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# **Adoption of Environmental Landscape Practices—Characteristics of Extension Clientele**

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**Abstract:** Extension programs emphasizing environmental landscape practices have emerged across the nation. A questionnaire, mailed to former attendees of environmental landscape management workshops, gathered information on demographics and landscape behaviour related to six landscape practices. The demographic profile of the typical participant in the study reported here is described, and the relationships that emerged between demographic variables and adoption of landscape practices are discussed. Implications for Extension programming are suggested.

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## **Introduction**

The lawn and landscape practices of homeowners can collectively affect the environment. Fertilizers and pesticides pollute water resources (Chesapeake Bay Program, 2007; Howarth et al., 2001). Enormous amounts of potable drinking water are squandered on lawns and landscapes (South Florida Water Management District, 2007). Waste management systems are burdened by yard debris that homeowners could recycle as mulch or compost (Kidder, 2003).

In light of this, Extension educational programs focusing on environmentally friendly landscape practices have emerged nationwide. In 1992, Florida Extension initiated a statewide educational program now called the "Florida Yards and Neighborhoods Program" (FYN) that emphasizes how landscape practices affect both the health of the yard and the environment

The goal of the program is behavior change, centered on nine major practices:

- Right Plant, Right Place
  
- Water Efficiently
  
- Fertilize Appropriately
  
- Mulch

- Attract Wildlife
- Control Yard Pests Responsibly
- Recycle
- Reduce Storm Water Runoff
- Protect the Waterfront

The findings presented here are part of a larger study that attempted to identify ways to focus the resources and efforts of Extension to increase adoption of environmentally friendly landscape practices (Brown, 2000). The section of the study presented here examined three questions:

- What is the demographic profile of Extension clients seeking information on environmental landscape practices?
- What landscape practices are this clientele using?
- What demographic factors are associated with the adoption of landscape practices?

The original study also investigated the perceived positive and negative outcomes (situational factors) resulting from the adoption of landscape practices.

## Methods and Procedures

A self-administered questionnaire was developed to gather demographic and landscape behavior data. Content and face validity were established by three panels of experts that included University of Florida horticulture faculty and research and measurement specialists. Four groups pre-tested the questionnaire, and an estimation of the reliability of the final version was established using the test-retest method (Ary, Jacobs, & Razavieh, 1979). The population consisted of 2,050 former participants in Extension FYN educational programs. The sample size was calculated using Yamane's (1964) formula ( $n = N/1+N(e)^2$ ), where  $n$  is the sample size,  $N$  is the population size and  $e$  is the level of precision. Assuming a 95% confidence level and a 50% non-response level, a sample size of 845 was determined and rounded to 900.

A questionnaire and cover letter were mailed, followed-up by a reminder postcard 1 week later. Three weeks after the first mailing, a second questionnaire was mailed to non-respondents, and 7 weeks after the first mailing, a third questionnaire was sent to those who had not yet responded. Part I of the questionnaire focused on demographic information; Part II focused on six lawn and landscape practices, listed below.

### Demographic Variables Studied

- Age

- Gender
- Education
- Years of residency in Florida
- Residential area (urban, suburban, rural)
- Type of community (deed-restricted, gated or not)
- Size of yard
- Who maintained the lawn and landscape
- Who made decisions about the lawn and landscape
- Hours spent per month in the yard
- Money spent per year on the yard
- Irrigation source
- Property value

### **Landscape Practices Studied**

- Handling of grass clippings
- Mowing height of lawn
- Pesticide use on the lawn
- Pesticide use on landscape plants
- Fertilizer use

- Water schedule

For each practice, respondents were asked to identify their approach to it. An example of a practice (Practice 3—Use of Pesticides on the Lawn) and approaches to that practice are displayed in Figure 1.

**Figure 1.**

Example from the Questionnaire of One of the Six Landscape Practices Examined

**Landscape Practice 3 - Use of Pesticides on the Lawn**

Which approach to this practice is used in your yard? Check (✓) only one response.

The entire lawn is routinely treated with pesticides.

Only pest-infested areas of the lawn are spot-treated with pesticides.

Pesticides are not used on the lawn.

Does not apply. I have no lawn (Please go to Practice #4)

Don't know (Please go to Practice #4)

Frequencies were calculated for all demographic variables and for each of the six landscape practices. Bivariate relationships were explored between each practice and each demographic variable. The same relationship was explored between the adoption of all six practices (PRMean). Kendall's tau correlation coefficients were determined for all ordinal data; eta correlation coefficients were calculated on all categorical data. Correlations that met or exceeded a threshold value of .20 (between a small and medium effect size) were considered to be meaningful. All data analyses were performed using SPSS version 9.0.

## Findings

The response rate to the questionnaire was 76% (686 respondents). The typical participant in the study was college-educated (53%), female (63%), over the age of 56 (54%), and a resident of Florida for more than 10 years (72%). They resided in urban/suburban communities (78%) that were not deed-restricted (44%) or gated (79%). The typical size of their yard was between 10,000 and 14,000 square feet (35%). They worked 8 to 15 hours a month on their yard (32%) and spent about \$700 per year on it (33%). They, or someone in their household, maintained the lawn (79%), and landscape plants (85%), and made the decisions about the care of the lawn (79%) and landscape (93%). They used city/county-supplied water as their irrigation source (49%).

Respondents were, for the most part, adopters of environmentally friendly approaches to landscape practices. Grass clippings were recycled or reused by 97% ; 94% mowed correctly (i.e., at the correct height); 53% spot-treated pesticides as needed on the lawn, 20% routinely treated it, and 27% did not use pesticides on the lawn. In regards to pesticide use on landscape plants, 66% of the respondents spot treated as needed, 4% routinely applied pesticides, and 29% indicated they did not apply pesticides at all. Slow-release fertilizer use was reported by 83% of the respondents, 7% used quick-release fertilizers, and 11% said they applied no fertilizers at all. Seventy-nine percent answered that they irrigated as needed (i.e., according to rainfall and temperature), 8% watered according to a routine schedule, and 13% watered only to establish new plants.

As indicated in Table 1, correlations between landscape practices and demographic variables (which met or exceeded a threshold value of .20) were found for only Practice 3-Pesticide use on the Lawn. Group means indicate a positive

relationship between the most environmentally friendly approach and years lived in Florida ( $r = .21$ ), living in a community that was not deed restricted ( $r = .31$ ), doing the maintenance themselves ( $r = .25$ ) and making decisions about the maintenance ( $r = .20$ ). None of the other five practices were correlated (at that threshold) with any of the demographic variables. However, PRMean, the mean scores on all six practices, was correlated with several demographic variables. A statistically significant relationship was found between the PRMean of those who use environmentally friendly approaches and those who do not live in deed restricted communities ( $r = .21$ ), those who maintain and make decisions themselves (both  $r = .20$ ), money spent per year ( $r = .21$ ) and municipally supplied irrigation water ( $r = .21$ ).

**Table 1.**  
Correlations between Demographic Variables and Landscape Practices

Demographic Variable	PR1 Grass Clippings <i>r</i>	PR2 Mowing Height <i>r</i>	PR3 Pesticide Use/Lawn <i>r</i>	PR4 Pesticide Use/Landscape <i>r</i>	PR5 Fertilizer <i>r</i>	PR6 Water <i>r</i>	PR Mean <i>r</i>
Master Gardener or General Population <sup>a</sup>	.00	-.13	-.15*	-.01	.04	-.02	-.05*
Years lived in Florida <sup>a</sup>	-.02	-.04	.21*	.12*	.05	.10*	.13*
Age <sup>a</sup>	-.02	.06	-.15*	-.14*	-.11*	-.10*	-.15*
Gender <sup>a</sup>	.04	.00	-.16*	-.11*	.04	.01	.09*
Schooling <sup>a</sup>	.04	.05	.01	.02	.02	.04	.02
Area <sup>b</sup>	.06	.04	.19*	.01	.01	.12*	.14*
Deed Restricted <sup>b</sup>	.08	.01	.31*	.16*	.07	.10	.21*
Gated <sup>b</sup>	.01	.01	.13*	.16*	.06	.10*	.15*
Size of Yard <sup>a</sup>	-.01	.02	.10*	-.02	-.02	.09*	.06
Who maintains your lawn? <sup>b</sup>	.04	.06	.25*		.11*	.17*	.20*
Who makes decisions re: lawn? <sup>b</sup>	.04	.06	.20*		.09	.18*	.20*
Who makes decisions re: landscape? <sup>b</sup>				.17*	.01	.12*	.13*
Time Spent/Month <sup>a</sup>	.06	.01	.08*	.01	-.10*	-.03	-.01

Money Spent/Year <sup>a</sup>	-.02	-.03	-.18*	-.18*	-.17*	-.19*	-.21*
Irrigation source <sup>b</sup>	.05	.11	.15*	.16*	.12	.16*	.21*
Property Value <sup>a</sup>	.01	.03	-.08*	-.13*	-.05	-.06	-.04*
<sup>a</sup> denotes Kendall's tau correlation coefficient; <sup>b</sup> denotes eta correlation coefficient. Empty cells denote that data are not applicable. * $p < .05$ .							

In summary, notable demographic characteristics associated with respondents and their landscape behaviors were:

**Education:** In the study reported here, nearly 54% of the respondents had achieved a Bachelors Degree. Of that group, almost 9% had completed some graduate school and 22% had a graduate degree. A technical or community college degree or some college study had been completed by 35% of the respondents. Fewer than 11% achieved 12th grade or its equivalent, and 0.1% reported achieving less than 12th grade.

**Deed Restrictions:** Respondents who adopted the most environmentally friendly approach to all six practices (PRMean) did not live in deed-restricted or gated communities. Sixty-six percent of the respondents who lived in deed-restricted communities had a maintenance service, whereas 37% who did not live in a deed-restricted community used one.

**Gender:** Sixty-two percent of the respondents were female. These female clients as a whole were adopters of environmental landscape practices and did not differ substantially from their male counterparts in that regard. Exceptional behavior was evident only where pesticides were concerned; females were more likely than males to spot-treat pesticides as needed (versus routine use) or to not use pesticides at all.

**Length of Residence:** Respondents were largely long-time residents of Florida. Almost 72% reported they had resided in the state for more than 10 years. Forty-eight percent of the respondents had lived in the state for more than 21 years; only 0.6%, represented had lived in the state fewer than 2 years.

**Who Maintains? Who Decides?:** Those respondents who adopted the most environmentally friendly approaches also did the maintenance and decision making themselves (i.e., the lawn and landscape maintenance and decision making about the maintenance was not done by a commercial maintenance company or homeowners' association).

**Money Spent per Year:** Less money spent per year was a strong demographic correlate with the adoption of the most environmentally friendly approaches (PRMean).

## Discussion

The findings from the study reported here have possible implications for Extension faculty who work in the area of horticulture. Most of the respondents in the study were adopters of the six environmentally friendly practices investigated. These findings support former research of Florida Extension programs addressing environmental landscape practices (Knox et al., 1995; Israel, Easton, & Knox, 1997; Salazar, 1997) indicating that clientele exposure to Extension educational information usually leads to adoption of environmental landscape practices.

Some recommendations for practice are the following.

- Capture personal testimonials by individuals who feel that environmentally friendly practices save money and do not lead to a loss of aesthetic quality or health of the yard. These could be powerful educational tools, especially when combined with images of their attractive lawns and landscapes.
- In the study reported here, environmental landscape programs appealed to mature, female clientele, so mass media that cater to this receptive audience should be considered. Evening and weekend workshops and the Internet offer educational venues for important, but often un-reached (at least in the study reported here), audiences such as young homeowners and males in the workforce.
- Surprisingly, the sample in the study was largely long-time residents of Florida. Residing in an area for an extended period appears to create a certain comfort level with the adoption of environmental landscape practices. Targeting new residents could perhaps accelerate this adaptation process.
- The Extension clientele in the study reported here were well educated. Extension educators should consider education levels when assessing readability levels and sophistication of Extension information. Recognize that a well-educated audience may have an affinity to university-based programs and emphasize the link between Extension and the land-grant university.
- A link between money (less money spent per year) and adoption of environmental landscape practices emerged in the study. The potential for immediate and long-term savings, where they exist, should be emphasized to clientele.

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