

Michigan State report - Bridget Behe

1. *Conducted a study with Jennifer Dennis (Purdue Univ.) on consumer behavior of gardeners of different ethnic backgrounds.* We were not successful in our attempt (11/04) to gain a \$25,000 grant from the Horticultural Research Institute. We did, however, collect data on gardening behavior of 1600 consumers (representative sample of U.S. on average) with over-sampling of three ethnic backgrounds: Asian-Americans, African-Americans, and Hispanic-Americans. In nearly every cross-tab analysis, differences among ethnic group gardening behavior was observed. Publications are being prepared.
2. *Conducted a study with Jessica Hicks (M.S. student) on the effect of consumer gardening knowledge and repurchase intentions.* Jessica successfully defended her thesis on 2/16/05. Our publication is ready for submission to the Journal of Consumer Behavior. This paper extended the current research on the role of moderating variables in satisfaction research. Our research tested the role of prior plant knowledge on repurchase intention. Knowledge level is proposed to be a potential moderating variable of the relationship between satisfaction and repurchase intention as well as delight and repurchase intention. An Internet survey was conducted to examine an actual purchase experience, in this case the initial purchase and the actual performance of the plant following purchase. Our results showed that knowledge level did not have a moderating effect on the delight to repurchase intention path, nor did it moderate the satisfaction to repurchase intention path. The delight to repurchase intention path, however, had a significant impact on repurchase intention. Results were consistent with existing literature, indicating that greater emphasis should be placed on delighting the consumer, rather than just satisfying them. A grant was submitted to the Michigan Nursery and Landscape Association (with J. Dennis, R. Spreng, and T. Page) to follow-up on this work by investigating the role price point plays in satisfaction, regret, delight, and repurchase intentions.
3. *To complete analysis and develop a publication from tested chestnut products with the chestnut team.* In October, 2004, 118 people in two locations in Michigan participated in a soup evaluation. One location was in Cadillac, MI, where the annual Chestnut Festival was held. The second location was on the campus of Michigan State University during the Homecoming Tailgate prior to the homecoming football game. A tent was erected outside the stadium where alumni of the Packaging School attended a luncheon function. Participants from Cadillac were older; their average age was 52.5 years compared to the campus participants, who were an average 45 years. Participants from both locations had a similar number of persons under age 18 in their household (average 0.5) and over age 18 (2.0). There was a similar percentage of males (41%) and females (59%) at each location ($\chi^2=1.382$, $p=0.710$). Persons at the Cadillac location had household incomes higher than those at the campus location ($\chi^2=27.528$, $p=0.001$) and surprisingly higher level of education ($\chi^2=39.634$, $p=0.000$). There was a wide range of household Zip codes (39), indicating the sample was from a diverse geographic area. Participants from both locations ate some type of soup a similar average number of times (1.6) in the week preceding the study. About half of the servings were made at home from raw ingredients and the other half were made from canned, frozen, or processed ingredients. In terms of soup evaluation, people from both locations evaluated the soup similarly, with the exception of the aroma attribute. All five attributes were evaluated on a five point scale, with 5=like very much and 1=dislike very much. Color received an average rating of 4.2, flavor 4.5, texture 4.5, overall 4.5. People in Cadillac like the aroma more (4.5 average rating) compared to people on campus (4.3 average rating) ($F=4.486$, $p=0.036$). All ratings were above 4.0, indicating strong acceptance for the soup overall and the individual attributes.

Delaware State Report – Sue Barton

Roadside rights-of-way are being managed in Delaware using one of the following strategies: release with spot treatment; release with annual mowing; editing existing vegetation with spot treatment; cutback of existing or planted vegetation; seeding or plugging with annual mowing; and planting with spot treatment. The economics of these various types of roadside vegetation strategies are being compared and evaluated. A public opinion survey was conducted during fall 2004 will to gauge public acceptance of these strategies. Results show that the public accepts a mowed edge as an alternative to an entirely mowed infield. Color is desirable on the roadside, but that color can come from flowers, fruit or foliage. A Roadside Vegetation Planning and Concept Manual is in the final layout and design stages. Final publication will occur in April 2005.

Two grant funded projects have focused on providing alternative plant recommendations to invasive plant species that are still sold in the nursery and landscape industry. Three pilot garden centers in Delaware tested merchandising materials that identified invasive species and suggested alternatives as well as tags that identified "Livable Delaware" plants sold at the garden center.

Impact:

"Enhancing Delaware Highways" strategies have been outlined at a number of regional and national vegetation management and design meetings. Landscape architects and roadside designers are beginning to implement these strategies in other states.

The Plants for a Livable Delaware campaign has been well received in Delaware and surrounding states. An initial printing of 10,000 brochures have been distributed and another 15,000 have been printed. Master Gardeners are using the materials in many homeowner presentations throughout the state.

Publications:

Barton, S., R. Darke and G. Schwetz. 2004. Enhancing Delaware Highways: Roadside Vegetation Concept and Planning Manual. University of Delaware, in press.

"Plants for a Livable Delaware" and "Controlling Backyard Invaders" brochures.

Tennessee State Report – John Brooker and Charles Hall

Marketing- and production-related data have been collected as part of the S-290 Regional Research Committee's activity (formerly S-103) since 1988. Beginning with 1988, and then at five year intervals, in 1993 and 1998, mail-back surveys have been used to collect information on selected production practices, plants produced within various categories, sales by type of outlet, distribution of sales by state, advertising expenditures, and selling methods for the calendar years completed prior to the late-winter distribution of questionnaires. For the 2004 nationwide nursery industry survey, a grant provided the resources to enable the S-290 survey team to include nearly every state in the 2003 survey and to draw a representative sample from consistent nursery population lists. Population lists for each state were assembled from each state's Department of Agriculture office responsible for licensing nursery producers. A master file of all certified nursery operations in 44 states resulted in a combined listing of 38,269 certified nursery operations. Based on budgetary consideration, and sample size necessary from a statistical perspective, the decision was made to draw a sample in the neighborhood of 15,000. The overall response rate for the usable returned questionnaires was 15.9 percent. The distribution of the 2,483 respondents ranged from as few as 10 for Nevada to 476 from Florida.

Substantial effort put into a National Economic Impact Study regarding the Green Industry in the U.S. in conjunction with Alan Hodges and John Haydu from the University of Florida. Refer to the Florida state report for more information regarding this study.

Impact:

The coding, cleaning, and initial examination of the survey results have only recently been completed. As noted on the last page of the questionnaire, "As researchers and Extension workers in the area of landscape plants, we need the type of data collected from this survey to facilitate marketing research and outreach information contributing to the overall efficiency and development of the industry." The data provided from the 44 states included in this survey and the subsequent analysis could help nursery managers anticipate and initiate adjustments in marketing strategies. Of course, such analyses will not alter the broad economic forces that affect firm competitiveness and efficiency. However, greater knowledge about the industry could provide valuable input into managers' decision-making activity regarding future expansion plans, selection of which plants and quantities to produce, determination of which production methods to use, and the appropriate market outlets to target. A researcher or Extension person in each state has a copy of the raw data for their state. Numerous individual state publications based on this survey data are anticipated.

Publications:

Gardner, Justin, David Eastwood, Charles Hall, and John Brooker, "Pricing Powdery-mildew-resistant Dogwoods: Simulated Impacts on the Nursery-Industry Supply Chain," *HortTechnology*, January-March 2004, 14(1), pages 114-119.

Klingeman, William, David Eastwood, John Brooker, Charles Hall, Bridget Behe, and Patricia Knight. "Consumer Survey Identifies Plant management Awareness and Added Value of Dogwood Powdery Mildew Resistance," *HortTechnology*, April-June, 2004 14(2), pages 275-282.

Brooker, John, Charles Hall, and David Eastwood, *The Fourth National Nursery Industry Survey of Production and Marketing Practices*, SNA Research Conference Proceedings, Vol. 49, 2004, pages 484-487.

Hall, Charles, John Brooker, and David Eastwood, *The Status of Computerization in the U.S. Nursery Industry*, SNA Research Conference Proceedings, Vol. 49, 2004, pages 491-494.

Florida State Report - Alan W. Hodges and John J. Haydu

National Nursery Survey. Conducted the fourth National Nursery Survey, during Jan-Apr, 2004, to document production, marketing and management trends in the wholesale nursery industry. Survey was conducted jointly by University of Tennessee (Brooker) and University of Florida (Hodges). Development of survey list and mailings were centrally coordinated for first time. A total of 35,000 wholesale or wholesale/retail firms were identified in 44 states; 15,588 firms were selected for the survey, and responses were received from 2,485 firms. Sales reported by respondents totaled \$2.67 billion and total employment reported was 46,590 jobs. The leading product groups were deciduous shade and flowering trees (14.0% of sales), annual bedding plants (10.2%), evergreen trees (8.3%), and broad-leaved evergreen shrubs (7.6%). Native plants represented 13.6% of total nursery sales. Nearly two-thirds (63%) of total sales were in containerized media, 16.4% were balled & burlapped, and 7.6% were bare root. Sales to wholesale markets represented 80.3% of total sales, while direct retail sales were 19.7%. Wholesale market outlets for plants were comprised of landscapers (29.8%), re-wholesalers (27.6%), retail garden centers at a single location (15.7%), home improvement stores (11.7%), retail mass merchandisers (9.3%), and retail chain garden centers (6.0%). Less than one percent of production was under forward contracts, while 15.2% of sales were brokered for other growers. The most important methods for marketing were telephone contacts (46.2% of sales) and in-person contacts (43.6%), while mail order, trade shows and internet sales each accounted for less than 5%. Approximately 25% of sales were negotiated between the buyer and seller as to price and terms. Sales within the state where production occurred represented 64.4% of total sales, so sales out-of-state were 35.6%. Foreign exports accounted for 1.7% of sales. Total advertising expenses reported represented 2.7% of sales, and the most important advertising media were trade shows and catalogs. The survey also gathered information on computer use, factors affecting business expansion, general business, and price determination, irrigation and pest management practices. Survey data have been distributed to participating state members of S-290. A summary publication for overall U.S. results is expected in 2005.

Economic Impact of the Green Industry in the United States. This research project, sponsored by the USDA/National Urban Forestry Advisory Council, and conducted in collaboration with University of Tennessee (C. Hall), seeks to measure the direct and indirect economic contribution of the environmental horticulture industries to the U.S. economy, including plant production, lawn & garden equipment manufacturing, landscape services, and wholesale/retail trade sectors. Published data on sales revenues, employment, payroll, and number of firms in each state and sector were taken from the 2002 Economic Census and Census of Agriculture, and County Business Patterns. Economic multipliers for each state and sector were developed using the *Implan* input-output software to construct regional models for each state. Multipliers represent the direct effects of industry sales, indirect effects of purchases from supplier businesses, and induced effects of employee household spending. With government and capital accounts included in the models, the Social Accounting Matrix (SAM) multipliers also represent institutional transfer payments and taxes. Preliminary results. Preliminary results indicate that economic impacts for all states were \$143.7 billion (Bn) in output, 1.92 million jobs, \$92.3 Bn in value added, \$62.9 B in labor income and \$6.7 Bn in indirect business taxes. For the production and manufacturing sectors, including nurseries/greenhouses, lawn and garden equipment manufacturers and greenhouse manufacturers, total output impacts were \$31.8 Bn, employment impacts were 274 thousand jobs, and value added impacts were \$18.8 Bn. For the horticultural services sectors, including landscape services and landscape architects, total output impacts were \$56.5 Bn, employment impacts were 739 thousand jobs, and value added impacts were \$38.2 Bn. For the wholesale/retail trade sectors, total output impacts were \$55.5 Bn, employment impacts were 910 thousand jobs, and value added impacts were \$35.3 Bn. A final report to the sponsor will be submitted in June, 2005.

Financial Benchmark Analysis System for Wholesale Nurseries. An internet-based system for financial benchmark analysis of wholesale nursery operations has been developed (website address is <http://hortbusiness.ifas.ufl.edu/hortNBA>), under

the sponsorship of the Florida Nursery Growers and Landscape Association. The system consists of a database of historic records for Florida firms, a report generator, and security-encrypted data entry forms. Benchmarks are available for productivity, efficiency, cost, financial solvency and liquidity measures. A series of standard industry reports and time series report are available to the general public. Members of FNGLA have access to the site to analyze operating results for an individual firm in relation to industry-average benchmarks. Training workshops on using the system were conducted for about 25 growers in Tampa and Homestead, FL. It is hoped that the system can be extended to other horticulture industry groups (e.g. landscape services), and to other states or regions.

Publications

- Brooker, John, C. Hall, D. Eastwood, J. Haydu, and A. Hodges. 2004. The Fourth National Industry Survey of Production and Marketing Practices. *Southern Nursery Association Research Conference*, Vol. 49:38-43.
- Caron, Jean, Richard C. Beeson, and John J. Haydu. 2004. Saving Water with Sphagnum Peat in Nursery Growing Media. *Acta Horticulturae*, Vol./No. December.
- Cisar, John, George Snyder, John Haydu, Daren Park and Karen Williams. 2004. "An evaluation of N sources on bermudagrass quality." *Journal of International Turfgrass Research*, in press
- Haydu, John J., John Cisar, and Loretta Satterthwaite. 2004. Florida's Sod Production Industry: A 2003 Survey. *Journal of International Turfgrass Research*, in press
- Haydu, John J., Richard C. Beeson, and Jean Caron. 2003. Economic Analysis of Five Irrigation Technologies for Container-grown *Viburnum odoratissimum*. *Acta Horticulturae*, Vol./No. December.
- Hodges, A., and J.J. Haydu. An Internet-Based System for Financial Benchmark Analysis of Wholesale Nursery Operations. *Southern Nursery Association Research Conference*, Vol. 49, pp. 517-520, Nov. 2004.
- Rahmani, M, A.W. Hodges and C.F. Kiker. Compost Users' Attitudes Toward Compost Application in Florida. *Compost Science & Utilization*, 12(1): 55-60 (Winter 2004).
- Satterthwaite, L.N., J.J. Haydu and A.W. Hodges. Exit Survey of Consumer Purchasing Habits at Florida Retail Garden Centers. *Southern Nursery Association Research Conference*, Vol. 49, pp. 479-481, Nov. 2004.
- van den Broek, L., J.J. Haydu, A.W. Hodges and E.M. Neves. Production, Marketing and Distribution of Cut Flowers in the United States and Brazil. Research Report, 19 pages.

Louisiana State Report – Roger Hinson

Project Number: LaB 3434 (S-290)

Project Title: Technical and Economical Efficiencies of Producing,
Marketing and Managing Landscape Plants

Initiation Date: 10/1/1999 Termination Date: 9/31/2005

Objective I. Kuehny

Objective IIA.

Write-up and dissemination of the study of economic impacts of the green industry on Louisiana's economy was accomplished.

Planning to update cost of production estimates for container-grown woody ornamental plants in climatic zones 7 and 8 was initiated. Updates are needed because existing estimates are about 10 years old. Production systems have changed to some extent, new crop protection chemicals are available, and machinery and equipment costs are outdated. Hinson and Charles Hall (University of Tennessee) are leaders of this sub-objective. The activity was planned in 2004, and data collection, verification and budget estimation are planned for 2005.

Risk management has received additional attention in the ornamentals industry. In response, scientists have received funding from the USDA-Risk Management Agency to conduct a series of workshops on financial analysis and risk management for horticulture industry producers in the southeast United States. These were planned in 2004, and will be conducted in 2005. A total of 10 states and territories are involved in the project. The training sessions will be two-day events for 15 to 25 persons with a qualified interest (owners and managers of nurseries, greenhouses and sod farms, and other segments of the industry such as landscapers, lawn & garden retailers and other allied industry professionals, as appropriate)

Publications:

Hinson, R. and S. Denvanich. "Technology, Mass Merchandisers Bring Dynamic Change to Nursery Industry". *Louisiana Agriculture*, Vol. 47, No. 1, Winter 2004, pp 16, 17.

Hinson, R. and R. Pinel. *The Economic Value of the Ornamental Plants and Allied Products and Service to Louisiana's Agricultural Economy*". *Louisiana Agriculture*, Vol. 47, No. 1, Winter 2004, pp 13 – 15.

Owings, A. and R. Hinson. 2004. "Nursery Crops", in *Outlook for Louisiana's Agriculture*, LSU Agricultural Center, Baton Rouge, 2004

Hinson, R. and R. Navajas. "Changing Content of the Nursery Grower's Sales Agreement". *HortTechnology*, 14(1) 119-124, 2004.