Supporting Statement – Part B

MILK AND MILK PRODUCTS

OMB No. 0535-0020

B.   COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

Additional information on data collection, sampling, statistical methodology and data reliability can be found in the back of the data publications for each of the surveys included in this docket. Sample publications have been attached to the ROCIS submission system.

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 Milk Production Sampling Frame (population) is comprised of all active operations on NASS's List Frame that have at least one milk cow. Hence, the Milk Production Sampling Frame includes both large licensed to sell milk commercial operations as well as small unlicensed to sell milk operations. The Milk Production Sampling Frame is continually updated with data from NASS surveys, Census of Agriculture and administrative lists (Brucellosis Ring Test List, Dairy Herd Improvement Association test records, and Agricultural Marketing Association regulated milk sources).

The Milk Production Sampling Frame is stratified – within each state - using the number of milk cows as a measure of size. The Milk Production Survey state level target sample size formula is:

$$n_h = \frac{N_h s_h^2}{\frac{(f_h T_h)^2}{N_h} + s_h^2}$$

Where:
h is the state.
n_h is the target sample size for state *h.*

N_h is the state population.
s_h is the state standard deviation.
f_h is the state coefficient of variation, and
T_h is the state total number of milk cows.

The sample size determination process includes an adjustment to account for collecting premium alfalfa price data in eight states (CA, MN, WI, MI, NY, PA, TX, and ID). A systematic sample is selected after explicitly sorting on State and Stratum and implicitly sorting on district and county.

The following table exhibits the Milk Production Sampling Frame strata definitions for CA, KY and PA. (Examples)

Milk Production Sampling Frame Strata Definitions		
State	Strata	Number of Milk Cows per Operation
California	1	1 - 29
	3	30 - 99
	4	100 - 199
	5	200 - 499
	6	500 - 999
	7	1,000 - 1,999
	8	2,000 - 3,999
	9	4,000 +

	1	1 - 29
	2	30 - 49
Kentucky	3	50 - 99
	4	100 - 199
	5	200 - 499
	8	500 +

	1	1 - 29
	2	30 - 49
	3	50 - 99
Pennsylvania	4	100 - 199
	5	200 - 499
	6	500 - 999
	8	1,000 +

The universe for <u>manufactured dairy products</u> is composed of producers, distributors, handlers, and processors of manufactured dairy products. There were 1,266 plants in the universe in early 2020. Of the 1,266 plants, 116 were required to respond to the monthly surveys (see Public Law No. 106-532). The

survey list frame is maintained using regulatory lists, license lists, trade association memberships, and information obtained during field travel. All plants in the universe are contacted at least once during the year. Those plants that report all of their manufactured products monthly are not required to report again on the annual survey.

Milk and Milk Products Response and Coverage Rates for 2020						
Survey	Sample Size	Waves of Data Collection	Total Contacts	Total Responses	Response Rate	Coverage Rates
Voluntary Surveys						
Quarterly Milk Production [1]						Total Milk Cows
Jan. 2020	10,958	1	10,958	5,757	52.5%	53.8%
Apr. 2020	10,233	1	10,233	5,908	57.7%	56.1%
July 2020	9,880	1	9,880	5,277	53.4%	51.6%
Oct. 2020	9,627	1	9,627	5,125	53.2%	55.7%
					54.2%	54.3%
Voluntary Surveys						
Manufactured Dairy Products [2]						Total Products Produced
Monthly	813	12	9,756	7272	74.5%	-
Annual	337	1	337	253	75.1%	-
Voluntary Subtotal	12,108		50,791	29,592	58.3%	
Frequency						
Mandatory Surveys						
Manufactured Dairy Products [3]						
Monthly	116	12	1,392	1,350	97.0%	-
Mandatory Subtotal	116		1,392	1,350	97.0%	
Overall Total	12,224		52,183	30,942	59.3%	

[1] Jan. Milk Production is the base month, the three other quarters contact only those operations that are still in business or still milking as the year progresses.

[2] Monthly plants are the plants who produce large quantities of one or more dairy products. The annual plants are the smaller plants, many of which are seasonal producers. Some large plants that refuse to respond to monthly surveys will only be contacted with the annual survey to honor their requests.

[3] Plants who produce dry whey or non-fat dry milk are required to report production data for these products under Public Law 106-523.

2. Describe the procedures for the collection of information including:
- **statistical methodology for stratification and sample selection,**
- **estimation procedure,**
- **degree of accuracy needed for the purpose described in the justification,**
- **unusual problems requiring specialized sampling procedures**

Milk production: Surveys are conducted quarterly (January 1, April 1, July 1, and October 1) in all 50 States. Milk production questionnaires are first mailed to the entire sample. States conduct follow-up telephone interviews with non-

respondents to ensure that adequate coverage is obtained for each stratum. In most states four strata are used for summarization. The three indications of milk cow numbers are:

a. The *direct expansion* is derived by multiplying the sampling weight by the reported number of milk cows per farm in each stratum after the weight has been adjusted for nonresponse. Individual strata expansions are added to a state total.

b. The *ratio-to-previous expansion* is obtained by matching operations' current survey reports with those operations' reports from the previous quarter. A ratio is calculated using the data from matching reports at the strata level after the weights have been adjusted for nonresponse. This indicated percent change is multiplied by the estimated number of milk cows on farms in the previous quarter and provides an indication of the current number of milk cows.

c. The *ratio-to-base expansion* is similar to the *ratio-to-previous* expansion in that current reports are matched with those operations' reports from January (the "base" month). This comparison is used to reflect the change in milk cows from the base month. Since all states conduct a large scale cattle inventory survey the first of each year (OMB No. 0535-0213), current reports are matched with the January 1 base period. The indicated change from the base is applied to the estimated number of cows at the beginning of the base.

Manufactured dairy products: States that have a small number of plants that produce manufactured dairy products send questionnaires out to their entire population monthly. In States with a large number of plants, the large and medium sized plants (based on production) are contacted monthly and the smaller sized operations or seasonal operations are contacted annually. The annual questionnaire collects all twelve months at one time and monthly numbers can be adjusted in the annual report if necessary.

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.**

Directors of NASS State and Regional Field Offices, along with HQ commodity statisticians, attend numerous industry meetings throughout the year to promote the importance of NASS data, discuss how operations use the data to make operating decisions, and explain how the data are used by government agencies

to make policy decisions that impact the dairy industry. Respondents are encouraged to participate in all NASS surveys so that the data are as accurate as possible.

Estimates from the milk production survey provides reliable indications when compared to data reported to AMS for various milk marketing orders. Not all States are covered under the milk marketing orders, so NASS is the only complete source of total milk production data. NASS conducts this survey on a quarterly basis instead of monthly basis. Prior to the 2018 approval, the 23 largest milk producing States were contacted monthly and the smaller States were contacted either quarterly or annually. Under this approval NASS will continue to collect the data from all 50 States on a quarterly basis to help minimize respondent burden and improve response rates. When NASS Field Offices do phone follow-up with non-respondents they concentrate their efforts towards the larger producers. In 2020, estimates were based on a 74.5 percent coverage rate of milk cows.

Survey estimates from the Milk Production survey align quite well when compared to data reported to administrative data sources. Administrative data used by NASS include Federal Milk Marketing Orders, Milk Checkoff, various state milk marketing orders, and Dairy Herd Improvement Association (DHIA). From the Milk Marketing Orders, the total milk production is nearly complete. A few state milk markets also have the number of cows. From the DHIA the rate per cow is provided. The milk administrative data are timely, good quality, and reliable, but they only cover the production, not the number of milk cows. The milk marketing data does not have 100% coverage, so NASS conducts a survey to obtain complete coverage, but with the rich administrative data NASS has reduced the Milk Production Survey from monthly to quarterly or annually.

NASS conducted a non-response bias analysis in January 2018 for the milk production survey. The analysis showed a potential downward bias of less than half of one standard error for the milk cow inventory estimate. Previously reported data (PRD) and list frame data were used to create a "complete" dataset. Most of the data used for non-respondents was from the list frame and was always positive. This means the potential bias is somewhat of an upper bound since it assumed all non-respondents had positive milk cows.
For milk production, the published estimates are reliable and no measurable bias is detectable given the rich administrative data that is available. As resources allow, NASS plans to investigate alternative estimators to reduce the risk of bias.

If a future nonresponse bias analysis shows evidence of additional bias, NASS will evaluate the survey and seek to reduce the bias in the estimation process. The actions taken will depend on the commodity and the amount of administrative data available. For many commodities that NASS publishes

estimates, administrative sources are available to provide a check on the surveys, but it may not become available until after the estimates are published. Once the administrative data are available, NASS will make revisions during the normal revision schedule. For commodities with historical administrative data, the data can be used to adjust for bias. The Census of Agriculture also gives an independent source to evaluate bias. Every five years following the Census, many commodities are open for five year revisions.

Monthly estimates of <u>manufactured dairy products</u> are based on a 77.3% response rate.

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

There are no tests planned for these long-running surveys.

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), or other person(s) who will actually collect and/or analyze the information for the agency.**

Survey data are collected, reviewed, and summarized by the Regional Field Offices. Publications are released from the Regional Offices and Headquarters. Survey design and methodology are determined by the Summary, Estimation, and Disclosure Methodology Branch, Methods Division; Branch Chief is Jeff Bailey, (202) 690-8141.

Survey sample sizes are determined by the Sampling and Frame Development Section and reviewed and approved by NASS Survey Teams. The Agency's Sampling, Editing and Imputation Methodology Branch, Methods Division; Branch Chief is Mark Apodaca (202) 690-8141.

Data collection is carried out by NASS Regional Field Offices; Eastern Field Operation's Director is Jody McDaniel, (202) 720-3638 and the Western Field Operation's Director is Troy Joshua (202) 720-8220.

The Livestock Branch Chief is Travis Averill (202)720-3570. Commodity statisticians within the Livestock Branch are responsible for coordination of sampling, questionnaires, data collection, data processing, Regional Field Office support, national and regional summaries, analysis, presenting the data to the Agricultural Statistics Board for final estimates, publication, and the Estimation Manual.

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