

Perceptions of Organic Practices among Turfgrass Professionals in Louisiana

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Abstract

Landscape contractors are increasingly interested in organic products for Louisiana's residential and commercial turfgrass areas. However, the use, motivations, and barriers to adopting organic practices in the commercial turfgrass and landscape industry sector are not well documented. This study examined the perceptions of organic landscaping practices among members of the Louisiana Turfgrass Association. The study's participants were primarily men aged 31 to 60, with six to 25 years of landscaping experience. Most turfgrass professionals were applying organic fertilizers and believed future organic product use would increase due to consumer demands and potential governmental regulation. Turfgrass professionals responded that they understood the USDA definition of *organic* but were less familiar with Organic Materials Review Institute (OMRI) labeling. Greater efficacy and access to organic products coupled with increased extension and educational efforts may increase Louisiana turfgrass professionals' choices to adopt organic practices; however, more research is needed to better understand the adoption processes at play.

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Introduction and Problem Statement

Turfgrass is a major component of residential and commercial landscapes, and its use has expanded in the United States due to the shift from rural to urban and suburban residency (Cromartie, 2017; Johnson et al., 2013; Robbins & Birkenholtz, 2003). Highly managed urban and suburban landscapes provide recreational spaces, enhance property aesthetics and value, and help improve the quality of life and environment in the areas where they are found (Jim & Chen, 2010). To maintain lush ground cover, professionals who manage turfgrass have traditionally relied on conventional fertilizers and pesticides (Carey et al., 2012). However, concern for human exposure to fertilizers and pesticides and recognition of well-documented environmental impacts associated with their use has contributed to a public perception that organic practices are safer alternatives for turfgrass management (Aziz et al., 2015; Motavalli et al., 2008).

Adoption of organic practices has occurred more readily in public spaces versus residential and commercial landscapes in the United States due to legislation that limits the use of pesticides and fertilizers (Marhsall et al., 2015). For example, New York and Connecticut passed legislation restricting pesticide application on school grounds, with New York extending those restrictions to include school athletic fields (Bartholomew et al., 2015; Haight, 2004). Similarly, Florida has enacted legislation to protect against water impairment focused on residential and commercial fertilizer applications (Hartman et al., 2008; Hochmuth et al., 2012).

Landscape professionals are increasingly interested in organic products for Louisiana's residential and commercial turfgrass areas. However, the use, motivations, and barriers to adopting organic practices in the commercial turfgrass and landscape industries are not well documented. Therefore, a need exists to better understand landscape and turfgrass professionals' perceptions of organic products and practices.

Theoretical and Conceptual Framework

Ajzen's (1991) theory of planned behavior (TPB) was utilized as the theoretical framework for this study. The TPB proposes that three conceptually independent determinants influence an individual's intention to engage in a behavior: attitudes, subjective norms, and perceived behavioral controls (Ajzen, 1991). Through the lens of the TPB, an individual's attitudes toward a behavior refer to their positive or negative evaluations of the behavior in question, which, in the context of this study, took the form of the perceptions of turfgrass professionals toward organic practices in their industry (Ajzen, 1991, 2005). Additionally, subjective norms in the TPB are perceived social pressures towards a particular behavior (Ajzen, 1991). For example, Suh et al. (2016) found that, for do-it-yourself consumers, purchases of organic landscaping fertilizers positively correlated with their perceptions of the importance of landscaping within their communities or neighborhoods. For turfgrass professionals, perceptions of social pressure may come from customers, professional organizations, or governmental agencies (Millington & Wilson, 2013). The final determinant of behavioral intention postulated by the TPB is perceived

behavioral control, which refers to the level of difficulty in performing the behavior perceived by the individual (Ajzen, 1991). In terms of implementing organic turfgrass and landscaping practices, anticipated obstacles may include increased costs, perceptions of low efficacy, or a lack of knowledge related to organic products.

Although the impact of factors like environmental beliefs, perceptions of neighborhood landscaping, and expected value held by homeowners on their purchase frequency of organic lawn care products have been investigated, it is unclear if these characteristics translate to behavioral intentions in the commercial setting (Suh et al., 2016). Ajzen (1991) posited that, in general, favorable attitudes and perceived subjective norms related to the behavior, coupled with a high level of perceived behavioral control, led to greater intention to perform the behavior being considered. In the context of this study, developing a better understanding of the attitudes, subjective norms, and perceived behavioral controls held by turfgrass industry professionals who have chosen to adopt organic practices, as well as those who have chosen not to adopt, was critical to exploring the behavioral-intention processes associated with the TPB (Ajzen, 2005).

Purpose

This descriptive study aimed to examine the perceptions of organic practices held by turfgrass industry professionals in Louisiana. The following objectives guided the study:

1. Describe the prevalence of organic practices among turfgrass professionals in Louisiana.
2. Examine the demographic characteristics of adopters and non-adopters of organic landscaping practices among turfgrass professionals in Louisiana.
3. Assess the perceptions of organic practices held by adopters and non-adopters of organic landscaping practices among turfgrass professionals in Louisiana.
4. Identify the knowledge of organic practices held by adopters and non-adopters of organic landscaping practices among turfgrass professionals in Louisiana.

Methods

The target population of this study was the active membership of the Louisiana Turfgrass Association ($N = 310$) at the time the study was conducted. The Louisiana Turfgrass Association (LTA) is a non-profit professional organization for adults working in the turfgrass and landscaping industries throughout the state, which frequently provides professional development and industry networking opportunities for its members (Louisiana Turfgrass Association, 2023). Members of the LTA traditionally include golf course superintendents, sports field managers, sod producers, landscape contractors, and other professionals related to the turfgrass and landscaping industries (Louisiana Turfgrass Association, 2023). We collaborated with LTA leaders to distribute an online survey to their members via Qualtrics to assess their perceptions of organic landscape and turfgrass practices. Because of the relatively small size of the organization and the availability of contact information for all active members, a census was chosen as the most appropriate sampling method (Dillman et al., 2014).

An online survey developed by the researchers, in collaboration with experts in turfgrass production and agricultural and extension education, served as the data collection instrument for this study. The instrument was designed to collect data relevant to participants' perceptions of organic practices and demographic information. Content and face validity for the instrument was established by a panel of experts consisting of turfgrass production faculty and social science researchers with experience in survey design. Additionally, Cronbach's alpha was calculated to analyze the post-hoc reliability of the scales measuring knowledge, which yielded alpha values above an acceptable level ($\alpha = .74$). Knowledge was measured by two items, one for participants' knowledge of the USDA definition of *Organic*, and another for their knowledge of OMRI (Eisinga et al., 2013).

Data collection began in December 2021 and was conducted using a mixed-mode delivery approach guided by Dillman et al.'s (2014) method. First, an email invitation containing a description of the study and a link to the survey was distributed to all members on the Louisiana Turfgrass Association's membership roster. Two follow-up reminder emails were distributed to nonrespondents in 10-day increments following the initial invite. An alternative mode of data collection was also offered during the 2022 LTA Annual Conference. Conference attendees were provided a QR code for the online survey and asked to participate in the study if they had not done so via email invitation. The mixed-mode delivery of the survey instrument yielded usable responses from 91 of the 310 members for a response rate of 29.4%. IBM SPSS v.27 was utilized to generate descriptive statistics for this study.

To test for nonresponse bias, early respondents (those responding prior to the second reminder, $n = 51$) were compared to late respondents ($n = 40$) on the variable 'perception of the term *organic*', using a two-tailed independent t-test at the .15 alpha level; the power of the test was .82 for a medium effect (Cohen's $d = 0.50$ [Cohen, 1988]). Although the selected level of significance was higher than the traditional social science threshold of .05, the nature of this research led us to the decision that the risk of a Type II error, where researchers inappropriately generalize results to a larger population, was of greater consequence than a Type I error, and .15 was selected as a less conservative level of significance to achieve reasonable power for the t-test (Cohen, 1988; Johnson & Shoulders, 2017; Mitchell & Jolly, 2010). There was no significant difference between early ($M = 3.08$, $SD = 0.82$) and late ($M = 3.24$, $SD = 0.86$) respondents, $t(89) = -0.83$; $p = .41$. Therefore, the findings were generalized to the population (Johnson & Shoulders, 2017; Lindner et al., 2001; Miller & Smith, 1983).

Findings

Objective One

Examination of the current organic practices of turfgrass professionals in Louisiana revealed that the vast majority of respondents ($n = 64$; 70.3%) reported using organic products within the preceding 12 months as part of their business. This item was used as a filter variable; respondents who indicated they used organic products were asked which products they

applied, while those who indicated they had not used organic products were asked about their perceived barriers to adoption (see Table 1).

Table 1

Prevalence of Organic Product Use Among LTA Members

Item	<i>f</i>	%
Do you currently apply organic products? (<i>n</i> = 91)		
Yes	64	70.3
No	27	29.7
Organic products applied (<i>n</i> = 64) ^a		
Fertilizer	58	90.6
Herbicide	12	18.8
Insecticide	28	43.8
Fungicide	14	21.9
Other	3	4.7
Primary reason for not applying organic products (<i>n</i> = 26) ^b		
Cost prohibitive	5	19.2
Less effective	10	38.5
No knowledge of available products	7	26.9
No products readily available in the local area	4	15.4

^a Percentages total greater than 100% due to the multiple selection nature of this item.

^b Response missing from one participant

Of the participants who had adopted organic practices, over 90% reported using organic fertilizers, and over 40% reported using organic insecticides. Alternatively, of the respondents who indicated that they had not applied organic products, doubt associated with product efficacy was the most frequently perceived barrier (*n* = 10; 38.5%), followed closely by a lack of knowledge of available organic products (*n* = 7; 26.9%).

Objective Two

The instrument's demographic portion revealed most respondents in both the adopter and non-adopter categories identified as male (see Table 2). Additionally, nearly three-quarters of respondents in both categories were between 31 and 60 years of age. The years of experience in the turfgrass and landscaping industries held by adopters of organic practices closely resembled a normal distribution, with the apex of respondents within the range of 16 to 25 years. Non-adopters were similar in years of industry experience, however, the largest percentage (*f* = 7; 25.9%) fell within the range of six to 15 years. Differences in position within their respective companies approached an even split between adopting owners (*f* = 33; 52.4%) and employees (*f* = 30; 47.6%), with percentages of non-adopters mirroring the percentage distribution among business owners (*f* = 14; 51.9%) and employees (*f* = 13; 48.1%). The adopter and non-adopter categories diverged in average annual sales of the companies they

represented. Although companies with annual sales totaling less than \$250,000 comprised the largest percentage of respondents for both groups, nearly half of respondents who adopted organic practices ($f = 31$; 48.5%) represented companies with annual sales of \$500,000 or greater. Conversely, over half of non-adopters ($f = 17$; 62.9%) represented companies with sales totaling less than \$500,000.

Table 2*Demographic Characteristics of Adopters and Non-adopters of Organic Landscaping Practices*

Item	Adopters ($n = 64$)		Non-adopters ($n = 27$)	
	f	%	f	%
Gender				
Female	6	9.4	2	7.4
Male	57	89.1	25	92.6
Prefer not to answer	1	1.6	0	0.0
Age				
18 – 30 years old	6	9.4	1	3.7
31 – 45 years old	19	29.6	9	33.3
46 – 60 years old	25	39.1	11	40.7
More than 60 years old	14	21.9	6	22.2
Industry Experience				
Five years or fewer	8	12.5	5	18.5
6 – 15 years	14	21.9	7	25.9
16 – 25 years	19	29.6	6	22.2
26 – 35 years	14	21.9	5	18.5
More than 35 years	9	14.1	4	14.8
Position within company ^a				
Owner	33	52.4	14	51.9
Employee	30	47.6	13	48.1
Company's average annual sales ^b				
Less than \$250,000	20	31.1	12	44.4
\$250,000 - \$499,999	8	12.5	5	18.5
\$500,000 - \$999,999	10	15.6	3	11.1
\$1,000,000 – \$2,999,999	6	9.4	1	3.7
\$3,000,000 - \$4,999,999	5	7.9	3	11.1
\$5,000,000 - \$9,999,999	0	0.0	1	3.7
\$10,000,000 or greater	10	15.6	0	0.0

^a Response missing from one participant

^b Responses missing from seven participants

Objectives Three and Four

The findings related to objectives three and four provided insight into respondents' perceptions and knowledge of organic terminology in the turfgrass industry. More than three-quarters of organic practice adopters ($f = 55$; 85.9%) reported *slightly positive* or *positive* feelings toward the term *organic* in relation to turfgrass products (see Table 3). Despite their choice not to adopt organic practices, over half of the non-adopters also reported *slightly positive* or *positive* feelings toward the term *organic*.

Table 3

Perceptions and Knowledge of Organic Terminology among LTA Members

Item	n	%			
		NF	SNF	SPF	PF
Perception of the term <i>Organic</i>					
Adopters	64	0.0	14.1	40.6	45.3
Non-adopters	27	11.1	29.6	33.3	25.9
	n	NK	SK	MK	VK
Knowledge of USDA definition of <i>Organic</i>					
Adopters	64	1.6	28.1	43.8	26.6
Non-adopters	27	7.4	48.1	29.6	14.8
Knowledge of OMRI					
Adopters	64	37.5	20.3	29.7	12.5
Non-adopters	27	70.4	14.8	11.1	3.7

Note. Perception Scale: 1 = Negative Feelings (NF), 2 = Slightly Negative Feelings (SNF), 3 = Slightly Positive Feelings (SPF), 4 = Positive Feelings (PF);

Knowledge Scale: 1 = No Knowledge (NK), 2 = Somewhat Knowledgeable (SK), 3 = Moderately Knowledgeable (MK), 4 = Very Knowledgeable (VK)

The majority of adopters claimed to be at least moderately knowledgeable about the USDA definition of *organic*, with 26.6% asserting they were very knowledgeable. Alternatively, over half of the non-adopters claimed they were somewhat knowledgeable or had no knowledge related to *organic* as defined by the USDA. Beyond their knowledge of definitions, the largest percentages of both respondent categories claimed no knowledge of the Organic Materials Review Institute (OMRI), the regulating body for products used in USDA-certified organic production programs (Organic Materials Review [OMRI], 2022). Although nearly two-thirds of adopters stated at least some knowledge of OMRI, over 70% of non-adopters held no knowledge of the organization.

Regarding their belief toward the increased prevalence of organic product use in the turfgrass and landscape industries, over 85% of adopters ($f = 55$; 87.3%) and 70% of non-adopters ($f = 19$; 70.4%) indicated that they believed these practices would increase in use in the future (see Table 4). This item was used as a filter variable, and a follow-up question was delivered to the

74 respondents who affirmed their belief in the increased future use of organic turfgrass and landscaping products.

Table 4

LTA Members' Beliefs Regarding Future Organic Product Use

Item	Adopters (<i>n</i> = 63)		Non-adopters (<i>n</i> = 27)	
	<i>f</i>	%	<i>f</i>	%
Do you believe the use of organic products will increase in the turfgrass/landscape industries in the future? ^a				
Yes	55	87.3	19	70.4
No	8	12.7	8	29.6
Primary reason for increased use (<i>n</i> = 65) ^b				
Increased customer requests	19	40.4	6	33.3
Increased governmental regulation	8	17.0	8	44.4
Increase availability	10	21.3	1	5.6
Marketing opportunities for landscaping companies	6	12.8	2	11.1
Temporary popularity	4	8.5	1	5.6

^a Response missing from one participant

^b Responses missing from nine participants

The follow-up question sought to identify these respondents' primary reason driving their perception. More than one-third of the adopters believed that increased customer requests (*f* = 19; 40.4%) would create increased use of organic products, while almost half of the non-adopters (*f* = 8; 44.4%) suspected increased governmental regulation as the most frequent justifications for that belief.

Similar to their perceptions of increased use, over half of respondents in both categories believed that organic products were safer than non-organic products (see Table 5). To better understand this perception, this dichotomous item was used as a filter variable, and a follow-up question was administered to the 56 respondents who stated that they believed organic products were safer than non-organic alternatives.

Table 5

LTA Members' Beliefs about Organic Product Safety

Item	Adopters (<i>n</i> = 62)		Non-adopters (<i>n</i> = 26)	
	<i>f</i>	%	<i>f</i>	%
Do you believe organic products in the landscaping industry are safer than non-organic products? ^a				
Yes	39	62.9	17	65.4
Item	Adopters (<i>n</i> = 62)		Non-adopters (<i>n</i> = 26)	
No	<i>f</i>	%	<i>f</i>	%
Primary reason for believing organic products are safer (<i>n</i> = 51) ^b				
Applicator safety	11	30.6	2	13.3
Customer safety	7	19.4	4	26.7
Environmental safety	18	50.0	9	60.0

^a Responses missing from three participants

^b Responses missing from five participants

The most frequently cited reason for believing that organic turfgrass products were safer than non-organic was increased environmental safety, a perception held by at least half of responding adopters (*f* = 18; 50.0%) and non-adopters (*f* = 9; 60.0%).

Perceptions of increased use and safety were largely in line with an interest in gaining knowledge about organic products, expressed by over three-quarters of organic adopters (*f* = 48; 76.2%) and non-adopters (*f* = 21; 77.8%) (see Table 6).

Table 6

LTA Members' Interest in Future Learning About Organic Products

Item	Adopters (<i>n</i> = 63)		Non-adopters (<i>n</i> = 27)	
	<i>f</i>	%	<i>f</i>	%
Are you interested in learning more about organic landscape products? ^a				
Yes	48	76.2	21	77.8
No	15	23.8	6	22.2
Preferred format for learning about organic landscape products (<i>n</i> = 64) ^b				
In-person training	24	55.8	7	33.3
Web-based training videos	9	20.9	9	42.9
Web-based informational pages	10	23.3	5	23.8

^a Response missing from one participant

^b Responses missing from five participants

However, the most frequently preferred learning format to support this interest varied across the two groups. A majority of adopters who were interested in furthering their learning about organic products preferred in-person training seminars ($f = 24$; 55.8%). The most frequent preference among interested non-adopters, however, was web-based training videos ($f = 9$; 42.9%), followed by one-third who preferred in-person training, similar to their adopting counterparts.

Conclusions, Discussion, and Recommendations

This study aimed to describe the characteristics of LTA members related to their perceptions of organic management practices. The commercial application of organic products, particularly fertilizers, was relatively widespread among LTA members. The majority application of organic fertilizers aligns with their availability, as natural fertilizers have a long history in production agriculture, bolstered by increased availability in urban environments (Heckman, 2006). This extensive adoption in Louisiana has occurred despite a lack of regulation observed in several other states. Nonadopters' reasoning for their choice to avoid organic products included a lack of efficacy beliefs and knowledge about organic products.

The LTA members in the study were predominantly male and between 31 and 60 years old. The high participation of males in the turfgrass industry found in this study was anticipated and in alignment with Carroll et al. (2021) work. Although most LTA members represented companies with average sales totaling less than \$1 million, company size based on annual sales was noticeably smaller among those who had not adopted organic practices. The narrow comparative number of respondents representing ownership and employees coupled with the distribution of average annual sales indicates a mixture of respondents who manage family-

owned businesses and larger regional companies or state agencies with higher non-ownership employee participation. The membership combination of business owners and employees holds the potential for further analysis of views of organic product usage in the turfgrass industry.

The greatest consensus among adopters and non-adopters was a belief that the use of organic products in the landscape and turfgrass industries will increase in the future. Despite a lack of regulation related to conventional fertilizer and pesticide use in Louisiana, non-adopters perceived governmental regulation as the driving force behind increased future use. This perception was juxtaposed against that of the adopters, who widely believed increased customer requests and product availability would increase demand for organic practices, implying that differences in communication networks or information sources, specifically *key players*, may exist between the two groups (Worley et al., 2021).

Despite widespread adoption and moderate knowledge of the USDA definition of *organic*, an understanding of the role of OMRI in selecting organic products was low. Therefore, the question is raised, is the choice to apply organic products due to increased knowledge, or does knowledge develop following the decision to use the products? Ajzen (2005) proposed that personal, social, and informational background factors can affect the determinants of behavioral intention. Informational factors, like knowledge and experience, support the assertion that increased knowledge about organic practices is influential in the intent to adopt them (Ajzen, 2005). Similarly, a *subjective norm* can be interpreted from increased customer requests as the primary reason respondents believed that organic product usage would increase in the landscaping industry (Ajzen, 1991, 2005). Increased customer requests and perceptions of improved safety may also contribute to the attitudes toward adopting organic practices and perceived behavioral controls associated with the TPB. (Ajzen, 1991).

More research is warranted on landscape and turfgrass professionals' behavioral intention processes regarding organic practices. A primary limitation of this study was a relatively low response rate. A higher number of participants in future studies would allow for enough statistical power to systematically evaluate the relationships among the characteristics of the participants (Johnson & Shoulders, 2019). Additionally, extension specialists in Louisiana should seek to capitalize on the expressed interest in learning more about organic landscape products, the widely held belief in expanded future use, and a lack of knowledge as a barrier to adoption by providing training about organic products in both in-person and web-based formats.

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