

1 Supporting Statement - Part B

**Nursery and Christmas Tree Production Survey
and
Nursery and Floriculture Chemical Use Survey**

OMB No. 0535-0244

B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS:

- 1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection has been conducted previously, include the actual response rate achieved during the last collection.**

The Nursery and Floriculture Chemical Use Survey universe consists of all known operations with horticultural crop sales of \$10,000 or more. Horticultural crops include bedding plants, potted flowering plants, cut flowers, cut cultivated greens, herbaceous perennials, foliage plants, trees, shrubs, ground covers, vines, fruit and nut trees, sod, dry bulbs, greenhouse produced vegetables, commercial vegetable transplants, vegetable and flower seeds, Christmas trees, short term woody crops, aquatic plants, unfinished or prefinished plants, propagation materials, and other nursery and greenhouse plants.

The six States (CA, FL, MI, OR, PA and TX) that were selected for the Nursery and Floriculture Chemical Use Survey were chosen based on diversity of plants, total value of sales, climate, growing conditions, geographic location, etc. NASS chose the six largest States that would best represent the diversity of plant materials in this industry.

Average Response Rates					
Survey	Data Year	Year Survey Conducted	Universe	Sample Size	Percent Response
Nursery and Floriculture Chemical Use	2009	2010	21,585	3,662	78.97%
Oregon Nursery Production Survey	2010	2011	1,607	641	78.60%

The Nursery and Christmas Tree Production Survey (NCTPS) was not included in the previous OMB approval, because NASS used the 2009 Census of Horticulture (0535-0236) data to fill the data needs. NASS will be reinstating the NCTPS in this approval. The following 17 States will be included in the NCTPS. They account for over 70 percent of the nursery production in the United States.

Alabama	Illinois	North Carolina	Tennessee
California	Michigan	Ohio	Texas
Connecticut	New Jersey	Oregon	Virginia
Florida	New York	Pennsylvania	Washington
Georgia			

The universe for the NCTPS consists of all operations identified on the NASS list frame in these 17 states with indicators of nursery production and sales of \$10,000 or more. All nursery operations that produce the commodities of interest and have a value of sales indicator on the NASS list frame of \$10,000 or greater in the 17 States listed above will be selected for the nursery production survey. The commodities for which NASS will make production estimates include: transplants for commercial vegetable and strawberry production, propagative nursery materials, broadleaf evergreens, coniferous evergreens, deciduous shade trees, deciduous flowering trees, deciduous shrubs, fruit and nut plants, Christmas trees, palms, ornamental grasses, and other woody ornamentals and vines. Operations with current sales of between \$10,000 and \$99,999 will be asked to report: total sales, area in production, and a few basic labor questions. Operations with \$100,000 in sales or more will be asked detailed production data.

The sample is a multivariate probability proportional to size (MPPS) design. Probability Proportional to Size (PPS) was used to determine the probability of selection for each item of interest; then MPPS was used to find the maximum of these probabilities of selection across all crops that a grower has. The resulting maximum probability of selection and the desired sample size for each crop is used to select the sample. This design maximizes the coverage for a given sample size, because an operation which has multiple commodities can report data for each of its commodities.

The MPPS design will be used again in 2013 for the 2014 data collection.

TABLE 1. Target Commodities and Sample Sizes

CFL= Floriculture value of sales for cut flowers and greens

FLO= Floriculture value of sales

PRO=Nursery value of sales for propagative material

TRA= Nursery value of sales for commercial vegetable transplants

XMA=Nursery value of sales for Christmas trees

TRE= Nursery value of sales for broadleaf evergreens, coniferous evergreens,
deciduous shade trees

HVS= deciduous flowering trees, deciduous shrubs and other ornamentals, and
fruit and nut plants

Nursery and Floriculture Chemical Use Survey			
State	Crop	Sample Size	Population Coverage (%)
CA	CFL	158	91
	FLO	363	69
	PRO	92	96
	TRA	57	100
	XMA	100	100
	TRE	291	82
	HVS	56	100
	State Sample Size	677	
FL	CFL	127	93
	FLO	391	60
	PRO	99	95
	TRA	17	100
	XMA	18	100
	TRE	360	68
	HVS	47	100
	State Sample Size	687	
MI	CFL	76	100
	FLO	370	56
	PRO	135	100
	TRA	37	100
	XMA	156	87
	TRE	238	88
	HVS	32	100
	State Sample Size	638	
OR	CFL	89	100
	FLO	290	92
	PRO	121	95
	TRA	26	100
	XMA	165	85
	TRE	389	89
	HVS	37	100
	State Sample Size	669	

State	Crop	Sample Size	Population Coverage (%)
PA	CFL	76	100
	FLO	361	52
	PRO	101	100
	TRA	49	100
	XMA	199	78
	TRE	270	79
	HVS	34	100
	State Sample Size	652	
TX	CFL	30	100
	FLO	190	58
	PRO	105	100
	TRA	31	100
	XMA	42	100
	TRE	181	83
	HVS	31	100
	State Sample Size	339	
U.S.	Sample Size	3,662	

2007 Nursery and Christmas Tree Production Survey	
State	
Alabama	2
California	9
Connecticut	2
Florida	2,0
Georgia	3
Illinois	3
Michigan	9
New Jersey	6
New York	6
North Carolina	1,0
Ohio	7
Oregon	1,4
Pennsylvania	9
Tennessee	6
Texas	6
Virginia	4
Washington	4
U.S.	12,8

* In 2010 NASS conducted the Census of Horticulture in all 50 States. The Nursery and Christmas Tree Production Survey was not conducted that year.

** The 2007 survey was a complete census of all known growers of nursery and Christmas trees.

The CVs are sample CVs and not independent of unit. Point estimates less than one can drive large CVs. For example, if the percent of acres covered is very close to zero, in previous surveys such as the Fruit and Vegetable Chemical Use Surveys the CVs have been above 2000.

The sample performed well in providing reliable estimates for the majority of items that NASS published. The MPPS design efficiently captured a sample that was representative of all operations in the target population. We were satisfied with the population coverage achieved by the sample with the exception of a few specific items that we will try and improve upon for the upcoming survey. The sample design is just one factor to consider when evaluating the reliability of our

estimates. Many of the estimates that saw unusually large CVs or were ultimately not able to be published were often the result of an extremely small number of positive reports for a specific item or the ultimate discovery that the item of interest is just not widely utilized/produced which makes it very difficult to capture in a survey. The rarer an item, the more difficult it is to capture in any sample design, outside of doing a complete census of all operations in the population.

Six States were included in the Nursery and Floriculture Chemical Use Survey. Seventeen States were included in the 2007 Nursery and Christmas Tree Production Survey.

The sample design is MPPS, therefore the larger an operation is, in terms of the percent of the state's total that it produces, the higher the probability it will be included in the sample. Table 1 above shows the coverage for each commodity by state.

The MPPS sample design is the most effective sampling methodology to capture a representative sample of this specific population while minimizing variability and ensuring sufficient coverage. The only other aspect of the sample design that could be considered to help reduce CVs would be to increase the sample size for all commodities that have population coverage below 80%. The biggest constraint with this approach is that our sample size must ultimately stay within our given budget. This option is certainly on the table and will be evaluated once we are provided with the final budget for this project.

The Oregon Nursery Production Survey and the Oregon Christmas Tree Production Survey will be sampled from their universe of growers. All of the large operations will be included in the sample, along with a random sampling of medium and small size operations (small operations were sampled at a rate of approximately 1 out of every 10 operations).

Oregon's Nursery & Greenhouse and Christmas Tree surveys use Stratified Random Sampling to select samples. The strata definitions are the same as the published acreage breakouts for Christmas trees and the same as the published sales categories for the Nursery Survey. In both cases the largest stratum are sampled with certainty. Survey Statisticians estimate for all non response in these largest strata. For all other smaller strata, expansion factors are calculated by taking the stratum population divided by the number of usable reports within that stratum.

The sample design is not a stratified design. It is MPPS. All operations in the population had to produce and sell, or have the potential to produce and sell, \$10,000 of at least one of the commodities of interest.

2. Describe the procedures for the collection of information.

The Nursery and Floriculture Chemical Use Survey is conducted exclusively as a field enumerated survey. The field enumerator will meet with the most knowledgeable person (owner, manager, book keeper, etc) at each operation to collect the data. Only a small portion of the questionnaire will involve direct contact with the respondent. The majority of the data collection process involves the enumerator sitting down with each operations chemical application records and recording the relevant information into our questionnaire.

The majority of the data for California is available electronically; we receive much of the chemical data directly from California EPA. The remaining data on pest management practices and certain columns in the chemical tables need to be collected from the respondent.

The Nursery and Christmas Tree Production Survey is conducted initially by mail. A blank questionnaire, postage paid envelope, publicity letter, and internet access instructions are mailed to the respondent. A reminder mailing will be sent out to non-respondents a few weeks later. Operators who do not respond to either of the mail requests will be attempted by either a phone enumerator or a personal visit from one of our field enumerators. Our enumerators work for the National Association of State Departments of Agriculture (NASDA) and are trained by NASS to conduct the surveys in a timely and accurate manner.

Publicity materials have been created that the State offices can mail to respondents, display at trade shows or include in State trade magazines advertising the importance of the surveys and how this data will be used to help the nursery and floriculture industry.

The two Oregon production surveys are designed to be used as mail surveys with either phone or personal interview follow-up for non-respondents.

3. Describe methods to maximize response rates and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling, a special justification must be provided for any collection that will not yield "reliable" data that can be generalized to the universe studied.

Information on the data needs of users is routinely requested and data users are involved in survey content development. The American Nursery and Landscapers Association and the Society of American Florists were consulted frequently during the design of the survey instruments. Data User meetings are held yearly and give all interested individuals the opportunity to express their

data needs. NASS makes every effort to accommodate the needs of the U.S. public. When NASS meets with data users and industry representatives we ask that they convey the message to their members of how important these data collections are to their industry.

NASS's Public Affairs Section (PAS) is responsible for promoting NASS survey efforts and educating respondents about the need and use for the data they are being asked to provide. PAS works with data users and industry leaders to provide concrete examples of data use. They are also actively publicizing survey activities by generating and distributing news reports and drop-ins for industry publications and news outlets.

The different publicity materials are used to inform the respondents of the importance of these surveys. How the information is used by the floriculture and nursery growers, chemical manufacturing companies, and legislative bodies is included in the materials provided to the growers in hopes to encourage them to respond. In previous collections, NASS expanded the data collection period for the chemical use survey, so that the field enumerators could schedule the most convenient time for the respondent. Depending on the type of plants being produced and the region of the country, we have to allow this degree of freedom in the data collection, to help insure good responses.

For non-response to the Oregon Nursery and Christmas Tree surveys, after two attempts by mail the Oregon Field Office has their telephone or field enumerators conduct follow-up interviews.

The chemical use sample survey is designed so that estimates are statistically representative of chemical use on nursery and floriculture commodities. The reliability of the survey results is affected by sampling variability and non-sampling errors. Sampling variability is a measure of how the estimates would differ if other samples had been drawn; it is expressed as a percent of the estimate called the coefficient of variation (CV). For the January 2010 survey, the variability of the estimates differed considerably by chemical. In general, the more often the chemical was applied, the smaller the sampling variability. For the more commonly used chemicals, CV's ranged from 5-50 percent at the six-State program level; other, more rarely used items ranged from 50-200 percent. Items with CV's above 200 percent or that had an insufficient number of reports were not published.

Follow-up contacts of operations have provided NASS with a greater insight to the variations in rates of applications for many of the chemicals. For example some operations may only produce small seedling trees and sell them to other operations that produce larger trees that are sold to final consumers. The chemical application rates can vary greatly, dependant upon the size or maturity

of the plants being produced.

Non-sampling errors occur during a survey process but, unlike sampling variability, are difficult to measure. They may be caused by interviewers failing to follow instructions, poorly worded questions, non-response, problematic survey procedures, or data handling mistakes between collection and publication. In this survey all survey procedures and analyses were carried out in a consistent and orderly manner to minimize the occurrence of these types of errors.

For pesticide data at the state and all program states levels, the CVs breakdown is as follows:

Category	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1. cv <= 25%	2786	71.42	2786	71.42
2. 25% < cv <= 50%	639	16.38	3425	87.80
3. 50% < cv <= 100%	337	8.64	3762	96.44
4. cv > 100%	139	3.56	3901	100.00

Approximately 35% of the data points with CV > 100% had a small enough number of positive reports that we did not publish them. With over 70% of CVs at or under 25% and only 3.6% of CVs over 100%, this shows that our survey results are overall very reliable.

Keep in mind that the sample design is just one of many factors that influence CVs. CVs are also heavily influenced by the number of positive reports we receive back for a specific item of interest and also the variability in the data on those responses. High end and low end outliers can have a significant impact on CVs, and that impact is even more severe if there are very few positive reports for that item.

NASS continually monitors CV performance in all surveys and always utilizes past survey results when designing the next iteration of a specific survey. We will certainly consider increasing the sample size in those states where CVs were unacceptable to provide reliable estimates while working within our budget constraints for this particular project.

Another way to improve the sample and also CVs is to verify we are using the most current control data as possible when selecting the sample. The MPPS design is based on using existing data about an operation and for the proposed study we will ensure that we are utilizing the most recent data available for all operations in our target population.

4. Describe any tests of procedures or methods to be undertaken.

NASS's experience with previous production and chemical use surveys has been

beneficial in designing the surveys covered in this docket. NASS has done extensive information gathering interviews over the years. The questionnaires in this docket have been developed with the assistance of greenhouse operators and nursery growers.

5. Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.

Specifications and survey design were developed by Statistical Methods Branch, Statistics Division; Branch Chief is Dave Aune, (202)720-4008.

The sample size for each State is determined by the Sample Design Section, Census and Survey Division; Section Head is Eric Porter, (202)720-5269.

Data collection is carried out by NASS Field Offices; Eastern Field Operation's Director is Norman Bennett, (202) 720-3638 and the Western Field Operation's Director is Kevin Barnes (202) 720-8220.

The NASS survey statistician in Headquarters for the Nursery and Floriculture Chemical Use Survey is Robert Harris, (202) 690-3622 in the Commodity Surveys Section of the Survey Administration Branch, Census and Survey Division. He is responsible for coordination of sampling, questionnaires, data collection, data processing, and FO support.

The NASS commodity statistician in Headquarters for the chemical use survey is Liana Cuffman, (202) 690-0392 in the Environmental and Demographics Section of the Environmental, Economics, and Demographics Branch, Statistics Division. She is responsible for analysis, summary, and publication.

The NASS commodity statistician in Headquarters for the nursery production survey is Erika White (202) 720-4215 in the Fruit, Vegetable, and Special Crops Section of the Crops Branch, Statistics Division. She is responsible for analysis, summary, and publication.

May, 2013

Revised September, 2013