servation. Hall et al. (5) found that "living" mulch reduced soil losses by about 100%. In their study the conventional till system had 4400 to 32200 kg/Ha (1.96 to 14.2 ton/A) of soil los while the living mulch systems resulted in 0 to 1100 kg/Ha (0 to 0.49 ton/A). Frere (4) discussed how finer particles transported by water can contain organic matter, phosphorus, and nitrogen in amounts equal to the soil content.

The annual soil loss tolerance for the study site was 11230 kg/Ha (5 ton/A). Based on the experiment, 'Appalow', lespedeza, (2430 kg/Ha [1.31 ton/A]) crimson clover (4850 kg/Ha [2.16 ton/A]), and perennial ryegrass plots (2940 kg/Ha [1.31 ton/A]) were well within the tolerance limit. However, the clean till plot was over four times (46100 kg/Ha [20.6 ton/A]) the tolerance limit during the six-month data collection period.

Literature Cited

1. Angle, J.S., G. McClung, M.S. McIntosh, P.M. Thomas, and D.C. Wolf. 1984. Nutrient losses in runoff from conventional and no till corn water sheds. J. Environ. Qual. 13:431–435.

2. Brakensiek, D.L., H.B. Osborn, and W.J. Rawls. 1979. Field manual for research in agricultural hydrology. Agriculture Handbook 224. U.S. Gov't. Printing Office. Washington, D.C. pp. 550.

3. Bregger, J.T., and G.F. Brown. 1945. Conserving soil and moisture in orchards and vineyards. USDA Farmers Bull. U.S. Gov't. Printing Office, Washington, D.C. pp. 2–29.

4. Frere, M.H. 1976. Nutrient aspects of pollution from cropland. pp. 59–82. *In*: Control of Water Pollution from Cropland: Volume II—An Overview. USDA-ARS and EPA. U.S. Gov't. Printing Office, Washington, DC.

5. Hall, J.K., N.L. Hartwig, and L.D. Hoffman. 1984. Cyanazine losses in runoff from no-tillage corn in "living" and dead mulches vs. unmulched, conventional tillage. J. Environment Qual. 13:105–110.

6. Klausner, D.E., C.W. Richardson, and E. Burnett. 1974. Surface runoff losses of soluble nitrogen and phosphorus under two systems of soil management. J. Environ. Qual. 3:42–46.

7. Newenhouse, A.C., and M.N. Dana. 1989. Grass living mulch for strawberries. J. Amer. Soc. Hort. Sci. 114:859–862.

8. Stewart, B.A., D.A. Woolhiser, W.H. Wischmeier, J.H. Caro, and M.H. Frere. 1975. Control of Water Pollution from Cropland, Vol. 1—A Manual for Guidelines Development. EPA. U.S. Gov't. Printing Office, Washington, DC.

9. Streeter, V.L., and E.B. Wylie. 1975. Fluid measurement. Fluid Mechanics, 6th ed. McGraw-Hill Book Co., New York, NY. p. 475.

10. Sweet, B. 1982. Conservations on the uses and effects of cover crops in agriculture. pp. 3–22. *In*: J.C. Miller and S.M. Bell (ed.). Workshop proceedings: Crop production using cover crops and sods as living mulches. Oregon State University. Corvallis, OR.

11. Wiles, L.J., R.D. Williams, G.D. Crabtree, and S.R. Radosevich. 1989. Analyzing competition between living mulch and a vegetable crop in an interplanting system. J. Amer. Soc. Hort. Sci. 114:1029–1034.

An Economic Inquiry into South Florida's Foliage and Woody Container Nurseries[1]

John J. Haydu[2]
University of Florida - IFAS
Central Florida Research & Education Center
2807 Binion Rd.
Apopka, FL 32703

Abstract

South Florida's nursery industry was examined to isolate important factors contributing to a recent loss of market share. Results indicate that a wide range of problems afflict both the foliage and woody industries. Two of the most pressing problems are easy market access and a lack of basic supply and demand information necessary for firm-level decision-making. These factors are detrimental to even the most efficiently run firms.

Index words: economic performance, economic coordination, market research, merchandising.

Significance to the Nursery Industry

Evidence indicates that, in spite of the economic growth in Florida's nursery industry in the 1980's, rate of growth is declining. Although part of this decline can be explained by growing competition from other states, additional problems persist. Easy market access and inadequate information on product supply and demand, are two of the most pressing problems. These factors weaken the decision-making capacity of firms and contribute substantially to business failures. Business failures, in turn, create considerable instability within the industry as new firms constantly replace old. Since new businesses require a "learning" period before they become competitive, inefficiencies arise primarily in the form of below-cost prices and poorer product quality overall.

Introduction

The nursery industry in the U.S. grew considerably during the 1980's. Between 1982 and 1988 cash receipts rose from $3.4 billion to $6.9 billion, representing a 10 percent average annual increase (12). Nursery crops also accounted for nearly one-tenth of all farm crop cash receipts in 1988,

[1]Received for publication May 4, 1992; in revised form October 13, 1992. Florida Agricultural Experiment Stations Journal Series No. R-02386.

[2]Assistant Professor, Food and Resource Economics, Institute of Food and Agriculture Sciences, University of Florida.

underscoring the growing economic importance of the nursery industry within the agricultural sector. Averages, however, fail to reveal how this growth was shared among individual producing states. Although Florida accounted for the second largest share of total U.S. receipts, between 1983 and 1989 the percentage change in its share actually declined by 30 percent (13).

In contrast to more traditional sectors of agriculture where detailed production and marketing data have been collected continuously at the national level (i.e., weekly or monthly) for decades, economic information in the nursery industry is noticeably deficient. At the state level, this problem is even more acute. The purpose of this study was to arrive at a better understanding of Florida's nursery industry and attempt to isolate important factors contributing to the state's recent loss of market share. There has been considerable speculation and debate among individuals within and outside the industry as to what these problems might be, yet to date no effort has been sought to determine them in a systematic fashion. This research sought to ameliorate this information deficit by exploring key problem areas with informed people in Florida's nursery industry.

Materials and Methods

Due to the scarcity of published economic information, a case study approach was employed. This approach utilizes a rather small, targeted (non-randomized) sample to facilitate in-depth questioning. Specifically, personal interviews were conducted to obtain a detailed understanding of the types, nature and severity of problems afflicting the industry. Personal interviews were also highly suitable for flushing out causes of particular problems and to explore unexpected avenues that surfaced during the interviews.

A survey instrument was developed with both open- and closed-ended questions. This was done to standardize the questioning and keep the interviews on track. Although published information was not available, there were individuals who were highly knowledgeable about the industry and many of its problems. For the purposes of this study, the four extension agents from the counties being examined became the information sources for the questionnaire. Two of the agents had over ten years experience with the industry, the remaining two had nearly twenty years experience. A series of 2–3 hour sessions were required to identify and rank the questions and to agree on the specific wording of each question to minimize ambiguities.

The design of this research emphasized the role of economic coordination. Of particular concern was how well coordinated the operations and activities of suppliers are with growers, and growers with retailers. For instance, is there satisfactory communication between sellers and buyers to ensure an optimal exchange? In analyzing these issues, a "mirror image" approach was adopted (11). The technique involves asking decision makers, who are on opposite ends of an exchange, their perceptions of a particular problem. Since each party's understanding of the problem will be based on their own experience, the interpretations should differ.

Although Florida's nursery industry consists of five major subsectors—cut flowers, potted flowering plants, foliage plants, landscape, or woody plant materials, and cut greens—due primarily to their economic importance, this study concentrated on foliage and woody ornamental plants. In 1988 these two subsectors comprised 66 percent of total annual sales in Florida (14). The study was conducted over a three-month period, from January through March of 1990. An area of the state which has high concentrations of both woody and foliage nurseries is southern Florida, comprised of Dade, Broward, Collier, and Palm Beach counties. Consequently, study efforts were limited to these counties. The interviews were carried out with people who were believed by local county extension agents to be most knowledgeable about industry issues. Respondents were therefore selected non-randomly and had to fall within either a production or marketing category: 1) Production—Woody or Foliage; 2) Marketing—Seller or Buyer (Table 1). A "Seller" was defined as a grower who wholesales his product and a "Buyer" was a retail garden center or chain store.

A working hypothesis of this research was that easy market access (facilitated by low-cost entry) in conjunction with unique product characteristics, such as the highly perishable nature of ornamental plants, remain central to this industry's problems. A two-dimensional analysis was employed covering both firm- and industry-level issues. In the firm analysis, it was posited that a confluence of factors such as minimal efforts at marketing and product promotion, a lack of basic information necessary for effective decision-making, insufficiently trained horticultural personnel, and pervasive problems of business management all have acted as strong impediments to improved business performance. The industry-wide issue centers around the extreme ease with which firms enter the marketplace, with the attendant problems of oversupply, inconsistent quality, and a strong tendency to eschew cooperative efforts.

Results and Discussion

Part I. Business Management

For the issues falling under the general heading of business management, respondents were given four choices to establish their position on a particular issue—strongly agree, agree, disagree, strongly disagree. Results of affirmative responses of sellers and buyers are shown in Table 2.

Economic information. Both public and private market information systems have been established for decades in many sectors of agriculture. The value of information in the economic system has been the subject of extensive inquiry (10, 4). Moreover, the linkage between information and improved economic performance has been demonstrated empirically in numerous studies (1, 9, 5). Yet this key decision-making tool is largely unavailable to firms in the ornamental nursery industry. Respondent perceptions of the information issue underscore its importance. Nearly 80 percent of sellers (growers/wholesalers) believed that current market information on price and production levels was ab-

Table 1. Sample design of respondents interviewed in case studies.

Production category	Market category		
	Sellers	Buyers	Total
	number interviewed		
Woody	16	10	26
Foliage	12	10	22
Total	28	20	48

Table 2. Business management issues affecting firm and industry performance.

Production category	Market category					
	Sellers			Buyers		
	SA[z]	A[z]	Total	SA	A	Total
	Percent agree					
Inadequate information[y]	46	33	79	20	10	30
Poor decisions[x]	40	46	86	37	67	100
Inadequate personnel[w]	18	29	47	26	48	74
Government regulations[v]	59	28	87	60	30	90

[z]SA = Strongly Agree; A = Agree.

[y]Inadequate economic information, particularly on industry-wide production levels, current demand conditions, product prices.

[x]Poor business management decisions are a widespread problem.

[w]Under-supply of horticulturally trained personnel.

[v]Increasing government regulations adversely impact business performance.

sent or difficult to obtain (Table 2). Of this group, 85 percent stated that this hurt the quality of their business decisions. Aside from their immediate competitors, many growers were unaware of developments and activities elsewhere in the industry. On the other hand, less than one-third of retail firms believed a lack of information compromised their business performance.

Management decisions. Buyers and sellers alike (100 percent and 86 percent, respectively) contended that poor business decisions were widespread and a serious problem for the industry. Inadequate knowledge of basic costs and returns was referred to by over three-fourths of respondents. However, the most common problem was over-expansion (86 percent) at both the grower/wholesale and retail levels. Misjudging market demand for nursery products (42 percent) and ignorance of the firm's financial status (58 percent) were cited as contributing factors to the over-production problem. Stated differently, the fact that many firms were overly optimistic about future sales as well as their business' profitability, led many to expand operations when they could not afford to do so.

Under-supply of horticulturally trained personnel. Nearly half (47%) of all growers and three-fourths (74%) of retailers believed there was a need for more people with horticultural training. While concern was notable at both levels, it was considered more serious at the retail end. This disparity arose from differences in the skills required to fulfill specific tasks. For instance, growers perceive their need as largely production oriented, that is, acquiring individuals with knowledge of propagation techniques as well as disease and pest control measures. On the other hand, retailers not only require production-oriented skills (many retail garden centers propagate plant material), they also need individuals with training in marketing and management. To underscore the seriousness of this problem, a recent study of Florida's nursery industry (7) revealed that only 43 percent of managers were educated through high-school and, for employees in general, less than 6 percent of the work force had any vocational or technical training. Unfortunately, given that wage earners in this industry receive 20–40 percent less than workers in other agricultural sectors (2), the likelihood of attracting additional skilled labor is remote.

Increasing government regulation. Eighty-seven percent of growers and 90 percent of retailers were concerned over the negative impacts of increased government regulation. In fact, 60 percent in each group *strongly* affirmed its importance. Nearly all respondents (81 percent of growers and 76 percent of retailers) emphasized the negative effects that restrictive legislation would have on firm cost structures, and whether or not these added costs could be passed on to the consumer. Because most ornamental plants are discretionary-type goods, they tend to be sensitive to price increases thereby undermining consumer willingness to absorb higher costs.

Part II. Production and Marketing

Market research. A common theme in marketing today is that customer satisfaction is central to business success. Tailoring product characteristics to the preferences of buyers is a key factor in attaining customer satisfaction. Monitoring changes in tastes and preferences must be part of this marketing process to maintain satisfaction over time. Yet only 10 percent of growers strongly believed they conducted sufficient market research to determine the wants of their buyers (Table 3). An additional 43 percent, although agreeing, expressed more ambivalence. The remainder did not believe that growers were attuned to the needs of buyers (retailers). Conversely, 95 percent of retailers claimed that retail firms did adequate market research to determine the wants of their customers (i.e., homeowners) prior to major purchasing decisions. Of this group, 30 percent strongly agreed.

Merchandising. Merchandising or "selling" is the second step in the marketing process. Fundamentally, it involves communicating information about the product to prospective buyers and implementing promotional programs to create incentives. At 90 and 80 percent, respectively, both growers and retailers believed they did a good job of merchandising (Table 3). Interestingly, growers who believed they were remiss in conducting market research (53 percent) felt they were aggressive in promoting their products (90 percent, Table 3). This appears consistent with Kotler's observation that most firms practice "selling" when they have overcapacity since "their aim is to sell what they make rather than make what they can sell" (8, p. 16). In addition, many nurseries are not classified as full-time busi-

Table 3. Production and marketing issues affecting firm and industry performance.

Production category	Market category					
	Sellers			Buyers		
	SA[z]	A[z]	Total	SA	A	Total
	Percent agree					
Adequate research[y]	10	43	53	30	65	95
Adequate merchandising[x]	36	54	90	40	40	80
Product quality problems[w]	34	53	87	55	25	80
Inefficient markets[v]	58	28	86	60	30	90

[z]SA = Strongly Agree; A = Agree.

[y]Firms conduct adequate market research to anticipate demand.

[x]Firms adequately develop and implement merchandising programs.

[w]Unreliable product quality is increasingly frequent.

[v]Inefficient markets, defined as how well the expectations of consumers are satisfied by producers. Were gluts and shortages, indicative of inefficient markets, a major concern?

nesses, rather they use supplemental income to sustain their operations. Many hobbyists or part-timers fall under this category, which represent a substantial portion of the total number of nurseries in Florida. For instance, of the roughly 10,500 nursery operators listed in the Florida Department of Agriculture's *1987 Nursery Directory*, only about 10 percent of these were classified as commercial businesses (i.e., annual sales exceeding $10,000) (3).

Product quality. Poor product quality is a topic frequently discussed throughout the industry. Eighty-seven percent of growers and 80 percent of retailers agreed with this statement. Although both groups were concerned, buyers "strongly agreed" by a nearly 2:1 margin. In other words, the agents who received the product were more sensitive to the issue than those who sent it. Many retailers (44 percent) complained that consistency in product quality was declining, even with growers who had in the past been reliable. Interestingly, respondents attributed this behavioral shift to financial stress. Increasing industry supplies in conjunction with declining markets was incentive for some marginal firms to shortcut the production process and sell immature or inadequately rooted plant material. Maintaining high quality standards is expensive, particularly when product prices are depressed and input costs rise. One would expect variations in product quality to be correlated with factors like the general health of the economy, changes in product demand, and the degree of firm financial health.

Inefficient markets. Although overproduction was a major concern, by itself this term is too vague to be useful. More precisely, at any point in time there may be a simultaneous surplus in one product area but shortages elsewhere. Eighty-six percent of sellers and 90 percent of buyers agreed with this statement. Moreover, the fact that nearly two-thirds of each group *strongly* agreed underscores their sensitivity to this problem. Three observations on this matter are noteworthy. First, producer inability to satisfy demand effectively over time suggests a signalling problem between specific market segments and nurserymen. Thus, their decisions on what and how much to produce were based largely on incomplete or inaccurate information. Secondly, due in part to the nature of the product, demand can fluctuate widely. This problem was noted by numerous respondents during the study period. Thirdly, production changes may not occur as rapidly as changes in consumer preferences. By the time a specific product-line is marketable, consumer preferences may have shifted to other varieties.

Part III. Product Distribution

Kotler defines physical distribution as planning, implementing, and controlling the physical flows of intermediate or final goods from points of origin to points of use to meet customer needs at a profit (7, p. 577). Implicit in this definition are three criteria useful for gauging the efficiency of the distribution system: 1) *How* the product arrives, that is, have the goods been damaged in the process of loading, transporting, or unloading; 2) *Timeliness* of delivery—did the product arrive when it was needed, and; 3) *Completeness* of shipment, including whether or not the buyer received what was agreed upon in the original transaction. These three performance criteria were applied to the ornamental nursery industry.

Interpreting results in this section requires care because a respondent's perception is partly a function of his or her relative position within the industry. For example in Figure 1, a grower is affected only by the actions of the input

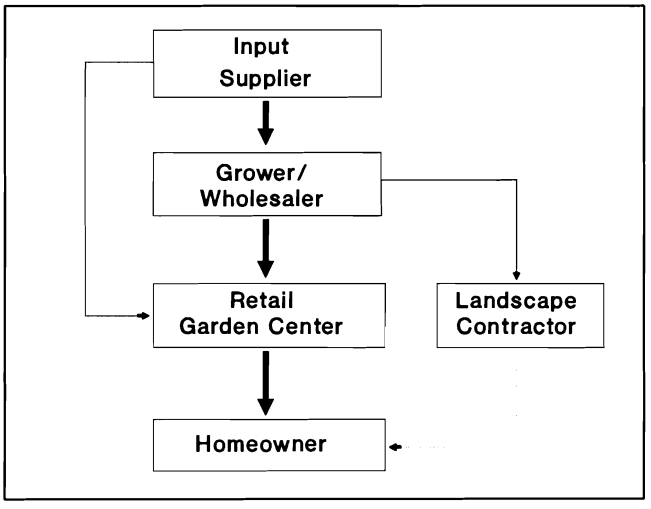

Fig. 1. Conceptual illustration of economic stages within the nursery industry.

supplier (i.e., a supplier of inputs used in the production of outputs, such as fertilizers, chemicals, pots, and potting media used to produce indoor houseplants) whereas the retailer is impacted by both the grower and the input supplier. Therefore, one would expect distribution problems to be greater for the retailer than the grower. This assertion was supported by the results shown in Table 4. In the performance measures used for this analysis, buyers were two-to-three times more likely to recognize distribution problems than were sellers. However, during the interview process, buyers were consistent with growers in awarding input suppliers generally high marks in all three areas. In other words, both groups believed distribution problems were most acute at the grower-retail interface.

Product quality. Inconsistent quality, as affected by shipping practices, was considered a problem by only 13 percent of growers but by 43 percent of retail firms. This disparity was attributed more to problems in plant material than to input supplies. For example, products like fertilizers and pesticides are subject to federal regulations which firmly establish quality standards. Moreover, in contrast to plants, items like fertilizers and pesticides hold up well in the distribution process. Plant quality, on the other hand, could be jeopardized at several sources—at the initial loading, during transport due to poor packaging, rough road conditions, heat or cold stress induced by faulty temperature control units, or in the process of off-loading. A final possibility is that the problem resides at the nursery, and the shipment was simply poor quality at the outset, rather than a consequence of the actions of other system players. Regardless of the problem's source, a lack of quality assurance hurts sellers through loss of customers, a tarnished business image, and additional expenditures on advertising and promotional programs used in reaching new customers or placating old ones.

Delivery timing. Poor timing of delivery was cited by 36 percent of sellers and 51 percent of buyers. Both commercial carriers and nursery-owned vehicles are used nearly equally. A common practice of commercial carriers is to arrange for multiple pick-ups in order to improve vehicle efficiency. Although this procedure was cost effective, delivering goods in a timely manner became more difficult with each additional transaction. A second problem cited by 26 percent of growers was that retailers frequently altered their orders, or made last minute purchases. Preparing plants to reduce shipping damage is both time consuming and labor intensive. Responding to additional orders on short notice presents logistical problems, particularly when many nurseries are laying off employees to reduce overhead costs. A third and related factor mentioned by 18 percent of growers is the fragile and highly perishable nature of ornamental plants. This product attribute impacts the distribution process in two ways. First, as noted above, packaging plants requires a considerable investment in time and labor, and yet protective measures are essential if plants are to arrive safely. At the same time, growers were reluctant to prepare large orders too early for fear of exposing the plants to heat stress. This concern was particularly acute for nurseries lacking adequate holding areas. In a sense, then, this problem became self-feeding. Growers who chose not to pre-package their plants because of unreliable shipping services only exacerbated the distribution problem by imposing further delays on all succeeding transactions.

Order problems. Twenty-one percent of growers and 40 percent of retail firms cited problems with their orders; either the order was incomplete or they had received the wrong product. Put differently, roughly one-in-five growers were affected by the mistakes of input suppliers, but retailers were affected by growers at nearly twice that rate. As in the case of inconsistent quality, these problems undermine business efficiency by causing firms to undergo the time and expense associated with rectifying mistakes.

Concluding statement. The areas discussed in this study—business management, production and marketing, and product distribution—shed light on some factors believed to affect the economic performance of Florida's nursery industry. Three problems highlighted were product quality, market information, and business management techniques. Potential solutions are now summarized briefly.

Part of the reason for the variability in product quality is the relative ease with which new firms enter this industry (6). In economic parlance, this attribute is referred to as low "entry and exit barriers." From an industry's perspective, the relevant issue is, without some form of check-off system such as a marketing order, how can these barriers be raised? One alternative is for state trade organizations to implement voluntary grades and standards for their products. A trade logo which guaranteed quality could be sold to "certifiable" growers or retailers. Certification could be imposed by the industry itself. Although the program would have substantial start-up costs, in the longer term benefits should exceed costs as buyers turned increasingly to more reliable and less risky certified growers.

Table 4. Distribution issues affecting firm and industry performance.

Production category	Market category					
	Sellers			Buyers		
	SA[z]	A[z]	Total	SA	A	Total
	Percent agree					
Inconsistent quality[y]	3	10	13	22	21	43
Delivery time poor[x]	3	33	36	15	36	51
Shipment wrong or incomplete[w]	7	14	21	18	22	40

[z]SA = strongly agree; A = agree.

[y]Inconsistent product quality, as affected by shipping practices (e.g. loss of plants and/or plant quality).

[x]Timing of pick-up and/or deliveries was a problem (i.e., arrive too late).

[w]Shipment received was either wrong or incomplete.

Good information is central to effective decision-making. For the most part, nursery data collected by state and federal agencies is limited to annual production and sales estimates. For the immediate future, additional assistance is unlikely. Rather than wait, this industry could establish a three-tiered electronic information network for use by participating firms and organizations. Using a standardized program, members of local chapters could provide production, price, and sales information on key commodities. In turn, local chapters could compile these data for their own use, and pass them on to state organizations. State associations would receive chapter-level data, analyze them and disseminate results back to participating members. Over time, a relatively good estimate of production and price trends of key commodities could be established.

Finally, results from this study indicate that improvements in business management practices are needed by many nurseries. Adopting and maintaining good record-keeping systems and evaluating this information regularly can contribute greatly to the financial health of firms and the collective performance of the industry. State trade organizations should promote the use of financial management systems more actively through their magazines, newsletters, and convention workshops. Numerous low-cost, easy-to-use computer packages are presently available on the market. Well trained University personnel offer educational programs to facilitate the transfer of this important technology. Recognizing the need, understanding the benefits, and overcoming the resistance to improved management practices remain the greatest obstacles to adoption by Florida's nursery industry.

Literature Cited

1. Fama, E. 1970. Efficient capital markets: a review of theory and empirical work. J. Finance, 25:383–417.

2. Florida Agriculture Statistics Service, 1989. Farm labor in Florida, Orlando, Florida, 4 pp.

3. Florida Department of Agriculture and Consumer Services, 1988. *Florida's certified nursery directory*. Division of Plant Industry, Gainesville, Florida.

4. Garoyan, L. and A. Hasely. 1973. "Developing planning information," Agriculture Economics Report No. 270, 22 pp., Oregon State University, Corvallis.

5. Grossman, S.J. 1977. The existence of futures markets, noisy rational expectations and informational externalities. *Review Econ. Studies*. 44:431–439.

6. Haydu, John J. 1989. What's happening to Florida's ornamental industry? *Fl Nurseryman* 36(9):25–30.

7. Hodges, A. and J. Haydu. 1990. An economic overview of Florida's woody ornamental industry. *Economics Report 120*. Food & Resource Economics Department, Institute of Food and Agricultural Sciences, Univ. of Fl, Gainesville.

8. Kotler, Phillip. 1988. *Marketing Management: Analysis, Planning, Implementation, and Control*, Sixth Ed., Prentice Hall, Englewood Cliffs, NJ.

9. Kryzanowski, L. 1978. "Misinformation and regulatory actions in the Canadian capital markets: Some Empirical Evidence," *Bell J. of Econ*, 9(2):355–368.

10. Moulton, K.S. and D.I. Padberg. 1976. Mandatory public reporting of market information. Marketing Alternatives for Agriculture, Economics Bulletin No. 27-76, Cornell Univ., Ithaca, NY.

11. Purcell, W.D. 1973. "An approach to research on vertical coordination: The beef system in Oklahoma," *Amer. J. Agric. Econ.*, 55(1):131–139.

12. U.S. Department of Agriculture. 1989. *Economic indicators of the farm sector: state financial summary, 1988*, Economic Research Service, ECIFS 8-2, Washington, DC, 238 pp.

13. U.S. Department of Agriculture. 1990. *Economic indicators of the farm sector: state financial summary, 1989*, Economic Research Service, ECIFS 8-2, Washington, DC, 222 pp.

14. U.S. Department of Agriculture. 1990. *Floriculture and environmental horticulture products: a production and marketing statistical review, 1960–88*. Economic Research Service, Sta. Bul. No. 817, Washington, DC., 245 pp.