 58% participation rate, although this included 15% who agreed to complete only a short 5-question version. The survey was conducted in late winter and early spring 2004, a period of time during which landscapers are traditionally beginning to hire seasonal workers and market their businesses but before significant landscape work can begin due to weather.

Survey Results

Our survey population was a varied one in terms of landscaper background and business size. It included people who regularly use a computer and those who never do, people with Ph.D.s and others without bachelor's degrees. The size of companies varied dramatically, from those serving 3,000 customers (one company) to those serving fewer than 100 (a total of 29). The largest company we contacted hired over 600 people; the largest group of landscapers (37) in our population hired 10 or fewer.

Knowledge and Use of IPM

We found that the majority of respondents claimed to be very or somewhat familiar with IPM (87%). Only 13% said they were barely or not at all familiar. Of those who said they were familiar or somewhat familiar, 92% said they employ the approach on a regular basis. The high percentage of IPM use was surprising compared with a survey of southeastern landscapers several years ago, which indicated technology transfer to landscapers was needed to facilitate IPM adoption (Hubbell, Florkowski, Oetting, Braman, & Robacker, 2001). The differences may be a function of the community: Dane County is home to the University of Wisconsin-Madison, with a concomitant high proportion of citizens with a post-secondary education, which has been associated with people's awareness of pesticide impact (Dunlap & Beus, 1992).

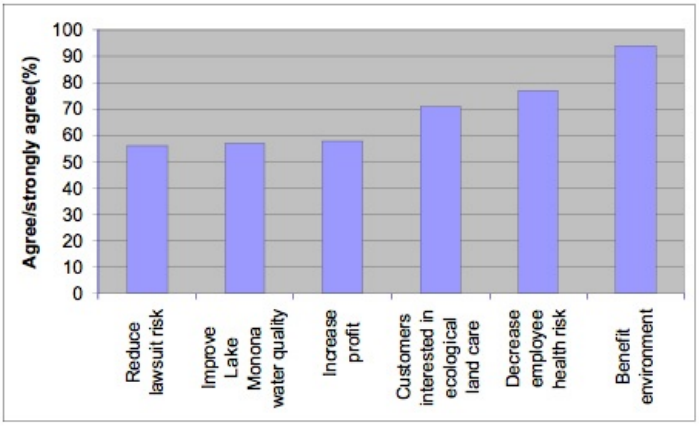
While not exhaustive, our survey included several questions attempting to determine the level of use of IPM and solicited examples. Some 87% of the respondents described the use of cultural practices, 74% set biological thresholds, and 94% monitor. Only 71% said that they keep records, however, and 28% stated that they spray on a standard calendar schedule, indicating that definitions and use of IPM varies between landscaper. Our question, "Do you set thresholds for pests?" elicited a number of comments, such as: "Yes, but the customer doesn't and we don't live in a bubble"; "The threshold depends on client"; and "No, the customer does."

Survey respondents were very positive about the effectiveness and accessibility of IPM: 64% disagreed with the statement that IPM was not effective, and 60% were not concerned about the complexity of IPM. Eighty-three percent disagreed and strongly disagreed that the use of IPM makes their business less profitable. Almost 60% of respondents stated that IPM could make businesses more profitable. Cross tabulations revealed that the more respondents engaged in IPM practices, the higher their level of confidence about effectiveness and accessibility of IPM.

Benefits of IPM

Regarding the benefits of IPM, most landscapers believed that IPM would benefit Lake Monona's water quality: 84% of respondents were strongly concerned about the water quality of the lake (Figure 1). 69% agreed or strongly agreed that customers were interested in "green" lawn care. Over 90% of landscapers surveyed reported they often or sometimes suggest non-chemical techniques to their customers, while 68% reported they have had at least one customer requesting non-chemical techniques. Only 9% felt IPM would decrease company profit.

Figure 1.
Landscaper's Perceptions of Integrated Pest Management Benefits, Dane County, WI (n=56; 2004)



There was also interest in IPM and worker safety. 60% strongly agreed and 18% agreed that IPM lowers landscape workers' health risks from harmful chemicals, indicating that landscapers may have an interest in IPM in terms of issues with health, or liability, and labor. Our data shows that 36% strongly agreed and 24% agreed, "Using fewer chemical pesticides would lower my business's risk of being sued."

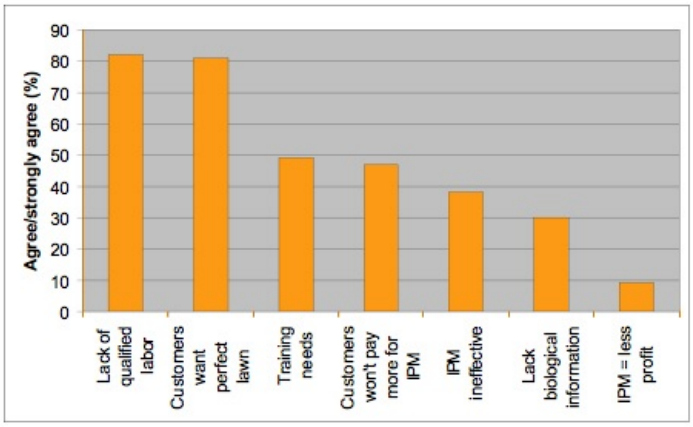
Barriers to IPM

The two primary barriers to adopting more IPM practices by landscapers were (Figure 2):

- Customers' desire for perfect lawn

- Lack of qualified labor

Figure 2.
Landscapers' Reasons for Not Utilizing Integrated Pest Management, Dane County, WI (2004)



Landscapers indicated strongly that customers' preferences for a perfect lawn and lack of awareness about plant ecology create barriers to IPM use. As one landscaper commented: "Four out of five people ask about chemical-free lawn care; one out of fifty is really willing to see it through." While most (71%) agreed and strongly agreed that customers are very interested in ecological land care, only half the respondents agreed that customers would pay more for a non or low-chemical approach to landscaping.

Unawareness on the part of customers about lawn and garden ecology and a desire for quick results were frequently mentioned barriers to IPM use. A participant stated, "I don't know if customers aren't willing to *pay* so much as they aren't willing to *wait*." As another respondent stated, "Customers are mostly for it, but if a customer doesn't understand, it's hard to persuade consumer awareness." Another said, "Educating the public is a b____. After a few more weeds turn up, customers turn elsewhere."

Lack of qualified labor was the other largest barrier to IPM, more so than availability of information about IPM. Over 80% agreed that availability of qualified labor was problematic. Our results agree with Hubbell et al. (2001), who reported worker training was critical if landscape firms were to adopt IPM.

Landscaper Educational Use and Needs

Our survey results indicate that as a group Lake Monona area landscapers did not indicate a strong need for additional materials and information sources on IPM. Only 22% of respondents felt that they lacked information about plant threshold levels or pest or weed biology. Respondents indicated that they rely on a whole variety of resources for IPM information, including Cooperative Extension, trade journals, and pesticide applicator trainings. Smaller businesses relied more heavily on Cooperative Extension, trade journals, and certified pesticide applicators. On a one-to-four scale of usefulness (one being not useful and four being highly useful), over 50% of landscapers ranked Cooperative Extension as the source for highly useful information (Table 1). These data indicate Cooperative Extension is doing a good job of getting information to clients, though there may be room for improvement.

Table 1.
Landscapers Reporting Various Sources of Information as Highly Useful Based on Rankings from a One-to-Four Scale, with One Being Not Useful to Four Being Highly Useful, Dane County, WI (2004).

Source of Information	% Respondents Identifying as Highly Useful Source
Cooperative Extension	51
Pesticide Applicator Training	42
Pest control guides	36
Trade journals/bulletins	36
WI Department of Agriculture	36
Other landscapers	27
Salespeople	20
Trade conferences	16

Master gardeners	12

The full impact of Cooperative Extension may be underreported since 27% of landscapers get IPM information from other landscapers who may likely have obtained their information firsthand from Cooperative Extension. In addition, Cooperative Extension staff often either develop and/or speak at trade shows, which were reported as highly useful by 16% of respondents. Another 10% found Master Gardeners to provide highly useful information: Cooperative Extension developed the Master Gardener program and conducts the training to Master Gardeners. Pesticide Applicator Training (PAT) was also deemed highly useful, though several people noted that recently IPM had been excluded from these trainings. This situation is unfortunate, because certified pesticide applicators are required to attend and/or review training materials for recertification, thus PAT was the only mandated source of IPM information. Information from other sources has to be voluntarily obtained.

Focus Group with Professional Landscapers

In order to explore these results and to brainstorm ideas for a social marketing strategy, we organized a half-day focus group of landscapers. Some of the participants had volunteered during our survey process, and others were solicited from our survey population. The group met in February of 2005 on the UW-Madison campus. We discussed survey results, available IPM educational materials and training, and labor needs associated with IPM. The last section of the focus group was spent discussing the major barriers identified by landscapers and possible avenues for working with homeowners to improve their reception and understanding of IPM.

In terms of IPM education for landscapers and hired labor, there was interest in new formats, such as "rainy day" or "slow day" trainings that could include a videotape/DVD and a workbook made available to landscapers. Some companies have their own training programs, but many put resources together themselves and would take advantage of smaller modules on IPM directed toward hired labor. Repeated evening sessions sponsored by UW Extension was another proposed idea.

In the discussion about educating homeowners, participants agreed that lawns are a good place to focus because they are the biggest source of chemical use *and* where people are interested. Also, lawns are where people are most likely to use calibrated equipment that can make a difference--like the height of mower, timing of mowing and watering, and regularity of fertilizations. Landscapers noted that homeowners are bombarded with images of perfect, homogeneous lawns and that other messages need to be broadcast that make it okay to have clover, a little creeping Charlie, or wood violets in a lawn; i.e., education toward a "biodiverse" lawn.

Additionally, people felt that too much of a barrier is being created between chemical and non-chemical approaches and that IPM can provide a useful "middle ground," where some chemical use can occur, keeping customers "happy," while their lawns are transitioning to lower chemical dependence. Also, messages about IPM can emphasize things that homeowners care about such as saving time or water and ensuring the health of children and pets. In addition, as one landscaper emphasized, a sense of humor is sorely needed, and any materials developed need to be fun.

There was general agreement that the Web is an increasingly useful source of information and that people in Madison are very Internet-savvy. Also, several landscapers noted that, although they regularly share printed materials with their customers, they feel that very little of it is ever read.

Developing a Strategy

These results suggested that one useful social market strategy would target homeowners with information on IPM practices and promote it as a sensible step in safety and caring for the quality of surrounding lakes. Consumer education was identified by Hubbell et al. (2001) as a component of enhancing the potential of IPM adoption by landscapers. Consequently, we were in contact with numerous existing grass roots organizations, such as Greater Madison's Healthy Lawn Team and Madison Area Municipal Stormwater Partnership as well as the Extension network, that could provide avenues for relaying IPM information to homeowners.

The project team worked with Richard Brooks, a social marketing specialist at UW-Madison, and designer Mary Kay Warner of Sandhill Studios to design prototype materials for testing and sharing with collaborating watershed and pollution prevention groups in the Madison area. The final product is a Web site <http://www.askaboutipm.info> that includes a series of printable, mailable "quick cards," an IPM information brochure, and an article that can be reprinted in landscapers' and neighborhood group newsletters.

The focus of the site is to present the idea of IPM in an amusing manner in order to catch people's interest and to provide them with a way to search out the many sources of information about environmentally friendly lawn care. Each quick card has a picture and phrase such as: "Mom, the Joneses have some dandelions," "Relax! It's just a dandelion," and "I need a dandelion to make my wish." The back of each quick card works to associate the phrase IPM with "healthy lawn" and other words such as "safe," diverse," and "natural." A critical message is the benefit of IPM for the

area lakes.

Results

The launch of the Web site was accompanied by an August 2005 UW-Madison press release. Links to the site were also established from sites of collaborating groups. Visitation to the Web site was highest in the weeks following the launch and then surged again in the spring in response to the weather and an additional mailing to UW-Extension agents. The vast majority of these visits are from Wisconsin but also come from other U.S. states and a few other countries, especially Canada. Interestingly, returning visitors have increased in 2006 over 2005 (Table 2). The site has had no other major advertising other than sharing with collaborating grassroots groups and the Extension network. We were unable to pursue further evaluation of the impact of our materials, but the participation of these groups has clearly been critical, and their involvement has helped not only to generate but also to maintaining interest in, and return visits to the site.

Table 2.
Number of Visitors to "Ask about IPM" Web Site
<http://www.askaboutipm.info>

Dates	Total Visitors	Returning Visitors
Total in 2005 (from 8/05)	402	17
Total in 2006 (to 6/06)	406	36
Total	725	53

Conclusions

The research described here established that for professional landscapers working in Madison, Wisconsin, two major barriers to increased use of IPM are 1) a lack of qualified labor and 2) customers' desire for a perfect lawn. In response to the identification of these barriers, the social marketing effort worked with landscapers and members of the pollution prevention community to develop an outreach strategy including prototype educational materials for landscapers, educators, grassroots groups, and others working with homeowners.

The general messages developed equate IPM with health, safety, and ease, and encourage people to broaden their vision of a lawn, to think of it as part of a biodiverse community that includes the lakes, and to encourage them to engage landscapers who employ IPM. The material also aims to amuse as well as inform audiences and encourages them to talk to landscapers about IPM.

Project results also suggest that two useful future outreach efforts might be 1) the development of "rainy day" and modular IPM trainings for part-time landscape laborers; and 2) research into the potential of a "green label" program that might provide landscapers who use IPM with market recognition for their expertise and efforts, and continue to improve the success of motivated landscapers who would like to use IPM and would do so with more support from their customers.

A well-designed social-marketing project extends beyond advertising. Critical elements in our efforts included capitalizing on established connections with the professional landscaping community and Extension network (both of which were critical in garnering participation and interest), as well as establishing new relationships with grassroots and neighborhood groups. Another key element was the saliency of the issue of Lake Monona's water quality, which is of high concern to the general community. This motivation underscores the "marketing" effort with a vision of environmental health in a specific, local context.

While social marketing is sometimes described in terms similar to commercial efforts, this experience emphasizes that people's ideals and experiences regarding environmental and personal health are critical elements of communication. Given the size of commercial advertising budgets behind messages about convenience, perfection, and fashion, it is clear that any communication emphasizing patience, tolerance of weeds, and the benefits of "paying more" will only succeed if motivated by personal feelings about health and the environment.

References

Dunlap, R. E., & Beus, C. E. (1992). Understanding public concerns about pesticides: An empirical examination. *J. Consumer Affairs* 26(2):418-438

Kassirer J., Koswan, S., Spence, K., & Morphet, S. (2004). *The impact of by-laws and public Education programs on reducing the cosmetic/non-essential, residential use of pesticides: A best practices review*. Jointly Prepared by: The Canadian Centre for Pollution Prevention and Cullbridge Marketing and Communications. Retrieved April 30, 2007 from: http://www.cbsm.com/Reports/Pesticides.pdf

Hubbell, B.J., Florkowski, W. J. Oetting, R., Braman, S. K. & Robacker, C. D. (2001). Implications of lawn care and landscape maintenance firm profiles for adoption of pest-management practices. *J.*

Agric. Appl. Econ. 33:147-159

McKenzie-Mohr, D. & Smith, W. (1999). *Fostering sustainable behavior: An introduction to community-based social marketing*. New Society Publishers, Gabriola Island, British Colombia

Schueler, T. R., & Holland, H. K. (eds.). (2000). Urban pesticides: From the lawn to the stream. *The practice of watershed protection*. Center for Watershed Protection, Ellicott City, MD

Sellmer, J.C., Ostiguy, N. Kelley, K. M. & Hoover, K. (2004). Assess the Integrated Pest Management Practices of Pennsylvania landscape companies. *HortScience* 32(2): 297-302

Snow, G., & Benedict, J. (2003). Using social marketing to plan a nutrition education program targeting teens. *Journal of Extension* (On-line), 41(6). Available at: http://www.joe.org/joe/2003december/a4.shtml

Templeton, S. R., Zilberman, D., & Yoo, S. J. (1998). An economic perspective on outdoor residential pesticide use. *Environmental Science & Technology* 32(17): 416A - 423A.

U.S. Geological Survey, U.S. Department of the Interior. (1999). *The quality of our nation's waters: Nutrients and pesticides*. U.S. Geological Survey Circular 1225, 82 p. Retrieved April 30, 2007 from: http://water.usgs.gov/pubs/circ/circ1225/index.html

Virginia Tech Entomology Department, Urban Entomology and Pesticide Safety Education Research. (N. D.). Retrieved April 30, 2007 from: http://web.ento.vt.edu/ento/index.jsp

Wisconsin Department of Natural Resources. (2004). Chapter NR 151: Runoff management. Retrieved April 30, 2007 from: http://www.legis.state.wi.us/rsb/code/nr/nr151.pdf