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Homeowners and Their Choice of Information Sources About Gardening

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Abstract

The Georgia Cooperative Extension Service increases its involvement in educating homeowners in fertilizer and pesticide use to reduce nonpoint source pollution from residential landscapes. A survey of homeowners revealed their current and preferred sources of gardening information. By dividing information sources according to the degree of their accessibility and cost, we determined the differences in the use of various sources according to homeowner gender, age, and education. Females, young homeowners, and those with a high level of education used and preferred more information sources. The Georgia Cooperative Extension Service will use a combination of sources to effectively disseminate best management practices to homeowners.

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The metropolitan area of Atlanta, which includes 50% of Georgia's population, has experienced rapid population growth (U.S. Census Bureau, 2001). This expanding population has contributed to increased pollution of Atlanta's urban watersheds. In the metropolitan Atlanta area alone, more than 1,000 miles of rivers and streams are imperiled by pollution (EPD, 1996-1997). The median concentration from urban watersheds of four major insecticides (chlorpyrifos, diazinon, carbaryl,

and malathion) exceeded the EPA guidelines for protection of aquatic life in Georgia (Frick et al., 1998). Homeowners, it appears, are a contributing source to the nonpoint source pollution urban watersheds.

The Georgia Environmental Protection Division (EPD) targets nonpoint source pollution as the principal water quality problem of the metropolitan Atlanta area. The EPD emphasizes the role of residents in addressing the water quality problem by explicitly stating that "citizens must individually and collectively be part of the solutions to these challenges" (EPD,1996-97). To address the issue of surface water pollution resulting from individual behavior, it is necessary to learn where the target audience or homeowners seek gardening information. Georgia homeowners were surveyed to determine what information sources they currently use and what sources they prefer to use to learn about gardening practices.

The Georgia Cooperative Extension Service (CES), present in all 159 counties in the state, will lead the educational effort to provide best management practices to homeowners, especially in urban Atlanta. Georgia urban gardeners will be educated about best management practices through their preferred sources and will have the knowledge to improve the water quality of surface waters. In addition, metro Atlanta 4-H students have already been instructed in environmental horticulture, including best management practices. This information was presented at the Research and Education Garden, an outreach facility associated with the University of Georgia. Adaptation of this curricula for public and private school education is under consideration for the future.

Polluting the Chattahoochee watershed raises important issues of food safety. The Chattahoochee River that runs through metropolitan Atlanta is the source of the area's drinking water. The river is also fished by people for food. Reducing pollutants from entering the river is imperative to the health of urban residents.

Learning About Homeowner Information Choices

This article describes the current and preferred sources of gardening information selected by surveyed homeowners residing in the upper Chattahoochee watershed area in metropolitan Atlanta. Specifically, we divide the information sources according to accessibility and cost of acquisition. Using the survey data, we discuss the relationship among gender, age, and education and the gardener's choice of information source. We compare various information sources used throughout the country to influence urban homeowners' gardening practices with information sources selected by respondents to our survey.

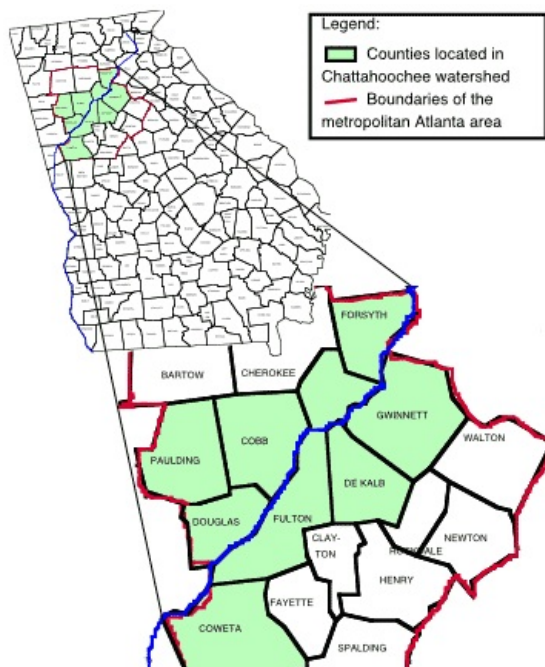
The dissemination of best management practices through widely used and preferred information sources will contribute to the use of gardening practices that reduce surface water pollution ensuing from homeowners' use of pesticides and fertilizers. The survey results will assist the Georgia Cooperative Extension Service in determining outreach mechanisms targeting various socio-demographic groups in urban watersheds.

The Survey

A team of scientists consisting of agricultural economists, entomologists, horticulturists, and environmental specialists developed a survey instrument. In the spring of 1999, the Survey Research Center (SRC) conducted a statewide telephone survey of adult Georgia residents. The RDD (random digit dialed) sample ensured that all adult Georgia residents had an equal chance of being selected. Four hundred interviews were completed with Georgia homeowners. For the purpose of this article, we use responses from 124 homeowners residing in eight metropolitan Atlanta area counties located within the Upper Chattahoochee River watershed (Figure 1).

Figure 1.

Map of Georgia showing the Atlanta metropolitan area counties located in the Chattahoochee River watershed.



Survey participants indicated currently used and preferred gardening information sources. A respondent was permitted to select as many choices as desired from the provided list. The questions included 12 choices of currently used information sources, while 10 selections were preferred sources.

A series of questions requested socio-economic and demographic information from each respondent. This information enabled the comparison of responses with respect to age, gender, and education level. The identification of the county of residence allowed us to know whether a homeowner resided within a specific watershed.

Homeowner Information-Seeking Behavior

To reach an audience, one must know it, and in particular, realize the obstacles preventing the use of a specific information source (Cobourn & Donaldson, 1997). A survey of urban gardeners (Kerrigan, 1993) showed that the most frequently used sources were convenient and easy. Knox (1997) provided further evidence supporting the importance of convenience in the adoption of landscape practices. Homeowners are motivated to adopt environmental landscape practices when practices are likely to reduce their workload, incur no extra cost, conform to neighborhood norms, and prevent environmental damage. Convenience, accessibility, and low cost drive consumers in their choice of goods and services, including information.

Given the preference for convenience and the relevance of price in the decision to use certain information sources, we divided all sources presented to respondents according to their accessibility and the cost of acquisition.

Current Gardening Information Sources

A homeowner's "current" gardening information sources were classified according to two criteria, convenience and price. The classification of a specific information source using two criteria was arbitrary but dictated by the observation of homeowner's behavior.

Friends, neighbors, television, and radio were classified as free and convenient information choices due to the fact that they are available in and around the home. Gardening magazines and newspapers were considered convenient because often these items are delivered to homes or are easily available in a local supermarket; however, they cost a fee. Therefore, they were classified as convenient and paid. The use of Master Gardeners, a library, County Extension Office (CEO), or a nursery requires knowledge of their existence. A user must dedicate time to travel or call for information. However, these sources are available at no cost and were determined to be low in convenience but free. Last, botanical gardens and the Internet were considered paid sources that are not easily accessible. Botanical gardens are located in predetermined areas and require travel time and an entrance fee. Searching the Internet for information requires hardware, software, and paid access to an Internet line. In addition, one must know how to search the Web for information.

Information sources currently used by homeowners in the Upper Chattahoochee River watershed located in urban Atlanta were fairly evenly distributed with the exception of paid, requiring search sources. Free and convenient information sources were used by 99 respondents. A nearly equal number of homeowners (101) employed the accessible but paid sources. The greatest number (106) used free but more difficult to access information sources. Last, as expected, the lowest number of respondents (33) used botanical gardens and the Internet as sources for gardening information. The use of both sources requires resources, time, and money. This supports Knox's (1997) findings that people were motivated to adopt environmental landscape practices when they were convenient and incurred no extra cost. It appears that free availability and convenience are

overriding factors in a homeowner's choice of gardening information source.

The pattern of information use by homeowners can be broadened by comparing each category of sources with homeowner characteristics such as gender, educational attainment, and age (Table 1). Both men (84%) and women (86%) selected information that was free and requiring search more often than any other category. Least chosen by both men (27%) and women (26%) were information sources that required payment and search. The only noticeable difference between genders was in the use of paid/convenient gardening information choices. Eighty-four percent of women used gardening magazines and newspapers for information, while 78% of men chose these means of learning about yard work.

The effect of educational attainment level on the selection of information sources was limited to two groups. Because only a few surveyed homeowners reported a high school diploma as the highest education level, they did not represent a meaningful group for comparison purposes and were omitted. Respondents with a postgraduate degree more frequently used all gardening sources than did college graduates. However, the only statistically significant difference between two educational attainment levels was detected by the chi-square test in the use of botanical gardens and the Internet as sources for information.

Table 1.
Current Use of Information Sources

Respondent Characteristics	Free and Convenient ^a		Free, Requiring Search ^b		Paid and Convenient ^c		Paid, Requiring Search ^d	
	Yes	No	Yes	No	Yes	No	Yes	No
	percent/number of respondents							
Gender								
Male	82/42	18/9	84/43	16/8	78/40	22/11	27/14	73/37
Female	78/57	22/16	86/63	14/10	84/61	16/12	26/19	74/54
Education								
College	79/65	21/17	87/71	13/11	80/66	20/16	21/17	79/65
Post graduate	84/21	16/4	92/23	8/2	88/22	12/3	44/11	56/14
Age								
Less than 30	91/10	9/1	100/11	0/0	64/4	36/4	36/4	64/7
30 - 39 years	91/30	9/3	91/30	9/3	88/29	12/4	30/10	70/23
40 - 49 years	81/25	19/6	90/28	10/3	84/26	16/5	29/9	71/22
50 - 59 years	87/14	13/2	97/15	6/1	87/14	13/2	44/7	56/9
60 or older	64/16	36/9	60/15	40/10	80/20	20/5	4/4	96/24
^a Friends or neighbors, television, radio. ^b Master Gardener, library, County Extension Office, nursery, garden centers at chain stores. ^c Gardening magazines, newspapers. ^d Botanical gardens, Internet.								

Homeowners who had completed postgraduate studies chose these sources (44%) twice as often as did homeowners who had attained a college degree (21%). It appears that increased education resulted in increased use of the Internet for obtaining gardening information, but overall these

were the least frequently used information sources. The most frequently used information source for college graduates (87%) and postgraduates (92%) were libraries, nurseries, garden centers, etc. (free, but requiring search).

In comparing the use of different information choices among various age groups, results suggest that younger homeowners used more gardening sources than older respondents did. This may be the result of younger people seeking gardening information as they buy and establish homes and gardens. Older respondents most likely have established gardens and therefore require less information about gardening.

Of all the information sources, the Internet and botanical gardens were chosen least frequently, with limited variation across age groups, except homeowners 60 years old or greater (Table 1). The chi-square test result shows this difference to be statistically valid. Among younger homeowners, a significant number used paid and requiring search gardening information sources. It is likely that younger people take advantage of obtaining information on the Web because it is a relatively new technology for which they received some formal training at school or on the job. In the case of homeowners 60 years or older, it is plausible that they do not own or operate a computer.

The fewest respondents used gardening information sources that were free but required search, such as Master Gardeners, a library, County Extension Offices, a nursery, and garden centers at chain stores. Forty-four percent of homeowners 50 - 59 years old used these sources, while respondents 60 years and older used this information only 4% of the time. Earlier reports suggested a particularly high use of Master Gardeners in school gardening programs aimed at children (De Marco, Relf, & McDaniel, 1998).

Free and convenient information sources were sought by mostly young people. However, admittedly, the requirement of home ownership limited the size of the youngest age group because young people typically have limited income to buy a home. Ninety-one percent of respondents in the two youngest groups used information from friends and neighbors, television, and radio. The age group least inclined to use these sources was respondents 60 years old and older (64%). Likely, some older homeowners have exhausted these information sources, which are typically geared to beginner gardeners.

Gardening information sources classified as paid and convenient (i.e., gardening magazines and newspapers) were less frequently used (64%) by respondents 30 years old and younger. Homeowners in the subsequent age groups showed little variation in the use of these information sources: 88% of 30 - 39 years old, 84% of 40-49 years old, 87% of 50-59 years old, and 80% of respondents over 60 years old, respectively, employed these information sources. Homeowners over 60 years old preferred to obtain most of their information through paid and convenient sources.

The use of information sources about gardening reported by Georgia homeowners shows several similarities with a survey of Iowa residents about their use of various information sources. Pounds (1985) found that when consumers were asked to name the source of information regarding five specific areas, they most often named professionals or businesses. However, friends, a free and convenient source, were often listed as the second source of information. Extension and magazines were also often named, followed by libraries. Two of these sources are free, but require dedicated time to obtain information, while magazines may require a payment for a single purchase or subscription.

Preferred Gardening Sources

Among preferred gardening information, the greatest number of respondents selected sources that are free but requiring search, including a toll-free line, more teaching in schools, local seminars, and information at the point of purchase. More than twice as many homeowners (69) preferred Internet and botanical gardens (paid and requiring search sources) as those currently using these sources did (31). Increased use and interest in the Internet may be the reason for this difference.

Table 2 shows the selection of preferred sources according to gender, education, and age. In all categories, women preferred more information sources than men did. Several factors may be responsible for this outcome: 61% of the survey respondents were women, and among Georgia Master Gardeners, 69% are female (Rons & Westerfield, 1995.) Previous studies reported limited relationship between gender and responsible environmental behavior (VanLiere & Dunlop, 1980; Hines et al., 1987).

In this study, little variation was seen among men and women in their preferences for information sources except for the free and convenient classification, television, and brochures by mail. Among women, 70% selected these sources, while only 45% of men made this choice. This difference in gender preferences was statistically confirmed by the chi-square test results. Television gardening programs are known to be a vehicle from which women enjoy learning about gardening. A survey of *Gardening in Georgia* viewers, a weekly Georgia Public Television show, determined that for shows on weekdays (Wednesday), 58% of the viewers were female and on weekends (Saturday) 73% of the audience were female (M. Killingsworth, personal communication, May 1, 2001).

Several studies support the relationship between higher education and possession of more

environmental knowledge (Ostman & Parker, 1987). Georgia homeowners with a postgraduate education preferred more gardening sources than college graduates did. This compares with postgraduates who also currently use more gardening sources than college graduates do. A significantly higher percentage of college graduates (61%) and postgraduates (68%) preferred more information available in paid but requiring search categories (the Internet and botanical gardens) than they currently use.

Table 2.
Preferred Sources of Gardening Information

Respondent Characteristics	Free and Convenient ^a		Free, Requiring Search ^b		Paid and Convenient ^c		Paid, Requiring Search ^d	
	Yes	No	Yes	No	Yes	No	Yes	No
	percent/number of respondents							
Gender								
Male	45/23	55/28	84/43	16/8	67/34	33/17	59/30	41/21
Female	70/51	30/22	90/66	10/7	75/55	25/18	60/44	40/29
Education								
College	59/48	41/34	90/74	10/8	71/58	29/24	61/50	39/32
Post graduate	64/16	36/9	88/22	12/3	80/20	20/5	68/17	32/8
Age								
Less than 30	64/7	36/4	100/11	0/0	92/9	18/2	55/6	45/5
30 - 39 years	73/24	27/9	100/33	0/0	88/29	12/4	76/25	24/8
40 - 49 years	58/18	42/13	90/28	10/3	71/22	29/9	71/22	29/9
50 - 59 years	50/18	50/8	81/13	19/3	62/10	38/6	56/9	44/7
60 or older	56/14	44/11	72/18	28/7	56/14	44/11	28/7	72/18
^a Free brochures by mail and television. ^b Point-of-purchase information, toll free, additional teaching in school, seminars. ^c Information on packaging, newspapers. ^d Botanical gardens, Internet.								

Studies have shown an inverse relationship between age and concern for the environment (Moon, Florkowski, Brückner, & Schonhof, 2002). Younger age groups exhibited greater knowledge and more likelihood of taking action (Honnold, 1984; Ostman & Parker, 1987). Results from this survey show that the interest in preferred gardening sources decreased with increasing age (Table 2). With the exception of preferences for free and convenient information sources, the results of the chi-square test confirmed the observed differences. The grouping with the highest interest in gardening sources were respondents 30 years to 39 years old. The current use of gardening sources showed slightly higher interest among 50 - 59 year old respondents. Homeowners 60 years or older showed the least interest in preferred information sources.

Without exception, all ages preferred the free but requiring search category, which includes a toll-free line, more teaching in school, local seminars, and point of purchase written information. Convenience and accessibility of information are important in homeowner's adoption of landscape management practices (Knox, 1997).

A survey of Northern Virginia homeowners (Aveni, 1994) revealed that homeowners consulted a wide variety of information sources to guide their lawn care efforts, but the most frequently used information source was lawn care product labels, followed by newspapers and magazines, the advice of nursery clerks, and friends and neighbors. According to Swann (1999), study after study indicates that product labels, store attendants, and lawn care companies are the primary source of information for homeowners who do their own lawn care maintenance. The highest number of Georgia survey respondents chose the category containing point of purchase and nurseries as their current and preferred source of gardening information, reinforcing earlier observations. Magazines and newspapers ranked second as current and preferred gardening information sources in Georgia.

Studies show that media campaigns typically using a mix of radio, television, direct mail, and signs to convey a general watershed message are effective (Schueler & Swann, 2000). However, others warned against over-reliance on mass dissemination of information, which was not very effective in altering specific nutrient application behavior of farmers to lower the nonpoint source pollution in watersheds (Shepard, 1999). Homeowners indicated they preferred the Internet as an information choice significantly more than they currently use it as an information source. Making all information available on the Internet is an easy, inexpensive way for a land-grant institution to provide best management practices to Georgia homeowners through existing Web sites.

Conclusions

- While homeowners indicated they wanted more information on gardening to protect the environment, the cost of access was the most important constraint in determining both current and preferred sources. Free or inexpensive and accessible sources of gardening information are essential for disseminating best management practices.
- Women preferred more gardening sources than men did in all categories. Therefore, an initial campaign to influence homeowners might involve developing material targeting female gardeners.
- Young, well-educated homeowners, who are most likely buying their first and second homes, preferred most information sources. Age should be taken into account when writing materials so they will appeal to young homeowners.
- Radio, television, newspapers, magazines, and the Internet are important homeowner choices when searching for gardening information.
- Homeowners prefer information at the point of purchase. Obtaining information directly where they purchase plants and gardening supplies is convenient.
- The Cooperative Extension Service is not currently used by many homeowners to obtain gardening information. To increase homeowners' awareness, Master Gardeners can be available at retail stores to answer questions and provide gardening information, including written Extension materials.
- The Cooperative Extension Service may also supply written information to gardening centers for distribution to homeowners as a means to promote landscape practices that protect surface water quality.

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