# 1. Background and Introduction

The U.S. environmental horticulture industry, also known as the "Green Industry", is comprised of wholesale nursery and sod growers, landscape architects, designers/builders, contractors and maintenance firms, retail garden centers, home centers and mass merchandisers with lawn and garden departments, and marketing intermediaries such as brokers and horticultural distribution centers (re-wholesalers). This industry is one of the fastest growing sectors in the nation's agricultural economy; often experiencing growth and expansion even during recessionary periods.

The relationship between urban/community forestry and the Green Industry has become more widely recognized as urban forestry has become more acknowledged as an integral segment of the infrastructure of our communities. However, this relationship is still vastly unappreciated in terms of the degree of synergy that the two segments share. Not only is the Green Industry crucial for the support of urban forestry in providing quality plant material used in our cities, it also offers professional personnel with specialized expertise for growing, maintaining, and managing city trees. These professionals have demonstrated their willingness to educate, volunteer, and mentor city employees in the cities and towns where they make their homes and own businesses. Conversely, urban forestry initiatives provide the Green Industry with a strong, dependable, and expanding market in which they can sell their goods and services. Cities can rely on growers to produce the size and species they require, and they can also depend on a professional cadre of landscape contractors and tree care providers to help maintain the resource that a healthy urban or community forest offers to its citizens. Both entities enjoy the benefits of this symbiotic relationship, and each would be diminished without the other. The importance of developing a mechanism by which this relationship can be measured, therefore, is crucial to understanding how to best plan for the future strengthening of each.

In spite of the magnitude and recent growth and interest in the Green Industry, there is surprisingly little information that has been developed on the national level regarding the economic impact of the Green Industry. The USDA does conduct floriculture and nursery crop surveys to collect information at the grower level, but data are often incomplete for some states and grower cash receipts reported do not reflect the further economic impacts generated from this production activity. Census data, including the 10-year Census of Horticultural Specialties, are subject to the same limitations and have historically had other mitigating problems such as poor response rate that reflect poorly on the data's accuracy. For firms downstream in the supply chain, such as landscapers, re-wholesalers, and retailers, there are economic statistics and employment data maintained by each state's Office of the Comptroller. However, misclassification errors and non-compliance on the part of industry participants have made some state data speculative at best. There is a transition to a new system (called the North American Industrial Classification System, or NAICS for short) currently underway that should provide more robust estimates in the future. However, to date, no one source of data has proven historically to be instrumental in capturing the total economic importance of the Green Industry.

Recognizing the limitations of existing data sources and also the critical need for this type of economic impact data, several state nursery and landscape associations have sponsored and developed their own economic impact studies for their respective green industries. Such states have found these studies to be useful in communicating the importance of the Green Industry to state legislatures, and in combating proposed legislation that would have had severe negative impacts on urban or community forestry initiatives and the Green Industry (e.g., labor regulations, constraints on water usage, etc.). As useful as these state-specific studies have been, there have not been similar analyses conducted at the national level, which would provide similar benefits on a national scale.

The objective of this study is to estimate the economic impacts of the Green Industry at the national level, synergistically utilizing the studies that have already been conducted by several states, and complementing those with data from other primary and secondary sources. In addition, this study seeks to evaluate the value and role of forest tree species (woody ornamental trees) as a product. The project is funded under the third category of the NUCFAC 2003 Challenge Cost-Share Grant program (Communicating the Value of Urban and Community Forestry) with the research priority of "*measuring the national value of goods and services produced by the Green Industry*."

## Green Industry Structure

The Green Industry complex includes input suppliers; production firms such as nursery, greenhouse, and sod growers; wholesales distribution firms, including importers, brokers, re-wholesalers, transporters; horticultural service firms providing landscape and urban forestry services such as design, installation, and maintenance; and retail operations, including independent garden centers, florists, home improvement centers, and mass merchandisers or other chain stores. The United States leads the world in the production and marketing of floriculture and nursery crops.

### INPUT SUPPLY FIRMS

Input supply firms, often referred to as allied trade firms, are businesses that provide various inputs for ornamental plant production, landscape services, and retail sales. These inputs commonly include agrichemicals, fertilizers, containers, packaging, farm machinery, tools and equipment, propagative materials, and consulting services. These products originate from extractive and manufacturing industries such as mining, petroleum, and forestry.

### PRODUCTION FIRMS

Participants engaged in producing Green Industry products include growers of floriculture crops, nursery crops, and turfgrass sod. *Floriculture crops* include bedding plants, potted flowering plants, foliage plants, cut cultivated greens, and cut flowers. As distinguished from nursery crops, floriculture crops are generally herbaceous. Bedding and garden plants consist of young flowering plants (annuals and perennials) and vegetable plants. They are grown in flats, trays, pots, or hanging baskets, usually inside a controlled greenhouse environment, and sold largely for gardens and landscaping.

Potted flowering plants are largely sold in pots for indoor use. The major potted flowering plants are poinsettias, orchids, florist chrysanthemums, and finished florist azaleas. Foliage plants are also sold in pots and hanging baskets for indoor and patio use, including larger specimens for office, hotel, and restaurant interiors. Cut flowers are usually sold in bunches or as bouquets with cut foliage. The most popular cut flowers are roses, carnations, gladioli, and chrysanthemums. Leatherleaf ferns are the leading cut foliage. Combining cut flowers and cut greens in bouquets or other flower arrangements is a value-added retail option.

The market outlets for floriculture crops are florists, garden centers, mass merchandisers, supermarkets, chain stores, discount stores, home improvement centers, hardware stores, landscape contractors, and re-wholesalers. Other retail outlets are farmers markets, flea markets, and street vendors. Since cut flowers are perishable and live floral crops are sensitive to variations in temperature, they usually require cool transportation and storage conditions that preserve and prolong their quality before final sale. The demand for floral crops, especially cut flowers, is highly seasonal. Sales are normally highest from February through May and in the fall. Sales of cut flowers peak during holidays such as Valentine's Day and Mother's Day. Poinsettia plants are sold mostly from Thanksgiving to Christmas. Cut flowers and foliage plants, however, are increasingly popular throughout the year as indoor home and workplace decorations.

*Nursery crops* are woody perennial plants that are usually grown in containers or in-ground. The Census of Agriculture defines nursery crops as ornamental trees and shrubs, fruit and nut trees (for noncommercial use), vines, and ground covers. They are primarily used for landscaping, not for producing edible products on a commercial scale. Trees and shrubs are classified as deciduous or evergreen. Deciduous includes shade, flowering, ornamental, fruit, and nut trees and shrubs. Evergreens include broadleaf and coniferous trees, and Christmas trees.

The location of nursery production is determined largely by soil, climate, availability of water, accessibility and distance to markets, and cost of land. Each plant species has a hardiness zone that sets the northern geographic latitude for in-ground growth. Trees and shrubs start out as "liners" (undeveloped, but rooted, trees and plants in pots or trays). As seedlings, they are typically protected from intense sunlight or severe weather by shade or temporary cover. The next step is transplantation into larger containers or the field for further growth. Sales can occur at any stage depending on the plants' commercial purpose.

Growers plant bare-root material ("liners") in rows in the field, either in the fall, giving the roots time to develop before the plant breaks dormancy, or in the spring. Broadleaf shrubs and trees (holly, oak, and magnolia, for example) are often purchased as small container-grown liners, which are more expensive than bare-root plants because fewer die after transplanting. Liner production requires 6-12 months for the roots to develop and the plant to reach the size needed for planting in the field. Bare-root material, the most economical nursery stock, is best planted in the early spring before growth begins.

Since nursery crops are usually grown in the field or in containers often without covered protection, the choice of crops is based on an area's natural vegetative species or the crop's ability to tolerate local climatic conditions. Thus, sales of most nursery crops, except Christmas trees, are more local or regional than floriculture crops, which are less costly to ship to farther markets. While homeowners are the typical consumers of trees, shrubs, and woody ornamental plants, markets also include developers, public utilities, golf courses, resorts, commercial parks, malls, as well as government agencies in charge of public parks, street and highway vegetation, and forests. Like many floral crops, demand for nursery crops (except Christmas trees) tends to coincide with normal planting seasons in the spring and fall.

Wholesale sales of nursery products are usually handled by salespersons who have established relations with large buyers. Marketing programs include numerous trade shows, advertising in trade publications, catalogs, and direct mail. Close planning with large buyers (referred to as partnering) is required to secure long-term markets and to ensure that the right product mix is produced; however, demand for different products can still vary substantially from year to year. Sales and many variable expenses (costs-of-goods-sold) are highly seasonal, with up to 50 percent of sales in the second quarter of a typical year. Cash flow is uneven throughout the year so cash management is important. Technical knowledge of plants and pests is important for nursery management, although many of the everyday tasks (cultural practices) are routine and do not require specialized labor. However, automation has proven to be difficult, aside from the widespread use of irrigation and fertilization systems. Greenhouse operations can be very sophisticated, with automatic irrigation and fertilization (sometimes referred to as fertigation), and air and lighting systems driven by a variety of sensors. Innovations demanded by big-box retailers (such as custom labeling, bar codes, scanners, and electronic data interchange between suppliers and buyers) are now used by many producers.

In recent years, there has been considerable consolidation among large growers, largely in response to consolidation occurring at the retail level. The rise of large, nationwide plant retailers like home centers and mass merchandisers has created a marketing opportunity for large growers who can supply the large volumes these customers require. Some nursery firms have grown rapidly through acquisition during the past decade, largely to service these big customers. Geared to serve big customers by handling large volumes, large growers actively discourage small-volume buyers. The big-box retailers and large landscape installation companies are supplied mainly by large nurseries, while independent garden centers, retail nurseries, and smaller landscape firms may be supplied by both large and small growers. Proximity and high product quality are more important to these buyers than low price because the end consumer is most interested in quality and the breadth of retail selection. Keeping plants alive and healthy is a challenge for many consumers, and small retail operations often have more technically knowledgeable staff than mass retailers to assist customers with plant care advice.

To even out the seasonal nature of demand throughout the year, many nurseries produce plants like Easter lilies and poinsettias that have demand at times other than late spring or fall. Large producers may also sell related products like soil, sod, and Christmas trees. Some growers may produce a range of soil mixtures made from peat moss, sand, bark, sawdust, lime, perlite, vermiculite, and other materials (including mulched product waste) to sell to other growers on a contract basis.

*Turfgrass sod farms* are specialized nurseries that usually only produce a subset of turfgrass varieties that are hardy for their particular region. Once sod leaves the nursery/farm, it usually passes through one or more marketing channels and is eventually used for new residential or commercial developments, for re-landscaping existing developments, for sports turf facilities such as athletic fields and golf courses, or for commercial applications that include businesses, public and private schools, and roadside uses. The final customer for sod can be the homeowner, a golf course, or an elementary school. Each of them has different circumstances and, hence,

different expectations. Thus, sod producers take these different needs into account. Although the customer generally decides the type of sod to purchase, the installer also plays an important role. Both the landscape contractor and sod installer often make the decision from whom to buy and may even recommend to the homeowner the type of sod to plant. Hence, although both the final consumer and the middleman are important, the latter is critical from the sod producers' perspective.

**WHOLESALE DISTRIBUTION FIRMS**

Wholesale distributors are an integral part of the Green Industry supply chain. Intermediaries such as brokers and importers facilitate the transactions of domestic and international (importing/exporting) growers and retailers. Re-wholesalers (often referred to as horticultural distribution centers, HDCs, or landscape distribution centers) are also market facilitators that offer regionally specific mixes of landscape products for immediate pickup or delivery to landscape professionals and have emerged throughout the United States in a variety of forms. There are self-contained HDCs and HDCs that serve as independent profit centers within vertically-integrated grower, landscape contracting, and retail garden center operations. Landscape distribution traces its development back to the produce dealers of the 1940s and 1950s. Following World War II, a sustained building boom fueled an increasing demand for products and services that landscape professionals, retail garden centers, and other horticultural businesses attempted to fulfill. At the same time, rising land values pushed the growers farther away from the spreading urban and suburban areas where the most demand existed. The resulting longer supply lines created difficulties in meeting the expanding needs of the horticulture industry. This spawned development of this new distribution network from the nursery grower to the horticultural customer.

The long-distance distribution system infrastructure for plants is still being refined in many parts of the country. An efficient trucking system extends from Florida all along the East coast, featuring regular routes run by independent trucking companies. Some large producers have developed in-house, large-volume delivery systems to service big-box retailers. But cross-country shipments are still difficult because of the long time that plants are in trucks, lack of back haul opportunities, and the excessive handling that takes place for small orders. Air transportation is being used more frequently, but only for high-value plants (e.g., cut flowers).

**HORTICULTURAL SERVICE FIRMS**

Horticultural service firms include those firms that provide a plethora of design (architectural) services, installation (construction) services, and maintenance services. These firms serve a variety of clientele, including residential homeowners, commercial business properties, and municipalities. Some firms in the industry offer a combination of design, installation, and maintenance services (e.g., design-build firms) to appeal to a larger clientele base. However, other businesses gear their services towards specific markets. For instance, some specialize in seeding and fertilizing areas along newly constructed highways and installing or constructing erosion control devices. Such work is usually contracted from state departments of transportation or subcontracted from state highway contractors working on federally funded projects. Local governments also use these services.

Landscape design or architectural establishments are primarily engaged in planning and designing the development of land areas for projects, such as parks and other recreational areas, airports, highways, hospitals, schools, land subdivisions, and commercial, industrial, and residential areas, by applying knowledge of land characteristics, location of buildings and structures, use of land areas, and design of landscape projects. Landscape contracting or installation establishments are primarily engaged in installing trees, shrubs, plants, lawns, or gardens, and the construction of walkways, retaining walls, decks, fences, ponds, and other similar (hardscape) structures. Specialized installation services such as irrigation systems, water features, night lighting, and Christmas decorations are becoming more prevalent.

Landscape maintenance establishments include firms that provide services such as mowing, trimming, leaf or snow removal, tree removal or trimming, mulching, and other garden and lawncare services. Lawncare services are defined more narrowly as services devoted to lawn "treatments" as opposed to the other "maintenance" activities listed. The difference is that treatment primarily involves applying fertilizers and pesticides to lawns, with the goal being to maximize lawn appearance and health while minimizing effort on the part of the client. The prime selling points of these service firms are that they have the knowledge and expertise to diagnose problems and apply lawn chemicals properly, effectively, and safely; they have the proper equipment to do the job; and they provide the materials, thus eliminating the need for homeowners to store toxic chemicals on residential

premises. Besides offering basic services, many lawncare firms also offer customized programs which often include lawn aeration, dethatching, resodding and/or overseeding, and integrated pest management.

**RETAILERS**

Retail firms are another point of contact with end consumers of horticultural products, such as independent garden centers, florists, home centers, mass merchants, and other chain stores. Garden centers are establishments primarily engaged in selling trees, shrubs, other plants, seeds, bulbs, mulches, soil conditioners, fertilizers, pesticides, garden tools, and other garden supplies to the general public. These establishments primarily sell products purchased from others, but may sell some plants which they grow themselves. Garden center consumer studies indicate customer loyalty and repeat business result from a convenient store location, plant quality, customer service, and plant selection. According to the latest National Gardening Survey, the number of households that purchased lawn and garden products at selected retail outlets in 2003 is outlined below:

**Table 1-1. U.S. Households Purchasing Lawn and Garden Products, By Type of Outlet, 2003**

| Type of Retail Outlet | Number of Households (Millions) | Share of Households (%) |
|---|---|---|
| Home Center | 45 | 53 % |
| Independent Garden Center | 36 | 43 % |
| Mass Merchandiser | 34 | 41 % |
| Hardware Store | 25 | 30 % |
| Supermarket/Drug Store | 16 | 19 % |
| Feed/Seed Store | 10 | 12 % |
| Mail Order/Internet | 6 | 7 % |

**END USERS**

Final consumers of Green Industry products and services are referred to as end users. While the vast majority of nursery and turfgrass products used by end users are purchased from Green Industry businesses, this is not the case for services. A significant amount of lawn and landscape services are performed by the end users themselves. However, these services are only for internal consumption; that is, end users do not maintain or care for any landscape plants or green space other than their own.

The list of end users includes airports, cemeteries, churches, commercial general business areas, golf courses and driving ranges, homeowners, municipalities, private recreation areas, public roadways, schools and universities, and utilities. "Commercial areas" are comprised of restaurants, banks, credit unions, commercial building operators, shopping centers, real estate managers, apartment buildings, other dwelling operators, mobile home sites, hotels and motels, medical centers, nursing care centers, intermediate care facilities, general and specialty hospitals, residential care facilities, retirement communities, community centers, and adult and child day-care centers. City park districts, arboretums and zoos, city streets, and other urban public areas are maintained by municipalities. Public roadways encompass both state and county roadsides and highways.

The National Gardening Association is a well known and widely recognized authority on the consumer lawn and garden market in the United States. Since 1973, NGA has worked with the Gallup Organization (and now with Harris Interactive, Inc.) to provide market research information for the lawn, garden, and nursery industries. Some highlights of the latest NGA survey include:

- Eight out of ten U.S. households (78%), or 84 million households, participated in one or more types of do-it-yourself indoor and outdoor lawn and garden activities in 2003. That is about the same number seen in 2002, and one of the highest levels of participation seen in the past five years.
- Consumers spent an average of $457 per household on their lawns and gardens in 2003. Over the past five years, annual spending has averaged $465. USDA/ERS reports average household expenditures in 2003 on nursery and floral plants alone at $140 per household.
- Consumers spent a total of $38.4 billion on their lawns and gardens in 2003. That was about the same level of spending seen over last three years. Over the past five years, total lawn and garden sales have

increased at a compound annual growth rate of 5 percent, from $30.2 billion in 1998 to $38.4 billion in 2003.

- The most important consumers of lawn and garden products last year were men; people age 45 and older; college graduates; households with no children at home; households in the Northeast, South, and West; married households; 2-person households; and households with annual incomes over $75,000.

## Current Green Industry Situation

Long term growth in output of the principal sectors of the US Green Industry is charted in constant dollar terms for the period 1987 to 2003 in Figure 1-2. Information on the landscape services and retail sectors was available only through 2001, due to the changeover to the NAICS system. It is evident that the sales output of the landscape services sector has grown dramatically, from around $15 Bn in 1987 to nearly $40 Bn in 2001, representing an average annual growth rate of 11.0 percent. The retail nurseries and garden stores sector also grew significantly, although at a lower level, from $3.7 to $6.2 Bn as gross margin on sales, averaging 5.0 percent annual growth. The nursery and greenhouse sector grew in real terms from $10.7 Bn to $14.7 Bn in 2003, or at a 2.4 percent average annual rate. The lawn and garden equipment manufacturing sector actually declined in value from $8.3 to $7.1 Bn between 1998 and 2003, a -2.7 percent annual rate.

### Nursery and Greenhouse Growers

Although grower receipts from greenhouse and nursery crops are expected to be up by less than 1 percent in 2004, they still represent another year of an unbroken series of annual sales increases. Sales of floriculture crops are also projected to be up slightly following a small decline in 2003 (USDA, NASS). Among floriculture product groups, cut flowers, potted flowering plants, and cut cultivated greens experienced reduced sales in 2003, largely due to competition from imports, and sales are projected to be down again in 2004 even as most prices continue upward. Bedding and garden annual and perennial plants and propagative materials are the only floriculture crops whose sales are expected to be higher in 2004. Nursery crops are also forecasted to extend annual sales gains into 2004, in part because of still-robust new housing construction.

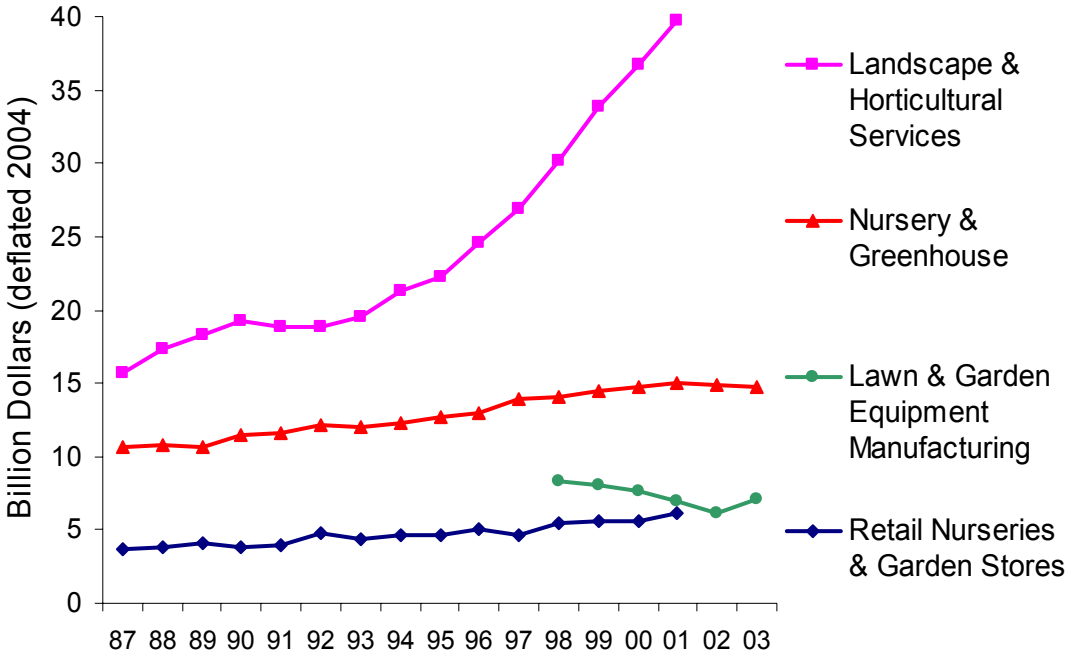


**Figure 1-1. Growth in Output of US Green Industry Sectors, 1987-2003.**
Values expressed in constant 2004 dollars using GDP Implicit Price Deflator (USDOC).
Data Sources: USDOC/BEA; USDA/ERS (nursery & greenhouse).

An important reason that nursery crop sales remained healthy in 2003, compared with floriculture crops, is the lower share of imports in nursery crop consumption. Relentless competition from imported cut flowers from South America has reduced domestic growers' U.S. market share to minority status. Per-household consumption of greenhouse and nursery crops of $139 in 2004 represents the second year of decline since its peak in 2002, matching the pattern of floriculture crops. Nevertheless, the ornamental crop sector will post total sales in excess of $15.3 billion in 2004, a value exceeded only by corn, soybeans, and vegetables among agricultural crops nationwide.

Sales of floriculture crops were projected to grow to $5.1 billion in 2004, due largely to gains from bedding and garden plants which represent 48 percent of total floriculture sales. Sales of bedding and garden annuals and herbaceous perennials are forecast to increase 1 percent. This contrasts with declines in cut flowers, potted flowering and foliage plants, and cut cultivated greens as competing imports provide further incentives for growers to produce other higher value and specialty crops. However, outsourcing cuttings and seedling production to lower-cost growers in Central America and Mexico is one way that domestic producers are coping.

Besides the top three producers of ornamental crops—California, Florida, and Texas—North Carolina and Oregon are close to reaching $1 billion in annual sales. Both of these States produce about $800 million worth of nursery and other greenhouse crops and only between $100 and $200 million of floriculture crops. Emerging competitors are Michigan and Ohio, which, by contrast, produced between $200 and $400 million of floriculture crops in 2003. These Midwestern States are leading producers of bedding and garden plants, both annuals and perennials, in large part due to increased greenhouse production. Michigan and Ohio are not far behind Texas in total greenhouse acreage. While Florida remains the predominant supplier of indoor foliage plants east of the Mississippi River, upcoming suppliers include North Carolina, Ohio, and Louisiana.

Together with bedding and garden plants, nursery and other greenhouse crops are the only agricultural product groups expected to continue gains in per-U.S.-household sales. Their higher sales in 2004 more than offset the declines in the other groups. Including Christmas trees, greenhouse vegetables, vegetable transplants, and sod, sales of nursery and other greenhouse crops have continuously grown historically but have slowed in recent years in terms of per-U.S.-household sales at around $93 since 2002. Given that this sector accounts for two-thirds of total greenhouse and nursery crop receipts, it is largely responsible for keeping per-household sales of ornamentals and other greenhouse crops at about $139 in recent years.

While the projected increase in floriculture growers' sales in 2004 is modest, average annual sales per grower is expected to continue rising beyond $1 million. As grower sales expand, either total production area also expands or sales per acre increases. In 2003, total U.S. floriculture production area increased largely due to Texas adding 10 times more space of open field production. Despite growth in open field production, average covered production area per large grower rose 3 percent to 4 acres, up from 3.9 in 2002. After climbing in 2002, the number of growers with at least $100,000 in annual floriculture sales fell from 4,974 to 4,741 in 2003. The addition of significant open field production area by growers pushed total production acres to 57,507 acres in 2003, up from 52,235 in 2002. However, since total production acreage grew faster than floriculture sales, average sales per acre dropped 9 percent, from $91,000 to $83,000, in 2003. Floriculture sales per production acre are still highest in the Midwestern States at $126,000. Growers in Minnesota lead the region at almost $230,000 sales per acre. Nevertheless, the largest growers based on floral sales are in the West—average sales per grower in California now exceed $1.8 million. While Southern States trail the West at $1.1 million sales, average sales per grower in South Carolina tops the country at $2.5 million sales per grower, dwarfing California's average. South Carolina is the biggest producer of herbaceous perennial plants, selling 12 percent of total U.S. production.

After slipping in 2002, U.S. cut flower imports surged 13 percent to $611 million in 2003, and are expected to continue to grow in 2004 (USDA, NASS). As a result, sales of domestically produced U.S. cut flowers are forecast down 1 percent in 2004, but consumer prices for flowers and indoor plants are up 18 percent from 2003. Cut flower production in California, which accounts for 70 percent of U.S. production, is at best flat in 2004, even in view of higher prices. The projected decline in volume of domestic cut flowers sold in 2004 is cushioned to some extent by somewhat higher prices. Overall sales of $421 million in 2004 are down 1 percent from 2003. As a result, sales per U.S. household fell to $3.83, almost a whole dollar lower than in 1997. By contrast, cut flower imports per U.S. household are almost $6, matching 1998's level. Cut flowers comprise half of total U.S.

floriculture and nursery stock imports. The share of imported cut flowers in total U.S. cut flower supply was 56 percent as recently as 2002. It is anticipated to jump to 63 percent in 2004. The number of cut flower producers in the United States was at a record low of 548 in 2003, down from 618 in 2002, and is expected to dwindle further. Despite fewer producers, average cut flower sales per U.S. grower have been growing and now approach $780,000 as the size of operations has expanded. By rank order, the largest average sales of growers are of roses ($701,000); gladioli, gerbera daisies, lilies (all around $500 million); and tulips and chrysanthemums (both about $300 million). In average unit prices, the leaders are pompon mums at $1.32 per bunch, orchids at $0.70 per bloom, and lilies at $0.64 per stem.

Sales of potted flowering plants are forecast at $820 million and foliage plants at $616 million in 2004, down slightly from $829 million and $623 million, respectively, in 2003 (USDA, NASS). Competition from fast-growing imports, especially from Canada, and crop damage from hurricanes in Florida will dampen sales prospects of domestic growers. Imports of orchid plants are also rising from Taiwan, Thailand, the Netherlands, South Korea, and Canada. Nevertheless, domestic grower sales of potted flowering plants per U.S. household have held steady at between $7 and $8, and between $5 and $6 for foliage plants, over the past decade. Florida dominates the foliage plant market, capturing 64 percent of total U.S. value in 2003. Prices of potted flowering plants have risen 6 percent on average since 2000, reflecting healthy demand for high-value varieties such as florist roses, florist azaleas, and spring flowering bulbs. Even prices of poinsettias, which account for 30 percent of total receipts from potted flowering plants in 2003, were up in the last two years. Prices of potted orchids, however, appear to be in a downward trend since 2000. The quantity of potted orchids sold jumped from 9.7 million in 2000 to 15.6 million in 2003, indicating increasing supply. Although producers boosted domestic orchid production, imported orchid plants have grown 70 percent in volume since 2000, providing ample competition to local growers.

Bedding and garden annuals dominate U.S. floriculture sales, comprising 36 percent of the $5.1 billion sales of floral crops in 2003 (UDA-NASS). Together with herbaceous perennial plants, the share is boosted to 48 percent. And since this sector posted a 1-percent sales gain in 2003, compared with declines in cut flowers, potted flowering plants, and cut cultivated greens, it was enough to push total floriculture receipts up. This growth is expected to repeat in 2004 as total bedding and garden receipts reach at least $2.424 billion, up $23 million from 2003. Sales of bedding and garden annuals are forecasted at $1.823 billion in 2004, continuing annual gains since 2000. Herbaceous perennial sales are also projected up, exceeding sales of foliage plants for the first time and becoming the second largest segment/product group in the industry. It is evident that growers are increasing production of annuals and perennials relative to other floriculture crops, more significantly in the Midwest and Northeast. Sales of annuals in flats were down in 2003 while potted annuals and hanging baskets registered gains. Although floriculture sales per U.S. household will continue to decline, albeit marginally, per household sales of bedding and garden plants are expected to remain at just over $22, unchanged since 2002. Prices of bedding and garden plants have been noticeably stable since 2000 as sales growth is matched by the pace of quantity produced. This price pattern is the effective average between weak prices of annuals and rising prices of perennials since 2001. For annuals, prices of potted plants and hanging baskets show a slight upward slope in contrast to downward prices of bedding and garden plants in flats. Increased production of bedding and garden annuals in the Midwest is supported by higher overall prices. But production of herbaceous perennials, except potted hardy/garden mums, is shifting heavily to Southern States, specifically South Carolina.

**U.S. ORNAMENTAL IMPORTS**

Expected prices for imported cut flowers are up 10 percent, due in part to the weaker U.S. dollar and higher fuel costs for transport (USDA-NASS). U.S.-grown cut flower prices are up 3 percent, due also in part to higher fuel and energy costs and damage to cut flower production by hurricanes in late summer. Import prices of cut flowers in 2004 are 15 percent higher than in 2000, after initially dropping 5 percent in 2002. Cut flower imports fell in 2001 and 2002 due to weak U.S. demand which was precipitated by the economic recession and stock market downturn. The share of imports in U.S. cut flower consumption is projected at a record 65 percent, up from 61 percent in 2003. In 1992, the import share was 20 points lower at 45 percent. The quantity of imported flowering and bedding plants, largely from Canada, are expected to be up 8 percent in 2004 based on strong shipments from January to July. However, lower prices for imported flowering, bedding, and foliage plants push the import value down somewhat from 2003. Ninety-four percent of U.S. imported cut flowers are from Colombia, Ecuador, the Netherlands, Mexico, Canada, and Costa Rica. Cut flower imports are dominated by roses at 35 percent of

imports, chrysanthemums at 11 percent, and carnations at 10 percent. Imports of flowering plants from Asia, such as orchids, and nursery plants and trees from Canada limit wholesale prices that domestic growers of these products can charge without losing market share. These help explain in part why wholesale prices of U.S.-grown potted flowering plants and bedding and garden plants have been generally flat since 2000. But for growers in the Midwestern and Eastern States, prices have improved relative to some growers in the South and especially in contrast to growers in the West.

**LAWN AND GARDEN EQUIPMENT**

U.S. demand for power lawn and garden equipment is projected to rise over 3 percent per year through 2009, reaching $10.7 billion, according to a new study by the Freedonia Group. An expansion of the key 55-64 year-old age group will contribute to gains, the report says, as this group typically trades up from older, less expensive equipment to higher-end products, or increasingly engages professional lawn care services. Growth will also result from product innovations and upgrades, driven by consumer demand for equipment with increased horsepower, additional features and lighter weight. The continued popularity of golf will also present opportunities, as a growing number of golf courses compete to have the best playing surfaces.

The residential market dominates power lawn and garden equipment sales, representing approximately two-thirds of the total in 2004. However, advances in the commercial market have outpaced the residential market in recent years, bolstered by the tremendous growth in the sales of zero-turn radius turf mowers. In addition, the continuing rise in the number of professional landscapers (in part a byproduct of an aging population) has boosted commercial demand. Although gas-powered equipment will remain dominant, electric-powered products are expected to post significantly stronger gains through 2009. Battery-powered equipment will fare particularly well, as improved battery technology is introduced. Cordless products are easy to use and have a better environmental image than competitive products. In addition, they appeal to women, who account for a growing portion of equipment sales and use.

Lawnmowers will continue to be the largest product segment, benefiting from their wide use in both residential and commercial applications. Turf and grounds equipment is expected to post the best gains, because of continuing growth in the professional landscaping services industry and the rising number of golf courses. Despite the improving durability of original equipment, parts and accessories will outpace the industry average due to the rising amount of stock in use.

**HORTICULTURAL SERVICE FIRMS**

Landscape-related firms surveyed in August 2004 by *Lawn & Landscape* magazine said that 2004 business revenue is up an average of 17.4 percent, individual service sales have increased in all categories, and net profits are projected to rise. Contributing to the industry's sound standing is an increase in consumer spending and a healthy housing market. Overall, 2004 represented encouraging economic times for the Green Industry. In contrast to previous annual surveys, contractors say their 2004/2005 concerns have shifted from matters such as finding adequate labor to cost-based concerns such as escalating health insurance and workers' compensation rates, as well as increased fuel expenses. Many contractors are focusing on raising business efficiency to combat these costs. Landscape companies are younger today, with the average age being 13.6 years old in 2004 versus 17.7 years old in 1999. In fact, a greater percentage of contractors – 28 percent – have been in business less than five years, compared to 12 percent in 2000, 15 percent in 2001 and 17 percent in 2003. Landscape companies that have operated more than five years include 23 percent who have been in business five to nine years, 25 percent who have been in business 10 to 15 years, and 24 percent who have been in business more than 20 years. Despite the fact that these companies are younger, they are generating more revenue, on average, today at $732,353, compared to $694,300 in 2002.

In terms of growth, the percentage of contractors who said their total gross sales revenue would increase in 2004 surpassed the percentage who felt this way in previous years. For instance, 84 percent of contractors said their 2004 revenue would increase compared to 57 percent in 2003 or 59 percent in 2002. In fact, going back to 1997, the percentage of contractors predicting growth for a single year has never been higher than in 2004. The next closest percentage of contractors foreseeing growth was 72 percent in 1998. Contractors predicted an increase of net 17.4 percent this year. This is up from last year's 13 percent, but down when compared to the rates

experienced five years ago. For instance, contractors averaged 24 percent growth in 1998 and 19 percent growth in 1999.

Today's typical landscape contractor offers a wider array of services than in the past. Historically, lawn maintenance has represented the greatest total revenue for landscape businesses. Almost 33 percent of contractors said construction generated their greatest total revenue in 2004. This was fairly consistent but slightly higher than in previous years. In 1997, 30 percent of contractors claimed construction generated more revenue and, in 1998, 27 percent said it was their top revenue source. In contrast, fewer contractors claim that chemical lawn care or arborist services generate a majority of their sales than in years past. This year, 10 percent of contractors said chemical lawn care was their most profitable service, while 11 and 14 percent of contractors reported this in 1997 and 1998, respectively. Only 2 percent of contractors said arborist services represented their greatest revenue source, compared to 8 percent in 1997 and 7 percent in 1998.

Nearly half of landscape businesses – 49 percent – said they have become more diverse in the past two years, offering a greater number of services, while 16 percent said they have become more specialized. Thirty-five percent of contractors reported no change in their service structure. Considering the two primary services for a landscape business – lawn maintenance and construction – *Lawn & Landscape* broke down the research to find out what other services typical mowing and design/build companies offer. For instance, 59 percent of the companies who primarily mow also offer construction services, 24 percent also offer chemical lawn care, and 53 percent also offer arborist services. Among firms identifying themselves as primarily construction companies, 63 percent also offer lawn maintenance, 23 percent offer chemical lawn care services and 70.6 percent offer arborist services. In terms of 2004 service growth, all areas are experiencing growth. Lawn maintenance is up15 percent, construction is up 11 percent, chemical/fertilizer services are up 9 percent, irrigation is up 5 percent, snow and ice control services are up 3 percent, arbor services are up 2 percent, and nursery/retail services are up 1 percent.

## Green Industry Outlook

Green Industry participants are facing both challenges and opportunities in today's marketplace. While plant breeders have provided new varieties at a dramatic pace in recent years, which has helped to keep the consumer interested in the industry's products, the demands of retailers are probably having a greater influence in shaping the marketplace for all of those in the market channel, with the possible exception of the consumer. Indeed, retailers are competing for market share and, in their efforts, they are changing the picture of horticulture as seen by both the consumer to whom they sell and the producers from whom they buy.

At the consumer level, the marketplace can best be viewed as divided between so-called "traditional retailers" and mass marketers. Traditional retailers or "independents" would include retail florists, who tend to focus on cut flowers and cut flower arrangements for special occasions, and garden centers, which, in addition to their traditional inventories of trees and shrubs and, in recent decades, bedding and garden plants, are increasingly carrying more and more potted flowering and foliage plants.

On the mass market side of the ledger, supermarkets have become the primary vendors of everyday cut flowers for the home, as well as for potted flowering plants. Increasingly, supermarkets are being viewed as vendors of holiday flowers and plants purchased for gifts. Some supermarkets carry foliage plants quite regularly, and some, in selected markets, have started to sell bedding/garden plants seasonally. Another mass marketer type would be the discount store; these retailers tend to focus on bedding and garden plants in the spring and potted flowering plants for Easter and Christmas. Some also include foliage plants in their offerings. In cases where these retailers have added perishable groceries to their mix (e.g. Wal-Mart SuperCenters and Super Kmarts), they have also added cut flowers as part of the retail format. Target, which had been very involved seasonally in the bedding/garden plant market throughout the country, has reduced this involvement to Florida, California, and selected other southwestern states, where there is more of a year-round market and where they have built permanent garden centers alongside their stores. Nationally, Target maintains a small foliage plant display in most stores, and they carry blooming holiday plants for Easter and Christmas.

The other dominant mass marketer type is the home improvement/hardware/home center, dominated by Home Depot and Lowe's. These retailers focus on bedding and garden plants to accompany their lines of trees and shrubs and lawn and garden hard goods (garden tools, fertilizers and chemicals, lawn mowers, hoses, and sprinklers, etc.), but they also carry both potted flowering and foliage plants on a weekly basis in established garden departments. At Easter and Christmas, these retailers also display racks of lilies and poinsettias throughout their stores.

**CONSUMER TRENDS**

Consumers are very divided by the various retail opportunities for nursery and floricultural products. First, it must be noted that there are very few retailers that can carry a mix that is representative of all of the major industry segments (nursery crops, cut flowers, potted flowering plants, foliage plants, and bedding/garden plants). Hence, many consumers are forced to shop among several retailer types to see the full array of product opportunities. Second, retailers vary dramatically in the selection offered, as well as the qualities, quantities, and sizes in the products and services they provide. Hence, if consumers have particular needs in mind, they may be forced to shop around to find their ideal retail offering. Of course, pricing varies among the retailers, as well.

Working on the side of many retailers is the overall lack of knowledge by the majority of consumers about the industry's products. For mass marketers, the lack of knowledge by the average lawn and garden consumer makes retailing a generic selection of dominant varieties and colors quite acceptable, especially if the retailer is able to attract consumers through the lowest price. For the traditional retailer able to attract the flower or plant aficionado through better quality, wider selection, or better service, the niche opportunities provide their *raison d'être*. Yet, consumers increasingly report that if they know what they want and they are looking for the bread-and-butter staples, they can get a great deal by buying at mass marketers.

**PRODUCER CHALLENGES**

The evolving marketplace has certain challenges for the grower. In many instances, buyers for mass marketers have added what must be considered artificial conditions to the buying arrangements. Some buyers have added "pseudo grades and standards" to plants based on shelving heights or personal preferences, rather than based on generally accepted plant-to-pot ratios; sometimes these conditions are set only to allow the retailer to better exhibit various differences among groups of plants being sold at different price points. Premium versus promotional plants being sold side-by-side provides an example. Ironically, such conditions sometimes make it easier for the uninformed consumers to recognize differences for their dollars. However, growers are sometimes forced either to sell perfectly acceptable plants at discounts because their dimensions fail to measure up to a particular buyer's prerequisites or to culturally curtail plant growth to keep plants within the standards. Growers also are forced to choose among production strategies depending on the desired market outlet. On the one hand, growers producing for mass marketers typically will grow large quantities of a limited number of products in highly automated operations. On the other hand, growers producing for independents typically will grow fewer numbers of a wider selection of products in much less-automated surroundings.

Consolidation of retailers has also presented some not-so-obvious marketing challenges for growers. There are instances in the marketplace where buyers are placing real or suggested limits on producers about which competitors they can sell to or on how much of a producer's output they are willing to buy. The restraint of trade issues notwithstanding, such actions limit producer options. Growers rightfully want to spread their eggs among as many baskets as possible, but options are dwindling as certain chains continue to consolidate and as financial realities force smaller chains and/or independents out of business.

In many markets, the big box chains often come onto the scene opening huge numbers of stores in a relatively short time. While this is the nature of mass markets, these actions, which have forced smaller retailers from the scene, have also had the effect of forcing producers to scramble to maintain any market opportunities to which they can sell. Sometimes the chains enter a new market and bring established supply relationships with them from distant locations, rather than developing new relationships with local producers. With alternative local retailers pressured, local growers often find themselves challenged to find an inviting market channel.

Conversely, as chains move from market to market, a number of buyers have asked growers to supply not only those stores that have been supplied in the past, but also additional stores being built or acquired. Due to

production or servicing constraints, additional volume is often beyond the means of certain suppliers. For the sake of buying efficiency, chain buyers have sometimes changed suppliers to those willing to add production volumes. There have also been instances where a chain has changed the buyers or their responsibilities, forcing producers to again compete and establish relationships with the new buyers.

One phenomenon affecting growers is the relatively new auction buying by a number of chains, particularly supermarkets. Perhaps caused by consolidation and/or centralization of buying functions, a number of chains have asked growers to participate in online reverse auctions to bid for their business (e.g., www.florabid.com). In such instances, purchases are made from growers willing to supply to a set of predetermined and written specifications, which are published online. Thus, superior quality is not encouraged nor rewarded, as the product is seldom seen by buyers. Instead, growers are forced to produce to the minimum standards to remain as competitive as possible.

Another decision being considered by several chains is whether to move to a pay-by-scan transaction basis. Today, most chains pay for the product delivered. But several chains (e.g. Home Depot) are considering moving to paying only for the product scanned at checkout. This would force producers to absorb the entire shrinkage now assumed by retailers. It might also force growers to modify their product and/or service protocols to help assure getting paid for their efforts. More frequent deliveries of smaller quantities per delivery and the servicing of retail displays are two possible examples of changes growers will be forced to make. Cash flow considerations are another concern, as well as who pays the costs of employee and/or customer theft. This pay-by-scan change would benefit the retailer, who will be able to radically reduce inventory dollars from their books. Such a move would increase the retailer's return on assets, something of particular importance to Wall Street, as market opportunities become more limited due to store saturation.

**STRUCTURAL IMPACTS ON THE INDUSTRY**

The impacts of the mass marketers on the nursery and floricultural industry are tremendous. To their credit, many would argue that the chains have exposed many more consumers to nursery and floral products. There is no doubt that this is true, as the presence of mass marketers has opened not only the consumers' eyes to the industry's products, but additional market opportunities for producers as well. This has forced independent retailers to become more savvy a marketing by looking for ways to increase customer service. Mass marketers have also facilitated the growth of offshore cut flower producers as major suppliers to the U.S. consumer. In recent years, offshore producers have also become providers of many of the cut flower bouquets now offered at retail stores. These bouquets were formerly assembled in the United States near the cities in which they were sold.

Domestically, the impact of the mass marketing of nursery and floricultural crops has led to the increased formation of larger and larger producer operations. The capital requirements needed to afford the infrastructure required to move mass quantities of product in a confined marketing window exceed those that this industry has historically managed. Most firms have been able to generate the capital on their own, but the industry also has seen examples of investment brokers entering the industry to help finance some of these production operations.

In many instances, chain buyers have limited the number of firms with whom they deal in any market area, as chains have come to realize certain efficiencies in merchandising products if fewer vendors are utilized. Chains have begun asking vendors to provide care for in-store displays, especially during the bedding/garden plant season, something that is easier to request if one firm handles all of the merchandise. Whether or not producers are rewarded for the additional expense of providing fully managed displays is debatable, but some growers report that the improved product care leads to additional turns (inventory turnover), which provide the needed results.

There are also several instances of producers partnering with smaller firms in order to handle the volumes required to supply burgeoning chains. In one instance, there may be as many as 40 growers involved in cross-docking activities to satisfy one chain's needs in a market area. Depending on the arrangements, this helps to spread the risk among several producers. Still, there are numerous examples of producers who supply 50 percent, 75 percent, or even 100 percent of their output to one chain; when asked about risk, these growers often respond with discussions about production efficiencies and questions about what they could do even if they wanted to change, noting that their competitors would love to steal the account.

In contrast, the focus on mass marketers by large growers has created opportunities for smaller growers to develop niches serving independent retailers or to go into retailing themselves, selling directly to the consumer. In a recent survey of growers, it was found that the majority of several thousand producers surveyed did some retailing of their own, whether that was 1 percent or 100 percent of their production. Smaller growers appeared to sell higher percentages, on average, of their production at retail. Yet, some larger producers have also used their own retail sales as a tactic for diversification. In many instances, producers in the middle seemed to focus their production on selling to independent retailers, perhaps including a retail operation of their own.

The other impact of mass marketers on the industry has been one of consolidation. In recent years, grower numbers have appeared to decline from year to year, or at best, remain stable. One could debate why the producer numbers are diminishing, but many would argue that the stresses of either supplying mass marketers or competing with them as an independent grower-retailer are taking their toll. The capitalization requirements, the reduced margins, the increased demands, the risk associated with fewer customer numbers, and the resulting consequences should that risk come to be realized have all created market pressures for larger producers. The struggle to remain competitive in a viable niche for smaller producers can be equally trying in markets being inundated by competing chains. There are already certain markets where independents can hardly be found.

## Previous Economic Impact Studies

In spite of the magnitude and recent growth of the Green Industry outlined above, there is surprisingly little information that has been developed at the national level regarding the economic impact of the Green Industry. The USDA does conduct floriculture and nursery crop surveys to collect information at the grower level, but these data are often incomplete for some states and the cash receipts reported for/by growers do not reflect the further economic impacts generated from this production activity. Census data, including the 10-year Census of Horticultural Specialties, is subject to the same limitations and has historically had other mitigating problems such as poor response rate, which reflects poorly on the data's accuracy. For firms downstream in the supply chain, such as landscapers, re-wholesalers, and retailers, there is Standard Industrial Classification (SIC) data maintained by each state's Office of the Comptroller, but misclassification errors and non-compliance on the part of industry participants have made some state's data speculative at best. There is a new sectoring scheme called the North American Industrial Classification System, or NAICS for short, which should provide more robust estimates in the future. However, to date, no one source of data has proven to be adequate in capturing the total economic importance of the Green Industry.

Recognizing the limitations of existing data sources and also the critical need for this type of economic impact data, several state nursery and landscape associations have sponsored and developed their own economic impact studies for their respective green industries. Such associations have found these studies to be useful in communicating the importance of the Green Industry to state legislatures, in gaining assistance and resources, and in combating proposed legislation that would have had negative impacts on urban or community forestry initiatives and the Green Industry. As useful as these state-specific studies have been, there have not been comparable analyses conducted at the national level that would provide similar benefits on that scale. Additionally, each of the researchers conducting state-level studies used different research methodologies in their respective analyses, which were completed in different time frames. Thus the cross-sectional and time-series comparability of such studies is quite limited. Nonetheless, this chapter attempts to summarize the findings of previous studies so that a common "point of departure" can be used as a benchmark from which to compare the results from this study which is national in scope.

Table 1-2 presents an overview of previous economic impact studies that have been conducted [in the last five years] regarding the Green Industry in selected states. While there have been other studies conducted (mostly by the Agricultural Statistics Service in respective states) that estimate grower-level sales or cash receipts, this summary only presents those that provide subsequent post-farm gate economic impacts. There have been other economic impact studies conducted in some states regarding turfgrass-related economic impacts (Table 1-3), but the focus here is on the economic impacts of the entire Green Industry. In Table 1-2, the studies are listed by state in alphabetical order. Total Green Industry sales are presented, along with the total employment and payroll associated with Green Industry sectors. Some state studies also provided estimates of value added and taxes paid

by Green Industry participants and those are listed where applicable. To gain a common basis on which to perform a comparison of the results from each state, total population during the year of the study is tabulated, along with each state's Gross State Product (GSP). In concept, an industry's GSP (or its value added) is equal to its gross output (sales or receipts and other operating income, and inventory change) minus its intermediate inputs (use of goods and services purchased from other U.S. industries or imported). Thus, the GSP accounts provide data by industry and state that are consistent with the Nation's gross domestic product (GDP) by industry accounts. However, total GSP for the Nation differs from GDP in the national income and product accounts for three reasons. First, like the national estimates of GDP by industry, GSP is measured as the sum of the distributions by industry of the components of gross domestic income. Second, GSP excludes (and GDP by industry include) compensation of Federal civilian and military personnel stationed abroad and government consumption of fixed capital for military structures located abroad and for military equipment, except domestically located office equipment. Third, GSP and GDP often have different revision schedules.

Table 1-2 also includes an estimate of the calculated share of each state's GSP that the Green Industry represents; an unadjusted Green Industry sales (impact) per capita calculation; and an adjusted sales (impact) per capita estimate. This adjusted sales impact involves multiplying each unadjusted per capita estimate by the respective GDP implicit price inflator for each respective year to convert all per capita estimates to 2004 dollars. As shown in the table, economic impacts estimated in the selected studies ranged from $186 million in Massachusetts and Vermont to a high of $10.3 billion in California. Florida was a close second with $9.2 billion and Texas ranked third with just over $9 billion in economic impact. Even with this being a subset of 23 states (only impact studies that have been conducted over the last five years were included), total economic impacts amounted to almost $60 billion (not adjusted for inflation). Adjusted per capita economic impacts ranged from $223 per person in Maine, largely due to its small industry relative to its population, to a high of $618 per person in Florida. The value on a per capita basis averaged across all states was $380 per person. The number of jobs represented by Green Industry firms ranged from 5,400 jobs in Vermont to just over 168,900 jobs in California. Texas and Florida ranked second and third in terms of Green Industry-related employment with 222,000 and 187,859 jobs respectively.

However, the reader is cautioned against making direct comparisons from state to state due to the differences in research methods utilized in each state. For example, the data collection procedures often differed dramatically in that some states used mail or telephone surveys to collect primary data, while others relied heavily on secondary data sources, and others used enumerators (often Agricultural Statistics Service personnel) to interview Green Industry participants directly to collect primary data. Another important difference is the number and type of sectors that were included in each respective study's definition of the Green Industry (refer to the last column of Table 1-2). For example, some states included all end users such as households, golf courses, and sports complexes, while others did not. Last, the model used to determine economic multipliers differed between the studies. Many of the researchers used the IMPLAN® (input-output) economic impact modeling system to conduct their respective analysis, but not all.

All of these factors again point to the dire need to conduct a study that is national in scope that uses a common methodology to collect industry data and calculate associated economic impacts. The next chapter will provide a detailed description of the methodology used in this study that was used to guarantee results that will be comparable across states.

**Table 1-2. Summary of Selected Recent Studies on Economic Impacts of the Green Industry in Individual States**

| State | Year | Output Impact (million $) | Employment Impact (jobs) | Impact per Capita ($) [a, b, c] | Sectors Included[d] |
|---|---|---|---|---|---|
| Arizona | 2002 | 1,200 | 24,100 | $230 | P, L |
| California | 2001 | 10,337 | 168,867 | $321 | P, R |
| Colorado | 2002 | 1,500 | 45,000 | $347 | P, L, G, F, BG, R |
| Connecticut | 2003 | 949 | 41,000 | $278 | P, L, R |
| Florida | 2000 | 9,164 | 187,859 | $618 | P, L, R, T |
| Idaho | 1999 | 662 | 12,911 | $566 | P, L, F, A, R |
| Illinois | 1999 | 3,950 | 160,000 | $352 | P, L, R |
| Louisiana | 2001 | 2,215 | 56,686 | $524 | P, G, L, R, RHA |
| Maine | 2003 | 286 | 10,000 | $223 | P, L, R |
| Maryland | 2000 | 1,152 | 14,800 | $235 | P, L, R |
| Massachusetts | 2003 | 1,860 | 52,000 | $296 | P, L, R |
| Minnesota | 2002 | 2,110 | 28,200 | $437 | P, L, R |
| Nevada | 2002 | 751 | 15,736 | $361 | P, RW, L, G |
| New Hampshire | 2003 | 438 | 12,100 | $347 | P, L, R |
| Ohio | 2001 | 3,950 | 96,600 | $368 | P, L, RW, R |
| Pennsylvania | 2000 | 3,300 | 107,000 | $291 | P, L, R |
| Rhode Island | 2003 | 329 | 10,000 | $312 | P, L, R |
| South Carolina | 1999 | 1,380 | 24,710 | $381 | P, L, F, R |
| Tennessee | 2000 | 2,782 | 73,000 | $528 | P, L, R |
| Texas | 2000 | 9,760 | 222,000 | $504 | P, L, R |
| Utah | 2000 | 800 | 15,000 | $386 | P, L, R |
| Vermont | 2003 | 186 | 5,400 | $307 | P, L, R |
| Wisconsin | 2002 | 2,706 | 43,000 | $518 | P, HH, PG, G |
| Total | | 61,768 | 1,425,969 | $380 | |

Notes/Sources:

[a] Population data: U.S. Census Bureau, State & County Quickfacts (quickfacts.census.gov/qfd/index.html).

[b] Impact per capita equals total Green Industry output impact divided by Total Population.

[c] Output impacts per capita were adjusted to 2004 dollars using GDP Implicit Price Deflator (US Commerce Dept.).

[d] Sector codes = [P] Producer; [L] Landscape-related; [R] retail; [RW] Re-wholesale; [F] Florist; [G] Golf; [BG] Botanical gardens; [HH] Households; [A] Arborists; [T] Trade; [RHA] Related horticultural activities; [PG] Public government.

**Table 1-3. State-Specific Studies of Economic Impacts of the Green Industry, 1978-2004**

| Year Reported | State | Scope |
|---|---|---|
| 2004 | Wisconsin | Green Industry Survey |
| 2004 | New England | Environmental Horticulture |
| 2003 | California | Nursery Industry |
| 2003 | New Jersey | Turfgrass Industry |
| 2003 | New York | Turfgrass Industry |
| 2002 | Nevada | Green Industry Operations |
| 2002 | Colorado | Green Industry |
| 2002 | Michigan | Turfgrass Industry |
| 2002 | Arizona | Green Industry |
| 2002 | Georgia | Golf Course and Landscape Maintenance |
| 2001 | Iowa | Turfgrass Industry |
| 2001 | Idaho | Green Industry |
| 2001 | Ohio | Green Industry |
| 2001 | Louisiana | Green Industry |
| 2001 | Illinois | Green Industry |
| 2001 | Florida | Environmental Horticulture Industry |
| 2000 | Kansas | Horticulture Industry |
| 2000 | Texas | Green Industry |
| 2000 | Virginia | Turfgrass Industry |
| 2000 | Maryland | Horticulture Industry |
| 2000 | Missouri | Nursery Industry |
| 2000 | Pennsylvania | Green Industry |
| 2000 | Minnesota | Nursery and Landscape Industry |
| 1999 | South Carolina | Horticulture Industry |
| 1999 | North Carolina | Turfgrass |
| 1999 | Arizona | Green Industry |
| 1999 | Wisconsin | Turfgrass Industry |
| 1998 | Missouri | Turfgrass Industry |
| 1998 | New England | Environmental Horticulture Industry |
| 1997 | Florida | Environmental Horticultural Industry |
| 1997 | Oregon | Nursery and Greenhouse Industry |
| 1997 | Louisiana | Nursery and Turfgrass Industry |
| 1996 | Maryland | Turfgrass Industry |
| 1996 | Mississippi | Turfgrass Industry |
| 1996 | Washington | Nursery and Landscape Industry |
| 1996 | Ohio | Nursery Industry |
| 1995 | New Mexico | Turfgrass Industry |
| 1995 | Louisiana | Green Industry |
| 1994 | Arizona | Green Industry |
| 1994 | Kansas | Turfgrass Industry |
| 1994 | North Carolina | Turfgrass Industry |
| 1994 | South Carolina | Golf Industry |
| 1994 | South Carolina | Ornamental Horticulture and Turfgrass Industry |
| 1994 | Kansas | Horticulture Industry |
| 1993 | Colorado | Green Industry |
| 1993 | Texas | Green Industry |
| 1993 | Tennessee | Nursery and Floriculture Industry |
| 1990 | Michigan | Nursery and Landscape Industry |
| 1989 | Ohio | Turfgrass Industry |
| 1989 | Kentucky | Turfgrass Industry |
| 1989 | Pennsylvania | Turfgrass Industry |
| 1989 | Michigan | Turfgrass Industry |
| 1987 | Oklahoma | Turfgrass Industry |
| 1986 | North Carolina | Turfgrass Industry |
| 1985 | New Jersey | Turfgrass Industry |
| 1984 | Rhode Island | Turfgrass Industry |
| 1982 | Virginia | Turfgrass Industry |
| 1978 | Oklahoma | Turfgrass Industry |