

Extension Education Methods

Educational Needs of the Nursery and Landscape Industry in Delaware

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SUMMARY. Keeping up with cultural issues, recruiting new employees, motivating employees, and weed control were the issues most frequently cited as "very serious" or "somewhat serious" by surveyed members of the nursery and landscape industry. The focus of important issues changed somewhat based on the type of business. Retailers were more concerned with marketing and less concerned with plant maintenance. Pesticide regulation was more important to firms that provide some form of plant maintenance for consumers. Small firms were less concerned with employee issues, and large firms were more concerned with regulation. The most desirable method of receiving information was still printed materials, but firms with equipment (i.e., facsimile machines, computers) were more likely (30%) to use these forms of communication. E-mail was a very popular form of communication with firms that had e-mail access. Technology-oriented communication will probably increase in popularity as more firms gain access to technology.

In 1993, the Delaware nursery and greenhouse industry produced \$17 million worth of products (Delaware Agricultural Statistics Service, 1995). This accounts for almost 12% of Delaware's total crop produc-

tion, a significant increase from the barely 4% share in 1982. Over the 10-year period, the industry grew 11.5% per year. Landscape and garden services is the largest segment of the agricultural services sector in Delaware, making up 59% of the establishments and almost 60% of the total annual payroll. Landscape and garden services businesses more than doubled their employment from 1982 until 1992. Horticultural trade businesses increased their payroll from \$2.8 million in 1982 to more than \$10 million in 1992 (Tanjuakio et al., 1997).

In an effort to understand and serve this growing segment of agriculture, a survey of the nursery and landscape industry in Delaware and nearby states, served by Delaware Cooperative Extension, was conducted. The objective was to determine the most serious problems or issues facing nursery and landscape industry businesses as well as the technologies and educational formats preferred.

Materials and methods

In total, 2000 surveys were mailed to a combined mailing list from cooperative extension and the Delaware Association of Nurserymen (DAN) on 5 Feb., 1997. Recipients received a cover letter endorsing the survey, which was signed by Extension Specialist Susan Barton and DAN President Craig Rice; a survey form; and an addressed business reply envelope. Preprinted reminder postcards were mailed on 10 Feb. In total, 355 usable surveys were returned for a response rate of 17.8%.

Recipients, classified by business type (Table 1) or number of employees (Table 2), were asked to rate 15 problems or issues in their business or job as "very serious," "somewhat serious," "not serious," or "does not apply." To explore methods of providing information, they were asked whether they had access to eight types of equipment or services (including touch-tone telephone, fax machine, Macintosh computer, Windows 3.1 computer, Windows 95 computer, CD ROM, World Wide Web (Web), and e-mail). They were asked to rate ten methods of receiving information as "very useful," "somewhat useful," "not useful," and "does not apply" (Table 3). They were also asked whether or not they had used 12 different cooperative extension programs or services in the past 2 years (Table 4). Demographic information about the type of firm, full- or part-time nature of the business, number of employees, and position held in firm was collected.

Results and discussion:

When respondents listed the aspects of the industry (i.e., landscape, production, retail sales, etc.) in which they participated, most listed multiple aspects. Only 21% listed a single industry aspect. Most respondents were involved in landscape or turf maintenance (70%), followed by design and installation (60%), production (46%), retail sales (40%), and arboriculture (32%).

Issues and problems

The four problems or issues most frequently listed as "very serious" or "somewhat serious" were keeping up with cultural information, recruiting new employees, motivating employees, and weed control (Table 1). Two-thirds of all respondents listed these four issues as either "very serious" or "somewhat serious." The four least important issues or problems according to respondents were labor regulations,

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Table 1. Relative importance of problems or issues facing nursery and landscape businesses categorized by business type (proportion of "very serious" or "somewhat serious" responses).

Issue	Business type (%)					
	Total	Production	Retail	Landscape	Design	Arboriculture
Keeping up with information	68	68	63	70	66	71
Recruiting new employees	67	66	68	69	71	66
Motivating employees	65	65	65	68	68	65
Weed control	65	66	55	67	63	66
Disease control	60	61	51	62	55	65
Pesticide regulations	59	58	50	63	59	62
Insect control	58	61	54	57	53	62
Keeping employees	57	56	56	62	63	56
Managing growth	54	57	61	52	56	48
Marketing	53	61	62	49	51	44
Bidding and estimating	47	39	44	55	60	52
Labor regulations	45	47	40	47	46	48
Accounting	42	39	43	43	43	38
Zoning regulations	33	33	34	34	32	27
Trucking regulations	33	35	29	35	34	33
	n=349	n=164	n=142	n=247	n=212	n=113

accounting, zoning regulations, and trucking regulations.

Respondents who participated in retail sales listed marketing and managing growth as more important issues than the respondents as a whole (Table 1). On the other hand, plant maintenance issues such as weed, insect, and disease control were less important. This suggests that retailers with high product turnover need less emphasis on plant maintenance. Plant maintenance issues were more important to arboriculture firms than to respondents as a whole. Pesticide regulation was more important to landscape or turf maintenance firms and arboriculture firms than firms that participated in retail. Pesticide regulation was of greatest concern to businesses that maintained plants on consumers' landscapes. They must become certified pesticide applicators and future pesticide regulations, such as posting, are most likely to affect them.

Landscape or turf maintenance and design and instal-

lation firms listed keeping employees as a more important issue compared to the responses from all respondents (Table 1). Landscape maintenance and installation businesses are service oriented and labor is their major expenditure (Horticulture Research Institute, 1988). Perhaps, the physically demanding nature of the work and relatively low pay contributed to the challenge of high employee turnover.

Of the 355 respondents, 29% was identified as small firms (<4 employees), 46% as medium firms (4 to 19 employees), and 25% as large firms (≥ 20 employees). Small firms cited plant maintenance issues (weed, insect, and disease control and keeping up with cultural information) as "very serious" or "somewhat serious" more frequently than medium or large firms (Table 2). Small firms cited employee issues (recruiting new employees, keeping employees, and motivating employees) as "very serious" or "somewhat serious" less frequently than medium and large firms. The

Table 2. Relative importance of problems or issues facing nursery and landscape business categorized by business size (proportion of "very serious" and "somewhat serious" responses).

Issue	Business size* (%)			
	Total	Small	Medium	Large
Keeping up with information	68	72	64	73
Recruiting new employees	67	42	77	79
Motivating employees	65	46	70	76
Weed control	65	73	64	59
Disease control	60	66	58	59
Pesticide regulations	59	58	58	67
Insect control	58	68	55	55
Keeping employees	57	43	64	64
Managing growth	54	50	57	56
Marketing	53	60	51	52
Bidding and estimating	47	42	50	46
Labor regulations	45	31	48	57
Accounting	42	50	38	42
Zoning regulations	33	32	31	31
Trucking regulations	33	22	35	42
	n=340	n=98	n=156	n=86

*Small, <4 employees; medium, 4 to 19 employees; and large, ≥ 20 employees.

Table 3. Relative usefulness of methods of receiving information categorized by access to computer and e-mail (proportion of "very useful" responses).

Information format	Total	Computer access (%)	
		Yes	Yes, with e-mail
Printed materials	84	83	83
Fax	54	64	68
One-day meetings	45	44	45
On-site troubleshooting	39	40	37
Multisession courses	25	23	24
E-mail	24	32	52
Materials on CD ROM	23	31	37
Materials on diskette	23	30	38
Evening meetings	22	21	22
World Wide Web	17	22	34

data suggested that as businesses grow, effective employee management was more critical to success. This may be related to the fact that the owner typically could no longer do all the work and had to delegate tasks and responsibility to managers and employees.

Regulation issues such as labor, pesticide and trucking regulations were cited as "very serious" or "somewhat serious" by large firms more frequently than small or medium firms. Some regulations, especially labor regulations, may not apply to smaller firms. Large firms may be more likely to belong to national trade associations, an important source of information about regulatory issues.

Equipment or technology

Almost every respondent (95%) had access to a touch-tone telephone and most (78%) had a fax machine. More than two-thirds (70%) of respondents had access to a computer. Close to half the respondents (43%) were using a Windows 95 computer, while others had either a Windows 3.1 computer (41%) or a Macintosh (16%). About half of the respondents (51%) had a CD ROM and one-third (35%) had access to the Web. Less than half of the respondents (42%) used e-mail. There was no difference in equipment access between the different business types (i.e., production, retail sales, landscape or turf maintenance, design and installation, arboriculture). Small firms were about half as likely to have a fax machine or a computer as medium or large firms.

Methods of receiving information

Most respondents (84%) listed printed materials as "very useful" (Table 3). Other useful methods for receiving information included 1-d meetings, faxes, on-site troubleshooting, multisession courses, and evening meetings. Fewer respondents found materials on diskette, materials on CD ROM, e-mail, or the Web to be useful methods of receiving information. Among computer owners, the usefulness of materials on diskettes, materials on CD ROM, e-mail, and the Web increased. Among respondents with e-mail access, e-mail was the third most-frequently listed "very useful" information source, behind printed materials and fax. The percentage of firms that listed equipment-oriented methods of receiving information as "very useful" increased with increasing firm size. For example, 28% of small firms found faxes "very useful" vs. 58% for medium firms and 74% for

large firms. A similar pattern was found for e-mail (15%, 23%, and 37%, respectively) and the Web (12%, 14%, and 28%, respectively). These data suggest that if nursery and landscape professionals have access to technology, they use and value it. As access to technology increases, we would expect more constituents to choose faxes, materials on diskette, materials on CD ROM, e-mail, and the Web as methods of receiving information. At the same time, access to a computer did not diminish the perceived usefulness of more traditional methods of receiving information such as printed materials and 1-d meetings.

Cooperative extension services or programs

More than two-thirds (70%) of respondents had used extension publications in the past 2 years (Table 4). The next most frequently used programs were 1-d short courses (63% of respondents) and workshops (55% of respondents). The most frequently attended single event was the Delaware Horticulture Industry Expo (39%). This well-promoted conference is cosponsored by DAN and Delaware Cooperative Extension. It has concurrent sessions with exhibits and workshop topics aimed at all segments of the industry.

On-site troubleshooting was the service least used by respondents (16%). The low response may be due to the reduced emphasis by cooperative extension on this one-on-one service in favor of multiple-client-information delivery methods.

Garden Check, a Delaware Cooperative Extension publication geared to home horticulture, was received with higher frequency by firms engaged in retail sales (22% vs. 15% by all other types of firms). These retail firms may use *Garden Check* as a resource for gardening information for their customer, the home gardener.

Landscape or turf maintenance firms, design and installation firms, and arboriculture firms were more likely to attend landscape-oriented conferences (such as the Turfgrass Conference and the Delaware/Maryland Ornamentals and Turf Conference) and receive *Ornamentals Hotline*,

Table 4. Percent of respondents that have used cooperative extension programs or services in the past two years. (n=345)

Cooperative extension services or programs	Yes responses (%)
Extension publications	70
Short courses (one day)	63
Workshops	55
Short courses (multisession)	35
Delaware Horticulture Industry Expo	39
Summer Turf and Nursery Expo	32
Turfgrass Conference	32
<i>Ornamentals Hotline</i> ²	29
Delaware/Maryland Ornamentals and Turf Workshop	25
Ornamentals Research Expo	17
<i>Garden Check</i> ³	17
On-site trouble shooting	16

²*Ornamentals Hotline* is a weekly, one-page, Delaware newsletter geared to professional landscape management.

³*Garden Check* is a biweekly Delaware Cooperative Extension newsletter geared to home horticulture.

Table 5. Selected cooperative extension program or service participation categorized by business type (proportion of "yes" responses).

Program	Business type (%)				
	Production	Retail	Landscape	Design	Arboriculture
Workshops	27	20	59	58	64
Turfgrass Conference	20	19	40	33	42
<i>Ornamentals Hotline</i> ^a	21	25	31	33	40
DE/MD O & T Conference	21	17	30	25	35

^a*Ornamentals Hotline* is a weekly, one-page, Delaware newsletter geared to professional landscape management.

a Delaware publication geared to professional landscape management (Table 5). This was consistent with the importance placed on plant maintenance issues by these firms as evidenced by their responses to the first question of the survey. Workshops in general were attended in the past 2 years nearly four times as frequently by these firms, possibly due to their need to collect pesticide recertification credits.

Conclusion

In the Delmarva region, the nursery and landscape industry is diverse; members participate in all aspects of the market chain, from production to retail sales, to plant installation and finally ongoing maintenance. There is also a wide range of business sizes, from small businesses with <4 employees to large operations who employ ≥20. Differences in business type and size lead to different needs and priorities. A thorough understanding of the range of industry needs and specificity of needs within business types and sizes can help cooperative extension and other support agencies shape educational programs.

Understanding the level of technology use also will

influence how cooperative extension presents information to clientele. Printed material was still the most preferred medium, but these results showed that computer owners are more willing to use electronic information. As more companies use computers routinely, the demand for electronic information may increase. Interestingly, access to a computer did not reduce the desire to receive information in the form of printed materials and 1-d meetings. In other words, the traditional methods were still valued.

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