Teaching Methods

Assessing the Preparedness of Postsecondary Graduates Entering the Landscape Contracting Industry

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SUMMARY. Industry input can assist postsecondary institutions as they strive to provide relevant knowledge and skill-building exercises for the professional development of their students. Using a mail questionnaire, we invited landscape contracting decision-makers to comment on the efficacy of landscape contracting curricula at colleges and universities. The population of Associated Landscape Contractors of America 2003 online member list (2049 companies) was organized into four strata based on company size. A stratified random sample of 400 companies was selected. We received 137 completed questionnaires (35% response rate). Most of the population was either satisfied or extremely satisfied (52%) with college graduates recently hired; only 8.1% of the population was dissatisfied or extremely dissatisfied. When respondents were asked to consider four knowledge categories, a majority (53%) said recent graduates were deficient in business knowledge, followed by construction (25.1%), horticultural (9.6%), and design (5.1%) knowledge. When respondents were asked to rate the importance of topics that could be taught in undergraduate landscape contracting programs, business topics (personnel management, estimating and bidding, and clientele management) were identified as their top three choices. The population also named three business-related skills (client relationships, time management, and managing employees) among the five most important skills for landscape contracting professionals. Despite the stated importance of business knowledge and training, 68.3% of the population said when hiring for an entry-level landscape contracting position, they prefer candidates with strong horticultural skills over those with strong business skills. These results suggest landscape contracting firms would welcome a postsecondary-trained work force with improved business skills; however, this business training should not come at the expense of horticultural course work and experience.

Mergers, acquisitions, shrinking budgets, high fuel prices, and escalating costs have

forced U.S. industries to look for new ways of increasing productivity while minimizing waste. During these

unsettled economic times, businesses in the U.S. want some assurance that college and university graduates are meeting industry workforce needs and requirements (Oblinger and Verville, 1998).

The landscape contracting industry (lawn care, landscape installation, landscape design, and tree care) experienced an annual growth rate of approximately 20% from 1997 to 2004, increasing 300% from \$14 billion in 1997 to \$42 billion in 2002 [Associated Landscape Contractors of America (ALCA), 2004]. In 2002, the North American Industry Classification System [NAICS 561730 (U.S. Census Bureau, 2002)] identified more than 145,000 businesses in the United States providing landscaping services, including 1) firms primarily engaged in landscape care and maintenance services and/or installing trees, shrubs, plants, lawns, or gardens; and 2) firms primarily engaged in the aforementioned services along with the landscape design services and/or the construction (i.e., installation) of walkways, retaining walls, decks, fences, ponds, and similar structures. In order to operate those 145,000 businesses, it was estimated in 2002 that more than 700,000 people are employed in the lawn and landscape market in the U.S. (University of Georgia, 2002).

Landscape Management magazine performed an assessment of the landscape contracting segment of the green industry in their 2003 *State of the Industry Report: Times of Opportunity, Uncertainty* (Hall, 2003). Of the 374 companies surveyed, 75% reported having more work in 2003 than in 2002 and 68% reported having more revenue in 2003 than in 2002. Respondents also reported "availability of labor" and "developing supervisors" as two of their biggest challenges. Regardless of the struggle to find and develop employees, 72% of respondents reported their employees were "very" or "mostly" satisfied and well rewarded in their company.

More recently, *Lawn and Landscape* published the 2004 *State of the Industry Report* (Wisniewski, 2004) after receiving 742 completed surveys from industry members. They found a large percentage (84%) of respondents believed their total gross sales revenue would increase in 2004. This varied from previous survey results in 2003 and 2002 when 57.4% and 59%,

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respectively, of respondents felt their gross revenue would increase.

The landscape contracting industry has exhibited substantial growth and economic strength in the past decade despite a fluctuating economy. This industry will continue to demand a plentiful supply of qualified employees, including postsecondary graduates, to keep up with the average 20% annual growth rate (ALCA, 2004).

Given the nature of these higher expectations, postsecondary institutions should periodically reevaluate their curricula and adjust for future educational needs (Andelt et al., 1997). A needs assessment survey of interested stakeholders is one technique that may be used to evaluate the success of postsecondary educational programs.

The objectives of this study were to assess the perceptions of landscape contracting decision-makers regarding 1) the overall effectiveness of postsecondary landscape contracting programs in preparing students for careers in the green industry, and 2) the relative importance of business training for students within the landscape contracting curriculum.

Material and methods

We obtained addresses and contact information for our population of 2049 companies from the 2003 online list of ALCA members. Face-to-face interviews with a sample of potential employers conducted during the 2004 ALCA Student Career Days at Columbus State Community College in Columbus, Ohio, contributed to the development of the final survey instrument. Ten of 11 selected (ad hoc allocation) companies were interviewed over the 3-d period of 25 to 27 Mar. 2004. All 11 companies subsequently were removed from the sample frame.

The remaining population of 2038 companies was placed in one of four strata based on annual revenue (stratum 1 = <\$250,000; stratum 2 = \$250,000 to \$750,000; stratum 3 = \$750,000 to \$2 million; and stratum 4 = >\$2 million). Stratum sizes were within 7.2% of one another ($N_1 = 589$; $N_2 = 442$; $N_3 = 503$; and $N_4 = 504$). Homogeneous variances and survey costs among strata were assumed, and thus proportional allocation was used to select the sample size (Lohr, 1999). Variance was assumed to be

$$S^2 = p(1 - p)$$

with the proportion, p , equal to 0.5. We assumed a worst-case scenario of population members splitting their opinions equally between two response options ($p = 0.5$). We also assumed a 60% response rate and a 6.4% margin of error. A sample size of 400 ($n_1 = 115$; $n_2 = 87$; $n_3 = 99$; and $n_4 = 99$) was determined after reviewing the previously stated acceptable margin of error and response rate, along with the budgetary constraints of this research project (Lohr, 1999).

The tailored design method process was used to develop the questionnaire and implement the survey (Dillman, 2000). This process was designed to maximize the quality and quantity of responses by convincing respondents the rewards of participating outweigh the costs they expect to incur (Dillman, 2000). The list of contacts and addresses was confirmed via up to five personal telephone calls to each company. We used a script to ensure consistency in conversations. Although we confirmed addresses and contacts for only 330 of the 400 (82.5%) companies, a questionnaire was still sent to the entire sample of 400.

The questionnaire was a 12-page booklet made from three letter-sized, double-sided sheets of paper in landscape format. The front page contained subject-matter appropriate photographs, the title of the survey, and Iowa State University affiliation. Part one of the questionnaire included 12 multiple-choice and Likert (1932) scale-type questions that dealt with the importance of different aspects of landscape contracting programs. Part two included 11 personal and company demographic, multiple-choice questions. The final two pages contained three open-ended questions asking for additional advice or comments. Return postage for our questionnaire was prepaid.

Four first-class mailings were sent to maximize the response rate. Four hundred advance-notice letters were sent on 28 June 2004. A questionnaire and cover letter were sent 8 d later. A reminder postcard was sent on 12 July 2004. Between 28 June and 16 July 2004 advance-notice letters, questionnaires, cover letters, and postcards were re-sent if returned with a new address supplied by the U.S. Postal Service. A second cover letter was developed to encourage participation by nonrespondents. A second

questionnaire and the new cover letter were mailed on 29 July 2004 to all nonrespondents. Completed questionnaires were accepted through 7 Sept. 2004. Returned questionnaires were coded (confirmed by an uninvolved individual) and entered into a spreadsheet file (Excel; Microsoft Corp., Redmond, Wash.).

Data were analyzed using SAS (release 9.1; SAS Institute, Cary, N.C.). The SURVEYMEANS procedure was used to calculate mean percentages and ratings with standard errors, 95% confidence levels, adjusted weights, and all chi-square tests ($P \leq 0.05$). Weights were calculated by dividing each stratum population by the respective number of respondents in that stratum. Standard errors are reported with two significant digits and corresponding statistics are rounded to the same decimal place.

Results and discussion

DEMOGRAPHIC RESPONSES. Our response rate (35%) was derived from 137 fully completed or nearly completed questionnaires. The majority of the population was male (86.9%) between the ages of 30 and 59 years (84.7%). Responses were received from all regions of the U.S. (Fig. 1). The largest category of the population identified themselves as sole owners (39.4%), followed by presidents or vice-presidents (29.9%). An equal number of managers and company partners responded (12.4% each), with the remaining population (5.8%) being supervisors, full-time sales persons, full-time recruiting staff, or holders of other miscellaneous positions. Fifty-four percent of the population were in their current position for >10 years, whereas 29.9% held their position for <5 years.

More than 80% of our population reported earning some kind of postsecondary degree: bachelor's degree (58%), associate degree (16%), and master's degree (8%). The rest of the population either completed high school (16%) or checked "something else" (2%) to indicate their highest level of education.

MULTIPLE-CHOICE AND LIKERT-SCALE RESPONSES. Respondents were asked to identify a knowledge category that is lacking or deficient among postsecondary graduates entering the landscape contracting work force. Given the choices of horticultural,

Fig. 1. Percentage of the 137 respondents from the Associated Landscape Contractors of America within the following U.S. regions: midwestern region (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin); southern region (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia); mid-Atlantic region (Delaware, Maryland, New Jersey, New York, Pennsylvania, and the District of Columbia); western region (Colorado, California, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming); southwestern region (Arizona, New Mexico, Oklahoma, and Texas); New England region (Connecticut, Massachusetts, New Hampshire, Maine, Rhode Island, and Vermont). Alaska and Hawaii were excluded from the population.

construction, design, and business knowledge, the largest percentage (53.1%) of the population said recent graduates were deficient in business knowledge (Table 1). Similar to one of the top 10 undergraduate improvements reported by Cole and Thompson (2002), who assessed the satisfaction of employers who hired agribusiness graduates, our population suggests industry would welcome graduates with a better understanding of business topics and/or skills before entering the workforce. Fewer respondents in our population identified horticultural (9.6%) or design (5.1%) knowledge as lacking or deficient, which suggests landscape contracting graduates are

perceived as being sufficiently trained in those categories.

Significant differences were found ($P = 0.019$) when responses to the question about lacking or deficient knowledge among postsecondary graduates were grouped by age of respondents ($<$ or $\geq$ age 40 years). Horticultural knowledge was considered lacking or deficient by 16% of the population $\geq$ age 40 years but by none of the population $<$ age 40 years. Construction knowledge was considered lacking or deficient by 17.3% of the population $\geq$ age 40 years and by 38.1% of the population $<$ age 40 years. These results suggest a generational difference in the way employers view

and value the knowledge of recent postsecondary graduates. Older employers ($\geq$ age 40 years) might place greater emphasis on horticultural knowledge whereas younger employers ($<$ age 40 years) might assign greater importance to knowledge of landscape construction.

The population expressed a mean score of 3.944 ($SE = 0.063$) on a five-point Likert scale (1 = no emphasis; 3 = moderate emphasis; and 5 = strong emphasis) when asked what emphasis should be placed on business training in an undergraduate landscape contracting program. Almost three-fourths of the population felt business training should receive above-moderate (50.8%) or strong emphasis (22.8%). A small percentage (1.5%) of the population stated a below-moderate emphasis on business training while no respondents felt business training should be nonexistent. One-quarter of the population (24.9%) said business training should receive moderate emphasis in undergraduate landscape contracting programs.

Using a similar five-point Likert scale (1 = not important; 3 = moderate emphasis; and 5 = very important), we asked respondents to rate the importance of 32 topics that could be taught in a landscape contracting undergraduate program. Business-related topics, including personnel management, estimating and bidding, and clientele management, were identified as being most important (Table 2). The horticultural science topics plant propagation, plant physiology, and plant biology received the lowest, third, and fourth lowest ratings, respectively (Table 2).

Respondents used the same Likert scale to rate the importance of 43 skills useful to individuals working in the landscape contracting industry. Three of the top five most important skills were business-related skills, pertaining to client relationships, time management, and managing employees (Table 3). Good work ethic (4.840, $SE = 0.032$) and proper attitude/personality (4.783, $SE = 0.039$) were considered the two most important skills (Table 3). Lowest-rated skills included a construction skill (pond installation), a business skill (advertising techniques), and a horticultural skill (ability to ball and burlap trees) (Table 3).

These data represent a first step toward quantifying opinions and per-

Table 1. Responses of the Associated Landscape Contractors of America population when asked: "Overall, what knowledge is lacking or deficient among college/university graduates entering the landscape contracting work force?"

Knowledge options	Gross annual revenue (\$1000)				
	Overall	<250	250-750	750-2000	>2000
----- Proportion of responses (% $\pm$ SE) -----					
Horticulture	9.6 $\pm$ 2.5	0.0 $\pm$ 0.0	12.5 $\pm$ 6.7	12.1 $\pm$ 5.5	15.6 $\pm$ 6.3
Construction	25.1 $\pm$ 4.0	32.1 $\pm$ 8.7	25.0 $\pm$ 8.7	27.3 $\pm$ 7.5	15.6 $\pm$ 6.3
Design	5.1 $\pm$ 1.8	0.0 $\pm$ 0.0	4.1 $\pm$ 4.0	15.2 $\pm$ 6.1	3.1 $\pm$ 3.0
Business	53.1 $\pm$ 4.6	57.1 $\pm$ 9.3	54.2 $\pm$ 10.4	39.4 $\pm$ 8.3	59.4 $\pm$ 8.5
Adequate ^z	7.1 $\pm$ 2.4	10.7 $\pm$ 5.8	4.2 $\pm$ 4.0	6.1 $\pm$ 4.0	6.3 $\pm$ 4.2
	(n = 117) ^y	(n ₁ = 28)	(n ₂ = 24)	(n ₃ = 33)	(n ₄ = 32)

^zGraduates have adequate knowledge with no deficiencies in the four choices.

^yTotal number of respondents per category.

Table 2. Responses of the Associated Landscape Contractors of America population when asked to rate the importance of topics from a list that could be taught in any landscape contracting undergraduate program. Response options are ranked in descending order using the overall mean. Ten highest- and five lowest-rated topics are shown.

Topic options ^z	Gross annual revenue (\$1000)				
	Overall	<250	250–750	750–2000	>2000
-----Mean rating of responses (mean ± SE) ^y -----					
Highest rated					
Management (personnel)	4.54 ± 0.06	4.53 ± 0.12	4.50 ± 0.12	4.46 ± 0.09	4.66 ± 0.11
Estimating and bidding	4.53 ± 0.06	4.48 ± 0.17	4.43 ± 0.12	4.56 ± 0.09	4.63 ± 0.08
Management (clientele)	4.46 ± 0.06	4.44 ± 0.13	4.50 ± 0.12	4.38 ± 0.10	4.51 ± 0.13
General design principles	4.41 ± 0.06	4.44 ± 0.14	4.33 ± 0.13	4.48 ± 0.10	4.36 ± 0.13
Plant identification (trees/shrubs)	4.39 ± 0.07	4.31 ± 0.15	4.29 ± 0.15	4.56 ± 0.10	4.39 ± 0.13
Plant identification (perennial/annual)	4.26 ± 0.07	4.19 ± 0.15	4.04 ± 0.15	4.43 ± 0.11	4.36 ± 0.12
Plant establishment/maintenance	4.19 ± 0.07	4.09 ± 0.16	4.25 ± 0.12	4.21 ± 0.11	4.24 ± 0.13
Grading and drainage	4.19 ± 0.07	4.15 ± 0.13	4.07 ± 0.18	4.29 ± 0.11	4.21 ± 0.16
Production management	4.18 ± 0.07	4.13 ± 0.13	4.21 ± 0.14	4.10 ± 0.12	4.30 ± 0.17
Computer skills	4.08 ± 0.07	4.07 ± 0.14	3.93 ± 0.15	4.07 ± 0.10	4.24 ± 0.14
Lowest rated					
Multimedia presentations	3.32 ± 0.08	3.48 ± 0.13	3.39 ± 0.15	3.12 ± 0.13	3.28 ± 0.19
Plant biology	3.31 ± 0.07	3.34 ± 0.15	3.32 ± 0.12	3.17 ± 0.13	3.40 ± 0.15
Plant physiology	3.31 ± 0.07	3.34 ± 0.16	3.43 ± 0.14	3.21 ± 0.13	3.26 ± 0.17
Business law	2.95 ± 0.08	2.97 ± 0.20	3.14 ± 0.16	3.05 ± 0.12	2.66 ± 0.16
Plant propagation	2.74 ± 0.08	2.97 ± 0.17	2.74 ± 0.16	2.48 ± 0.14	2.73 ± 0.19

^zRespondents rated 32 topics.

^yRating scale: 1 = not important; 2 = below average importance; 3 = average importance; 4 = above average importance; and 5 = very important.

Table 3. Responses of the Associated Landscape Contractors of America population when asked to rate the importance of skills used by individuals in the landscape contracting industry. Response options are ranked in descending order using the overall mean. Ten highest- and five lowest-rated skills are shown.

Skill options ^z	Gross annual revenue (\$1000)				
	Overall	<250	250–750	750–2000	>2000
-----Mean rating of responses (mean ± SE) ^y -----					
Highest rated					
Good work ethic	4.84 ± 0.03	4.81 ± 0.07	4.86 ± 0.07	4.81 ± 0.07	4.89 ± 0.05
Proper attitude/personality	4.78 ± 0.04	4.81 ± 0.07	4.71 ± 0.11	4.76 ± 0.07	4.83 ± 0.06
Client relationships	4.63 ± 0.05	4.56 ± 0.11	4.57 ± 0.11	4.64 ± 0.07	4.74 ± 0.09
Time management	4.57 ± 0.05	4.48 ± 0.12	4.64 ± 0.09	4.50 ± 0.10	4.65 ± 0.09
Managing employees	4.48 ± 0.06	4.46 ± 0.12	4.32 ± 0.20	4.52 ± 0.09	4.62 ± 0.10
Plant identification	4.46 ± 0.06	4.38 ± 0.12	4.39 ± 0.13	4.67 ± 0.09	4.40 ± 0.13
Organizational skills	4.39 ± 0.05	4.34 ± 0.10	4.36 ± 0.10	4.33 ± 0.09	4.54 ± 0.09
Proper planting techniques	4.31 ± 0.06	4.33 ± 0.10	4.41 ± 0.14	4.35 ± 0.12	4.15 ± 0.15
Production management	4.31 ± 0.07	4.19 ± 0.15	4.32 ± 0.14	4.33 ± 0.10	4.38 ± 0.15
Internships or work experience	4.30 ± 0.06	4.13 ± 0.13	4.32 ± 0.14	4.36 ± 0.13	4.43 ± 0.11
Lowest rated					
Member of associations	3.47 ± 0.08	3.41 ± 0.17	3.61 ± 0.17	3.38 ± 0.14	3.51 ± 0.16
Understanding law of business	3.35 ± 0.08	3.44 ± 0.18	3.46 ± 0.16	3.45 ± 0.11	3.06 ± 0.15
Pond installation	3.28 ± 0.08	3.37 ± 0.17	3.26 ± 0.15	3.44 ± 0.13	3.03 ± 0.15
Advertising techniques	3.21 ± 0.07	3.56 ± 0.15	3.46 ± 0.15	3.02 ± 0.13	2.82 ± 0.14
Ability to ball and burlap trees	2.84 ± 0.08	2.78 ± 0.12	2.89 ± 0.20	2.86 ± 0.13	2.83 ± 0.19

^zRespondents rated 43 skills.

^yRating scale: 1 = not important; 2 = below average importance; 3 = average importance; 4 = above average importance; and 5 = very important.

ceptions about topics and skills that might be emphasized by postsecondary institutions. However, it is important to remember the population rated only two topics, business law (2.95) and plant propagation (2.74), below average in importance, and one skill, the ability to ball and burlap trees (2.84), below average in importance.

Thus, the population seems to suggest almost every topic and skill mentioned in our study is of at least average importance, with many rated above average. It would not be wise to use these ratings to make decisions about what to cover and what not to cover in landscape contracting programs, but rather what topics and skills could be

given more emphasis and what topics and skills are possibly overemphasized in landscape contracting curricula across the U.S.

Respondents also were asked to choose between two hypothetical candidates with equally good attitude, ambition, and work ethic for an entry-level landscape contracting position.

The only difference between the candidates was in their work-related skill strengths. A majority (68.3%) of the population said when given a choice, they preferred hiring entry-level employees with strong horticultural skills and weak business skills rather than employees with strong business skills and weak horticultural skills.

This question, purposely placed at the end of the questionnaire (before demographic questions), helped us avoid the following incorrect interpretation of the data: the green industry demands that landscape contracting programs replace horticultural and design training with business training. Instead, industry seems to be saying they would like students to receive more business training, but not necessarily at the expense of courses currently being offered. Integrating business topics and skills into current landscape contracting programs without weakening other important content then becomes the challenge for postsecondary institutions.

Significant differences were found ($P = 0.002$) when responses to this hypothetical question were grouped according to gross annual revenue of the population. A majority (55.9%) of the population choosing strong business skills over strong horticultural skills came from firms reporting an annual revenue $\geq \$2$ million while only 22.8% were from companies with annual revenue $< \$2$ million. The landscape industry has experienced an average annual growth of 20% between 1997 and 2004 (ALCA, 2004). Growth of this magnitude for large companies could require the addition of employees, crews, or branches. Furthermore, large companies experiencing sustained and rapid growth might have a substantial need for employees with business skills to fill supervisory and managerial positions; assuming companies with $\geq \$2$ million in annual revenue are not hiring business staff with the intention of providing necessary horticultural training. For smaller companies, however, 20% growth might equate to longer hours, additional part-time employees, or only a few additional full-time employees. Smaller companies with more modest increases in growth may be better served by employees with strong horticultural skills instead of strong business skills.

Significant differences also were found ($P = 0.036$) when responses to

our hypothetical question were analyzed by the age of our population. An employee with strong horticultural skills was preferred by only 57.5% of the population < 40 years, compared to 75% of the population ≥ 40 years. The landscape contracting industry has undergone constant financial and economic change during the past 10 years, and companies have adjusted accordingly to stay in business (Higley, 2004). As landscape managers watched their companies grow and prosper, they were confident in the fact that having employees with strong horticultural skills ensured more customers, and as long as the company was busy, profits were being made (D. Spunaugle, personal communication). These beliefs no longer guarantee success in the highly competitive landscape contracting market of today (Higley, 2004). Respondents under the age of 40 years entered a different landscape industry than respondents ≥ 40 years, and a sizeable percentage (42.5%) of younger respondents seem to be indicating business skills are essential for success.

Respondents were asked if they actively recruit employees from landscape contracting programs at colleges and universities. Forty-four percent of the population said they recruit from postsecondary institutions offering 4-year bachelor's degrees and postsecondary institutions offering 2-year associate degrees; however, one-third (32.5%) of the population said their company does not recruit at all from postsecondary institutions. Significant differences were found when responses regarding recruiting practices were grouped by the four company size classifications ($P = 0.0168$). Companies with $< \$250,000$ (40.6%) and $\$250,000$ to $\$750,000$ (48.2%) in gross annual revenue do not recruit. Conversely, 69.0% of companies with $\$750,000$ to $\$2$ million in gross annual revenue and 88.6% of companies with $> \$2$ million in gross annual revenue said they recruit from postsecondary institutions.

Why the difference in recruiting between companies with $<$ or $> \$750,000$ in annual revenue? Kratcoski (2005) believes companies need more postsecondary graduates to fill supervisory and management positions as annual revenue increases. In addition, overhead fixed expenses decrease as annual revenue increases (Baye, 2003). Thus, larger companies can afford management recruiting services

or full-time recruiters to search for future employees (Kratcoski, 2005). The time and money needed to recruit from colleges and universities might inhibit smaller companies from competing for high-quality postsecondary graduates.

Respondents also were asked to rate their satisfaction with postsecondary graduates they either have worked with or hired during the past 5 years. Using a five-point Likert scale (1 = extremely dissatisfied; 2 = dissatisfied; 3 = neutral; 4 = satisfied; 5 = extremely satisfied), the population gave graduates an average rating of 3.534 ($SE = 0.075$). More than one-half (52%) of the population said they were either satisfied or extremely satisfied; 40% were neutral; and only 8% were either dissatisfied or extremely dissatisfied with postsecondary graduates.

The generally positive response to recent graduates from 2- and 4-year landscape contracting programs is good news for postsecondary institutions; however, there is room for improvement, particularly among the segment of our population that rated their experience with recent graduates as neutral (40%). Perhaps colleges and universities can increase satisfaction of employers by providing quality graduates and welcoming recruiters to campus (Poling and Ikenberry, 1997).

When asked if most colleges and universities that provide landscape contracting programs are in touch with the needs and expectations of industry, the largest percentage of the population (39.1%) said no. Significant differences were found ($P = 0.0188$) when the population was grouped by geographic region. Only 25% of the population in five of six regions believed most universities and colleges are in touch with industry needs and expectations. But in the southern region, 51.8% of the population said colleges and universities are in touch with industry needs and expectations. A higher percentage of positive perceptions from this region might be attributed to the fact that the first postsecondary landscape contracting program (Mississippi State University) is from this region. In addition, nursery and landscape professionals in the southeastern U.S. have a long history of supporting education and research via state and regional green industry organizations (e.g., Southern Nursery Association).

In a national study of employers, faculty, staff, students, and alumni, it was found that employers felt postsecondary faculty and administrators did not understand the needs of the private sector and the demands of an economy under constant change (Poling and Ikenberry, 1997). Meanwhile, postsecondary faculty, staff, and administrators felt employers do not respect the high-quality education they are providing (Poling and Ikenberry, 1997). The study also indicated industry leaders do not view themselves as experts in understanding curricula, yet their insight and experience are valuable and should be viewed as such (Poling and Ikenberry, 1997). In our study, practically all of the population (96.7%) agreed industry professionals should be invited to take a more active role in shaping the menu of coursework offered in landscape contracting programs. Creating a collaborative relationship between faculty and industry can ultimately result in gains for the one common investment, the students (Marsden, 1989).

The results of this survey have provided knowledge that can be used to strengthen the relationship between industry and academic professionals in the landscape contracting discipline. Yet this research is only the beginning of possible studies. One important change since the time of this survey was the merger of the ALCA with the Professional Lawncare Association of America to form the new Professional Landcare Network (PLANET). In addition to surveying this larger population, researchers could ask respondents to prioritize choices of skills and topics or ask in-depth questions about how they responded to specific questions about business-related curriculum. The authors encourage others to continue similar research similar in order to provide more relevant information regarding the landscape contracting industry.

A final point of interest from this data comes from the open-ended questions asked at the end of the survey instrument. The responses were summarized into simpler statements by the authors and the following shows the top three most repeated comments. For students in landscape contracting programs, industry respondents felt they 1) should get more experience in the field; 2) need a firm grasp of business principles; and 3) should take part in an internship. As for the faculty/staff in landscape contracting programs, industry respondents felt they should 1) have more hands-on projects with students; 2) stay up-to-date on the industry and the technology used in the industry; and 3) realize that although horticulture skills are important, there needs to be a stronger emphasis on business and people-management skills.

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