



Floriculture Crops Methodology and Quality Measures

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Commercial Floriculture Survey Methodology

Scope and Purpose: The Commercial Floriculture Survey (CFS) is conducted annually and is a census of all floriculture growers that produced and sold \$10,000 or more of product during the previous year. Currently there are 15 States surveyed: California, Florida, Hawaii, Illinois, Maryland, Michigan, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Texas, and Washington.

All floriculture growers are surveyed to report production, hired labor, and value of sales. Detailed crop information is collected from operations with \$100,000 or more in sales. The main types of crops included are: cut flowers, annual bedding plants, herbaceous perennials, cut cultivated greens, potted flowering plants and foliage plants for indoor and patio use. Information is also collected for propagative floriculture materials, including cuttings, liners, plug seedlings, pre-finished plants, and tissue cultures. Excluded from this survey are Christmas trees and nursery products such as, but not limited to, deciduous shade trees, fruit and nut trees, evergreen trees, ornamental shrubs and bushes (including roses and azaleas for outdoor landscaping and ornamental purposes), grapevines, and palms for outdoor landscaping. Aquatic and pond plants also are excluded.

Data collected for operations with \$10,000 or more in sales are published for 15 program States as follows: value of all production, number of producers, area used for production, and peak hired workers. The data are published for the current survey year and the previous survey year. Production data for operations with \$100,000 or more in sales are reported by State as relevant. For operations with \$100,000 or more in sales, items published include number of producers, quantity sold, price and wholesale value for annual bedding/garden plants, potted herbaceous plants, potted flowering plants, foliage plants potted, cut flowers, cut cultivated greens, and propagative floriculture materials.

Commercial floriculture data are used by the government to measure the economic impact of the industry and by all segments of the industry to plan future production and marketing strategies.

Survey Timeline: Data are collected for the previous year's production beginning in January with a survey mailing. A telephone follow-up is conducted for non-response records approximately one month after the mailing. Data collection takes place over a period of approximately eight weeks. Field Office staff complete analysis, summarization, and submission of estimates over a period of approximately three weeks. Estimates are released to the public on the date specified by the Agricultural Statistics Board.

Sampling: The target population for the CFS is all commercial floriculture operations which produce and sell, or have the potential to produce and sell, \$10,000 or more of the floriculture crops in one year. Both retail and wholesale sales are considered in determining the dollar value of sales for establishing the population. Floriculture crops do not have to be the primary source of income for a grower to qualify. A greenhouse or nursery with production and sales of floriculture products that meets the \$10,000 lower limit qualifies, even though this may represent only a small portion of the operation's total sales.

The survey population is identified from the NASS list frame population. The CFS is a census; therefore, all operations that qualified are included in the survey.

Data Collection: Sampled floriculture producers receive a pre-survey letter explaining the survey along with questionnaire to complete and return by mail. If a response is not received by mail, respondents are contacted by phone to obtain the survey data. Personal interviews are limited to large operations or those with special handling arrangements.

Survey Edit: As survey data are collected and captured, they are edited for consistency and reasonableness using automated systems. Reported data are edited as a batch of data when first captured. The edit logic ensures administrative coding follows the methodological rules associated with the survey design.

Relationships between data items (i.e. responses to individual questions) on the current survey are verified. Some data items in the current survey are compared to data items from earlier surveys to ensure certain relationships are logical. The edit will determine the status of each record to be either “dirty” or “clean” (i.e. failing or passing the edit requirements for consistency and reasonableness).

Records that fail edit requirements must be updated. Only records that pass edit requirements are eligible for final summary.

Analysis Tools: Edited floriculture survey data are processed through an interactive analysis tool which displays data for all reports by item. The tool provides scatter plots, tables, charts, and special tabulations that allow the analyst to compare an individual record to similar records. This tool allows atypical responses and unusual data relationships, as well as large changes in the operation to become evident. Following careful review, data found to be in error are corrected, while correct data are retained.

Nonsampling Errors: Nonsampling errors are present in any survey process. These errors include reporting, recording, and editing errors. Steps are taken to minimize these errors, such as comprehensive interviewer training, validation, and verification of processing systems, application of detailed computer edits, and evaluation of the data via the analysis tools.

Estimators: The CFS is a complete enumeration of all known floriculture operations with \$10,000 or more in sales and new operations are added to the sample when discovered. No coverage adjustment is made to account for list incompleteness. Response to the CFS is voluntary. Producers may refuse to participate in the survey, may not be located during the data collection period, or may submit incomplete reports. The non-response data items and sampling units are imputed by Field Office statisticians. The weights for current items are not adjusted.

Since manual imputation is conducted for all non-response units and items, point estimates are an accounting of all responses and manual imputations. The measurement of error due to sampling in the current survey period is irrelevant for a fully enumerated census. Moreover, standard errors and coefficients of variation (CVs) are zero for all current data items collected.

Estimation: When all samples are accounted for, all responses fully edited, and the analysis material reviewed, each Field Office executes a preliminary summary and a final summary to evaluate and analyze the data. When all Field Offices have run summaries, Headquarters executes the National summary. The summary results provide multiple point estimates and information used to evaluate the quality of the survey estimates such as response rates and number of usable positive reports.

Field Offices are responsible for performing a detailed review of the survey results. Any irregularities revealed by the preliminary summary must be investigated and, if necessary, resolved. In cases where recommendations deviate from survey results, Field Offices must provide justification.

The review of National estimates is conducted by the Headquarters commodity statistician and a statistician who is selected by the Agricultural Statistics Board (ASB). The selected statistician assists the Headquarters statistician and staff in review of all state level and commodity use level recommendations and establishes official estimates.

Quality Metrics for Floriculture

Purpose and Definitions: Under the guidance of the Statistical Policy Office of the Office of Management and Budget (OMB), the United States Department of Agriculture’s National Agricultural Statistics Service (NASS) provides data users with quality metrics for our published data series. The metrics tables below describe the performance data for all surveys contributing to the publication. The accuracy of data products may be evaluated through sampling and non-sampling error. The measurement of error due to sampling in the current period is irrelevant for a fully enumerated data series. Non-sampling error is evaluated by response rates and the percent of the estimate from reported data.

Sample size is the number of observations selected from the population to represent a characteristic of the population.

Response rates are the proportion of the sample that responded to the survey.

Percent of estimate from reported data is the estimated value of a characteristic from respondent reports divided by the estimated value of a characteristic from manually imputed reports or respondent reports expressed as a percent.

Commercial Floriculture Survey Sample Sizes and Response Rates: The Commercial Floriculture Survey is a census of all known floriculture growers with an operation that produced and sold \$10,000 or more of product during the previous year in the 15 program States. However, detailed crop information is collected from only operations with \$100,000 or more in sales. To assist in evaluating the performance of the estimates in the *Floriculture Crops* report, the sample sizes and response rates are displayed for 2010 and 2011 in each of the 15 program States for operations with \$10,000 or more in sales and for operations with \$100,000 or more in sales.

Commercial Floriculture Survey Sample Size and Response Rate - 15 Program States: 2010 and 2011

[Operations with \$10,000+ sales]

| State | Sample size | | Response rate | |
|----------------------|------------------|------------------|-------------------|-------------------|
| | 2010 (number) | 2011 (number) | 2010 (percent) | 2011 (percent) |
| California | 792 | 729 | 83.3 | 83.4 |
| Florida | 850 | 813 | 64.8 | 76.8 |
| Hawaii | 373 | 347 | 75.9 | 84.1 |
| Illinois | 289 | 255 | 74.4 | 76.1 |
| Maryland | 201 | 179 | 89.6 | 78.2 |
| Michigan | 703 | 635 | 84.2 | 76.4 |
| New Jersey | 633 | 353 | 90.2 | 73.1 |
| New York | 714 | 668 | 75.1 | 73.5 |
| North Carolina | 300 | 278 | 85.3 | 78.4 |
| Ohio | 759 | 671 | 70.8 | 69.7 |
| Oregon | 288 | 278 | 75.7 | 77.0 |
| Pennsylvania | 783 | 756 | 79.7 | 80.0 |
| South Carolina | 101 | 87 | 75.2 | 74.7 |
| Texas | 294 | 290 | 71.8 | 75.9 |
| Washington | 242 | 226 | 83.5 | 80.5 |
| 15 State Total | 7,322 | 6,565 | 78.0 | 77.1 |

Commercial Floriculture Survey Sample Size and Response Rate - 15 Program States: 2010 and 2011

[Operations with \$100,000+ sales]

| State | Sample size | | Response rate | |
|----------------------|------------------|------------------|-------------------|-------------------|
| | 2010 (number) | 2011 (number) | 2010 (percent) | 2011 (percent) |
| California | 408 | 385 | 84.6 | 79.5 |
| Florida | 434 | 431 | 67.7 | 82.1 |
| Hawaii | 94 | 93 | 70.2 | 78.5 |
| Illinois | 126 | 113 | 69.8 | 69.0 |
| Maryland | 75 | 66 | 89.3 | 68.2 |
| Michigan | 315 | 297 | 78.4 | 69.4 |
| New Jersey | 154 | 151 | 77.9 | 68.2 |
| New York | 215 | 211 | 64.7 | 64.0 |
| North Carolina | 107 | 102 | 78.5 | 61.8 |
| Ohio | 191 | 180 | 47.1 | 45.6 |
| Oregon | 94 | 90 | 74.5 | 81.1 |
| Pennsylvania | 204 | 196 | 64.2 | 64.8 |
| South Carolina | 34 | 21 | 70.6 | 71.4 |
| Texas | 175 | 168 | 69.1 | 71.4 |
| Washington | 64 | 59 | 89.1 | 72.9 |
| 15 State Total | 2,690 | 2,563 | 72.2 | 71.1 |

Floriculture Survey Percent of Estimate from Reported Data: To assist in evaluating the performance of the estimates in the *Floriculture Crops* report, the percent of the estimate of the wholesale value of sales from reported data is displayed by program State and nationally for each plant category and in total for 2010 and 2011.

Quality Metrics for Wholesale Value of Sales by Plant Category - 15 Program States: 2010 and 2011

[Operations with \$100,000+ sales]

| State | Percent of estimate from reported data | | | | | |
|----------------------|--|-----------|--|-----------|----------------------|-----------|
| | Annual bedding/garden | | Herbaceous perennial | | Total bedding/garden | |
| | 2010 | 2011 | 2010 | 2011 | 2010 | 2011 |
| | (percent) | (percent) | (percent) | (percent) | (percent) | (percent) |
| California | 83.4 | 69.2 | 88.0 | 72.0 | 84.4 | 69.7 |
| Florida | 65.1 | 61.5 | 96.9 | 45.3 | 76.8 | 54.7 |
| Hawaii | (D) | (D) | (D) | (D) | 54.1 | 35.2 |
| Illinois | 68.1 | 60.3 | 84.7 | 89.4 | 76.2 | 74.7 |
| Maryland | 97.9 | 75.6 | 98.3 | 73.5 | 98.0 | 75.1 |
| Michigan | 89.9 | 80.4 | 94.6 | 56.0 | 90.9 | 75.0 |
| New Jersey | 79.5 | 77.9 | 82.6 | 77.2 | 80.8 | 77.6 |
| New York | 67.6 | 68.4 | 74.1 | 80.3 | 69.1 | 71.3 |
| North Carolina | 78.7 | 79.6 | 92.4 | 86.9 | 81.9 | 81.2 |
| Ohio | 55.0 | 53.4 | 69.1 | 76.9 | 59.1 | 60.9 |
| Oregon | 81.8 | 93.6 | 55.0 | 92.0 | 73.7 | 93.0 |
| Pennsylvania | (D) | (D) | (D) | (D) | 67.2 | 55.1 |
| South Carolina | (D) | (D) | (D) | (D) | 54.2 | 6.8 |
| Texas | 58.2 | 71.2 | 48.5 | 89.2 | 56.6 | 74.3 |
| Washington | 98.7 | 67.0 | 98.2 | 77.6 | 98.5 | 71.3 |
| 15 State Total | 76.1 | 71.3 | 79.5 | 64.6 | 77.1 | 69.3 |
| State | Potted flowering plants | | Foliage plants for indoor or patio use | | Cut flowers | |
| | 2010 | 2011 | 2010 | 2011 | 2010 | 2011 |
| California | 94.4 | 81.0 | 86.8 | 70.6 | 67.3 | 90.1 |
| Florida | 72.5 | 83.5 | 73.4 | 48.4 | (D) | 95.8 |
| Hawaii | 79.4 | 77.5 | 74.2 | 81.5 | 66.4 | 82.6 |
| Illinois | 74.3 | 71.5 | (D) | (D) | 82.5 | 56.8 |
| Maryland | 98.6 | 11.5 | (D) | (D) | (D) | (D) |
| Michigan | 89.5 | 64.0 | 70.4 | (D) | 99.7 | 99.5 |
| New Jersey | 90.4 | 87.2 | (D) | (D) | 99.0 | 73.5 |
| New York | 80.8 | 86.9 | 40.6 | 54.9 | 75.0 | (D) |
| North Carolina | 90.8 | 76.1 | (D) | (D) | (D) | 40.4 |
| Ohio | 79.8 | 83.4 | (D) | 56.7 | (D) | (D) |
| Oregon | 95.7 | 97.3 | 44.6 | 100.0 | 93.7 | 95.0 |
| Pennsylvania | 37.6 | 41.6 | 36.4 | 34.9 | (D) | (D) |
| South Carolina | 33.0 | 8.2 | 24.1 | 11.6 | (D) | (D) |
| Texas | 56.9 | 84.8 | 83.2 | 80.4 | (D) | (D) |
| Washington | 96.4 | 62.6 | (D) | (D) | 98.6 | 97.8 |
| 15 State Total | 82.1 | 77.9 | 75.6 | 55.6 | 71.3 | 87.7 |

See footnote(s) at end of table.

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**Quality Metrics for Wholesale Value of All Sales by Plant Category - 15 Program States:
2010 and 2011 (continued)**

[Operations with \$100,000+ sales]

| State | Percent of estimate from reported data | | | | | |
|----------------------|--|-----------|-----------------------------------|-----------|---|-----------|
| | Cut cultivated greens | | Propagative floriculture material | | Total wholesale value of all plant categories | |
| | 2010 | 2011 | 2010 | 2011 | 2010 | 2011 |
| | (percent) | (percent) | (percent) | (percent) | (percent) | (percent) |
| California | 99.6 | 99.4 | 98.8 | 59.8 | 83.3 | 77.9 |
| Florida | 64.9 | 84.3 | 70.2 | 85.6 | 73.1 | 60.6 |
| Hawaii | 68.2 | 99.2 | (D) | (D) | 72.7 | 75.7 |
| Illinois | (D) | (D) | 37.6 | 62.2 | 73.6 | 73.5 |
| Maryland | - | (D) | 91.6 | 100.0 | 97.8 | 75.0 |
| Michigan | 100.0 | (D) | 96.9 | 92.0 | 91.8 | 77.8 |
| New Jersey | (D) | (D) | 71.7 | 73.5 | 82.4 | 78.4 |
| New York | 64.5 | (D) | 83.0 | 88.3 | 72.0 | 75.7 |
| North Carolina | (D) | - | (D) | (D) | 83.7 | 80.8 |
| Ohio | - | (D) | 93.3 | 94.2 | 67.2 | 69.5 |
| Oregon | 43.8 | 23.4 | 70.8 | 69.9 | 75.5 | 88.9 |
| Pennsylvania | (D) | (D) | 72.0 | 56.1 | 58.1 | 49.5 |
| South Carolina | (D) | - | (D) | (D) | 51.2 | 7.0 |
| Texas | (D) | (D) | 68.9 | 92.6 | 58.6 | 76.6 |
| Washington | (D) | (D) | 100.0 | 61.5 | 98.4 | 72.9 |
| 15 State Total | 67.0 | 79.4 | 85.8 | 79.3 | 77.8 | 71.3 |

- Represents zero.

(D) Withheld to avoid disclosing data for individual operations.

Information Contacts

| Process | Unit | Telephone | Email |
|-----------------------------------|---|----------------|----------------------------|
| Estimation | Crops Branch | (202) 720-2127 | HQ_SD_CB@nass.usda.gov |
| Data Collection | Program Administration Branch | (202) 690-4847 | HQ_CSD_PAB@nass.usda.gov |
| Questionnaires and Editing | Data Collection Branch | (202) 720-6201 | HQ_SD_DCB@nass.usda.gov |
| Sampling | Sampling Branch | (202) 720-3895 | HQ_SD_SB@nass.usda.gov |
| Analysis and Estimators | Statistical Methods Branch | (202) 720-4008 | HQ_SD_SMB@nass.usda.gov |
| Dissemination and Webmaster | Marketing and Information Services Branch | (202) 720-1707 | HQ_DAPP_MISO@nass.usda.gov |

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