

# Edina Goes Green Part III: A Survey of Consumer Lawn Care Knowledge and Practices

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**SUMMARY.** Homeowners in Edina, Minn., were surveyed in conjunction with a low-input lawn care community education project. Surveys were sent at the start and finish of the yearlong project, and asked questions pertaining to the respondent's lawn care knowledge, practices, and environmental attitude toward lawn inputs. The responses from before the program, compared with those afterward, show overall that homeowners lawn care did not change significantly by the end of the educational campaign. Responses are useful, however, in targeting future educational efforts. For example, while >80% of respondents were aware of the benefits of leaving mowed clippings on the lawn, <6% knew how much fertilizer is needed yearly for a medium maintenance lawn. Participants indicated a 10% weed tolerance was acceptable, but 25% was not; and disagreed with the statement "pesticides are not harmful to the environment."

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Lawn care is a major gardening activity in the United States (National Gardening Association, 1997) and has increasingly become a target for environmentalists (Stein, 1993). Many homeowners see aesthetic and social value in a green, attractive, well-maintained lawn (Jenkins, 1994). Concerned citizens of Edina, Minn., a suburb of Minneapolis, raised questions about pesticide safety with children in public parks. In recent years, public attitude toward pesticides has become an issue among communities and government, (Star Tribune, 1994) with consumer use of pesticides steadily declining since the 1980s (Aspelin, 1997; M. Dana, personal communication). Edina residents teamed up with City Hall and the University of Minnesota Extension Service to develop an educational campaign, called Edina Goes Green (EGG), aimed at teaching environmentally responsible low-input home lawn care techniques (Carpenter and Meyer, 1999a).

Edina has a population of  $\approx 46,000$  with an estimated 15,000 owner-occupied households. The city estimates that  $\approx 600$  acres (243 ha) of public and 4,850 acres (1,963) of private land are planted with turfgrass. In 1990, the median family income was \$64,127, household income was \$48,936 (South Hennepin Regional Planning Agency, 1993).

This paper reports the results of two surveys of Edina residents, one at the beginning and a second at end of the educational campaign. The objectives of the surveys were to measure lawn care knowledge and practices; environmental attitudes toward lawn care; and the effectiveness of the educational program.

The surveys used in this study were developed based on other research, (Minnesota Center for Survey Research, 1995; Virginia Cooperative Extension Service, 1985; Morris and Traxler, 1996) and were distributed to a random sample of Edina households. All surveys were mailed, followed by a reminder postcard and then a second survey was sent to nonrespondents. The first survey was mailed in May 1996 before the majority of the educational campaign, to 800 households with 549 (68.6%) returned. In May 1997, after the educational campaign, a second survey was mailed to these same households, with 466 (58%) returned. The surveys were identical with the exception of two additional questions in the second survey, which asked about familiarity with the EGG program, and its various educational tools. Chi-squared distribution tests were used to compare the responses.

### Lawn care knowledge and practices

Examining the survey responses provides insight into which lawn care concepts Edina residents already seem to understand, and which concepts were still misunderstood even after the educational campaign (Table 1).

Responses to questions 3 and 6 concerning lawn clippings knowledge and practices show the majority of residents' knowledge and practices were in accordance with EGG's recommendations both before and after the educational campaign. Most respondents to question 3 recognize that leaving grass clippings on the lawn is beneficial. However, 20% were still bagging clippings after the educational campaign. Since most respondents indicated on question 6 that they do leave their clippings on the lawn, this is apparently one case in which the lawn care knowledge and practices were in synch.

For many of the questions in Table 1, the frequencies

of responses were similar before and after the educational campaign, but most responses in each case were not necessarily in accordance with EGG's teachings. During the educational campaign EGG emphasized fall as the best time to control perennial broadleaf weeds, but most respondents from either survey chose spring for this question. Only a slight increase, 2.4%, for a total of 8.8% indicated that fall was preferred for weed control in the second survey.

When and how much to fertilize the lawn was another commonly misunderstood concept. For question 1, most respondents indicated that fall was the best time to fertilize the lawn. This is the "correct" response, and seems encouraging, except that almost as many respondents indicated that spring was the best time to fertilize. When asked in question 7 when they actually apply fertilizer to the lawn, most respondents were still fertilizing in the spring, with fall a close second.

Most responses to question 4, how much fertilizer was needed for a medium maintenance lawn, was "don't know". University of Minnesota Extension Service publications recommend that medium maintenance lawns receive two fertilizer treatments, each with 1 lb of nitrogen/1000 ft<sup>2</sup> per year, and both applied in the fall (Mugaas, 1995). Since there was no significant increase in the number of respondents at the end of the program who knew how much fertilizer to use on the lawn, this is clearly another key area to emphasis in future educational efforts. Our findings concerning the lack of fertilizer know-how in Edina are supported by results from other fertilizer use studies in the Twin Cities which concluded that homeowners generally are not following recommendations of turfgrass specialists regarding fertilizer use (Creason and Runge, 1992; Schultz and Cooper, 1995).

Another practice not in synch with low input practices was mowing height, at the end of the program 34% were mowing at 1–2 inches, rather than the recommended 2–3 inches.

### Environmental attitudes

Environmental attitudes toward lawn care are presented in Table 2, showing very consistent responses to both surveys for all questions. Most respondents indicated some degree of weed tolerance, although 10% seemed to be the usual limit of acceptance. Most respondents viewed pesticides and, to a lesser extent, fertilizers, as potentially harmful to the environment and public health. This agrees with public opinion of pesticides in commercial agriculture (van Ravenswaay, 1995). Respondents favor posting signs in public parks whenever either of these inputs is used. Most also favor posting signs on private property whenever pesticides are applied, but fewer think that signs are necessary when fertilizer is used. Nearly all respondents agreed that a well-kept lawn increases property values, but most disagreed that the lawn was more important than the house's exterior appearance or the presence of shade trees.

Overall, five of the questions had significant differences in responses between the first and second surveys. Unfortunately, these questions were not necessarily linked or relevant to the EGG program. Two questions: "How often do you water your lawn?" and "I am satisfied with my lawns appearance" probably differed the second year because a summer drought occurred. Three other questions, "How often do you mow your lawn?", "How short do you usually

**Table 1. Comparison of before and after Edina Goes Green (EGG) educational campaign survey responses to questions on lawn care knowledge and practices.**

Survey question	Frequency (%)	
	Before	After
The single best time to fertilize a lawn is		
Spring	42.3	37.6
Summer	1.6	0.9
Fall	45.5	52.1
Don't know	7.1	4.9
The single best time to control broadleaf weeds is		
Spring	78.3	78.3
Summer	5.8	5.8
Fall	6.4	8.8
Don't know	8.2	5.8
Lawn clippings are		
Detrimental to the lawn	2.7	3.0
Of no value to the lawn	3.3	2.4
Equal to 1 fertilizer treatment	79.6	83.7
Don't know	13.8	9.7
The amount of fertilizer needed for a medium maintenance lawn is		
1 lb N/1000 ft <sup>2</sup> per yr	10.7	13.5
2 lb N/1000 ft <sup>2</sup> per yr	4.9	6.7
3 lb N/1000 ft <sup>2</sup> per yr	4.6	5.2
5 lb N/1000 ft <sup>2</sup> per yr	2.2	2.1
None	1.3	1.5
Don't know	75.8	68.9
Which of the following pests usually require control in Minnesota home lawns? (circle all that apply)		
Insects	18.0	21.9
Weeds	82.3	81.5
Diseases	30.4	32.8
Don't know	11.7	10.5
My lawn clippings are usually		
Left on the lawn	66.3	69.3
Put on compost pile	6.4	5.8
Bagged and removed	23.5	20.0
Don't know	0	0
My lawn is usually fertilized in the: (circle all that apply)		
Spring	79.2	81.3
Summer	35.0	34.5
Fall	61.9	68.2
Never	9.8	7.3
Don't know	1.5	0.6
What pesticides do you currently use on your lawn? (circle all that apply)		
Herbicide	64.8	60.3
Insecticide	5.6	5.2
Fungicide	6.0	6.4
Other	0.9	3.4
None	20.0	21.9
Don't know	13.1	14.2
How often do you usually water your lawn?		
Often	14.6	16.7
Regularly	17.3	31.8
Only when dry	60.8	47.0
Never	5.8	2.4
Don't know	0.5	0
How often do you usually mow your lawn?		
>1/week	12.9	8.2
1/week	68.3	70.2
<1/week	5.5	7.1
Only when long	11.7	13.1
Don't know	0.2	0
How short do you usually mow your lawn?		
≤1 inch	0	1.3
1 to 2 inches	31.1	34.1
2 to 3 inches	51.0	48.7
3 to 4 inches	12.8	10.5
>4 inches	0.2	0.6
Don't know	4.0	2.4

**Table 2. Before and after EGG educational campaign survey responses to statements related to the environmental impact of lawns. Average rankings are on a scale of 1 to 4, where 1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree.**

Survey question	Average rank	
	Before	After
Some weeds (10%) are okay in my lawn	2.19	2.14
More weeds (25%) are okay in my lawn	3.23	3.20
No weeds are my goal	2.49	2.55
As long as my lawn is green, it's okay	2.55	2.62
Pesticides are not harmful to the environment	3.32	3.31
Pesticides are not harmful to public health	3.32	3.35
Fertilizers are not harmful to the environment	2.97	3.01
Fertilizers are not harmful to public health	2.89	2.93
I am satisfied with my lawn's appearance	2.13	2.29
A well-kept lawn increases property values	1.65	1.66
A green, weed-free lawn is more important than my house being painted	3.21	3.22
A green, weed-free lawn is more important than shade trees around my house	3.17	3.20
Signs should be posted on public parks whenever fertilizer is applied	1.76	1.72
Signs should be posted on public parks whenever pesticides are applied	1.56	1.51
Homeowners should be required to post signs on their property whenever fertilizer is applied	2.30	2.23
Homeowners should be required to post signs on their property whenever pesticides are applied	2.04	1.98
Organic lawn care products are just as effective as inorganic products	2.12	2.16

mow your grass?", and "Pesticides are not harmful to the environment", differed in proportion of total responses, due to a lower number of the second surveys returned. In each of these five questions, most responses remained the same in both surveys.

## Conclusions

The overall similarity in responses to surveys distributed at the start and end of the educational campaign indicates that there was little change in the lawn care knowledge, practices, or environmental attitudes of Edina residents during the yearlong program. In some areas, such as management of grass clippings, this may be because positive practices were already adopted in the community. In other areas, such as knowing when and how much to fertilize the lawn, results indicate that further education is needed.

Edina residents, similar to other consumers, are concerned about the environmental impact of lawn pesticides and fertilizers. The majority see pesticides as harmful to the environment and support posting where pesticides and fertilizers have been used. Although they acknowledge the potential harm to the environment, they appear unsure of the proper amount and time for fertilizer application; and most will not tolerate 25% weeds in their lawn. Our findings suggest that repetitive, long-term education, using a variety of tools, and emphasizing key areas as determined by survey results, are necessary for impacting consumer changes in lawn care.

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