

## **SOCIOECONOMIC SURVEY OF NURSERY AUTOMATION**

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**Nature of Work.** According to the American Nursery and Landscape Association (2002), the major limitation to growth of the greenhouse nursery industry is the shortage of qualified labor for container-based handling of plants. A recent national survey of commercial nursery/landscape operations by *Lawn and Landscape* magazine listed labor shortage as the number one limitation facing the industry at the end of 2001 (Anonymous, 2001), with 68.4% of the respondents citing labor as a critical issue for their business. Many of the jobs in the greenhouse nursery industry require large amounts of stooping, lifting of heavy containers, and exposure to chemicals, dust, and plant materials. Exposure to plant materials and pollen at flowering can also lead to increased risk of allergy and asthma. These jobs tend to be relatively low paying, making it difficult to compete for and retain workers in a tight labor market. Many commercial operations have turned to immigrant labor to meet their labor requirements; however, these workers are often relatively unskilled, not speaking English and many lack driver's license and needed certifications (Anonymous, 2001; Jovan, 2001; West, 2002). There is a need to increase the skill level of workers in order to improve wage rates, recruitment, and retention of workers. Singh et al. (2001) stated "changing markets and evolving technologies are two major forces creating investment and employment opportunities, as well as adjustment problems, in the green industry.

As the opportunities in the green industry grow, so does the need for better-educated and qualified employees in the industry." They further reported that one of the main issues of concern for the green industry is the ability to find the right kind of trained workers. They noted that universities can assist in training workers for the green industry through technology transfer and training. This socioeconomic (SEC) project is a part of a research program currently being undertaken by the Mississippi Agricultural and Forestry Experiment Station and the U.S. Department of Labor entitled "Enhancing Labor Performance of the Green Industry in the Gulf South." The overall goal of this SEC project is to develop a socioeconomic profile of horticulture workers and to evaluate the impact of automation technologies on their employment, earnings, safety, skill-levels, recruitment and retention rates. Specifically, it aims to achieve the following objectives:

1. To develop socioeconomic profiles (NSEP) of horticulture workers in the region;
2. To formulate an index of automation for horticulture nurseries (NAI) in the region;
3. To evaluate the effects of automation on the socioeconomic characteristics (NSEM) of horticulture workers in the region; and
4. To create a socioeconomic database (NSED) for horticulture workers in the region.

**Results and Discussion.** The focus of the SEC project is the greenhouse and nursery industry of in the Northern Gulf of Mexico. Demographically, the region's population is 61-72% white, 26-37% African American, and 2-3% other racial groups. Those who had at least a bachelor's degree comprised 18% in Mississippi to 21 in Alabama and Louisiana, which were below the national average. Those who did not complete formal high school education ranged from 21% in

Alabama to 25% in Mississippi, which were also higher than that of the national average. The percent of the population who spoke a language other than English at home ranged from 3% in Mississippi to 9% in Louisiana. The incidence of poverty in all the states covered was also higher than that reported for the entire nation, ranging from 17% in Alabama to 20% in Mississippi. The target populations are laborers indirectly through the operators of the greenhouse/nursery industry (O\*NET SOC Code 45-2092.00). The above demographic characteristics indicate that the region has a very low paid, relatively unskilled labor force from which the greenhouse nursery industry can recruit. The results of this nursery survey (NSEP) are used to evaluate the socioeconomic impact of automation on greenhouse nursery workers. Major labor issues addressed include, among others, worker safety, skill-levels, wage rates, and worker recruitment and retention rates. The number, employment and workers' earnings of nurseries by states and Metropolitan Areas (MSAs) are collected from both primary and secondary sources. Secondary sources include the U.S. Dept. of Agriculture (2002; 2003) and U.S. Census Bureau (2003). The major primary source of socioeconomic data is the survey of nurseries in the three adjacent states, including Mississippi, Alabama and Louisiana. These interviews are conducted to obtain labor, technical and economic information concerning the horticulture nurseries. The Nursery Automation Index (NAI) is a measure of the level of automation currently being practiced in each nursery included in the regional survey. It shows the extent by which nurseries have currently automated the various tasks involved in the production of horticulture products. A series of questions are asked to solicit the respondent's perceptions of the level, costs and labor requirements of every automation used in every nursery visited.

1. How would you describe the level of automation in <nursery task> in your nursery?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

where 100% = fully automated or mechanized and 0% = fully manually done.

2. If automated or mechanized, what type of automated system is used?
3. What was the cost of purchasing and installing the automation system?
4. How many workers are required to operate the equipment?

The Nursery Socioeconomic (NSEM) models estimate the relationships among the different parameters describing earnings, employment, working environment, and automation index. The Nursery Socioeconomic Database (NSED) consists of variables estimated by the SEM models linking labor, technical and economic information collected during the survey of horticulture nurseries in the region. Variables included are race, age, gender, formal education completed, marital status, household income, household size, nursery experience, percent of income from nursery, and level of satisfaction from current lifestyle.

### **Significance to the Industry.**

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Characteristics	US	LA	MS	AL
Education <sup>1</sup> (% , 25 yrs & over)				
< High school diploma	17	22	25	21
High school diploma	30	33	30	32
Some college	27	24	27	27
Bachelor's degree (%)	26	21	18	21
Age distribution <sup>1</sup>				
18-64 (%)	63	62	61	61
65 & older (%)	12	11	12	13
Median age (yr)	36	35	34	36
Race distribution <sup>1</sup> (%)				
White	78	64	61	72
African American	12	33	37	26
Others	10	3	2	2
% spoke a language other than English at home <sup>1</sup>	18	9	3	4
% employed in AFFHM <sup>1</sup>	2	4	3	2
% of people in poverty <sup>1</sup>	12	19	20	17

<sup>1</sup> - 2002 data released by the U. S. Census Bureau (2003).

AFFHM - agriculture, forestry, fishing, hunting and mining industry.

Item	USA	LA	MS	AL
Per capita income <sup>1</sup> (\$000)	30.9	25.4	22.4	25.1
Unemployment rates <sup>2</sup> (%)	6.2	7.6	7.2	5.7
Median annual wages <sup>3</sup> (\$)	14,500	14,500	13,300	16,300

<sup>1</sup> - preliminary 2002 estimates released by the U.S. Bureau of Economic Analysis (2003).

<sup>2</sup>- July 2003 seasonally adjusted data released by O\*Net Online (2003).

<sup>3</sup>- 2001 wage rates of farmworkers and laborers, crop, nursery, and greenhouse released by O\*Net Online (2003).