Analysis of Employment in the Illinois Nursery Industry

T.M. Waliczek,¹ P.D. O'Rourke,² and J.C. Bradley³

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SUMMARY. Horticulture crops are a multimillion dollar industry in Illinois, providing employment opportunities as well as strengthening many local economies. In February 1998, about 300 surveys were mailed to members of the Illinois Nurserymen's Association, including owners and operation managers of retail and wholesale nurseries, greenhouses and garden centers. Questions included the pool of available labor, the total number of persons employed, including full and part-time workers, starting and average salaries for employees, retention rates and training procedures. Questions were also asked regarding employees' education and experience level, average compensation for various levels of employment and demographics of the employee pool. A 48% response rate was achieved with 147 surveys returned and analyzed. Respondents reported an average of 70 employees including sales staff, office staff and seasonal employees. Those businesses responding employed an average of 2.5 managers with an approximate annual salary of \$48,000, and an average of 15 laborers with an approximate annual salary of \$21,000. Correlations provided insight into which areas of the industry hired persons with horticulture degrees and the types of experience most valued by the respondents.

The horticultural industry throughout the United States is comprised of many units including those that produce, sell, distribute and provide service to clients. Illinois is part of a subgroup of states, the eastern north-central region, that has historically been a significant contributor to the production and consumption of horticultural crops (Bordelon et al., 1997). Illinois is an important producer of fruit, berries, and landscape and ornamental horticultural products including apples (*Malus × domestica*), peaches (*Prunus persica*), cut flowers, potted flowering plants, foliage, and bedding plants (Illinois Agricultural Statistics Service, 1997).

The value of U.S. horticultural products was \$36 billion in 1995 and is expected to continue growing until the year 2005 for both edible and ornamental products (USDA, 1997). Consumption of fruit and vegetables in the United States has increased over the past 2 decades. Per capita produce consumption is expected to continue rising as a result of dietary concerns and the aging population (Bordelon et al., 1997; Putnam and Allshouse, 1996). Similarly, consumers have invested more dollars toward aesthetic horticulture products over the past 10 years than they have ever before. Americans spend an average of \$350

per person annually on ornamental horticulture products such as cut flowers, foliage, and potted flowering plants (Bordelon et al., 1997).

Because of this growth in the industry, there has been concern about the increasing problem of recruiting and retaining qualified employees to meet the horticulture industry's current and future needs [Human Resources Development Canada (HRDC), 1992]. However, little information is available on the horticulture labor force (Smith et al., 1990). To gain better insight into the industry, it is essential to examine its status. The objectives of this study were to ascertain business ownership, recruiting and training techniques, type of positions, length of service, salary and payroll figures, as well as overall employee demographics. Examining this information will provide valuable insight for businesses seeking successful transitions and increased growth in the future.

Materials and methods

In February 1998, 304 surveys were mailed to owners and operation managers of retail and wholesale nurseries, greenhouses and garden centers registered as active members of the Illinois Nurserymen's Association (Springfield, Ill.). The survey was modeled after similar instruments used by other universities (Lard et al., 1996; Rhodus and Hoskins, 1996). The survey consisted of questions concerning the types of positions employed within the company, average salaries and benefits provided to employees, types of training provided, recruiting tools used and the years of service employees gave to companies. Questions were also included to collect employee demographic information such as gender, ethnicity and age. Reminder postcards were sent to increase response rates. All data were analyzed using the Statistical Package for the Social Sciences for Windows release 10.0 (SPSS, Chicago). During statistical analyses, any missing responses to survey questions were coded as missing values. Descriptive statistics such as frequencies and percentages were calculated for all variables of interest. Multivariate analysis of variance (MANOVA) tests were conducted to determine the differences in business responses. MANOVA tests are commonly used when determining whether groups differ on more than one dependent variable (Borg and Gall, 1989). Additionally, posthoc analyses (LSD) were used to help identify where differences were occurring. Pearson product-moment correlations were conducted to compare variables of interest. Correlation statistics are commonly computed to help describe the strength of the relationship between two variables. A perfectly positive relationship will be indicated with a value of 1.0, while a perfectly negative relationship would be a value of -1.0 (Borg and Gall, 1989).

Results and discussion

Of the 304 surveys sent to businesses, 147 were returned, for a return rate of 48%. This level of response was adequate for supplying ideas for the given sample population, but is not necessarily intended for generalizations to other populations. In addition, findings from the analysis of this survey data reflect the situation that existed at the time the respondents returned the survey. Data results indicated the types of businesses (wholesale and retail nurseries, greenhouses and garden centers) that were included in the study group as a whole. It should also be noted that while

Department of Agriculture, Illinois State University, Normal, IL 61790-5020.

¹Assistant professor; corresponding author (tc10@swt.edu).

²Professor.

³Assistant professor, Department of Environmental Horticulture, University of Florida, Gainesville, FL 32611-0670.

Table 1. Frequencies and percentages of industry survey responses (n = 140) indicating business structure as sole proprietorship, corporation, partnership, or limited liability corporation.

Type of business structure	Industry survey responses	
	Businesses (no.)	Businesses (%)
Sole proprietorship	79	56.4
Corporation	48	34.3
Partnership	11	7.9
Limited liability corporation	2	1.4

Table 3. Frequencies and percentages of industry survey responses (n = 131) indicating those businesses that expect a percent change in the business labor force within 5 years.

Change expected (%)	Industry survey responses	
	Responses (no.)	Responses (%)
-50	2	1.5
-10	2	1.5
0/no change	44	33
5	4	3.1
8	1	0.8
10	19	14.6
15	14	10.8
20	21	16.2
25	10	7.7
30	5	3.8
50	5	3.8
70	1	0.8
75	2	1.5
100	1	0.8

some of the results of this survey support findings provided by the USDA, National Agriculture Statistics Service reports (USDA, 1998), some are conflicting due to sampling differences.

The mean for the businesses responding indicated that most businesses had one location and were either a corporation (34%) or a sole proprietorship (56%) (Table 1). In total, the respondents were employing about 6,343 full and part-time employees. On average, those businesses responding had 2 owners or managers, 2 superintendents, 5 foremen, 39 laborers, 3 office staff, 4 sales staff, and 15 seasonal employees (Table 2). While the value of U.S. horticultural products is expected to continue growing for the next 5 years (USDA, 1997), 33% of respondents expected no change and 3% expected a decrease in their own labor force within that same time frame (Table 3). However, about 42% of respondents expected a 10% to 20% increase in their labor force, indicating an expected growth in the company within the next 5 years.

Recruiting, hiring and retaining good employees have traditionally been a fundamental goal of businesses (Ayers and Stone, 1999), and are current con-

Table 2. Industry survey responses (n = 147) indicating the types of positions available within businesses, the total number of positions held within businesses and the average number of positions held by employees within companies.

Position	Industry survey responses	
	Positions (total no.)	Positions (mean no.)
Owners/managers	129	2.26
Superintendents	64	2.44
Foremen	97	4.99
Laborers	93	39.5
Office staff	83	2.89
Sales staff	50	4.12
Seasonal employees	87	14.86

Table 4. Percentages of industry survey responses (n = 147) ranking various recruiting tools as the most valuable to their business in attracting new employees.

Recruiting tool	Industry survey responses (%)
Word of mouth	46.8
Recommendation from friend/family	43.8
College/trade school	13.7
Walk-in	8.0
Newspaper advertisement	7.4
Trade magazine	2.9
Labor pool	2.2
Employment agency	2.2
Internet	1.5

cerns in the horticulture industry with its expected growth (HRDC, 1992; USDA, 1997). Respondents ranked the value of recruiting tools from one to nine with one being the most valuable tool and nine being the least valuable tool for

Fig. 1. Industry survey responses (n = 147) indicating the percentage of employees trained using various methods including on-the-job, mentoring programs, orientation procedures, seasonal seminars, and video training.

Fig. 2. Industry survey responses ($n = 147$) indicating the percentage of employees required to have a bachelor's degree in horticulture or another discipline and the types of positions employed.

recruiting employees (Table 4). With the availability of online resumes and advertisements in 1997 [e.g., Ferrell's Jobs in Horticulture (Tinker Graphics, 1994)], it was

surprising that the Internet was ranked so low by respondents (1.5%) as a source of connecting with potential employees. Word of mouth, referrals and family contacts were recognized as effective recruitment techniques in past studies (HRDC, 1992). Similarly, this study found word of mouth (47%) and recommendations (44%) were the most valuable methods for recruiting employees.

Higher levels of technology in the industry are increasing the need for more educated or trainable candidates (HRDC, 1992). Results from this study showed that employees were trained with a variety of methods, with on-the-job (98%) and mentoring programs (45%) (Fig. 1) ranking as those most applied. Respondents indicated that 59% of employees were required to have a bachelor's degree in horticulture (Fig. 2). About 44% of employees were hired with previous experience.

With MANOVA comparisons of business structures, it was found that corporations used training videos ($P = 0.015$) and seminars ($P = 0.026$) at a statistically significantly higher rate than did sole proprietorships (Table 5). Thirty-one percent of corporations used training videos compared to 11% of sole proprietorships, and 50% of corporations incorporated seminars into training of employees compared to 26% of sole proprietorships.

Low wages are cited as a difficulty associated with recruiting and retaining a good workforce (HRDC, 1992).

Table 5. Comparisons of industry survey responses ($n = 147$) on of the types of training used by different business structures using multivariate analysis of variance.

Business structure and type of training	Industry survey responses (% of businesses)	Sum of squares	df	Mean square	F value	P
On the job		8.174	3	2.725	1.790	0.152
Corporation	98.7					
Sole proprietorship	100					
Partnership	90.9					
Limited liability	100					
Orientation		0.879	3	0.293	1.186	0.318
Corporation	48.7					
Sole proprietorship	34.8					
Partnership	36.4					
Limited liability	0					
Video		1.766	3	0.589	3.629	0.015
Corporation	30.8					
Sole proprietorship	10.9					
Partnership	9.1					
Limited liability	0					
Seminars		2.186	3	0.729	3.195	0.026
Corporation	50.0					
Sole proprietorship	26.1					
Partnership	27.3					
Limited liability	0					
Mentoring		1.284	3	0.428	1.744	0.161
Corporation	46.2					
Sole proprietorship	45.7					
Partnership	27.3					
Limited liability	100

Fig. 3. (A) Industry survey responses (n = 147) indicating reported average annual salaries by employee classification. (B) Industry survey responses (n = 147) indicating reported average annual salaries by employee classification.

Table 6. Industry survey responses (n = 134) indicating the frequencies and percentages of nonseasonal workers employed with companies for less than 1 year to 16 or more years.

Years	Industry survey response	
(no.)	Nonseasonal workers (no.)	Nonseasonal workers (%)
<1	3	2.2
1-2	9	6.7
3-5	29	21.6
6-7	26	19.4
8-10	32	23.9
11-15	11	8.2
≥16	24	17.9

Over 50% of laborers earned, on average for those businesses responding, between \$16,000 and \$25,000 annually, while 75% of sales staff made on average between \$26,000 and

\$40,000 each year (Fig. 3A); 50% of superintendents also indicated salaries in that range (Fig. 3B).

Generally, nonseasonal employees were staying with companies 3 to 10 years (65%) (Table 6); 18% of employees were with companies for more than 16 years. A statistically significant difference ($P < 0.01$) was found in analysis of variance comparisons of the types of business structure and the amount of time that nonseasonal employees stayed with companies (Table 7). Post hoc analyses indicated that nonseasonal employees tended to stay with corporations longer than with sole proprietorships. Greater than 80% of the employees at corporations were reported in the 6 to 16+ years of service categories while over 50% of sole proprietorship employees were reported in the 1 to 5 year range (Table 8).

Since the well-known Hawthorne Studies were conducted in the 1920s to 1930s (Dickson, 1973), researchers have looked at employee motivation and found that employers' interest in supplying a safe working environment and good working conditions can be just as important as salary/pay rate (Lindner, 1998). Nearly 87% of employers carried worker's compensation, 59% of respondents provided liability insurance (Table 9), 26% of businesses offered life insurance, and 47% offered medical insurance. Most companies also contributed other types of benefits known to aid in business identity such as hats or caps (76%) and shirts (71%). Employees were also given protection devices such as safety glasses (78%), masks (74%), gloves (71%), back supports (48%) and shoes or boots (15%). There was a statistically significant correlation between the total annual payroll of companies and availability of medical ($P = 0.046$) and life insurance ($P = 0.001$) (Table 10). Companies with a larger annual payroll were more likely to provide medical and life insurance.

Past studies have indicated that workplace diversity promotes recruitment and retention of employees and affects management styles and relationships within the company. Minorities in homogenous institutions can be excluded and isolated, leading to employee dissatisfaction and, ultimately, a high turnover rate within the business (Ewert et al., 1995). Results from this study showed low employment among African Americans (1%) and Asians (2%) (Fig. 4). Recruitment of Hispanic employees is especially common for seasonal labor (HRDC, 1992), which likely explains the higher percentage of Hispanic employees reported in this study (46%) (Fig. 4). Respondents indicated that 76% of their employees were male (Fig. 4). This was similar to past research that found fewer women working in the Florida ornamental horticulture industry, and most of the women employed in clerical positions (Smith et al., 1990). Respondents indicated that their employees were primarily between 21 and 41 years old (64%), with only 10% over 52 years old (Fig. 4). These findings supported research showing a higher number of young people working in the industry in North America (HRDC, 1992).

The value of U.S. horticultural products is expected to continue growing through 2005. Respondents in this study indicated that business proprietors forecast growth, as well, with most nursery businesses predicting 10% to 20% growth in their companies. There has been some concern whether

Table 7. Comparisons of industry survey responses on the variables of employees' length of service^z and type of business structure^y in which they were employed determined by an analysis of variance.

Years of service	Sum of squares	df	Mean square	F value	P
Between groups	35.235	3	11.745	4.910	0.003
Within groups	298.997	125	2.392		
Total	334.233	128			

^z0 through 16+ years.^ySole proprietorship, corporation or limited liability.**Table 8. Post hoc analyses indicating the percentages of nonseasonal workers employed with each type of business structure for less than 1 year to 16 or more years as reported by industry survey responses (n=147).**

Business structure and length of service	Industry survey responses Nonseasonal workers (%)
<1 year	
Corporation	0
Sole proprietorship	5.1
Partnership	10.0
Limited liability corporation	0
1–2 years	
Corporation	2.6
Sole proprietorship	17.9
Partnership	0
Limited liability corporation	0
3–5 years	
Corporation	16.7
Sole proprietorship	35.9
Partnership	20.0
Limited liability corporation	0
6–7 years	
Corporation	24.4
Sole proprietorship	7.7
Partnership	20.0
Limited liability corporation	0
8–10 years	
Corporation	23.1
Sole proprietorship	17.9
Partnership	40.0
Limited liability corporation	100
11–15 years	
Corporation	12.8
Sole proprietorship	2.6
Partnership	0
Limited liability corporation	0
≥16 years	
Corporation	20.5
Sole proprietorship	12.8
Partnership	10.0
Limited liability corporation	0

there will be enough trainable or educated workers to meet the increased need for employees. Respondents in this study indicate that businesses were recruiting employees with various educational backgrounds including those with degrees in horticulture, business and related areas. These results demonstrate that knowledge and skills related to business can be as valuable as horticulture knowledge for students seeking positions in the industry. As such, universities may want to modify degree programs to promote business skills by offering minors in business or dual programs. Results from

this study found that wages earned by horticultural laborers were exceedingly low. Low wages are often associated with difficulties in recruiting and retaining good employees. If the industry wishes to remain competitive, it may prove wise to consider implications that occur with high employee turnover. Finally, the information provided by this study provides valuable insight into the status of the industry, indicating that horticultural crops are a valuable industry in Illinois, providing employment opportunities as well as strengthening many local, rural economies.

Table 9. Frequencies and percentages of the types of employee benefits provided by businesses as reported by industry survey responses (n = 147).

Benefit	Industry survey responses	
	Businesses providing benefits (no.)	Businesses providing benefits (%)
Liability insurance	83	59.3
Medical insurance	66	46.8
Worker's compensation	122	86.5
Life insurance	37	26.2
Hats	105	75.5
Back supports	67	48.2
Shirts	99	71.2
Safety glasses	109	78.4
Shoes/Boots	20	14.6
Gloves	98	70.5
Masks	103	74.1

Table 10. The relationship between total annual payroll of businesses responding to the industry survey and the availability of medical and life insurance provided by those businesses to employees determined by using a Pearson product-moment correlation.

Total annual payroll	Medical insurance	Life insurance
Pearson correlation	0.264	0.434
P (2-tailed)	0.046	0.001
Number	58	58

Fig. 4. Industry survey responses (n = 147) indicating the percentages of horticulture employees in each of the categories of ethnicity, gender and age.

Literature cited

Ayers D. and B. Stone. 1999. Extension organization of the future: linking emotional intelligence and core competencies. *J. Ext.* 37(6). 12 Jan. 2002. <<http://www.joe.org/joe/1999december/iw4.html>>

Bordelon, B., A. Hammer, B. Moser, J. Simon, G. Sullivan, and J. Uhl. 1997. Food system 21: Gearing up for the new millennium. Purdue Univ. Coop. Ext. Serv., West Lafayette, Ind.

Borg, W.R. and M.D. Gall. 1989. Educational research: An introduction. 5th ed. Longman, White Plains, N.Y.

Dickson, W.J. 1973. Hawthorne experiment, p. 298–302. In: C. Heyel (ed.). *The encyclopedia of management*. 2nd ed. Van Nostrand Reinhold, New York.

Ewert, D.M., J.K. Rice, and E. Lauderdale. 1995. Training for diversity: How organizations become more inclusive. *Adult Learning* 6(5):27–28.

Human Resources Development Canada. 1992. Horticulture industry report—A summary of the human resources study. 12 Jan. 2002. <<http://www.hrdc-drhc.gc.ca/hrhb/hrp-prh/ssd-des/english/industryprofiles/R01/busenv.shtml#100>>

Illinois Agricultural Statistics Service. 1997. Illinois agricultural statistics annual summary. Ill. Agr. Stat. Serv., Springfield.

Lard, C.F., C.R. Hall, and R.K. Berry. 1996. The economic impact of the Texas turfgrass industry. *Hort. Econ. Res. Rpt.* #96-9. Dept. Agr. Econ., Texas A&M Univ., College Station.

Lindner, J.R. 1998. Understanding employee motivation. *J. Ext.* 36(3). 12 Jan. 2002. <<http://www.joe.org/joe/1998june/rb3.html>>

Putnam, J. and J. Allshouse. 1996. Food consumption, prices, and expenditures. *USDA Stat. Bul.* 928, April.

Rhodus, T. and J. Hoskins. 1996. Ohio nursery industry survey. Department of Horticulture and Crop Science, Ohio State University. 12 Jan. 2002. <<http://www.hcs.ohio-state.edu/greengoods/survey96.htm>>

Smith, S., M.E. Swisher, and C. Shehan. 1990. Targeting women in agribusiness. *J. Ext.* 28(4). 12 Jan. 2002. <<http://www.joe.org/joe/1990winter/a8.html>>

Tinker Graphics. 1994. Jobs in horticulture. 21 Jan. 2002. <<http://hortjobs.com/>>

U.S. Department of Agriculture. 1997. Vegetables and specialties: Situation and outlook report. Market and Trade Econ. Div., Econ. Res. Serv., VGS-271, April.

U.S. Department of Agriculture. 1998. Census of agriculture horticulture specialties. vol. 3. Natl. Agr. Stat. Serv. 12 Jan. 2002. <<http://www.nass.usda.gov/il/1998/>>