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Economic Contributions of the California Nursery Industry

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EXECUTIVE SUMMARY

The California nursery and floral industries contribute significantly to California's economy. They are the largest in the United States with the California farm value of combined floral and nursery product sales totaling almost \$3.086 billion in 2001. The total output of nursery products places the nursery industry third (\$2.09 billion) and the floral industry seventh (almost \$1 billion) among all California agricultural industries. When floral and nursery product sales are combined, the industry ranks second among all California agricultural products, following the dairy industry, which had \$4.63 billion in sales in 2001.

The number of California farms producing nursery and floral crops grew from 3,263 in 1982 to 4,988 in 1997 according to the *Census of Agriculture* (U.S. Department of Agriculture, National Agricultural Statistics Service 1982-1997). The number of California farms currently growing nursery and floral crops is difficult to determine because of differences in criteria used in classifying farms. The most recent California directory of licensed nurserymen listed 2,999 producers. As is true with many other commodities, there are a large number of small producers that account for a very small share of total output and a moderate number of large producers that produce most of the product sold. There were 411 California farms with nursery sales exceeding \$1 million in 1997; this 8.2 percent of nursery farms by number accounted for 81.3 percent of total nursery sales.

Many California commodities faced price and/or revenue problems during the decade from 1992 to 2002. During that time, the nursery and floral industries enjoyed steady sales increases, which increased the industry's share of total California agricultural production from 8.3 to 10.6 percent of total output. While there is floral and nursery production in 55 of California's 58 counties, ten counties with annual production valued at more than \$100 million accounted for more than 73 percent of 2001's value of production. San Diego County dominated the industry, producing more than \$855 million of nursery, floral, and foliage products in 2001 and accounting for almost 27 percent of the California

total. The other nine, however, have annual production exceeding \$100 million, and the next five counties' production ranged from \$50 to \$100 million. Nursery and flower production is a major agricultural enterprise in several of California's most urbanized counties, including Los Angeles, San Diego, Orange, Santa Clara, and Riverside, which together account for more than 54 percent of California's population.

California is the largest single market for lawn and garden products in the United States, accounting for from 10.3 to 10.4 percent of total annual U.S. sales since 1997. The majority of California's nursery and floral products are sold to California consumers. Based on secondary sources, we estimate that total 2001 California retail lawn, garden, and floral product sales exceeded \$10.1 billion. The gross margin (retail sales minus cost of goods sold) on these sales was estimated at almost \$3.8 billion. Retail channels have been changing over time, with the market shares of "big-box" hardware/home improvement stores such as Home Depot and Lowe's increasing significantly.

Market shares vary by type of retail store and product line. Retail florists have almost half of the cut flower market but have faced increasing competition from supermarkets, which now account for about one-quarter of cut flower sales. Garden centers are still the leading outlet for outdoor garden and bedding plants, but they have faced increasing competition from big-box stores. Retail florists, garden centers, big-box stores, and supermarkets are all important outlets for flowering and greenhouse plants. Direct sales are important for many nurseries; landscape contractors and gardeners purchase products ranging from specimen trees to bedding plants, and agricultural producers purchase trees and strawberry plants.

A regional economic model was used to trace the direct, indirect, and induced effects of California nursery and floral production and lawn and garden retailing through the California economy. The impacts are dramatic and far reaching. Overall, nursery and floral production and lawn and garden retailing contributed more than \$10.3 billion to California's 2001 output and were responsible for almost 169,000

jobs. Total value added attributed to California nursery and floral production and lawn and garden retailing was \$8 billion, and the labor-income impact exceeded \$4.9 billion.

The impacts of nursery and floral production and lawn and garden retailing also were estimated separately. The direct effects of nursery and floral production

were almost \$4.8 billion (46 percent of the combined total) while the direct effects of retailing were almost \$5.5 billion. Nursery and floral production generated 81,011 jobs (48 percent of the combined total) while lawn and garden retailing accounted for 87,867 jobs. Estimated value added for the nursery and retail sectors was \$3.55 and \$4.44 billion, respectively.

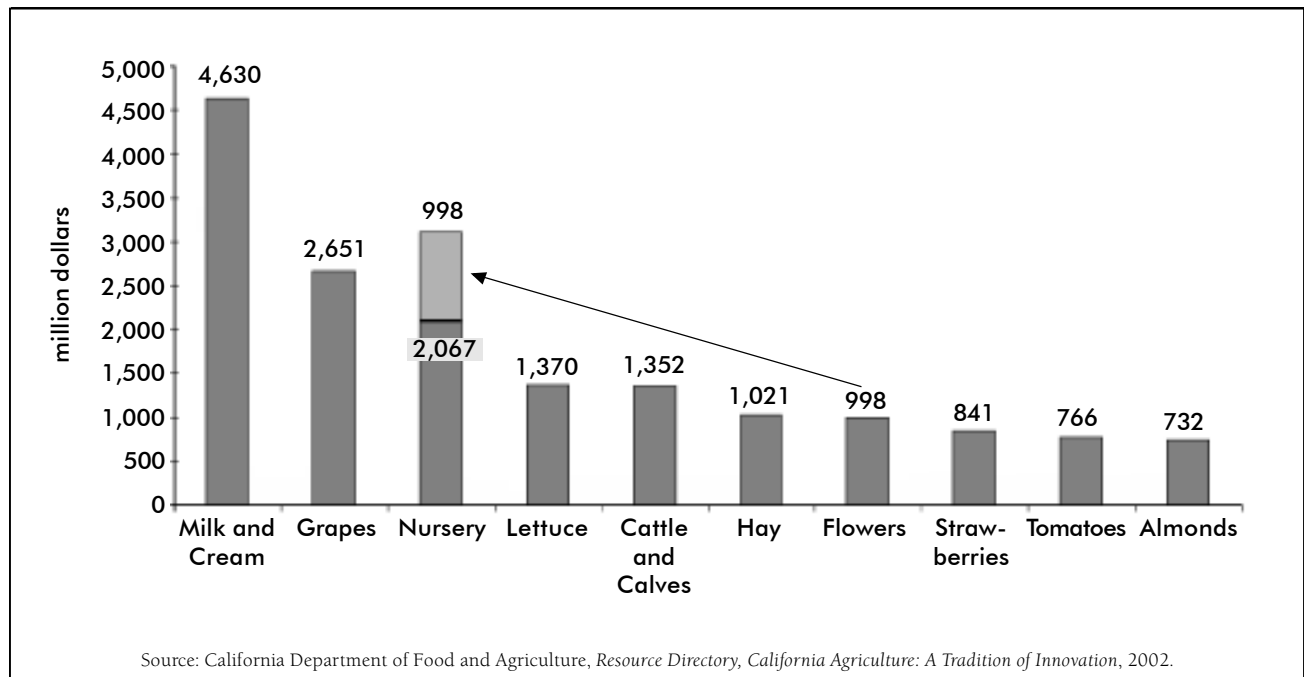
INTRODUCTION

California's nursery industry is the largest in the United States, and floral and nursery product sales are a leading sector in the California agricultural economy. The value of combined floral and nursery product sales in California in 2001 totaled almost \$3.086 billion at the farm level; nursery products contributed \$2.09 billion and floral sales contributed almost \$1 billion. Compared with other California agricultural commodities in 2001, the nursery industry ranked third, following first the dairy industry (\$4.65 billion) and then the grape industry (\$2.65 billion). The floral industry ranked seventh. When 2001 floral and nursery product sales are combined, the industry ranks second among all California agricultural products.¹

Commodities among the top ten in California that rank below floral and nursery products in terms of 2001 sales include lettuce (4), cattle and calves (5), hay (6), strawberries (8), tomatoes (9), and almonds (10). California's gross cash income from all agricultural production totaled \$27.6 billion in 2001. Nursery and floral sales made up 11.2 percent of that total.²

Despite its economic contributions and importance to the state and nation, the California nursery and floral industries are often overlooked by government officials, legislators, the agricultural industry, and the general public in discussions about leading agricultural products and producers. Though the California nursery industry faces the same issues that confront other agricultural producers (water, price and income,

Figure 1. Sales for California's Top Ten Commodities, 2001



¹ The commodity cash income data are reported in the California Department of Food and Agriculture's (CDFA's) 2002 resource directory. While commodity rankings often change from year to year as a result of yield and price variability, nursery crops were ranked third for the last three years (1999–2001). Flowers were eighth in 1999 and seventh in 2000 and 2001. The combined category of nursery and flower crops ranked second in each of the last three years (1999–2001). Rankings for the top 20 commodities for 1999, 2000, and 2001 are listed in Table A1 in the Appendix.

² There are two major data series for California agricultural sales. The California Agricultural Statistics Service (CASS) publishes annual estimates of cash sales that are used by the U.S. Department of Agriculture (USDA) for calculating farm income. CASS also publishes the annual county agricultural commissioners' reports, which provide estimates of the value of production for each commodity. Note that the California gross cash income estimate for 2001 presented here (\$27.6 billion) is less than the county agricultural commissioners' estimate of total agricultural output (\$29.8 billion).

energy and input costs, government regulation, changing market structure, competition, information, etc.), it sometimes is not included in policies and programs designed to benefit agricultural producers. At the extreme, there are individuals and organizations that do not consider the floral and nursery industries to be agricultural production. This may be due to any of a number of factors, including the limited visibility of production facilities and product movement (compared to commodities like tomatoes, rice, and citrus) and the decorative nature of the product (rather than being a food or fiber).

The three major objectives of this report are to:

- Assemble economic data on the California nursery and floral industries that show trends, growth patterns, and present status by location, products, and channels of distribution.
- Use output, employment, and value-added multipliers for the California nursery and floral industries to estimate the regional and statewide economic contributions of the industry.
- Organize economic data and analysis of the industry's economic contributions and impacts for use by the California nursery industry in educational programs for policymakers, agricultural leaders, and the general public.

STRUCTURAL CHARACTERISTICS OF CALIFORNIA'S NURSERY AND FLORAL INDUSTRY FROM 1982 TO 1997

The changing structure of the California nursery industry was examined for the 15-year period from 1982 through 1997 using *Census of Agriculture* data for 1982, 1987, 1992, and 1997. California leads the nation, and Florida typically ranks second, in total sales of nursery and floriculture crops. California sales of nursery and floriculture crops increased from \$957,232,000 in 1982, accounting for 25 percent of total U.S. sales, to \$2,210,574,000 in 1997, accounting for 20 percent of U.S. sales (U.S. Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) 1982–1997). After being adjusted for price changes, California's real sales increase from 1982 to 1997 totaled 38.8 percent. The most recent USDA reports list California's 2001 market share for nursery and floriculture crops at 21.3 percent; Florida trailed with 11.9 percent (USDA Economic Research Service).

Number of Farms and Sales

The number of California farms growing nursery and floriculture crops increased from 3,263 in 1982 to 4,988 in 1997. Increases in other states were more

rapid, however, and California's share of U.S. farms producing nursery and floriculture crops decreased from 9 percent in 1982 to 7 percent in 1997 (Table 1). Note that California's share of area under glass, acres in the open, and sales also decreased from 1982 to 1997. However, the average California nursery operation had more area under glass and approximately 2.75 times the sales of the average U.S. nursery farm (\$443,178 versus \$161,360) in 1997.

In 1982, California farms producing nursery products with annual sales of less than \$40,000 accounted for 50.6 percent (1,652 farms) of the total number of farms but represented only 1.8 percent of total sales. There were 362 farms with sales of nursery products exceeding \$500,000 and they accounted for 76.3 percent of total 1982 sales. The pattern was similar in 1997, with 58 percent (2,892) of the farms with sales less than \$50,000 accounting for only 1.3 percent of industry sales. There were 411 California farms with nursery sales exceeding \$1 million in 1997. These farms, representing 8.2 percent of nursery farms by number, accounted for 81.3 percent of total nursery sales.

Table 1. Farms Growing Nursery and Floriculture Crops, Area under Glass, Acres in the Open, and Sales, U.S. and California, 1982 and 1997

| | United States | California | California Share |
|---|---------------|-------------|------------------|
| 1982 | | | |
| No. of Farms | 35,507 | 3,263 | 9.19% |
| Square Feet under Glass or Other Protection | 637,388,163 | 143,390,104 | 22.50% |
| Acres in the Open | 451,607 | 56,123 | 12.43% |
| Sales (\$1,000) | \$3,821,196 | \$957,232 | 25.05% |
| 1997 | | | |
| No. of Farms | 67,816 | 4,988 | 7.36% |
| Square Feet under Glass or Other Protection | 1,027,391,958 | 173,192,317 | 16.86% |
| Acres in the Open | 1,234,510 | 90,544 | 7.33% |
| Sales (\$1,000) | \$10,942,816 | \$2,210,574 | 20.20% |

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, *Census of Agriculture*, 1982–1997.

California Nursery Farms versus Other Farms: A Comparison of Averages

Nursery farms are comparatively compact and of high value compared to other farms in California. There were 74,126 farms in California in 1997 with an average size of 374 acres. Nursery farms represented 5.8 percent of total California farms that year but, with an average of 45 acres of land per farm, they accounted for only 0.7 percent of California land in farms. Overall, the value of the average California farm's land and buildings in 1997 totaled \$941,170 per farm (\$2,605 per acre).³ The value of land and buildings of the average California farm growing nursery crops was \$624,267 (\$12,017 per acre).

The 1997 gross value of California agricultural production was estimated by county agricultural commissioners at \$28.02 billion (\$322,104 per farm) with nursery products, flowers, and foliage accounting for about \$2.5 billion of the total (\$500,855 per nursery farm). This gross value was up from \$21.77 billion in 1992 and subsequently increased to \$29.8 billion in 2001 (Appendix, Table A2). The gross value of nursery, flower, and foliage production increased from a little more than \$1.9 billion in 1992 to more than \$3.17 billion in 2001.

Characteristics of Nursery-Farm Operators

The average age of operators of farms producing nursery crops has been increasing, a trend that holds for other farm operators in California. The number of nursery farms operated by a person over the age of 45 increased from 2,141 (66 percent) in 1982 to 3,822 (77 percent) in 1997. The average age for all California farm operators in 1997 was 56.5 years; for nursery-farm operators, the average age was 54.3 years.

In 1982, slightly more than 64 percent of all California nursery farms were operated by persons whose main occupation was farming. This share decreased to 58 percent in 1997. As might be expected, the pattern of part-time operators varies when income is considered. In 1982, almost 81 percent of the

nursery farms with sales exceeding \$40,000 were operated by persons whose main occupation was farming while 52 percent of the farms with less than \$40,000 in sales were operated by part-time farmers. In 1997, 78.5 percent of the farms with more than \$50,000 in sales were operated by persons whose main occupation was farming while almost 55 percent of farms with less than \$50,000 in sales were operated by part-time farmers.

The legal structure of California nursery operations also has changed over time. The distribution of the number of nursery farms in 1982 was sole proprietors, 61 percent; partnerships, 14 percent; corporations, 24 percent; and other, 1 percent. By 1997, this had changed to sole proprietors, 69 percent; partnerships, 11 percent; corporations, 18 percent; and other, 2 percent.⁴ In the corporate category, the relative importance of family corporations tended to decrease over time. Even though the share of farms organized as corporations has decreased over time, the share of farms owned by corporations is larger for nursery operations than for any other sector in California agriculture. Note that the corporate share of all California farms was about 7.1 percent in 1997.

Postcensus Changes in Farm Numbers

While the structure of California agriculture has been changing since 1997, the extent of the changes is difficult to determine because the 2002 agricultural census has not yet been published. The 1997 census listed 4,988 California farms producing nursery and floral products. As noted previously, 2,892 of these farms had less than \$40,000 in sales and accounted for only 1.3 percent of industry sales. The California Agricultural Statistics Service (CASS), in its annual reports for the California floriculture industry, lists the number of California floriculture producers with sales greater than \$10,000. These reports show the number of floriculture producers decreasing fairly steadily from 1,171 in 1998 to 973 in 2000 and to 802 in 2002. The 2002 California directory of

³ The *Census of Agriculture* (USDA NASS) based the average value of land and buildings on a per-farm and per-acre basis on a sample of California farms.

⁴ The "other" category includes cooperatives, estates and trusts, institutions, etc.

nurserymen, which defines a commercial producer as someone who grows and sells a total of \$1,000 or more of nursery stock in one year, lists 2,999 producers for 2002. If the total number of nursery

and floral producers has remained steady or decreased while total production has increased, average sales per farm may increase significantly.

GROWTH OF THE CALIFORNIA NURSERY INDUSTRY

As noted earlier, production by the California nursery and floriculture industry has grown significantly over time, both in absolute values and relative to the rest of California agriculture. The value of floral products has remained generally stable over the last decade while the value of nursery products has increased. The total value of California nursery and floral products grew from \$1.75 billion in 1989 to \$3.17 billion in 2001 (an overall increase of 81 percent). This growth over time is shown in Figure 2. Total output dipped slightly from 1991 to 1992 and then grew steadily from \$1.938 billion in 1992. Total output increased 63.5 percent from 1992 through 2001 while real output (total revenue adjusted for price changes) increased 43.9 percent. Also shown in Figure 2 is the nursery and floriculture industry's annual share of total California agricultural production. Note that nursery's share of total agricultural output increased from 1989 through

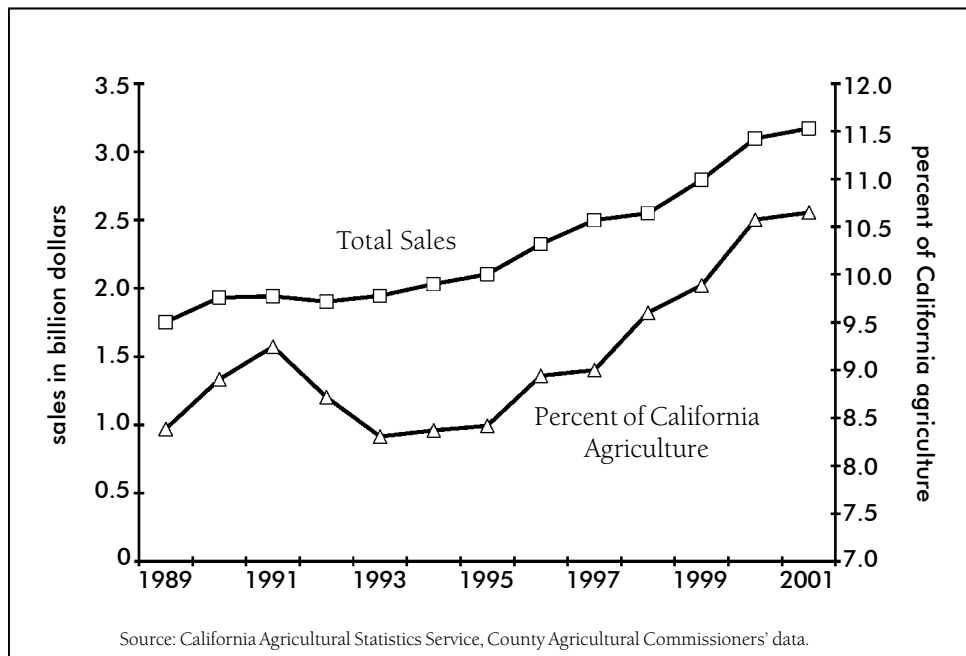
1991, dropped to 8.3 percent in 1993, and then steadily increased to 10.6 percent of total California agricultural output in 2001.

Total California agricultural output grew steadily, from \$21.77 billion in 1992 to \$29.8 billion in 2001, with the only pause in year-to-year growth occurring in 1998. However, the ten-year growth of 36.9 percent for total agricultural output was less than the nursery industry's growth of 63.5 percent, resulting in an increased share of total output for the nursery industry (Appendix, Table A2).

Location of Production

Nursery products and/or flowers and foliage are produced in 55 of California's 58 counties, but production tends to be concentrated in Central Coast and South Coast counties.⁵ There were ten counties with more than \$100 million in nursery, flower, and foliage production in 2001 (Figure 3). Seven of the ten counties border the Pacific Ocean, and Santa Clara County has a coastal type of climate (Figure 3). Note that Kern is the only Central Valley county in the top ten. As shown in Table 2, San Diego County dominates the industry with almost 27 percent of total production. The next four counties—Ventura, Orange, Monterey, and Los Angeles—combine for 25.32 percent of total California production. The remaining five counties account for 21.16 percent

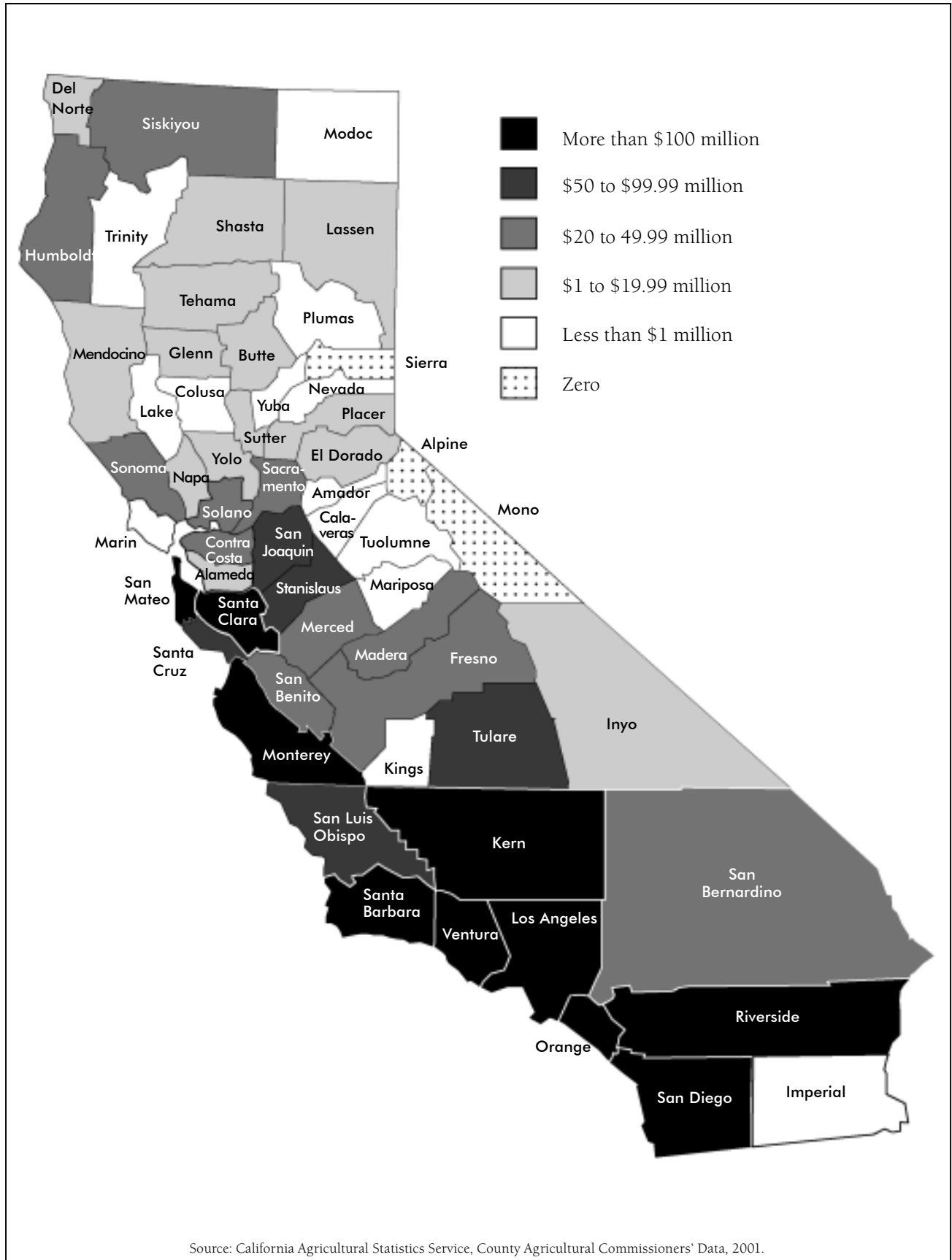
Figure 2. California Nursery and Floral Product Sales, Farm Value, and Percent of California's Total Agriculture



and foliage production in 2001 (Figure 3). Seven of the ten counties border the Pacific Ocean, and Santa Clara County has a coastal type of climate (Figure 3). Note that Kern is the only Central Valley county in the top ten. As shown in Table 2, San Diego County dominates the industry with almost 27 percent of total production. The next four counties—Ventura, Orange, Monterey, and Los Angeles—combine for 25.32 percent of total California production. The remaining five counties account for 21.16 percent

⁵ The gross value of nursery, flower, and foliage production by county is shown in Table A2 of the Appendix. Note that the county agricultural commissioners' reports do not include nursery and flower sales for seven counties that do have producers listed in CDFA's 2002 directory, *Nurserymen and Others Licensed to Sell Nursery Stock in California*. These counties and the number of producers are Colusa (1), Imperial (10), Kings (2), Modoc (3), Plumas (3), Tuolumne (6), and Yuba (5).

Figure 3. Nursery and Floral Production by County, Value at the Farm Gate, 2001



of production. As shown, the ten counties with production exceeding \$100 million accounted for almost \$2.32 billion (73.45 percent) of California's 2001 nursery, flower, and foliage production. There were eight California counties with populations exceeding one million in 2001. Five of them (Los Angeles, Orange, San Diego, Santa Clara, and Riverside) were among the ten largest nursery and flower producers (Appendix, Table A4). The ten largest nursery- and flower-producing counties accounted for almost 63 percent of California's 2001 population.

There were five counties where the value of nursery, flower, and foliage production fell between \$50 and

Table 2. California Nursery, Flower, and Foliage Production in 2001, Top 15 Counties with Share of State Total

| | Value of Production (thousand dollars) | Share of State Total (percent) |
|---------------------------------------|--|--------------------------------------|
| Top Ten Counties | | |
| San Diego | 855,139 | 26.97 |
| Ventura | 223,368 | 7.36 |
| Orange | 218,833 | 6.90 |
| Monterey | 178,564 | 5.63 |
| Los Angeles | 172,046 | 5.43 |
| Santa Clara | 150,265 | 4.74 |
| Riverside | 138,371 | 4.36 |
| San Mateo | 136,613 | 4.31 |
| Santa Barbara | 131,419 | 4.14 |
| Kern | 114,599 | 3.61 |
| <i>Total for Top Ten Combined</i> | 2,319,217 | 73.45 |
| Next Five Counties | | |
| San Joaquin | 99,224 | 3.13 |
| San Luis Obispo | 91,128 | 2.87 |
| Santa Cruz | 75,025 | 2.37 |
| Stanislaus | 68,960 | 2.17 |
| Tulare | 65,175 | 2.06 |
| Top 15 County Total | 2,718,729 | 85.74 |
| Rest of State | 452,346 | 14.26 |

Source: California Agricultural Statistics Service, *Summary of County Agricultural Commissioners' Reports*, 2001, 2001.

\$100 million. These counties—San Joaquin, San Luis Obispo, Santa Cruz, Stanislaus, and Tulare—accounted for 12.6 percent of total 2001 production. Overall, 15 counties produced 86.05 percent of California's total 2001 nursery, flower, and foliage crops. Among these top 15 counties, nursery and floral crops were number one in value of production in San Diego, Orange, Los Angeles, Santa Clara, and San Mateo.

Nursery, flower, and foliage crops are very important agricultural products for several California counties that are not among the top 15 value producers previously discussed. For example, nursery crops are listed as the number one commodity in terms of gross value of production for eight counties that are not included in the top 15: Alameda (\$15.1 million), Contra Costa (\$37.5 million), Del Norte (\$16.15 million), Humboldt (\$33.95 million), Inyo (\$4 million), San Benito (\$25.2 million), Siskiyou (\$30.79 million), and Solano (\$37.67 million).

Crops Produced

California nursery, flower, and foliage producers market a tremendous variety of plant materials—from cut flowers, potted flowering plants, flower seeds, bedding and garden plants, bulbs, and ornamentals to fruit and nut trees and strawberry plants. Buyers include consumers, landscape contractors, institutions, and agricultural producers. The most recent data available indicate that the gross value of plant materials produced by the industry in 2001 totaled almost \$3.17 billion (Table 3). Values for the various categories of nursery products are shown in Table 3.

Counties tend to specialize in particular floral and nursery crops. The five leading floral and nursery crops produced in each of the ten California counties with the largest production of floral and nursery crops (listed in Table 2) are shown in Table A3 in the Appendix. The largest single crop in any county is flowering foliage plants in San Diego County, which had a gross value in 2001 of almost \$309 million. Woody, deciduous, and evergreen ornamentals (the largest product category statewide) ranked among the top five crops in seven of the ten counties and number one or two in five counties. Bedding plants rank in the top five crops in five of the ten counties. San Diego County ranks first in value of production of bedding

Table 3. Wholesale Value of California Nursery Products by Major Categories, 2000 and 2001

| | 2000 Value | 2001 Value |
|---|------------------------|------------------------|
| Floral Products | | |
| Cut Flowers and Cut Greens | \$383,101,500 | \$359,810,600 |
| Flower Seeds | 5,830,700 | 6,074,100 |
| Christmas Trees | 10,685,800 | 10,304,900 |
| <i>Total</i> | <i>\$399,618,000</i> | <i>\$376,189,600</i> |
| Nursery Products | | |
| Potted Plants and Flowering Foliage | \$615,772,400 | \$631,386,400 |
| Bulbs, Corm, Roots and Tubers | 10,295,200 | 35,712,300 |
| Flowering Propagative Materials | 75,590,000 | 75,700,800 |
| Bedding Plants | 465,045,400 | 480,438,100 |
| Rose Plants | 45,936,000 | 54,062,000 |
| Woody, Deciduous, and Evergreen Ornamentals | 772,006,300 | 823,255,600 |
| Herbaceous Perennials | 30,069,200 | 36,175,500 |
| Turf and Sod | 42,750,300 | 56,724,700 |
| Nursery Stock Other than Ornamentals | 639,508,900 | 598,606,600 |
| <i>Total</i> | <i>\$2,696,973,700</i> | <i>\$2,792,062,000</i> |
| Grand Total | \$3,096,591,700 | \$3,168,251,600 |

Source: California Department of Food and Agriculture Nursery Program, *Value of California Nursery Products, Fiscal Year 2001/2002, 2002.*

plants (\$165 million), but Ventura, Monterey, Los Angeles, and Santa Clara each have significant production. Cut flowers rank in the top five crops in eight of the ten counties, with the greatest production in San Diego, Ventura, and Santa Barbara. Cut roses are important in Monterey and Santa Clara. Kern, the only Central Valley county in the top ten, dominates production of rose plants and is the only one of the ten that counts nursery, fruit, vine, and nut crops among its top five.

Marketing Channels

The distribution of California floral and nursery sales varies by product. A survey of California flower growers conducted in 2000 found that

59 percent of flowers produced in California were sold in California, 40 percent were shipped to other states, and 1 percent was exported to other countries (Prince & Prince, Inc.). Based on industry estimates, approximately 79 percent of California nursery products are sold in California, 20 percent are shipped to other states, and 1 percent is exported to other countries.

Number and Type of Firms

There are a variety of California firms involved in production and distribution of nursery and floral products. According to the 2002 *Directory of Nurserymen and Others Licensed to Sell Nursery Stock in California*, there are 2,999 California producers of nursery and floral products.⁶ This

includes 551 producers in San Diego County, 375 in Los Angeles County, and 207 in Riverside County. At the other end of the range, there are between one and five producers in each of nine counties and no registered producers in three counties (Appendix, Table A5). Moving forward in the channel of distribution, 3,756 retailers primarily sell nursery and floral products. Among them are 263 integrated producer/retailer operations (producers who also retail nursery and floral products). There are also 3,465 incidental retailers registered in California—retail outlets with multiple product lines, including nursery and floral products. Retail stores in the incidental classification include many of the largest nursery retailers (warehouse club stores, chain stores, and mass merchandisers such as Home Depot, Lowe’s,

⁶ The California Food and Agriculture Code states that “It is unlawful to sell any nursery stock without an annual license from the Secretary of Food and Agriculture.” Further, “Exemption from license is allowable to florists and others who only sell plants at retail for the sole purpose of indoor decoration, to persons who sell no nursery stock except seeds, and to persons who only sell cut Christmas trees.” (Sections 6721 through 6744)

Table 4. Statewide Taxable Sales by California Retail Florists and Farm and Garden Supply Stores, 1997-2001

| Year | Florists | Farm and Garden | Total |
|------|----------|--------------------|-----------|
| | | thousand dollars | |
| 1997 | 816,185 | 1,936,173 | 2,752,358 |
| 1998 | 843,978 | 1,967,564 | 2,811,542 |
| 1999 | 921,774 | 1,961,504 | 2,883,278 |
| 2000 | 983,396 | 2,060,713 | 3,042,436 |
| 2001 | 988,022 | 2,059,040 | 3,047,062 |

Source: California State Board of Equalization, *Taxable Sales in California during 2001, Forty-First Annual Report*, 2002.

Wal-Mart, K-Mart, Target, and the supermarket chains). Many producers sell directly to large-scale retailers, performing the functions usually associated with wholesalers and brokers. There are also 853 wholesalers and 476 jobber/broker/commission merchants dealing in nursery and floral products in California.

Retail Sales

Partial data on retail floral and nursery product sales in California are available from government statistics. Private data collection efforts and consultant reports also include retail sales. These multiple sources were used to develop the best possible estimates for this study.

The California State Board of Equalization publishes sales data by type of retail outlet but not by product line. There are annual retail sales data for florists and for farm and garden supply stores, two types of stores that tend to specialize in floral and nursery products. There are also aggregate sales data for large multi-product retailers such as food stores, hardware stores, and general merchandise stores, but it is not possible to determine their share of floral and nursery product sales. Lacking more detailed retail data, industry members have developed their own rules of thumb for estimating total retail sales.

One such method has simply doubled reported sales for florists (based on the growing importance of flower sales by supermarkets) and farm and garden stores (based on the growth in floral and nursery sales by large retailers such as Home Depot, Lowe's, Wal-Mart, Target, Price-Costco, and others that are not included in that category). Retail sales reported by California florists and farm and garden supply stores for the five-year period from 1997 through 2001 are shown in Table 4. Note that combined sales for the two types of stores shown in Table 4 increased from \$2.75 billion in 1997 to almost \$3.05 billion in 2001. There were 5,338 sales tax permits for retail florists and 3,711 permits for retail farm and garden stores on July 1, 2001.

Nursery Retailer publishes estimates of annual lawn and garden retail sales by state and also ranks America's 100 largest nursery retailers annually. California is the largest single market for lawn and garden products in the United States, accounting for between 10.3 and 10.4 percent of total annual sales since 1997 (Table 5). Estimated 2001 California lawn and garden sales totaled \$9.913 billion of the U.S. total of \$88.4 billion (Greenidge 2002). For the United States, the composition of estimated total sales for the product lines carried by lawn and garden stores were: green goods, 26 percent; equipment and tools, 28.4 percent; chemicals and fertilizers, 24.8 percent; and lawn furniture, accessories, and tree trim, 20.8 percent.

Market Shares

Where consumers purchase floral and nursery products has changed significantly over time in response to

Table 5. Estimated Annual U.S. and California Lawn and Garden Retail Sales, 1997-2001

| Year | U.S. million dollars | California million dollars | California's Share of U.S. Total |
|------|-------------------------|-------------------------------|-------------------------------------|
| 1997 | 76,500 | 7,896 | 10.32 |
| 1998 | 79,100 | 8,154 | 10.31 |
| 1999 | 81,700 | 8,422 | 10.31 |
| 2000 | 84,600 | 8,798 | 10.40 |
| 2001 | 88,400 | 9,193 | 10.40 |

Source: *Nursery Retailer*, February/March, 1998-2002.

changes in the structure of retailing, competition in local markets, and growing consumer demand. Greenidge, in a 1995 *Nursery Retailer* article, listed three major lawn and garden product distribution channels with estimated 1994 market shares. The channels and shares of the total market were hardware/hardlines, 20.8 percent; garden centers/nurseries, 39.1 percent; and mass marketers/chain stores, 40.1 percent.⁷ In 2001, only seven

years later, the growth of big-box stores such as Home Depot and Lowe's in the hardware category had increased the hardware/hardline's share to 38.9 percent of the total market. The independent sector's share (garden centers, nurseries, and farm stores) decreased to 31.1 percent, and the share held by warehouse clubs, chain stores, and mass merchandisers (Walmart and K-mart are the largest) decreased to 30 percent (Greenidge 2002). These changes in market share, while dramatic, are not surprising given the rapid growth in the number of big-box stores and typical sales of lawn, garden, and nursery items in those stores. National data, for example, show 2001 lawn and garden sales in the average Home Depot store at more than \$5.2 million annually, sales in the average Lowe's store at \$5 million annually, and sales in the average home center store (a category that includes Home Depot and Lowe's) at \$4.67 million annually (Morey, Morey, and Morey).

Retail florists are not included in the store types or total sales figures reported in Table 5. In addition, *Nursery Retailer's* independent sector (garden centers, nurseries, and farm stores) discussed previously undoubtedly includes more retailers than counted by the California State Board of Equalization in the farm and garden supply store category shown in Table 4. Retail florists have faced competition from and loss of market share to other store types, especially supermarkets. Data for market share over time were not available, but estimates of California's 2001 floral

Table 6. Estimated Market Shares of Various Retail Store Types for Sales of Flower Products in California, 2001

| Flower Product | Cut Flowers | Flowering and Greenhouse Plants | Outdoor Garden and Bedding |
|-------------------------------|-------------|---------------------------------|----------------------------|
| Florist Shop | 47.4 | 12.7 | 0.7 |
| Garden Center | 0.6 | 19.0 | 39.5 |
| Discount Chain | 0.7 | 6.7 | 7.8 |
| Home Improvement/ Hardware | 0.2 | 20.9 | 37.4 |
| Supermarket | 25.9 | 20.5 | 2.6 |
| Warehouse/ Price Club | 8.3 | 3.4 | 0.4 |
| Other Store | 16.9 | 16.8 | 11.6 |

Source: Sales estimates provided by The American Floral Endowment, Glen Carbon, Illinois.

market shares by type of retail outlet were provided by The American Floral Endowment (AFE).

AFE collects detailed data on retail flower sales from a national consumer panel and uses this panel data to develop timely detailed sales estimates for use by its subscribing members. Sales data are collected for three major types of flower products—cut flowers, flowering and greenhouse plants, and outdoor garden and bedding plants. These three floral product categories accounted for 43, 23, and 32 percent, respectively, of estimated total 2001 California retail flower sales. The importance of the various retailers varies significantly by flower product category.

The dominant outlet for cut flowers was florist shops, which had a 47.4 percent market share, followed by supermarkets, which had a 25.9 percent share (Table 6). Home improvement/hardware stores, supermarkets, and garden centers each retailed about a one-fifth share of flowering and greenhouse plants. Garden centers and home improvement/hardware stores had the dominant market shares for outdoor garden and bedding plants in California.

Retail Margins

Gross profit margins (sales revenue minus cost of goods sold) vary across retail store types and among stores within a given type because of factors such as firm size, location, services provided, product mix, product perishability, and competitive conditions.

⁷ Greenidge noted that garden centers, nurseries, and farm stores had about 60 percent of the market in 1980.

Table 7. Estimated Percentage Gross Margin for Floral and Nursery Products by Retail Store Type, Estimated Total Floral and Nursery Sales, and Total Margin, California, 2001

| Retail Store Type | Gross Margin percent | Retail Sales million dollars | Total Margin million dollars |
|--------------------------|-----------------------------|-------------------------------------|-------------------------------------|
| Hardware/Big Box | 30 | 3,576.077 | 1,072.8231 |
| Independent Farm/Garden | 45 | 2,859.023 | 1,286.5604 |
| Chain/Warehouse | 33 | 2,757.900 | 919.3000 |
| Florists | 50 | 988.022 | 494.0110 |
| Total | 37 | 10,181.112 | 3,772.6945 |

Source: Gross margin estimates provided by members of the California Association of Nurseries and Garden Centers; retail sales estimates are from *Nursery Retailer* and the California State Board of Equalization (Tables 4 and 5).

Estimates of gross margins are an essential component for deriving estimates of the economic contributions of California's floral and nursery industry.

California lawn, garden, and floral product retail sales are estimated at slightly more than \$10.18 billion in 2001.

Estimated gross margins and 2001 retail sales are shown in Table 7. Gross margins range from a low of 30 percent for the largest volume retailers (hardware/big box) to a high of 50 percent for retail florists. Note that these are estimated averages for the categories and that individual stores within a category ranged above and below the estimate. The weighted average retail gross margin is slightly more than 37 percent. Total

ESTIMATED ECONOMIC IMPACTS

California's floral and nursery sector is closely intertwined with other sectors of the state's economy, and changes in flower and nursery production have ripple effects throughout the state. Each dollar earned in the floral and nursery sector stimulates economic activity in the form of jobs, income, and output. The effects of changes in floral and nursery production on total economic activity are estimated through multipliers developed from input-output models. For this study we used the IMPLAN (Impact Analyses and Planning) system, developed by the U.S. Forest Service and USDA, to estimate economic input-output models for individual California counties and the state.⁸ The input-output models provide detailed economic multipliers for greenhouse and nursery production and retailing, as well as for all other sectors of the California economy. A brief description of the IMPLAN system is included in the Appendix in Table A6.

or retailing, indirect effects are changes in interindustry transactions as supplying industries respond to increased demands from nursery production or retailing, and induced effects are changes in local spending that result from income changes in the directly and indirectly affected industry sectors. The sum of direct, indirect, and induced effects is the total-effects multiplier. We estimate Type SAM (social accounting matrix) multipliers for output, employment, value added, and labor income.

Lindall and Olson describe the IMPLAN multipliers. Type SAM multipliers are the direct, indirect, and induced effects where the induced effect is based on information in the social account matrix. This relationship accounts for social security and income tax leakage, institution savings, and commuting. Interpretation of the tabled multipliers follows.

Economic Multipliers

IMPLAN models of the California economy were constructed for the ten individual counties with the largest 2001 flower and nursery production in the state. The estimated multipliers for California nursery production and lawn and garden retailing are shown in Table 8. The total-effects multipliers for the ten California counties are shown in Table 9.

IMPLAN multipliers for California nursery production and retailing estimate three components of total change for a particular county or the state. Direct effects are the initial change in nursery production

Table 8. Estimated IMPLAN Multipliers for the California Nursery Industry

| Type/Sector | Direct Effects | Indirect Effects | Induced Effects | Total Effects |
|-------------------------------------|----------------|------------------|-----------------|---------------|
| Output | | | | |
| Nursery | 1.0000 | 0.1646 | 0.3407 | 1.5053 |
| Retail | 1.0000 | 0.0999 | 0.3760 | 1.4759 |
| Employment (jobs/\$ million) | | | | |
| Nursery | 19.9723 | 2.1496 | 3.4478 | 25.5696 |
| Retail | 18.4669 | 1.0159 | 3.8046 | 23.2874 |
| Value Added | | | | |
| Nursery | 0.8084 | 0.1029 | 0.2120 | 1.1232 |
| Retail | 0.8816 | 0.0626 | 0.2339 | 1.1781 |
| Labor Income | | | | |
| Nursery | 0.4752 | 0.0657 | 0.1318 | 0.6727 |
| Retail | 0.5551 | 0.0393 | 0.1455 | 0.7399 |

Source: Minnesota IMPLAN Group (MIG), Inc., 2003.

⁸ We used IMPLAN PRO software licensed from Minnesota IMPLAN Group, Inc. (MIG) and the associated databases for California. For a detailed description of the software and data, see MIG, *Implan Professional Social Accounting and Impact Analysis Software User's Guide, Analysis Guide and Data Guide*, 1997.

- Output multipliers relate changes in sales to final demand by one industry (nursery or retail) to total changes in output (gross sales) by all industries within the local area. An industry output multiplier of 1.50 would indicate that a change in sales to final demand of \$1.00 by the industry in question would result in a total change in local output of \$1.50.
- Labor-income and employment multipliers relate changes in direct production to changes in labor income and employment within the local economy. For example, a labor-income multiplier for a direct industry change of 1.75 indicates that a \$1.00 change in output in the direct industry will produce an employment income change of \$1.75 in the local economy. Similarly, an employment multiplier of 25 indicates that 25 jobs are created for each \$1 million of output by the industry.
- Value-added multipliers are interpreted the same as labor-income and employment multipliers. They relate changes in sales in the industry experiencing the direct effect to total changes in value added for the local economy. Value added includes employee compensation, proprietary income, other property type income, and indirect business taxes.

Estimated Economic Impacts

The economic multipliers in Table 8 were combined with floral and nursery sales at the producer level and lawn, garden, and floral retail gross margins to estimate total contributions of the industry to the California economy. Procedures and important assumptions used to estimate economic impacts follow. First, the direct effects multipliers of 1.0 for nursery and retail output were applied to the total 2001 wholesale value of California nursery products and gross margins for lawn and garden retailing. The total-effects multiplier, which includes the indirect and induced output multipliers, was applied to the direct output to obtain total output. Second, the direct effects for employment, value added, and labor income were all derived from the direct output values.

Estimated total economic impacts of California's flower and nursery production and lawn and garden retailing are shown in Table 10. Note that the direct output effects, from Table 3 and Table 7, total \$6.9 billion. The indirect and induced economic multiplier effects expand the total California output effect to \$10.3 billion. Based on reported input-output relationships, flower and nursery production generates a total of 81,011 jobs in California while lawn and garden retailing adds another 87,856 jobs, a combined total of 168,867 California jobs. The estimated payroll for the two sectors totals more than \$4.9 billion with \$2.1 billion from floral and nursery production and almost \$2.8 billion from lawn and

Table 9. Estimated Output, Employment, and Value-Added Total-Effects Economic Multipliers for the Nursery Industry in Selected California Counties

| County | Output | | Employment | | Value Added | |
|---------------|---------|--------|------------|---------|-------------|--------|
| | Nursery | Retail | Nursery | Retail | Nursery | Retail |
| San Diego | 1.4766 | 1.4453 | 24.1083 | 22.9199 | 1.0665 | 1.1648 |
| Ventura | 1.4717 | 1.4127 | 25.3528 | 21.9990 | 1.0761 | 1.1375 |
| Orange | 1.3354 | 1.4027 | 29.8705 | 20.6946 | 1.1526 | 1.1314 |
| Monterey | 1.9023 | 1.5529 | 27.4385 | 25.9316 | 1.9022 | 1.5529 |
| Los Angeles | 1.3426 | 1.4122 | 27.9808 | 22.4117 | 1.1481 | 1.1286 |
| Santa Clara | 1.2344 | 1.2509 | 26.3628 | 19.4947 | 1.0384 | 1.0328 |
| Riverside | 1.5717 | 1.5013 | 24.1843 | 25.3873 | 1.1109 | 1.2006 |
| San Mateo | 1.4194 | 1.4383 | 28.4814 | 20.7759 | 1.1330 | 1.1689 |
| Santa Barbara | 1.5338 | 1.4587 | 28.8306 | 24.9838 | 1.1241 | 1.1806 |
| Kern | 1.6645 | 1.5393 | 25.6954 | 28.2864 | 1.1320 | 1.2282 |

Source: Minnesota IMPLAN Group, Inc., 2003.

Table 10. Estimated Direct and Total Economic Effects of California Flower and Nursery Production and Lawn and Garden Retailing, 2001

| Type/Sector | Direct Effects | Total Effects |
|---------------------------------------|----------------|---------------|
| Output (million dollars) | | |
| Nursery | 3,168.2516 | 4,769.1691 |
| Retail | 3,772.6945 | 5,568.1198 |
| Total | 6,940.9461 | 10,337.2889 |
| Employment (jobs) | | |
| Nursery | 63,277 | 81,011 |
| Retail | 69,670 | 87,856 |
| Total | 132,947 | 168,867 |
| Value Added (million dollars) | | |
| Nursery | 2,561.2146 | 3,558.5801 |
| Retail | 3,326.0075 | 4,444.6113 |
| Total | 5,887.2221 | 8,003.1915 |
| Labor Income (million dollars) | | |
| Nursery | 1,505.5532 | 2,131.2828 |
| Retail | 2,094.2227 | 2,791.4167 |
| Total | 3,599.7759 | 4,922.6995 |

garden retailing. Total value added for the two sectors is just slightly more than \$8 billion with almost \$3.6 billion from floral and nursery production and a little more than \$4.4 billion from lawn and garden retailing. The difference between total effects and direct effects for each row in Table 10 is the sum of indirect and induced effects.

The estimated economic multipliers for the ten California counties with the greatest nursery and floral production (Table 9) were combined with direct output (Table 2) and estimated retail gross margins by county to estimate total output, employment, and value-added effects for California's nursery and floral production and lawn and garden retailing. The resulting estimates are shown in Table 11. Note that the counties that produce the most are not necessarily the largest sources of retail sales since sales and gross-margin estimates are based on each county's population. While the top ten counties account for more than 73 percent of California production, they account for a little less than 63 percent of the state's population. The combined output effects for the nursery and retail industries in the ten counties is \$6.808 billion (Table 11), which is almost 66 percent of California's total output effect of \$10.337 billion (Table 10). The nursery and floral industries have a huge

Table 11. Estimated Total Output, Employment, and Value-Added Effects of Nursery and Floral Production and Lawn and Garden Retailing in California's Top Ten Producing Counties, 2001

| County | Output million dollars | | Employment number of jobs | | Value Added million dollars | |
|---------------|---------------------------|------------------|------------------------------|---------------|--------------------------------|------------------|
| | Nursery | Retail | Nursery | Retail | Nursery | Retail |
| San Diego | 1,262.698 | 453.515 | 20,616 | 7,192 | 912.006 | 365.498 |
| Ventura | 328.731 | 118.606 | 5,663 | 1,847 | 240.366 | 95.501 |
| Orange | 292.230 | 443.271 | 6,537 | 6,540 | 252.227 | 357.537 |
| Monterey | 339.682 | 69.022 | 4,900 | 1,153 | 339.664 | 69.022 |
| Los Angeles | 230.989 | 1,495.828 | 4,814 | 23,739 | 197.526 | 1,195.433 |
| Santa Clara | 185.487 | 233.019 | 3,961 | 3,631 | 156.035 | 192.391 |
| Riverside | 217.478 | 260.852 | 3,346 | 4,411 | 153.716 | 208.605 |
| San Mateo | 193.908 | 112.423 | 3,891 | 1,624 | 154.783 | 91.366 |
| Santa Barbara | 201.570 | 64.531 | 3,789 | 1,105 | 147.728 | 52.229 |
| Kern | 190.750 | 113.765 | 2,945 | 2,091 | 129.726 | 90.773 |
| Total | 3,443.524 | 3,364.833 | 60,461 | 53,332 | 2,683.778 | 2,718.355 |

Source: Minnesota IMPLAN Group, Inc., 2003.

economic impact in San Diego County, accounting for more than 20,000 jobs, \$1.26 billion in output, and \$912 million in value added. While not as dramatic, the output, employment, and value-added effects in the other nine counties are also substantial and very important. The total output effects of the nursery industry, for example, exceed \$290 million for three of the nine counties, and three more counties have total output impacts ranging from \$200 to \$231 million. In terms of employment in the nine counties, the nursery industry accounts for a low of 2,945 jobs

in Kern County to a high of 6,537 jobs in Orange County (Table 11).⁹

Los Angeles County dominates the retail lawn and garden sales impacts shown in Table 11. This is not surprising given that it had 9,653,900 residents in 2001, slightly more than 28 percent of California's population. There are 778 incidental retailers and 824 specialty retailers for nursery and floral products in Los Angeles County (Appendix, Table A5). San Diego and Orange Counties have very important but smaller retail impacts.

⁹ A reviewer asked about the relative impact of nursery and floral production on employment. Using data from the California Department of Employment Development Web site, we calculated the proportion of total 2001 employment attributed to nursery and floral production. For all of California, the nursery and floral industries generated 1.17 percent of total employment in 2001. For the ten counties shown in Table 11, the largest relative employment impacts were in Monterey (3.98 percent of total county employment), Santa Barbara (3.02 percent), Ventura (2.65 percent), San Diego (2.30 percent), and Kern (2.18 percent). The smallest relative impacts were in Los Angeles (0.70 percent), Santa Clara (0.80 percent), Orange (0.93 percent), San Mateo (1.47 percent), and Riverside (1.59 percent).

CONCLUDING COMMENTS

The California nursery and floral industries have demonstrated significant growth during the last two decades, in real terms and relative to all of California agriculture. Dimensions of this growth include expansion in the number and average size of farms producing nursery and floral products, a threefold increase in crop revenues, and growth to 10.6 percent of the total value of California agricultural output. Recent growth of output has come primarily from nursery production. The flower industry and cut flowers in particular have faced significant competition from imports from Colombia, Costa Rica, Ecuador, Mexico, and the Netherlands.

Data for the nursery and floral industries are typically reported separately. Annual county agricultural commissioners' reports have ranked the nursery industry third among all California commodities in terms of value of production since 1994; the flower industry has ranked seventh. Recently, the nursery and floral industries combined have ranked second among all California agricultural products. At the national level, California's nursery and flower industries lead the nation; Florida ranks a distant second.

Fifty-five of California's 58 counties produce nursery and flower products, but output is small and not reported separately by agricultural commissioners in nine of the counties. As noted, nursery and flower production tends to be concentrated in coastal counties from San Mateo in the north to San Diego in the south. Fifteen counties account for more than 86 percent of total production. Nursery and flower production was the number one agricultural product in terms of value of production in 13 counties with values in 2001 ranging from more than \$855 million in San Diego to \$4 million in Inyo. The location of many nursery and flower producers in the most urbanized areas of California is a distinguishing feature of the industry. These producers are close to many of their customers, helping them to deliver quality products and minimize distribution costs.

The large, growing, economically important nursery and flower production sector is accompanied by

a large and growing retail sector. California is the largest single market for lawn and garden products in the United States with 2001 retail sales estimated at more than \$10.1 billion. The combined effects of nursery and flower production and lawn and garden retailing on the California economy are huge.

The total economic impacts of California flower and nursery production and lawn and garden retailing were estimated at more than \$10.3 billion in 2001. Based on reported input-output relationships, flower and nursery production generates 81,011 jobs in California while lawn and garden retailing adds another 87,856 jobs, resulting in a combined total of 168,867 California jobs—1.17 percent of total California employment in 2001. The estimated payroll for the two sectors together exceeded \$4.9 billion with \$2.1 billion from floral and nursery production and almost \$2.8 billion from lawn and garden retailing. Total value added for the two sectors was slightly more than \$8 billion with almost \$3.6 billion from floral and nursery production and a little more than \$4.4 billion from lawn and garden retailing.

The important message that the nursery and flower industries should deliver to policymakers, agricultural leaders, and the general public at every available opportunity is that the industries are large, growing, and economically important. In terms of total output, the California nursery industry is exceeded only by the dairy and grape industries, and when the nursery and flower industries are combined, their output is exceeded only by the dairy industry. Nursery and floral production exceeds the output of many large, well-known, world-class California agricultural industries, including, for example, lettuce, cattle, strawberries, tomatoes, almonds, cotton, chickens, oranges, broccoli, carrots, walnuts, avocados, celery, melons, and peaches. Recently, more than \$1.06 of every \$10 of California agricultural gross sales were from nursery and floral products. And finally, more than one out of every hundred jobs in California during 2001 could be attributed to the direct and indirect impacts of California nursery production and retailing.

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APPENDIX

Table A1. California's Top 20 Commodities with Values and Ranks for 1999-2001

| Commodity | 1999 | | 2000 | | 2001 | |
|--------------------|-----------------------------|------|-----------------------------|------|-----------------------------|------|
| | Value in Million Dollars | Rank | Value in Million Dollars | Rank | Value in Million Dollars | Rank |
| Milk and Cream | 4,091 | 1 | 3,707 | 1 | 4,630 | 1 |
| Grapes | 2,656 | 2 | 2,829 | 2 | 2,651 | 2 |
| Nursery | 2,009 | 3 | 2,247 | 3 | 2,087 | 3 |
| Lettuce | 1,130 | 5 | 1,494 | 4 | 1,370 | 4 |
| Cattle and Calves | 1,223 | 4 | 1,218 | 5 | 1,352 | 5 |
| Hay | 767 | 9 | 769 | 9 | 1,021 | 6 |
| Flowers | 776 | 8 | 931 | 7 | 998 | 7 |
| Strawberries | 904 | 7 | 840 | 8 | 841 | 8 |
| Tomatoes | 1,118 | 6 | 948 | 6 | 766 | 9 |
| Almonds | 688 | 10 | 666 | 11 | 732 | 10 |
| Cotton | 672 | 11 | 720 | 10 | 658 | 11 |
| Chickens | 515 | 12 | 471 | 13 | 532 | 12 |
| Oranges | 404 | 15 | 346 | 14 | 514 | 13 |
| Broccoli | 433 | 14 | 574 | 12 | 438 | 14 |
| Carrots | 434 | 13 | 322 | 17 | 434 | 15 |
| Walnuts | 251 | 19 | 296 | 18 | 342 | 16 |
| Avocados | 327 | 16 | 340 | 15 | 316 | 17 |
| Celery | 210 | 25 | 325 | 16 | 260 | 18 |
| Melons, Cantaloupe | 222 | 22 | 226 | 24 | 252 | 19 |
| Peaches | 238 | 21 | 252 | 21 | 247 | 20 |

Source: California Department of Food and Agriculture, *Resource Directory, California Agriculture: A Tradition of Innovation*, 2002.

Table A2. Value (Thousand Dollars) of California Nursery, Flower, and Foliage Production by County, 1992–2001

| County | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|----------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Alameda | 33,725 | 31,873 | 34,641 | 28,933 | 25,211 | 25,215 | 17,421 | 19,058 | 14,049 | 15,108 |
| Amador | 19 | 22 | 30 | 33 | 48 | 130 | 174 | 209 | 216 | 241 |
| Butte | 5,085 | 6,351 | 6,400 | 7,437 | 4,485 | 5,350 | 3,610 | 6,400 | 5,961 | 8,555 |
| Calaveras | 471 | 585 | 856 | 864 | 883 | 896 | 740 | 597 | 452 | 543 |
| Contra Costa | 17,884 | 24,940 | 25,409 | 21,782 | 26,219 | 31,288 | 30,663 | 28,202 | 32,105 | 37,510 |
| Del Norte | 10,710 | 9,721 | 11,357 | 10,895 | 10,683 | 12,415 | 13,322 | 14,831 | 15,427 | 16,151 |
| El Dorado | 3,868 | 4,166 | 3,540 | 4,149 | 4,302 | 4,374 | 4,114 | 4,855 | 5,812 | 5,988 |
| Fresno | 16,747 | 21,294 | 23,945 | 16,211 | 16,847 | 36,837 | 29,576 | 32,531 | 28,905 | 32,014 |
| Glenn | 2,191 | 2,403 | 2,340 | 2,178 | 2,165 | 2,461 | 2,615 | 3,503 | 3,258 | 4,238 |
| Humboldt | 17,923 | 20,940 | 20,940 | 17,419 | 17,419 | 22,577 | 23,227 | 25,806 | 32,859 | 33,952 |
| Inyo | 1,111 | 1,109 | 1,324 | 1,525 | 3,485 | 2,341 | 2,897 | 2,981 | 3,515 | 4,020 |
| Kern | 58,191 | 59,536 | 62,891 | 68,710 | 72,383 | 79,629 | 82,636 | 99,129 | 106,246 | 114,599 |
| Kings | 0 | 1,958 | 2,343 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lake | 332 | 332 | 326 | 6 | 12 | 408 | 408 | 408 | 408 | 408 |
| Lassen | 8,730 | 10,440 | 12,329 | 10,683 | 8,702 | 9,512 | 7,702 | 11,609 | 12,336 | 9,860 |
| Los Angeles | 151,536 | 147,068 | 153,625 | 156,909 | 166,086 | 172,577 | 186,660 | 180,790 | 170,185 | 172,046 |
| Madera | 4,294 | 3,855 | 3,160 | 3,470 | 5,324 | 4,541 | 15,128 | 30,200 | 37,500 | 24,543 |
| Marin | 1,151 | 1,199 | 1,000 | 556 | 576 | 547 | 683 | 708 | 814 | 675 |
| Mariposa | 93 | 93 | 95 | 100 | 108 | 108 | 99 | 136 | 152 | 147 |
| Mendocino | 2,596 | 2,123 | 2,296 | 2,510 | 3,092 | 3,117 | 2,685 | 2,620 | 2,550 | 2,790 |
| Merced | 11,212 | 14,603 | 14,923 | 14,093 | 14,265 | 15,833 | 19,007 | 23,747 | 21,758 | 22,233 |
| Monterey | 147,528 | 116,515 | 105,514 | 111,199 | 114,176 | 135,893 | 154,297 | 180,822 | 194,252 | 178,564 |
| Napa | 2,176 | 2,666 | 2,615 | 2,881 | 2,181 | 2,749 | 3,804 | 3,156 | 3,250 | 4,720 |
| Nevada | 593 | 509 | 522 | 639 | 564 | 752 | 594 | 633 | 515 | 334 |
| Orange | 131,397 | 117,405 | 127,988 | 132,780 | 143,537 | 165,727 | 168,387 | 200,966 | 214,877 | 218,833 |
| Placer | 8,698 | 7,825 | 7,825 | 8,856 | 9,513 | 10,245 | 10,797 | 12,090 | 11,505 | 12,854 |
| Plumas | 1,250 | 1,400 | 1,475 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Riverside | 50,257 | 47,551 | 79,537 | 71,169 | 81,943 | 82,827 | 94,549 | 90,377 | 107,520 | 138,371 |
| Sacramento | 22,757 | 16,643 | 9,910 | 9,582 | 15,745 | 15,969 | 17,933 | 17,113 | 26,408 | 28,968 |
| San Benito | 18,598 | 23,364 | 19,384 | 14,992 | 15,350 | 15,668 | 16,985 | 19,682 | 28,428 | 25,207 |
| San Bernardino | 23,141 | 21,517 | 22,915 | 21,906 | 22,890 | 23,303 | 21,718 | 26,458 | 29,502 | 34,617 |
| San Diego | 509,768 | 556,921 | 585,433 | 643,193 | 692,106 | 704,988 | 722,186 | 773,081 | 790,140 | 855,139 |
| San Francisco | 356 | 530 | 475 | 564 | 702 | 482 | 447 | 759 | 727 | 913 |
| San Joaquin | 38,701 | 53,722 | 58,538 | 63,601 | 97,916 | 97,059 | 74,115 | 81,937 | 88,257 | 99,224 |
| San Luis Obispo | 37,230 | 39,301 | 44,585 | 49,607 | 55,546 | 65,188 | 70,155 | 85,149 | 89,168 | 91,128 |
| San Mateo | 168,909 | 164,707 | 165,401 | 161,611 | 169,657 | 171,854 | 142,460 | 142,842 | 154,756 | 136,613 |
| Santa Barbara | 80,573 | 86,755 | 78,753 | 95,244 | 122,857 | 139,849 | 130,038 | 135,042 | 150,669 | 131,419 |
| Santa Clara | 48,640 | 46,228 | 45,666 | 40,522 | 42,824 | 40,740 | 45,446 | 48,467 | 177,146 | 150,265 |
| Santa Cruz | 54,115 | 48,174 | 43,859 | 51,762 | 62,972 | 73,110 | 56,686 | 71,562 | 76,556 | 75,025 |
| Shasta | 9,587 | 8,229 | 9,622 | 9,502 | 8,865 | 8,674 | 8,462 | 9,534 | 8,212 | 8,830 |
| Sierra | 450 | 420 | 443 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Siskiyou | 6,922 | 6,566 | 7,939 | 9,962 | 14,526 | 16,722 | 17,844 | 20,695 | 25,076 | 30,789 |
| Solano | 14,169 | 14,512 | 17,345 | 19,715 | 22,348 | 24,078 | 26,408 | 28,978 | 35,045 | 37,668 |
| Sonoma | 25,864 | 29,297 | 28,797 | 30,996 | 33,078 | 27,427 | 27,836 | 23,133 | 33,272 | 30,069 |
| Stanislaus | 26,970 | 28,062 | 30,906 | 29,793 | 32,180 | 35,553 | 36,758 | 64,111 | 68,642 | 68,960 |
| Sutter | 6,151 | 8,888 | 9,116 | 10,129 | 7,502 | 11,839 | 9,891 | 11,819 | 8,025 | 9,387 |
| Tehama | 1,104 | 867 | 765 | 1,228 | 1,131 | 1,225 | 1,651 | 1,367 | 1,309 | 1,991 |
| Trinity | 12 | 32 | 32 | 35 | 35 | 35 | 37 | 32 | 32 | 32 |
| Tulare | 19,639 | 22,255 | 24,176 | 28,524 | 43,399 | 51,823 | 65,306 | 69,682 | 72,730 | 65,175 |
| Ventura | 97,001 | 105,417 | 111,230 | 108,387 | 124,123 | 138,808 | 162,063 | 180,624 | 204,828 | 223,368 |
| Yolo | 3,753 | 3,746 | 4,514 | 5,584 | 5,028 | 5,603 | 2,771 | 4,954 | 4,533 | 6,991 |
| Yuba | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Calculated | 1,904,188 | 1,944,635 | 2,029,050 | 2,102,426 | 2,324,989 | 2,498,346 | 2,532,991 | 2,793,385 | 3,099,888 | 3,171,075 |
| Total Reported | 1,901,303 | 1,944,632 | 2,029,646 | 2,102,425 | 2,324,650 | 2,498,345 | 2,547,817 | 2,793,384 | 3,096,592 | 3,171,074 |
| Total Calif. Agric. | 21,766,419 | 23,697,420 | 24,373,778 | 24,947,169 | 26,260,004 | 28,048,589 | 26,950,521 | 28,647,905 | 29,349,616 | 29,801,768 |

Counties reporting no production: Colusa, Imperial, Tuolumne, Modoc, Mono.

Source: California Agricultural Statistics Service, *Summary of County Agricultural Commissioners' Reports, 2001, 2001*.

Table A3. Five Leading Nursery Crops for Each of the Ten California Counties Producing the Largest Amount of Nursery and Floral Products, 2001

| | Gross Value of Nursery Product | Percent Share of County Total |
|---|-----------------------------------|----------------------------------|
| San Diego | | |
| Flowers Foliage Plants | \$308,854,200 | 36.12 |
| Nursery Woody Ornamentals | 198,542,500 | 23.22 |
| Nursery Plants Bedding | 165,465,500 | 19.35 |
| Flowers Cut Unspecified | 71,822,000 | 8.40 |
| Flowers Poinsettia Potted | 42,658,400 | 4.99 |
| Ventura | | |
| Nursery Plants Bedding | \$65,119,000 | 29.15 |
| Nursery Woody Ornamentals | 56,930,000 | 25.49 |
| Flowers Cut Unspecified | 48,628,000 | 21.77 |
| Nursery Plants Potted Unspecified | 16,963,000 | 7.59 |
| Nursery Flowering Propagative Materials | 10,491,000 | 4.70 |
| Orange | | |
| Nursery Woody Ornamentals | \$172,662,000 | 78.90 |
| Nursery Plants Potted Unspecified | 25,197,600 | 11.51 |
| Nursery Flowering Propagative Materials | 19,079,900 | 8.72 |
| Flowers Cut Unspecified | 1,425,200 | 0.65 |
| Christmas Trees and Cut Greens | 368,400 | 0.17 |
| Monterey | | |
| Nursery Plants Vegetation. Bedding | \$57,634,000 | 32.38 |
| Nursery Plants Bedding | 41,983,000 | 23.59 |
| Nursery Plants Orchid | 18,296,000 | 10.28 |
| Flowers Foliage Plants | 13,095,000 | 7.36 |
| Flowers Roses Cut Standard | 8,260,000 | 4.64 |
| Los Angeles | | |
| Nursery Woody Ornamentals | \$114,254,000 | 66.41 |
| Nursery Plants Bedding | 40,692,000 | 23.65 |
| Nursery Products Miscellaneous | 10,246,000 | 5.96 |
| Nursery Plants Potted Unspecified | 3,534,000 | 2.05 |
| Flowers Foliage Plants | 2,581,000 | 1.50 |
| Santa Clara | | |
| Nursery Products Miscellaneous | \$89,848,000 | 55.96 |
| Nursery Plants Bedding | 34,057,000 | 21.21 |
| Nursery Woody Ornamentals | 14,698,000 | 9.15 |
| Flowers Roses Cut Standard | 10,301,000 | 6.42 |
| Nursery Horticultural Specimens Misc. | 5,665,000 | 3.53 |

continued on page 27

Table A3 (continued)

| | Gross Value of Nursery Product | Percent Share of County Total |
|---|-----------------------------------|----------------------------------|
| Riverside | | |
| Nursery Woody Ornamentals | \$94,015,800 | 67.94 |
| Nursery Turf | 29,796,000 | 21.53 |
| Nursery Flowering Propagative Materials | 13,109,000 | 9.47 |
| Flowers Cut Unspecified | 1,035,100 | 0.75 |
| Christmas Trees and Cut Greens | 415,400 | 0.30 |
| San Mateo | | |
| Nursery Plants Potted Unspecified | \$56,154,000 | 41.10 |
| Flowers Foliage Plants | 22,180,000 | 16.24 |
| Nursery Flowering Propagative Materials | 22,119,000 | 16.19 |
| Flowers Cut Unspecified | 16,761,000 | 12.27 |
| Nursery Plants Orchid | 9,391,000 | 6.87 |
| Santa Barbara | | |
| Flowers Cut Unspecified | \$48,269,000 | 38.44 |
| Nursery Plants Potted Unspecified | 19,371,800 | 15.43 |
| Nursery Products Miscellaneous | 16,979,200 | 13.52 |
| Flowers Chrysanthemum Unspecified | 9,269,100 | 7.38 |
| Nursery Plants Orchid | 6,855,000 | 5.46 |
| Kern | | |
| Nursery Plants Rose | \$54,062,000 | 47.18 |
| Nursery Fruit/Vine/Nut Non-Bearing | 38,222,000 | 33.35 |
| Nursery Turf | 15,178,000 | 13.24 |
| Nursery Herbaceous Perennials | 4,853,000 | 4.23 |
| Nursery Woody Ornamentals | 1,161,000 | 1.01 |

Source: California Agricultural Statistics Service, *Summary of County Agricultural Commissioners' Reports, 2001, 2001.*

Table A4. Population and Value of Nursery and Floral Production by County, California, 2001

| County | Population | Value of Nursery Product thousand dollars | County | Population | Value of Nursery Product thousand dollars |
|--------------|------------|--|-----------------|-------------------|--|
| Alameda | 1,462,900 | 15,108 | Orange | 2,880,200 | 218,833 |
| Alpine | 1,190 | N/A | Placer | 254,900 | 12,854 |
| Amador | 35,550 | 241 | Plumas | 20,850 | 0 |
| Butte | 205,400 | 8,555 | Riverside | 1,583,600 | 138,371 |
| Calaveras | 41,050 | 543 | Sacramento | 1,247,800 | 28,968 |
| Colusa | 19,150 | 0 | San Benito | 54,400 | 25,207 |
| Contra Costa | 965,100 | 37,510 | San Bernardino | 1,741,100 | 34,617 |
| Del Norte | 27,650 | 16,151 | San Diego | 2,859,900 | 855,139 |
| El Dorado | 161,600 | 5,988 | San Francisco | 785,700 | 913 |
| Fresno | 813,200 | 32,014 | San Joaquin | 578,600 | 99,224 |
| Glenn | 26,800 | 4,238 | San Luis Obispo | 249,700 | 91,128 |
| Humboldt | 127,200 | 33,952 | San Mateo | 712,400 | 136,613 |
| Imperial | 148,300 | 0 | Santa Barbara | 403,200 | 131,419 |
| Inyo | 18,200 | 4,020 | Santa Clara | 1,697,800 | 150,265 |
| Kern | 673,600 | 114,599 | Santa Cruz | 257,500 | 75,025 |
| Kings | 131,300 | 0 | Shasta | 166,700 | 8,830 |
| Lake | 59,500 | 408 | Sierra | 3,570 | 0 |
| Lassen | 34,300 | 9,860 | Siskiyou | 44,650 | 30,789 |
| Los Angeles | 9,653,900 | 172,046 | Solano | 398,600 | 37,668 |
| Madera | 128,600 | 24,543 | Sonoma | 464,300 | 30,069 |
| Marin | 248,100 | 675 | Stanislaus | 457,700 | 68,960 |
| Mariposa | 17,000 | 147 | Sutter | 80,100 | 9,387 |
| Mendocino | 87,100 | 2,790 | Tehama | 56,100 | 1,991 |
| Merced | 213,000 | 22,233 | Trinity | 13,000 | 32 |
| Modoc | 9,400 | 0 | Tulare | 372,400 | 65,175 |
| Mono | 12,950 | 0 | Tuolumne | 55,200 | 0 |
| Monterey | 405,100 | 178,564 | Ventura | 765,200 | 223,368 |
| Napa | 126,600 | 4,720 | Yolo | 171,800 | 6,991 |
| Nevada | 93,100 | 334 | Yuba | 60,900 | 0 |
| | | | State | 34,384,710 | 3,171,075 |

Population data: California Department of Finance data available online at www.dof.ca.gov.

Value of nursery product: California Agricultural Statistics Service, *Summary of County Agricultural Commissioners' Reports, 2001, 2001*.

Table A5. Nursery and Floriculture Products: Number of Producers, Wholesalers, and Retailers Licensed to Sell Nursery Stock in California, 2002, by County

| County | Cut Flowers/ Greens Wholesalers | Inci- dental Retailers ^a | Jobber/ Broker/ Commission Merchants | Land- scapers | Producers ^b | Retailers ^c | Total No. of Companies |
|-----------------|---------------------------------------|---|---|------------------|------------------------|------------------------|------------------------------|
| Alameda | 15 | 84 | 15 | 13 | 43 | 129 | 273 |
| Amador | 1 | 9 | 0 | 1 | 7 | 4 | 20 |
| Butte | 6 | 31 | 6 | 6 | 38 | 45 | 107 |
| Calaveras | 1 | 10 | 0 | 3 | 7 | 10 | 27 |
| Colusa | 1 | 2 | 0 | 0 | 1 | 4 | 6 |
| Contra Costa | 10 | 86 | 5 | 7 | 24 | 111 | 229 |
| Del Norte | 0 | 2 | 0 | 1 | 11 | 6 | 21 |
| El Dorado | 6 | 26 | 2 | 3 | 23 | 25 | 70 |
| Fresno | 6 | 62 | 11 | 16 | 73 | 97 | 239 |
| Glenn | 2 | 3 | 0 | 0 | 7 | 5 | 14 |
| Humboldt | 9 | 13 | 4 | 2 | 40 | 30 | 87 |
| Imperial | 0 | 8 | 1 | 1 | 10 | 14 | 34 |
| Inyo | 1 | 3 | 1 | 0 | 4 | 7 | 12 |
| Kern | 4 | 58 | 6 | 7 | 59 | 81 | 204 |
| Kings | 0 | 5 | 0 | 0 | 2 | 12 | 22 |
| Lake | 1 | 10 | 1 | 0 | 14 | 12 | 38 |
| Lassen | 1 | 1 | 0 | 0 | 2 | 6 | 11 |
| Los Angeles | 83 | 605 | 74 | 73 | 375 | 824 | 1,737 |
| Madera | 2 | 9 | 3 | 4 | 25 | 15 | 52 |
| Marin | 4 | 21 | 3 | 9 | 16 | 38 | 89 |
| Mariposa | 2 | 4 | 1 | 0 | 4 | 4 | 13 |
| Mendocino | 5 | 16 | 5 | 8 | 64 | 32 | 103 |
| Merced | 1 | 10 | 1 | 0 | 13 | 20 | 50 |
| Modoc | 0 | 2 | 0 | 0 | 3 | 1 | 4 |
| Mono | 0 | 1 | 0 | 0 | 0 | 5 | 5 |
| Monterey | 93 | 34 | 14 | 7 | 89 | 46 | 231 |
| Napa | 8 | 12 | 9 | 5 | 23 | 24 | 69 |
| Nevada | 3 | 17 | 4 | 3 | 22 | 17 | 51 |
| Orange | 16 | 264 | 32 | 40 | 121 | 284 | 666 |
| Placer | 14 | 33 | 13 | 17 | 41 | 44 | 125 |
| Plumas | 0 | 5 | 0 | 1 | 3 | 5 | 13 |
| Riverside | 12 | 139 | 28 | 37 | 207 | 208 | 564 |
| Sacramento | 28 | 101 | 11 | 12 | 50 | 123 | 292 |
| San Benito | 1 | 2 | 2 | 0 | 10 | 7 | 20 |
| San Bernardino | 7 | 123 | 12 | 15 | 118 | 180 | 440 |
| San Diego | 176 | 303 | 95 | 49 | 551 | 333 | 1207 |
| San Francisco | 40 | 18 | 12 | 4 | 22 | 67 | 150 |
| San Joaquin | 9 | 27 | 9 | 6 | 59 | 59 | 162 |
| San Luis Obispo | 18 | 47 | 5 | 11 | 82 | 56 | 192 |
| San Mateo | 30 | 39 | 8 | 6 | 54 | 75 | 187 |
| Santa Barbara | 55 | 56 | 14 | 12 | 92 | 59 | 235 |
| Santa Clara | 25 | 97 | 11 | 5 | 47 | 161 | 337 |

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Table A5 (continued)

| County | Cut Flowers/ Greens Wholesalers | Inci- dental Retailers ^a | Jobber/ Broker/ Commission Merchants | Land- scapers | Producers ^b | Retailers ^c | Total No. of Companies |
|--------------------|---------------------------------------|---|---|------------------|------------------------|------------------------|------------------------------|
| Santa Cruz | 46 | 25 | 17 | 4 | 66 | 40 | 167 |
| Shasta | 6 | 23 | 4 | 7 | 36 | 35 | 90 |
| Sierra | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Siskiyou | 1 | 6 | 0 | 2 | 10 | 6 | 29 |
| Solano | 7 | 36 | 3 | 4 | 17 | 36 | 95 |
| Sonoma | 23 | 52 | 12 | 25 | 128 | 92 | 279 |
| Stanislaus | 9 | 28 | 4 | 6 | 37 | 48 | 139 |
| Sutter | 3 | 8 | 1 | 0 | 16 | 14 | 40 |
| Tehama | 1 | 7 | 0 | 1 | 15 | 12 | 29 |
| Trinity | 0 | 1 | 0 | 0 | 1 | 6 | 9 |
| Tulare | 9 | 22 | 3 | 6 | 63 | 46 | 137 |
| Tuolumne | 0 | 7 | 3 | 4 | 6 | 9 | 26 |
| Ventura | 45 | 83 | 8 | 9 | 126 | 103 | 304 |
| Yolo | 7 | 11 | 3 | 2 | 17 | 16 | 50 |
| Yuba | 0 | 7 | 0 | 0 | 5 | 8 | 18 |
| State Total | 853 | 2,715 | 476 | 454 | 2,999 | 3,756 | 9,821 |

Source: California Department of Food and Agriculture, *Nurserymen and Others Licensed to Sell Nursery Stock in California, 2002 Directory*.

^a An incidental retailer is an operator of a retail sales outlet for nursery stock that is handled incidental to other merchandise. Retailers such as Home Depot, Wal-Mart, Lowe's, and supermarkets are in this category.

^b A producer is a commercial producer that grows and sells a total of \$1,000 or more of nursery stock in one year.

^c A retailer is an operator of a sales outlet that has no growing grounds except small areas devoted to production of plants for local distribution and those producing less than \$1,000.

Table A6. The IMPLAN System

The following brief description of IMPLAN is from Mulkey and Hodges.

IMPLAN, an acronym for Impact Analyses and Planning, was originally developed by the U.S. Forest Service in cooperation with the Federal Emergency Management Agency and the U.S. Department of the Interior's Bureau of Land Management to assist in land and resource management planning. It is a computer software package that consists of procedures for estimating local input-output models and associated databases. Since 1993, the IMPLAN system has been developed under exclusive rights by Minnesota IMPLAN Group, Inc., which licenses and distributes the software to users, including universities, government agencies, and private companies.

The economic data for IMPLAN comes from the system of national accounts for the United States based on data collected by the U.S. Department of Commerce, the U.S. Bureau of Labor Statistics, and other federal and state government agencies. Data are collected for 528 distinct producing industry sectors of the national economy corresponding to Standard Industrial Categories (SICs). Industry sectors are classified on the basis of the primary commodity or service produced. Corresponding data sets are also produced for each county in the U.S., allowing analyses at the county level or for individual states. Data on the technological mix of inputs and levels of transactions between producing sectors are taken from detailed input-output tables of the national economy. National and county level data are the basis for IMPLAN calculations of input-output tables and multipliers for local areas.

The IMPLAN software package allows estimation of the multiplier effects of changes in final demand for one industry on all other industries within a local economic area. Multipliers may be estimated for a single county, for groups of contiguous counties, and for an entire state. The multipliers measure total changes in output, income, employment, and value added.

For a particular producing industry, multipliers estimate three components of total change within the local area:

- Direct effects represent the initial change in the industry in question.
- Indirect effects are changes in interindustry transactions as supplying industries respond to increased demands from the directly affected industries.
- Induced effects reflect changes in local spending that result from income changes in the directly and indirectly affected industry sectors.

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