Dairy Herd Management Practices Focusing on Preweaned Heifers
April 1991 - July 1992

National Dairy Heifer Evaluation Project
July 1993
Acknowledgements

This report has been prepared from material received and analyzed by the U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS), National Animal Health Monitoring System (NAHMS). Specimen analyses were performed by the National Veterinary Services Laboratories in Ames, Iowa.

The National Dairy Heifer Evaluation Project was a cooperative effort between State and Federal animal health officials, university researchers, and Cooperative Extension Service (CES) personnel. NAHMS wants to thank the State and Federal Veterinary Medical Officers (VMO’s) who visited the farms and collected the data.

The roles of the producer, Area Veterinarian in Charge (AVIC), NAHMS Coordinator, Veterinary Medical Officer (VMO), Animal Health Technician (AHT), and NASS enumerator were critical in providing quality data for this report. All participants are to be commended for their efforts, particularly the producers whose voluntary efforts made the study possible.
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Executive Summary

A National study of preweaning heifer health and productivity, the National Dairy Heifer Evaluation Project (NDHEP), was conducted by the National Animal Health Monitoring System (NAHMS), USDA:APHIS:Veterinary Services, from April 1991 through July 1992 representing herds of 30 or more milk cows and heifer-rearing operations in the participating States.

Two groups of dairy industry and health experts were assembled to make recommendations for implementation of the study: 1) the Dairy Advisory Group identified the replacement heifer as the area of largest informational need not currently being met through other avenues, and 2) a Dairy Technical Group made recommendations as to the input and output measures to be studied in reference to the replacement heifer. The study design was developed in collaboration with the National Agricultural Statistics Service (NASS) who provided list and area sampling frames. The sample was statistically designed to provide inferences about the national heifer population. NASS selected 3,346 operations in 28 preselected States to contact as a subsample of their January 1, 1991, cattle survey respondents.

A general farm management and policy questionnaire was completed by 1,811 producers from 28 States whose operations qualified for the study and who agreed to continue. Data were collected by enumerators of the National Association of State Departments of Agriculture (NASDA). The 28 States represented 83 percent of U.S. milk cows; herds with 30 or more milk cows in the participating States represented 78 percent of the U.S. milk cows.

- One-third (33.7 percent) of the producers allowed calves to receive first colostrum during first nursing from the dam, 64.0 percent hand fed first colostrum from a bucket or bottle, and 2.3 percent force fed calves using an esophageal feeder.
- Of those that hand fed first colostrum, 73.9 percent of the producers fed less than 4 quarts in the first 24 hours.
- Preweaned heifer calf death loss was 8.4 percent of those born alive or moved on the operations.

Next, 1,177 producers were enrolled in the on-farm monitoring phase of the program on a staggered, monthly basis by State and federal Veterinary Medical Officers (VMO’s). Information on farm biosecurity measures, facility characteristics, disease history, routine preventive/treatment practices and economics were collected via additional questionnaires over a 3-month monitoring period for each operation. Each producer also
maintained records and monitored health events of heifers born on the operation during the 3-month period. Results were again extrapolated to the U.S. dairy population.

- Preweaned calves brought onto the operation were quarantined by 27.9 percent of the producers, lactating cows by only 5.5 percent of producers.

- If additional resources were available for improvements, the first choice of 64.8 percent of the producers would be in housing or structures.

A subset of 606 producers participated in an evaluation of milk replacer quality and management.

- Of those producers that fed milk replacer, over 96 percent normally fed it individually to calves, and over 97 percent fed calves twice a day.

- Roughly 65 percent of producers have calves in cold environments during the winter and do not increase the amount of milk replacer fed to calves.
Overview

Part I of the National Dairy Heifer Evaluation Project (NDHEP) results, *Dairy Herd Management Practices Focusing on Preweaned Heifers*, contains descriptive tables divided into four sections, named for the tool used to collect the data. The number of operations responding to each data collection tool is shown below.

- General Dairy Report (n = 1,811)
- Dairy Heifer Health Report (n = 1,177)
- Dairy Heifer Management Report (n = 1,123)
- Milk Replacer Quality and Management (n = 606)

The tables shown in this report are population estimates, such as averages and proportions which have been weighted so that inferences can be made to the National dairy heifer population. The estimates are provided with a measure of variability called the standard error and denoted by (+/-). Chances are 95 out of 100 that these survey estimates will be within plus or minus two standard errors of the average estimates derived from repeating the survey for all possible samples of the population. Estimates and standard errors have been rounded to the nearest tenth (0.1).

An order sheet for additional information on projects of the Center for Animal Health Monitoring is included at the back of the booklet. A Technical Report containing details on the methodology employed during the National Dairy Heifer Evaluation Project is also available.

Part II, *Dairy Herd Morbidity and Mortality Focusing on Heifers from Birth to Weaning*, expected within 6 months of the release of Part I, will present NDHEP information of calf monitoring for clinical signs, treatments, and deaths. Part II will also contain laboratory testing results for *Salmonella*, *E. coli* 0157:H7, *Cryptosporidium*, immunoglobulin, and selenium. Additional information will be results of heifer growth assessments.

If you have questions about this report contact the National Animal Health Monitoring System at:

Center for Animal Health Monitoring  
USDA:APHIS:VS  
555 South Howes, Suite 200  
Fort Collins, Colorado 80521  
(303) 490-7800
Goals of the National Dairy Heifer Evaluation Project

• To provide cooperating producers and practitioners with an evaluation of the current status of certain heifer-rearing practices.

• To obtain estimates of health and productivity parameters on the National dairy heifer population.

• To identify and quantitate the effect of factors contributing to the health, productivity, and profitability of dairy replacement heifers.

*******Focus on the preweaned heifer.*******
General Dairy Report

A. **Inventory (at the time of the interview)**

1. How many steers, bulls, and bull calves of any age (including bulls used for breeding and newborn bull calves)?

<table>
<thead>
<tr>
<th>Average</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1</td>
<td>(±0.8)</td>
</tr>
</tbody>
</table>

2. How many are:

   a. beef cows (including beef heifers that have calved and cull beef cows, but not cull dairy cows)?

      | Average | Standard Error |
      |---------|----------------|
      | 1.8     | (±0.2)         |

   b. beef heifers (that have not calved) including newborns?

      | Average | Standard Error |
      |---------|----------------|
      | 1.5     | (±0.2)         |

3. How many are:

   a. dairy cows (including dairy heifers that have calved)

      | Average | Standard Error |
      |---------|----------------|
      | 85.7    | (±1.3)         |

      i. being milked (including culls)?

      | Average | Standard Error |
      |---------|----------------|
      | 72.5    | (±1.2)         |

      ii. dry?

      | Average | Standard Error |
      |---------|----------------|
      | 13.2    | (±0.3)         |

   b. dairy heifers (that have not calved)

      | Average | Standard Error |
      |---------|----------------|
      | 66.3    | (±1.3)         |

      i. newborn to weaning age?

      | Average | Standard Error |
      |---------|----------------|
      | 8.5     | (±0.3)         |

      ii. dairy heifers weaning age to 4 months old?

      | Average | Standard Error |
      |---------|----------------|
      | 9.5     | (±0.3)         |

      iii. 4 months to breeding age?

      | Average | Standard Error |
      |---------|----------------|
      | 25.5    | (±0.5)         |

      iv. breeding age and older?

      | Average | Standard Error |
      |---------|----------------|
      | 22.8    | (±0.5)         |

4. The total cattle and calves on this operation is:

<table>
<thead>
<tr>
<th>Average</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>169.4</td>
<td>(±2.9)</td>
</tr>
</tbody>
</table>

B. **Dairy Calves Expected**

1. How many dairy cows will calve on this operation during the next 3 months (including any that are not already here)?

<table>
<thead>
<tr>
<th>Average</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.7</td>
<td>(±0.4)</td>
</tr>
</tbody>
</table>

2. How many dairy heifers will calve (during the next 3 months)

<table>
<thead>
<tr>
<th>Average</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>(±0.2)</td>
</tr>
</tbody>
</table>
### C. Dairy Herd Information

1. **Is this operation Grade A, Grade B, a Contract Heifer operation, or something else?**

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Percent of Operations (± Error)</th>
<th>Percent of Cows (± Error)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade A</td>
<td>90.7 (±1.2)</td>
<td>94.6 (±0.7)</td>
</tr>
<tr>
<td>Grade B</td>
<td>9.0 (±1.2)</td>
<td>5.2 (±0.7)</td>
</tr>
<tr>
<td>Contract heifer operation</td>
<td>.2 (±0.1)</td>
<td>0.1 (±0.1)</td>
</tr>
<tr>
<td>Other</td>
<td>.1 (±0.1)</td>
<td>0.1 (±0.1)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

2. **What is the main breed of the dairy herd?**

<table>
<thead>
<tr>
<th>Breed</th>
<th>Percent of Operations (± Error)</th>
<th>Percent of Cows (± Error)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holstein</td>
<td>94.9 (±0.7)</td>
<td>95.8 (±0.6)</td>
</tr>
<tr>
<td>Jersey</td>
<td>2.4 (±0.4)</td>
<td>2.5 (±0.4)</td>
</tr>
<tr>
<td>Ayrshire</td>
<td>0.6 (±0.3)</td>
<td>0.4 (±0.2)</td>
</tr>
<tr>
<td>Brown Swiss</td>
<td>1.0 (±0.4)</td>
<td>0.7 (±0.3)</td>
</tr>
<tr>
<td>Guernsey</td>
<td>0.9 (±0.3)</td>
<td>0.6 (±0.2)</td>
</tr>
<tr>
<td>Other</td>
<td>0.2 (±0.2)</td>
<td>0.0 (±0.0)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

3. **a. What percent of the dairy herd is registered?**

<table>
<thead>
<tr>
<th>Herd Average</th>
<th>Standard</th>
<th>Percent of</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>Cows</td>
<td>Error</td>
</tr>
<tr>
<td>16.7</td>
<td>(±1.0)</td>
<td>15.8</td>
<td>(±0.8)</td>
</tr>
</tbody>
</table>

3. **b. Percent of operations by percent of herd registered:**

<table>
<thead>
<tr>
<th>Percent of Herd Registered</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>59.7</td>
<td>(±0.1)</td>
</tr>
<tr>
<td>1-25</td>
<td>19.6</td>
<td>(±0.1)</td>
</tr>
<tr>
<td>26-50</td>
<td>7.4</td>
<td>(±0.1)</td>
</tr>
<tr>
<td>51-75</td>
<td>3.2</td>
<td>(±0.1)</td>
</tr>
<tr>
<td>76-99</td>
<td>4.2</td>
<td>(±0.1)</td>
</tr>
<tr>
<td>100</td>
<td>5.9</td>
<td>(±0.1)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

4. **a. What is the current rolling herd average for milk production?**

<table>
<thead>
<tr>
<th>Average Pounds per Cow</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>16,703.2</td>
<td>(±96.4)</td>
</tr>
</tbody>
</table>

4. **b. Was average estimated or calculated?**

<table>
<thead>
<tr>
<th>Information Source</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated</td>
<td>46.1</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>Calculated</td>
<td>53.9</td>
<td>(±1.8)</td>
</tr>
</tbody>
</table>

5. **During the past 12 months, what was the average length of time cows were dry?**

<table>
<thead>
<tr>
<th>Average Days per Cow</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>61.1</td>
<td>(±0.5)</td>
</tr>
</tbody>
</table>

6. **What contributed most to the low production of milk cows culled from the herd during the past 12 months? (First and second most common contributors.)**
C. Dairy Herd Information (continued)

<table>
<thead>
<tr>
<th>Health Problem</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive problems</td>
<td>46.4 (±1.8)</td>
<td>23.9 (±1.6)</td>
<td></td>
</tr>
<tr>
<td>Mastitis or udder problems</td>
<td>29.2 (±1.6)</td>
<td>34.3 (±1.7)</td>
<td></td>
</tr>
<tr>
<td>Old age</td>
<td>10.1 (±1.1)</td>
<td>12.5 (±1.1)</td>
<td></td>
</tr>
<tr>
<td>Lameness</td>
<td>5.8 (±0.8)</td>
<td>11.9 (±1.2)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>7.3 (±1.0)</td>
<td>8.3 (±1.0)</td>
<td></td>
</tr>
<tr>
<td>No reason/unknown</td>
<td>1.2 (±0.4)</td>
<td>9.1 (±0.9)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

7. a. During the past 12 months, what was the average calving interval?

<table>
<thead>
<tr>
<th>Calving interval</th>
<th>Average Months per Cow</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12.8</td>
<td>(±0.0)</td>
</tr>
</tbody>
</table>

8. Does this operation normally sell or remove all its dairy calves within 24 hours?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1.9 (±0.4)</td>
</tr>
<tr>
<td>No</td>
<td>98.1 (±0.4)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

9. During the past 12 months (of the producers who do not normally sell or remove all calves within 24 hours), were any dairy heifer calves:

<table>
<thead>
<tr>
<th>Marketing Option</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
<th>Average Age When Sold</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sold for replacements before they were weaned (from liquid ration)?</td>
<td>10.0 (±1.0)</td>
<td>2.0 Days (±0.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sold for veal or some other purpose before weaning (from liquid ration)?</td>
<td>13.9 (±1.1)</td>
<td>1.4 Weeks (±0.1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. a. During the past 12 months, were any of this operation’s dairy heifers sent to someone else’s operation on a contract basis?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1.6 (±0.3)</td>
</tr>
<tr>
<td>No</td>
<td>98.4 (±0.3)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

b. Were any of the dairy heifers contracted out:

<table>
<thead>
<tr>
<th>Age</th>
<th>Percent of Operations</th>
<th>Average Age When Contracted</th>
<th>Average Length of Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborns to 4 months old when contracted out?</td>
<td>0.7 (±0.2)</td>
<td>31.4 Days (±9.6)</td>
<td>16.0 Months (±1.8)</td>
</tr>
<tr>
<td>Heifers 4 months to breeding age when contracted out?</td>
<td>0.8 (±0.2)</td>
<td>9.3 Month (±1.4)</td>
<td>13.7 Months (±1.3)</td>
</tr>
<tr>
<td>Heifers breeding age (but not yet calved) when contracted out?</td>
<td>0.2 (±0.1)</td>
<td>14.5 Months (±0.6)</td>
<td>9.6 Months (±0.8)</td>
</tr>
</tbody>
</table>
D. Dairy Heifers

1. How soon are newborn calves separated from their mothers?

<table>
<thead>
<tr>
<th>Age</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Hours (before nursing)</td>
<td>28.0</td>
<td>(±1.7)</td>
</tr>
<tr>
<td>Less than 12 hours</td>
<td>39.6</td>
<td>(±1.7)</td>
</tr>
<tr>
<td>12-24 hours</td>
<td>22.0</td>
<td>(±1.4)</td>
</tr>
<tr>
<td>More than 24 hours</td>
<td>10.4</td>
<td>(±1.0)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

2. How do baby calves get their first feeding of colostrum (the first milk produced after calf is born)?

<table>
<thead>
<tr>
<th>Method of Delivery</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>During first nursing</td>
<td>33.7</td>
<td>(±1.7)</td>
</tr>
<tr>
<td>Hand feeding from bucket or bottle</td>
<td>64.0</td>
<td>(±1.7)</td>
</tr>
<tr>
<td>Hand feeding using esophageal feeder</td>
<td>2.3</td>
<td>(±0.6)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

3. Does someone routinely assist the calves with their first nursing (from the mother)?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40.8</td>
</tr>
<tr>
<td>No</td>
<td>59.2</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4. What is the source of colostrum used in hand feeding?

<table>
<thead>
<tr>
<th>Source</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>First milk from mother</td>
<td>94.6</td>
<td>(±0.7)</td>
</tr>
<tr>
<td>Pooled milk from several cows, excluding first calf heifers</td>
<td>2.3</td>
<td>(±0.4)</td>
</tr>
<tr>
<td>Pooled milk from several cows, including first calf heifers</td>
<td>0.9</td>
<td>(±0.3)</td>
</tr>
<tr>
<td>Stored milk from individual cows (not pooled)</td>
<td>1.9</td>
<td>(±0.5)</td>
</tr>
<tr>
<td>Commercial colostrum substitute</td>
<td>0.3</td>
<td>(±0.2)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

5. How much colostrum is fed (by hand) during the first 24 hours?

<table>
<thead>
<tr>
<th>Source</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two quarts or less</td>
<td>25.6</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>More than two, but less than four quarts</td>
<td>48.2</td>
<td>(±2.1)</td>
</tr>
<tr>
<td>Four or more quarts</td>
<td>26.2</td>
<td>(±1.9)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
### D. Dairy Heifers (continued)

6. **What types of liquid feed are used after colostrum is fed?**

<table>
<thead>
<tr>
<th>Liquid Feed Types</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk from cows recently calved</td>
<td>51.9</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>Whole milk from bulk tank</td>
<td>32.7</td>
<td>(±1.7)</td>
</tr>
<tr>
<td>Mastitic or antibiotic milk (discarded milk from sick cows)</td>
<td>37.7</td>
<td>(±1.7)</td>
</tr>
<tr>
<td>Milk replacer</td>
<td>59.0</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>Fermented milk</td>
<td>3.3</td>
<td>(±0.6)</td>
</tr>
<tr>
<td>Other</td>
<td>1.5</td>
<td>(±0.4)</td>
</tr>
</tbody>
</table>

7. **On average, how old are the calves when first offered:**

<table>
<thead>
<tr>
<th>Average Age in Days</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. grain or other concentrated feeds?</td>
<td>9.7</td>
</tr>
<tr>
<td>b. hay or other roughages?</td>
<td>23.0</td>
</tr>
<tr>
<td>c. free choice of water?</td>
<td>25.8</td>
</tr>
</tbody>
</table>

8. a. **What determines when it’s time to wean calves (from liquid ration)?**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>43.0</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>Weight</td>
<td>26.4</td>
<td>(±1.6)</td>
</tr>
<tr>
<td>Grain intake</td>
<td>26.9</td>
<td>(±1.5)</td>
</tr>
<tr>
<td>Other</td>
<td>3.7</td>
<td>(±0.6)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

   b. **What is the average age of calves at weaning (from liquid ration)?**

<table>
<thead>
<tr>
<th>Average Age in Weeks</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.9</td>
<td>(±0.1)</td>
</tr>
</tbody>
</table>

9. a. **Are calves ever separated into groups?**

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>79.8</td>
</tr>
<tr>
<td>No</td>
<td>20.2</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

   b. **What is the main consideration for grouping the first time?**

<table>
<thead>
<tr>
<th>Factor That Group Calves</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>48.0</td>
<td>(±2.0)</td>
</tr>
<tr>
<td>Weight or size</td>
<td>47.4</td>
<td>(±2.0)</td>
</tr>
<tr>
<td>Other</td>
<td>4.6</td>
<td>(±0.8)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
D. Dairy Heifers (continued)

c. What is the average age of calves when first grouped?

<table>
<thead>
<tr>
<th>Standard</th>
<th>Average</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.8 Weeks</td>
<td>±0.2</td>
</tr>
</tbody>
</table>

d. What is the average weight (at first grouping)?

(Answers were usually estimated.)

<table>
<thead>
<tr>
<th>Standard</th>
<th>Average</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>190.7 Pounds</td>
<td>±2.4</td>
</tr>
</tbody>
</table>

e. What is the average number per group?

<table>
<thead>
<tr>
<th>Standard</th>
<th>Average</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.5 Calves</td>
<td>±0.1</td>
</tr>
</tbody>
</table>

10. Are extra teats removed from heifer calves while they are on this operation?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
<th>Average Age</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>53.3 (±1.8)</td>
<td>133.9 Days</td>
<td>(±3.0)</td>
</tr>
</tbody>
</table>

11. a. Are heifer calves dehorned while on this operation?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
<th>Average Age</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>95.2 (±0.8)</td>
<td>4.1 Months</td>
<td>(±0.1)</td>
</tr>
</tbody>
</table>

b. What is the primary method of horn removal?

<table>
<thead>
<tr>
<th>Method of Removal</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caustic paste</td>
<td>7.4</td>
<td>(±1.0)</td>
<td></td>
</tr>
<tr>
<td>Electric dehorner</td>
<td>35.0</td>
<td>(±1.7)</td>
<td></td>
</tr>
<tr>
<td>Scoop, cut, or gouge</td>
<td>45.3</td>
<td>(±1.8)</td>
<td></td>
</tr>
<tr>
<td>Saw</td>
<td>10.5</td>
<td>(±1.2)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1.8</td>
<td>(±0.4)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. a. What types of identification are used? (Top three types.)

<table>
<thead>
<tr>
<th>Identification Type</th>
<th>Percent of Operations</th>
<th>First</th>
<th>Standard Error</th>
<th>Second</th>
<th>Standard Error</th>
<th>Third</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ear tags (all kinds)</td>
<td>82.8</td>
<td>(±1.5)</td>
<td></td>
<td>9.7</td>
<td>(±1.6)</td>
<td>0.4</td>
<td>(±0.3)</td>
</tr>
<tr>
<td>Collars</td>
<td>1.3</td>
<td>(±0.4)</td>
<td></td>
<td>9.5</td>
<td>(±2.0)</td>
<td>8.0</td>
<td>(±3.8)</td>
</tr>
<tr>
<td>Photograph or sketch</td>
<td>3.7</td>
<td>(±0.8)</td>
<td></td>
<td>40.2</td>
<td>(±2.8)</td>
<td>21.4</td>
<td>(±7.9)</td>
</tr>
<tr>
<td>Freeze branding</td>
<td>0.7</td>
<td>(±0.3)</td>
<td></td>
<td>6.3</td>
<td>(±1.3)</td>
<td>8.1</td>
<td>(±5.1)</td>
</tr>
<tr>
<td>Other methods of branding</td>
<td>0.3</td>
<td>(±0.1)</td>
<td></td>
<td>2.9</td>
<td>(±0.8)</td>
<td>9.2</td>
<td>(±4.9)</td>
</tr>
<tr>
<td>Tattoo (other than tattoo for brucellosis)</td>
<td>2.2</td>
<td>(±0.5)</td>
<td>17.2</td>
<td>(±2.5)</td>
<td>38.5</td>
<td>(±7.5)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1.6</td>
<td>(±0.5)</td>
<td></td>
<td>14.2</td>
<td>(±2.0)</td>
<td>14.4</td>
<td>(±4.7)</td>
</tr>
<tr>
<td>None</td>
<td>7.4</td>
<td>(±1.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
<td></td>
<td>100.0</td>
<td></td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
D. Dairy Heifers (continued)

b. Which is the most common type of identification used?

<table>
<thead>
<tr>
<th>Identification Type</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
<th>Percent of Animals</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ear tags (all kinds)</td>
<td>(±1.6)</td>
<td>85.0</td>
<td>(±1.2)</td>
<td></td>
</tr>
<tr>
<td>Collars</td>
<td>1.3 (±0.4)</td>
<td>1.1</td>
<td>(±0.4)</td>
<td></td>
</tr>
<tr>
<td>Photograph or sketch</td>
<td>4.7 (±0.9)</td>
<td>3.3</td>
<td>(±0.6)</td>
<td></td>
</tr>
<tr>
<td>Freeze branding</td>
<td>0.9 (±0.3)</td>
<td>1.2</td>
<td>(±0.3)</td>
<td></td>
</tr>
<tr>
<td>Other methods of branding</td>
<td>0.6 (±0.2)</td>
<td>0.8</td>
<td>(±0.3)</td>
<td></td>
</tr>
<tr>
<td>Tattoo (other than tattoo for brucellosis)</td>
<td>2.6 (±0.5)</td>
<td>2.5</td>
<td>(±0.4)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2.1 (±0.5)</td>
<td>1.7</td>
<td>(±0.4)</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>7.3 (±1.2)</td>
<td>4.4</td>
<td>(±0.7)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. a. What is the average age of the heifers at time of first calving?

Average Age (Months) Standard Error
25.9 (±0.1)

b. What is their average weight? (Answers were usually estimated.)

Average Weight (Pounds) Standard Error
1,109.1 (±4.2)

E. Births, Illnesses, and Deaths

1. a. How many dairy calves were born alive or moved onto this operation during the last 12 months as a percent of dairy cows plus dairy heifers of breeding age or older?

Percent Calf Crop Standard Error
91.4 (±1.6)

b. What is the most common illness among dairy heifer calves from birth to weaning of those born alive or moved onto this operation during the past 3 months? (Top two health problems.)

<table>
<thead>
<tr>
<th>Health Problem</th>
<th>Percent of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scours, diarrhea</td>
<td>53.8 (±1.8)</td>
</tr>
<tr>
<td>Respiratory problems</td>
<td>12.1 (±1.1)</td>
</tr>
<tr>
<td>Trauma</td>
<td>0.2 (±0.1)</td>
</tr>
<tr>
<td>Joint or naval problems</td>
<td>1.1 (±0.3)</td>
</tr>
<tr>
<td>Other</td>
<td>1.9 (±0.5)</td>
</tr>
<tr>
<td>No reason/unknown</td>
<td>3.4 (±0.8)</td>
</tr>
<tr>
<td>No illness or deaths</td>
<td>27.5 (±1.7)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

USDA:APHIS:VS 11
E. Births, Illnesses, and Deaths (continued)

2. a. During the past 3 months, how many dairy heifer calves from birth to weaning died on this operation as a percent of those born alive or moved onto the operation?

<table>
<thead>
<tr>
<th>Percent Preweaning Heifer Death Loss</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.4</td>
<td>(±0.4)</td>
</tr>
</tbody>
</table>

b. What was the leading cause of death among dairy heifer calves from birth to weaning of those born alive or moved onto this operation during the past 3 months? (Top two causes.)

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Cause of Death</th>
<th>First</th>
<th>Standard Error</th>
<th>Second</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scours, diarrhea</td>
<td>49.6</td>
<td>(±2.6)</td>
<td>4.2</td>
<td>(±0.8)</td>
</tr>
<tr>
<td></td>
<td>Respiratory problems</td>
<td>17.9</td>
<td>(±1.8)</td>
<td>9.3</td>
<td>(±1.5)</td>
</tr>
<tr>
<td></td>
<td>Trauma</td>
<td>2.3</td>
<td>(±0.7)</td>
<td>0.9</td>
<td>(±0.5)</td>
</tr>
<tr>
<td></td>
<td>Joint or naval problems</td>
<td>2.8</td>
<td>(±0.8)</td>
<td>0.8</td>
<td>(±0.3)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>13.8</td>
<td>(±2.0)</td>
<td>2.8</td>
<td>(±0.9)</td>
</tr>
<tr>
<td></td>
<td>No reason/unknown</td>
<td>13.6</td>
<td>(±1.9)</td>
<td>10.2</td>
<td>(±1.4)</td>
</tr>
<tr>
<td></td>
<td>No deaths</td>
<td>0.0</td>
<td>(±0.0)</td>
<td>71.8</td>
<td>(±2.2)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

c. Percent of deaths by cause:

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Percent of Total Deaths</th>
<th>Standard Error</th>
<th>Percent of Calves Born</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scours, diarrhea</td>
<td>52.2 (%) (±2.6)</td>
<td>4.4 (%) (±0.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory problems</td>
<td>21.3 (%) (±1.6)</td>
<td>1.8 (%) (±0.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trauma</td>
<td>2.4 (%) (±0.8)</td>
<td>0.2 (%) (±0.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joint or naval problems</td>
<td>2.2 (%) (±0.7)</td>
<td>0.2 (%) (±0.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>11.7 (%) (±1.8)</td>
<td>1.0 (%) (±0.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No reason/unknown</td>
<td>10.2 (%) (±1.4)</td>
<td>0.8 (%) (±0.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0 (%)</td>
<td>8.4 (%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. a. During the past 12 months, how many heifers from weaning age to first calving died on this operation as a percent of heifer inventory (weaning age to calving)?

<table>
<thead>
<tr>
<th>Percent Death Loss</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>(±0.1)</td>
</tr>
</tbody>
</table>

b. What was the leading cause of death among heifers from weaning age to first calving that died on this operation during the past 12 months? (Top two causes.)

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Cause of Death</th>
<th>First</th>
<th>Standard Error</th>
<th>Second</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scours, diarrhea</td>
<td>10.8</td>
<td>(±1.4)</td>
<td>3.1</td>
<td>(±0.8)</td>
</tr>
<tr>
<td></td>
<td>Respiratory problems</td>
<td>30.9</td>
<td>(±2.5)</td>
<td>4.6</td>
<td>(±0.9)</td>
</tr>
<tr>
<td></td>
<td>Trauma</td>
<td>8.7</td>
<td>(±1.3)</td>
<td>2.4</td>
<td>(±0.6)</td>
</tr>
<tr>
<td></td>
<td>Joint or naval problems</td>
<td>1.8</td>
<td>(±0.7)</td>
<td>0.4</td>
<td>(±0.3)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>26.1</td>
<td>(±2.2)</td>
<td>6.1</td>
<td>(±1.1)</td>
</tr>
<tr>
<td></td>
<td>No reason/unknown</td>
<td>21.7</td>
<td>(±2.2)</td>
<td>14.2</td>
<td>(±1.9)</td>
</tr>
<tr>
<td></td>
<td>No deaths</td>
<td>0.0</td>
<td>(±0.0)</td>
<td>69.2</td>
<td>(±2.3)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
E. Births, Illnesses, and Deaths (continued)

c. Percent of deaths by cause:

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Percent of Total Deaths</th>
<th>Percent of Heifer Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard First</td>
<td>Standard Percent</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>Error</td>
</tr>
<tr>
<td>Scours, diarrhea</td>
<td>18.4 (±2.6)</td>
<td>0.4 (±0.1)</td>
</tr>
<tr>
<td>Respiratory problems</td>
<td>34.8 (±3.5)</td>
<td>0.8 (±0.1)</td>
</tr>
<tr>
<td>Trauma</td>
<td>6.7 (±0.9)</td>
<td>0.1 (±0.0)</td>
</tr>
<tr>
<td>Joint or naval problems</td>
<td>1.0 (±0.4)</td>
<td>0.0 (±0.0)</td>
</tr>
<tr>
<td>Other</td>
<td>20.8 (±2.0)</td>
<td>0.5 (±0.0)</td>
</tr>
<tr>
<td>No reason/unknown</td>
<td>18.3 (±2.1)</td>
<td>0.4 (±0.0)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>2.2 (±0.1)</td>
</tr>
</tbody>
</table>

F. Housing

1. Where are heifers on liquid ration kept during the:

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>NO BUILDING</th>
<th>HUTCH</th>
<th>COW BARN</th>
<th>OTHER BARN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(run loose in</td>
<td>Individual</td>
<td>Super</td>
<td>Individual</td>
</tr>
<tr>
<td></td>
<td>lot or pasture)</td>
<td>(group)</td>
<td>Individual</td>
<td>Group</td>
</tr>
<tr>
<td>Winter months?</td>
<td>1.2 (±0.3)</td>
<td>30.5</td>
<td>2.2 (±1.6)</td>
<td>14.6 (±0.4)</td>
</tr>
<tr>
<td>Standard Error</td>
<td>±0.3</td>
<td></td>
<td>±1.6</td>
<td>±0.4</td>
</tr>
<tr>
<td>Summer months?</td>
<td>5.6 (±0.8)</td>
<td>32.4</td>
<td>2.8 (±1.6)</td>
<td>13.6 (±0.5)</td>
</tr>
<tr>
<td>Standard Error</td>
<td>±0.8</td>
<td></td>
<td>±1.6</td>
<td>±0.5</td>
</tr>
</tbody>
</table>

2. How old is the structure?

<table>
<thead>
<tr>
<th>Material</th>
<th>Hutches?</th>
<th>Individual</th>
<th>Super</th>
<th>Cow</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5 years</td>
<td>59.6</td>
<td>54.7</td>
<td>3.2</td>
<td>12.6</td>
<td></td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±2.7)</td>
<td>(±8.5)</td>
<td>(±0.9)</td>
<td>(±1.9)</td>
<td></td>
</tr>
<tr>
<td>5-10 years</td>
<td>34.3</td>
<td>21.6</td>
<td>5.7</td>
<td>15.5</td>
<td></td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±2.7)</td>
<td>(±6.1)</td>
<td>(±1.5)</td>
<td>(±2.2)</td>
<td></td>
</tr>
<tr>
<td>11-20 years</td>
<td>5.2</td>
<td>13.5</td>
<td>10.0</td>
<td>21.5</td>
<td></td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±1.0)</td>
<td>(±6.2)</td>
<td>(±1.6)</td>
<td>(±2.4)</td>
<td></td>
</tr>
<tr>
<td>&gt; 20 years</td>
<td>0.9</td>
<td>10.2</td>
<td>81.1</td>
<td>50.4</td>
<td></td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±0.4)</td>
<td>(±6.0)</td>
<td>(±2.2)</td>
<td>(±2.9)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
F. Housing (continued)

3. What material is used in the framing for the:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td>53.5</td>
<td>83.7</td>
<td>88.6</td>
<td>89.5</td>
<td>(±2.9)</td>
</tr>
<tr>
<td>Concrete</td>
<td>0.0</td>
<td>0.0</td>
<td>9.1</td>
<td>3.3</td>
<td>(±0.0)</td>
</tr>
<tr>
<td>Stone</td>
<td>0.0</td>
<td>0.0</td>
<td>0.5</td>
<td>1.4</td>
<td>(±0.0)</td>
</tr>
<tr>
<td>Metal</td>
<td>4.0</td>
<td>12.1</td>
<td>1.8</td>
<td>5.4</td>
<td>(±0.9)</td>
</tr>
<tr>
<td>Fiberglass/plastic</td>
<td>42.5</td>
<td>4.2</td>
<td>0.0</td>
<td>0.4</td>
<td>(±2.9)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

4. What material is used for the exterior walls of the:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.6</td>
<td>(±0.1)</td>
</tr>
<tr>
<td>Wood</td>
<td>48.2</td>
<td>55.2</td>
<td>52.1</td>
<td>48.5</td>
<td>(±2.9)</td>
</tr>
<tr>
<td>Concrete</td>
<td>0.0</td>
<td>1.0</td>
<td>26.1</td>
<td>10.9</td>
<td>(±0.0)</td>
</tr>
<tr>
<td>Stone</td>
<td>0.0</td>
<td>0.0</td>
<td>7.1</td>
<td>2.9</td>
<td>(±0.0)</td>
</tr>
<tr>
<td>Metal</td>
<td>7.3</td>
<td>39.6</td>
<td>14.3</td>
<td>36.0</td>
<td>(±1.5)</td>
</tr>
<tr>
<td>Fiberglass/plastic</td>
<td>44.2</td>
<td>4.1</td>
<td>0.1</td>
<td>0.4</td>
<td>(±2.9)</td>
</tr>
<tr>
<td>Asphalt/tar</td>
<td>0.2</td>
<td>0.0</td>
<td>0.2</td>
<td>0.7</td>
<td>(±0.2)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
F. Housing (continued)

5. What kind of floor is in the:  

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td>3.1</td>
<td>8.5</td>
<td>2.1</td>
<td>3.5</td>
<td>±0.8</td>
</tr>
<tr>
<td>Concrete</td>
<td>5.5</td>
<td>14.1</td>
<td>90.5</td>
<td>75.4</td>
<td>±1.7</td>
</tr>
<tr>
<td>Stone/gravel</td>
<td>14.5</td>
<td>16.1</td>
<td>1.6</td>
<td>2.7</td>
<td>±2.0</td>
</tr>
<tr>
<td>Metal</td>
<td>0.5</td>
<td>1.3</td>
<td>0.5</td>
<td>0.1</td>
<td>±0.2</td>
</tr>
<tr>
<td>Fiberglass/plastic</td>
<td>0.0</td>
<td>2.1</td>
<td>0.3</td>
<td>0.3</td>
<td>±0.0</td>
</tr>
<tr>
<td>Dirt/sand</td>
<td>76.4</td>
<td>57.9</td>
<td>5.0</td>
<td>18.0</td>
<td>±2.5</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>±8.3</td>
</tr>
</tbody>
</table>

G. General Operation

1. Who makes the day-to-day decisions for this operation?

<table>
<thead>
<tr>
<th>Person(s)</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>One individual</td>
<td>72.7</td>
<td>±1.5</td>
</tr>
<tr>
<td>Partners</td>
<td>26.0</td>
<td>±1.4</td>
</tr>
<tr>
<td>Hired manager</td>
<td>1.3</td>
<td>±0.4</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

2. What is the operator’s highest level of formal education?

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade school</td>
<td>10.4</td>
<td>±1.0</td>
</tr>
<tr>
<td>High school</td>
<td>59.5</td>
<td>±1.8</td>
</tr>
<tr>
<td>Some college</td>
<td>13.3</td>
<td>±1.0</td>
</tr>
<tr>
<td>BA or BS degree</td>
<td>9.5</td>
<td>±1.1</td>
</tr>
<tr>
<td>Graduate school</td>
<td>1.3</td>
<td>±0.3</td>
</tr>
<tr>
<td>Technical school</td>
<td>6.0</td>
<td>±0.9</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

3. What type of business is this operation?

<table>
<thead>
<tr>
<th>Business Type</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sole proprietorship</td>
<td>72.9</td>
<td>±1.5</td>
</tr>
<tr>
<td>Partnership</td>
<td>23.6</td>
<td>±1.5</td>
</tr>
<tr>
<td>Corporation</td>
<td>3.5</td>
<td>±0.4</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
G. General Operation (continued)

4. a. What record-keeping systems are used for the dairy operation?

<table>
<thead>
<tr>
<th>Record-Keeping System</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand written such as a ledger or notebook</td>
<td>88.3</td>
<td>(±1.0)</td>
</tr>
<tr>
<td>Computer located on the operation</td>
<td>13.7</td>
<td>(±1.1)</td>
</tr>
<tr>
<td>Computer located off the operation</td>
<td>11.8</td>
<td>(±1.2)</td>
</tr>
<tr>
<td>Dairy Herd Improvement Association (DHIA)</td>
<td>57.5</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>Other system</td>
<td>11.4</td>
<td>(±1.1)</td>
</tr>
</tbody>
</table>

b. Which of the above systems is used for most of the record-keeping?

<table>
<thead>
<tr>
<th>Record-Keeping System</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand written such as a ledger or notebook</td>
<td>60.4</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>Computer located on the operation</td>
<td>6.8</td>
<td>(±1.0)</td>
</tr>
<tr>
<td>Computer located off the operation</td>
<td>2.8</td>
<td>(±0.7)</td>
</tr>
<tr>
<td>Dairy Herd Improvement Association (DHIA)</td>
<td>27.8</td>
<td>(±1.5)</td>
</tr>
<tr>
<td>Other system</td>
<td>2.2</td>
<td>(±0.5)</td>
</tr>
</tbody>
</table>

Total 100.0

5. a. Which sources of information are used for making health care decisions for dairy heifers? (Top three answers.)

<table>
<thead>
<tr>
<th>Source</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative Extension Service/university</td>
<td>7.5</td>
<td>(±1.0)</td>
</tr>
<tr>
<td>Veterinarian</td>
<td>83.7</td>
<td>(±1.3)</td>
</tr>
<tr>
<td>Medical supply salespersons</td>
<td>1.2</td>
<td>(±0.4)</td>
</tr>
<tr>
<td>Producer association</td>
<td>0.1</td>
<td>(±0.0)</td>
</tr>
<tr>
<td>Other producers</td>
<td>0.5</td>
<td>(±0.3)</td>
</tr>
<tr>
<td>Consultants</td>
<td>1.3</td>
<td>(±0.4)</td>
</tr>
<tr>
<td>Dairy magazines or agricultural journals</td>
<td>3.1</td>
<td>(±0.6)</td>
</tr>
<tr>
<td>Radio, television, or newspaper</td>
<td>0.0</td>
<td>(±0.0)</td>
</tr>
<tr>
<td>Other</td>
<td>2.6</td>
<td>(±0.5)</td>
</tr>
</tbody>
</table>

Total 100.0

b. Which of the above sources are the most important?

<table>
<thead>
<tr>
<th>Source</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative Extension Service/university</td>
<td>4.0</td>
<td>(±0.9)</td>
</tr>
<tr>
<td>Veterinarian</td>
<td>83.4</td>
<td>(±1.4)</td>
</tr>
<tr>
<td>Medical supply salespersons</td>
<td>1.4</td>
<td>(±0.5)</td>
</tr>
<tr>
<td>Producer association</td>
<td>0.1</td>
<td>(±0.1)</td>
</tr>
<tr>
<td>Other producers</td>
<td>0.9</td>
<td>(±0.4)</td>
</tr>
<tr>
<td>Consultants</td>
<td>1.7</td>
<td>(±0.4)</td>
</tr>
<tr>
<td>Dairy magazines or agricultural journals</td>
<td>4.0</td>
<td>(±0.7)</td>
</tr>
<tr>
<td>Radio, television, or newspaper</td>
<td>0.0</td>
<td>(±0.0)</td>
</tr>
<tr>
<td>Other</td>
<td>4.5</td>
<td>(±0.7)</td>
</tr>
</tbody>
</table>

Total 100.0
G. General Operation (continued)

6. a. Who has the major responsibility for feeding and health care of the dairy heifers before they are weaned (from liquid ration)?

<table>
<thead>
<tr>
<th>Person</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator</td>
<td>48.4 (±1.8)</td>
<td></td>
</tr>
<tr>
<td>Spouse</td>
<td>24.3 (±1.5)</td>
<td></td>
</tr>
<tr>
<td>Son or daughter</td>
<td>15.3 (±1.2)</td>
<td></td>
</tr>
<tr>
<td>Someone hired especially for the job</td>
<td>3.4 (±0.5)</td>
<td></td>
</tr>
<tr>
<td>General farm worker with multiple tasks</td>
<td>4.8 (±0.7)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>3.8 (±0.6)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

b. Is the person described above male or female?

<table>
<thead>
<tr>
<th>Gender</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>69.6 (±1.6)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>30.4 (±1.6)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Dairy Heifer Health Report

A. Biosecurity

1. a. During the last 12 months, how many animals (both beef and dairy) in the following categories were brought onto the operation?

<table>
<thead>
<tr>
<th>Class of Animal</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calves not yet weaned</td>
<td>90.4 (±1.2)</td>
<td>9.6 (±1.2)</td>
</tr>
<tr>
<td>Heifers weaned but not yet bred</td>
<td>88.8 (±1.3)</td>
<td>11.2 (±1.3)</td>
</tr>
<tr>
<td>Bred heifers not yet calved</td>
<td>80.7 (±1.6)</td>
<td>19.3 (±1.6)</td>
</tr>
<tr>
<td>Lactating cows and/or heifers</td>
<td>74.2 (±2.0)</td>
<td>25.8 (±2.0)</td>
</tr>
<tr>
<td>Dry cows</td>
<td>90.0 (±1.4)</td>
<td>10.0 (±1.4)</td>
</tr>
<tr>
<td>Bulls</td>
<td>77.6 (±1.7)</td>
<td>22.4 (±1.7)</td>
</tr>
<tr>
<td>Other cattle</td>
<td>96.7 (±0.7)</td>
<td>3.3 (±0.7)</td>
</tr>
</tbody>
</table>

b. During the past 12 months, were all new animals (both beef and dairy) in the following categories quarantined upon arrival at the operation?

<table>
<thead>
<tr>
<th>Class of Animal</th>
<th>Operations Bringing on at Least One Animal</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calves not yet weaned</td>
<td>27.9 (±6.1)</td>
<td>40.3 (±8.0)</td>
</tr>
<tr>
<td>Heifers weaned but not yet bred</td>
<td>23.1 (±5.1)</td>
<td>24.3 (±3.7)</td>
</tr>
<tr>
<td>Bred heifers not yet calved</td>
<td>12.8 (±3.2)</td>
<td>14.4 (±2.4)</td>
</tr>
<tr>
<td>Lactating cows and/or heifers</td>
<td>5.5 (±1.9)</td>
<td>18.2 (±7.3)</td>
</tr>
<tr>
<td>Dry cows</td>
<td>9.0 (±4.4)</td>
<td>17.8 (±4.4)</td>
</tr>
<tr>
<td>Bulls</td>
<td>12.5 (±3.0)</td>
<td>19.4 (±4.0)</td>
</tr>
<tr>
<td>Other cattle</td>
<td>34.0 (±9.6)</td>
<td>65.8 (±30.8)</td>
</tr>
</tbody>
</table>
A. Biosecurity (continued)

2. Do any of the following animals have physical contact with female dairy animals and/or contact with their feed? (Physical contact = possible nose-to-nose contact or sniffing/touching/licking each other through a fence.)

<table>
<thead>
<tr>
<th>Animal Types</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chickens/other poultry</td>
<td>10.6 ± 1.4</td>
<td></td>
</tr>
<tr>
<td>Horses</td>
<td>15.0 ± 1.6</td>
<td></td>
</tr>
<tr>
<td>Pigs</td>
<td>5.5 ± 1.0</td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td>3.0 ± 0.6</td>
<td></td>
</tr>
<tr>
<td>Goats</td>
<td>3.1 ± 0.7</td>
<td></td>
</tr>
<tr>
<td>Beef cattle</td>
<td>17.3 ± 1.7</td>
<td></td>
</tr>
<tr>
<td>Deer</td>
<td>56.1 ± 2.2</td>
<td></td>
</tr>
</tbody>
</table>

3. Are the cows’ udders washed prior to calving?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>5.1 ± 1.1</td>
</tr>
<tr>
<td>No</td>
<td>94.9 ± 1.1</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4. Is antiseptic routinely applied to the navels of newborn calves?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>46.6 ± 2.3</td>
</tr>
<tr>
<td>No</td>
<td>53.4 ± 2.3</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>
A. Biosecurity (continued)

5. With regard to the hygiene of calf feeding utensils (buckets, bottles, nipples, calf feeders, and esophageal feeders) for calves up to 2 weeks of age, which of the following best describes the practice on the operation?

<table>
<thead>
<tr>
<th>Practices</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utensils are not shared between calves</td>
<td>15.5</td>
<td>(±1.6)</td>
</tr>
<tr>
<td>Utensils are shared but not routinely rinsed or washed between calves</td>
<td>36.8</td>
<td>(±2.1)</td>
</tr>
<tr>
<td>Utensils are shared and routinely rinsed with water only between calves</td>
<td>29.8</td>
<td>(±2.0)</td>
</tr>
<tr>
<td>Utensils are shared and routinely washed and/or sanitized between calves</td>
<td>17.9</td>
<td>(±1.7)</td>
</tr>
</tbody>
</table>

6. After separation from the dam, do heifer calves not yet weaned have physical contact with any of the following groups? (Physical contact = possible nose-to-nose contact or sniffing/touching/licking each other through a fence.)

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Percent of Operations Yes</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weaned calves less than approximately 4 months of age</td>
<td>31.5</td>
<td>(±2.0)</td>
</tr>
<tr>
<td>Calves from approximately 4 months of age to breeding</td>
<td>10.4</td>
<td>(±1.3)</td>
</tr>
<tr>
<td>Bred heifers not yet calved</td>
<td>4.6</td>
<td>(±0.9)</td>
</tr>
<tr>
<td>Adult cattle</td>
<td>10.2</td>
<td>(±1.3)</td>
</tr>
</tbody>
</table>

B. Maternity Hygiene

<table>
<thead>
<tr>
<th>BUILDING</th>
<th>NO BUILDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feestall</td>
<td>Drylot</td>
</tr>
<tr>
<td>Individual Animal Area</td>
<td>Individual Animal Area</td>
</tr>
<tr>
<td>Multiple Animal Area</td>
<td>Multiple Animal Area</td>
</tr>
<tr>
<td>Individual Multi.</td>
<td>Individual Multi.</td>
</tr>
<tr>
<td>Animal Area</td>
<td>Animal</td>
</tr>
<tr>
<td>Tiestall or Stanchion</td>
<td>Animal</td>
</tr>
<tr>
<td>Individual Multi.</td>
<td>Animal</td>
</tr>
<tr>
<td>Animal Area</td>
<td>Animal</td>
</tr>
<tr>
<td>Stanchion</td>
<td>Animal</td>
</tr>
</tbody>
</table>

1. For the next 3 months, where will calves be born?

<table>
<thead>
<tr>
<th>Location</th>
<th>Percent of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Drylot</td>
</tr>
<tr>
<td>Location</td>
<td>Pasture</td>
</tr>
<tr>
<td>Location</td>
<td>4.8</td>
</tr>
<tr>
<td>Location</td>
<td>(±0.8)</td>
</tr>
</tbody>
</table>

2. Will the calving area be separate from the dry cows?

<table>
<thead>
<tr>
<th>Yes</th>
<th>Percent of Operations Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Drylot</td>
</tr>
<tr>
<td>Yes</td>
<td>Pasture</td>
</tr>
<tr>
<td>Yes</td>
<td>48.9</td>
</tr>
<tr>
<td>Yes</td>
<td>(±8.6)</td>
</tr>
</tbody>
</table>

Stan. Error
### B. Maternity Hygiene (continued)

<table>
<thead>
<tr>
<th>Time in Calving Area</th>
<th>BUILDING</th>
<th>NO BUILDING</th>
<th>Drylot</th>
<th>Pasture</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3 days</td>
<td>33.8</td>
<td>65.7</td>
<td>20.9</td>
<td>16.1</td>
</tr>
<tr>
<td>Stan. Error</td>
<td>±8.0</td>
<td>±3.3</td>
<td>±3.6</td>
<td>±3.0</td>
</tr>
<tr>
<td>3-5 days</td>
<td>11.7</td>
<td>19.1</td>
<td>9.3</td>
<td>7.8</td>
</tr>
<tr>
<td>Stan. Error</td>
<td>±5.9</td>
<td>±3.0</td>
<td>±2.1</td>
<td>±2.2</td>
</tr>
<tr>
<td>6-10 days</td>
<td>16.7</td>
<td>7.6</td>
<td>10.9</td>
<td>6.7</td>
</tr>
<tr>
<td>Stan. Error</td>
<td>±6.0</td>
<td>±1.8</td>
<td>±2.9</td>
<td>±2.0</td>
</tr>
<tr>
<td>&gt;10 days</td>
<td>37.8</td>
<td>7.6</td>
<td>58.9</td>
<td>69.4</td>
</tr>
<tr>
<td>Stan. Error</td>
<td>±8.6</td>
<td>±1.7</td>
<td>±4.8</td>
<td>±3.9</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

#### 3. How long will the dams be in the calving area prior to calving?

#### 4. a. Will bedding be used in the calving area?

<table>
<thead>
<tr>
<th>Percent of Operations Using Bedding by Facility Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
</tbody>
</table>

#### b. If bedding is used, what is the primary type to be used?

<table>
<thead>
<tr>
<th>Percent of Producers Using Bedding by Facility Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straw/hay</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Sand</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Sawdust/wood shavings</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Newspaper</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Corn cobs/stalks</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
B. Maternity Hygiene (continued)

<table>
<thead>
<tr>
<th>BUILDING</th>
<th>DRYLOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freestall</td>
<td>Individual</td>
</tr>
<tr>
<td>Animal Area</td>
<td>Multiple</td>
</tr>
<tr>
<td>Tiestall or Animal</td>
<td>Area</td>
</tr>
<tr>
<td>Stanchion</td>
<td>Individual</td>
</tr>
<tr>
<td>Animal</td>
<td>Multiple</td>
</tr>
</tbody>
</table>

5. a. Will the calving facilities be routinely emptied of animals and cleaned?

<table>
<thead>
<tr>
<th>Percent of Producers Indicating Yes by Facility Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>64.1</td>
</tr>
<tr>
<td>76.5</td>
</tr>
<tr>
<td>55.6</td>
</tr>
<tr>
<td>82.7</td>
</tr>
<tr>
<td>46.2</td>
</tr>
<tr>
<td>22.0</td>
</tr>
<tr>
<td>Standard Error (±8.3)</td>
</tr>
<tr>
<td>(±2.7)</td>
</tr>
<tr>
<td>(±5.3)</td>
</tr>
<tr>
<td>(±3.6)</td>
</tr>
<tr>
<td>(±15.7)</td>
</tr>
<tr>
<td>(±4.1)</td>
</tr>
</tbody>
</table>

b. On an average, how many calvings occur between the cleaning of the calving facilities?

<table>
<thead>
<tr>
<th>Number of Calvings</th>
<th>Percent of Producers Using Facility Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>53.6</td>
</tr>
<tr>
<td>2-3</td>
<td>46.0</td>
</tr>
<tr>
<td>4-6</td>
<td>16.8</td>
</tr>
<tr>
<td>&gt;6</td>
<td>89.3</td>
</tr>
<tr>
<td>Not cleaned</td>
<td>34.2</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±8.6)</td>
</tr>
<tr>
<td>(±3.3)</td>
<td></td>
</tr>
<tr>
<td>(±4.0)</td>
<td></td>
</tr>
<tr>
<td>(±3.1)</td>
<td></td>
</tr>
<tr>
<td>(±15.5)</td>
<td></td>
</tr>
<tr>
<td>(±2.1)</td>
<td></td>
</tr>
<tr>
<td>11.2</td>
<td></td>
</tr>
<tr>
<td>14.6</td>
<td></td>
</tr>
<tr>
<td>38.8</td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>26.8</td>
<td></td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±5.4)</td>
</tr>
<tr>
<td>(±2.8)</td>
<td></td>
</tr>
<tr>
<td>(±2.6)</td>
<td></td>
</tr>
<tr>
<td>(±0.8)</td>
<td></td>
</tr>
<tr>
<td>(±11.8)</td>
<td></td>
</tr>
<tr>
<td>(±2.5)</td>
<td></td>
</tr>
<tr>
<td>7.7</td>
<td></td>
</tr>
<tr>
<td>15.1</td>
<td></td>
</tr>
<tr>
<td>17.0</td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±3.8)</td>
</tr>
<tr>
<td>(±2.4)</td>
<td></td>
</tr>
<tr>
<td>(±3.4)</td>
<td></td>
</tr>
<tr>
<td>(±0.7)</td>
<td></td>
</tr>
<tr>
<td>(±2.6)</td>
<td></td>
</tr>
<tr>
<td>(±2.5)</td>
<td></td>
</tr>
<tr>
<td>&gt;6</td>
<td>11.2</td>
</tr>
<tr>
<td>14.6</td>
<td></td>
</tr>
<tr>
<td>38.8</td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>26.8</td>
<td></td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±4.5)</td>
</tr>
<tr>
<td>(±2.2)</td>
<td></td>
</tr>
<tr>
<td>(±4.9)</td>
<td></td>
</tr>
<tr>
<td>(±2.5)</td>
<td></td>
</tr>
<tr>
<td>(±2.7)</td>
<td></td>
</tr>
<tr>
<td>(±4.6)</td>
<td></td>
</tr>
<tr>
<td>Not cleaned</td>
<td>18.8</td>
</tr>
<tr>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>16.3</td>
<td></td>
</tr>
<tr>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>35.9</td>
<td></td>
</tr>
<tr>
<td>57.3</td>
<td></td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±6.4)</td>
</tr>
<tr>
<td>(±1.2)</td>
<td></td>
</tr>
<tr>
<td>(±4.9)</td>
<td></td>
</tr>
<tr>
<td>(±1.8)</td>
<td></td>
</tr>
<tr>
<td>(±5.5)</td>
<td></td>
</tr>
<tr>
<td>(±5.2)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
<tr>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

C. What is the primary cleaning method to be used (for those that clean calving facilities)?

<table>
<thead>
<tr>
<th>Percent of Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of soiled</td>
</tr>
<tr>
<td>bedding only</td>
</tr>
<tr>
<td>19.3</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>(±2.9)</td>
</tr>
<tr>
<td>(±3.3)</td>
</tr>
<tr>
<td>(±4.6)</td>
</tr>
<tr>
<td>(±7.1)</td>
</tr>
<tr>
<td>(±7.7)</td>
</tr>
<tr>
<td>Removal of all bedding</td>
</tr>
<tr>
<td>46.5</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>(±3.2)</td>
</tr>
<tr>
<td>(±4.1)</td>
</tr>
<tr>
<td>(±4.5)</td>
</tr>
<tr>
<td>(±17.1)</td>
</tr>
<tr>
<td>(±6.5)</td>
</tr>
<tr>
<td>Removal of bedding and washed with water</td>
</tr>
<tr>
<td>9.6</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>(±0.7)</td>
</tr>
<tr>
<td>(±0.4)</td>
</tr>
<tr>
<td>(±0.7)</td>
</tr>
<tr>
<td>(±0.0)</td>
</tr>
<tr>
<td>(±0.0)</td>
</tr>
<tr>
<td>Removal of bedding and washed with disinfectant0.5</td>
</tr>
<tr>
<td>4.5</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>(±1.4)</td>
</tr>
<tr>
<td>(±0.9)</td>
</tr>
<tr>
<td>(±2.6)</td>
</tr>
<tr>
<td>(±0.0)</td>
</tr>
<tr>
<td>(±0.0)</td>
</tr>
<tr>
<td>Other (such as scraping)</td>
</tr>
<tr>
<td>24.1</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>(±1.5)</td>
</tr>
<tr>
<td>(±2.6)</td>
</tr>
<tr>
<td>(±2.0)</td>
</tr>
<tr>
<td>(±8.6)</td>
</tr>
<tr>
<td>(±8.4)</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>100.0</td>
</tr>
<tr>
<td>100.0</td>
</tr>
<tr>
<td>100.0</td>
</tr>
<tr>
<td>100.0</td>
</tr>
<tr>
<td>100.0</td>
</tr>
</tbody>
</table>

6. Will lime be routinely used in the calving area?

<table>
<thead>
<tr>
<th>Percent of Producers Using Lime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>22.0</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>(±3.3)</td>
</tr>
<tr>
<td>(±5.2)</td>
</tr>
<tr>
<td>(±4.3)</td>
</tr>
<tr>
<td>(±1.8)</td>
</tr>
<tr>
<td>(±3.0)</td>
</tr>
</tbody>
</table>
B. Maternity Hygiene (continued)

<table>
<thead>
<tr>
<th>BUILDING</th>
<th>NO BUILDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freestall</td>
<td>Drylot</td>
</tr>
<tr>
<td>Individual</td>
<td>Animal Area</td>
</tr>
<tr>
<td>Stanchion</td>
<td>Animal</td>
</tr>
</tbody>
</table>

7. How long will the calf remain in the calving area (number of days)?

<table>
<thead>
<tr>
<th>Average Number of Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days</td>
</tr>
<tr>
<td>Standard Error (±)</td>
</tr>
</tbody>
</table>

C. Preweaning Hygiene

<table>
<thead>
<tr>
<th>HUTCH</th>
<th>COW BARN</th>
<th>OTHER BARN</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Building</td>
<td>Individual</td>
<td>Group (Super)</td>
</tr>
</tbody>
</table>

1. a. After separation from the dam, where are heifer calves housed during the summer/warm months?

<table>
<thead>
<tr>
<th>Percent of Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
</tr>
<tr>
<td>Stan. Error</td>
</tr>
</tbody>
</table>

b. After separation from the dam, where are heifer calves housed during the winter/cold months?

<table>
<thead>
<tr>
<th>Percent of Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
</tr>
<tr>
<td>Stan. Error</td>
</tr>
</tbody>
</table>

c. What facilities are currently in use?

<table>
<thead>
<tr>
<th>Percent of Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
</tr>
<tr>
<td>Stan. Error</td>
</tr>
</tbody>
</table>

2. Of those facilities currently in use:

a. How many square feet are accessible to each calf inside the preweaning structures? (Total square feet of covered structure for each calf.)

<table>
<thead>
<tr>
<th>Average per Calf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square Feet</td>
</tr>
<tr>
<td>Stan. Error</td>
</tr>
</tbody>
</table>

b. How many square feet are accessible to each preweaned calf in the outside areas? (Total square feet of uncovered structure for each calf.)

<table>
<thead>
<tr>
<th>Average per Calf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square Feet</td>
</tr>
<tr>
<td>Stan. Error</td>
</tr>
</tbody>
</table>

3. a. What is the total number of preweaned calves currently in the preweaning facilities and outside access areas? (Total number of preweaned calves.)

<table>
<thead>
<tr>
<th>Average Number of Calves per Herd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
</tr>
<tr>
<td>Stan. Error</td>
</tr>
</tbody>
</table>
### C. Preweaning Hygiene (continued)

<table>
<thead>
<tr>
<th>HUTCH</th>
<th>COW BARN</th>
<th>OTHER BARN</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Building</td>
<td>Individual</td>
<td>Group</td>
</tr>
<tr>
<td>b. How many other livestock are currently in the preweaning facilities and outside access areas? (Livestock = cattle, sheep, horses, goats, and pigs.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average Number of Other Livestock per Herd</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>1.9</td>
<td>—</td>
</tr>
<tr>
<td>Std. Error</td>
<td>(±1.2)</td>
<td>—</td>
</tr>
</tbody>
</table>

4. a. Is bedding routinely used in facilities for heifer calves after separation from dam?  
- **Percent of Operations**
  - Yes: 51.4  96.3  96.9  95.6  97.0  98.5  94.2  94.9  93.2  
  - Stan. Error: (±17.5)  (±0.9)  (±1.4)  (±2.9)  (±2.0)  (±1.5)  (±1.4)  (±2.4)  (±4.9) 

b. If bedding is used, what is the primary type of bedding used?  
- **Percent of Operations**
  - Straw/hay: 83.7  86.9  86.3  75.2  86.0  79.1  74.4  80.5  79.9  
  - Sand: 16.3  0.2  0.4  0.0  0.6  0.1  0.0  0.1  0.0  
  - Sawdust/wood shavings: 0.0  10.1  12.5  19.4  11.7  18.7  14.1  10.7  16.8  
  - Newspaper: 0.0  0.9  0.0  2.2  0.6  2.1  4.3  0.0  2.4  
  - Corn cobs/stalks: 0.0  0.8  0.8  2.1  1.1  0.0  6.9  6.2  0.4  
  - Other: 0.0  1.1  0.0  1.1  0.0  0.0  0.3  2.5  0.5  
  - Total: 100.0  100.0  100.0  100.0  100.0  100.0  100.0  100.0  100.0  

5. a. Are the preweaning facilities routinely cleaned while calves are present?  
- **Percent of Operations**
  - Yes: 48.3  30.0  35.2  81.8  87.9  93.4  58.4  81.8  88.4  
  - Stan. Error: (±17.6)  (±3.5)  (±9.2)  (±4.0)  (±3.5)  (±2.7)  (±4.6)  (±4.2)  (±5.6) 

b. If the preweaning facilities are routinely cleaned, how often are they cleaned while calves are present?  
- **Cleaning Interval**
  - **Percent of Producers That Clean Preweaning Facilities**
  - Daily: 0.0  8.9  0.0  53.5  36.5  75.2  15.5  9.5  54.6  
  - Stan. Error: (±0.0)  (±3.5)  (±0.0)  (±7.6)  (±5.9)  (±4.7)  (±3.8)  (±4.4)  (±11.3) 
  - Weekly: 4.8  28.0  8.9  22.1  29.0  17.3  30.5  31.5  22.5  
  - Stan. Error: (±3.8)  (±6.8)  (±4.7)  (±6.2)  (±5.6)  (±4.1)  (±6.5)  (±29.1)  (±7.6) 
  - Biweekly: 71.9  12.9  15.1  15.0  13.9  4.4  26.3  11.2  4.7  
  - Stan. Error: (±19.1)  (±3.9)  (±10.9)  (±4.8)  (±3.8)  (±2.2)  (±5.4)  (±26.3)  (±2.2) 
  - Monthly: 23.3  50.2  76.0  9.4  20.6  3.1  27.7  47.8  18.2  
  - Stan. Error: (±17.9)  (±6.9)  (±11.9)  (±5.2)  (±5.4)  (±1.5)  (±4.8)  (±8.8)  (±7.8) 
  - Total: 100.0  100.0  100.0  100.0  100.0  100.0  100.0  100.0  100.0  

USDA:APHIS:VS 23
### C. Preweaning Hygiene (continued)

#### Percent of Producers That Clean Preweaning Facilities

<table>
<thead>
<tr>
<th>Cleaning Method</th>
<th>HUTCH</th>
<th>COW BARN</th>
<th>OTHER BARN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only soiled bedding removed</td>
<td>71.9</td>
<td>26.7</td>
<td>10.8</td>
</tr>
<tr>
<td>Stan. Error (±19.1)</td>
<td>(±6.6)</td>
<td>(±7.8)</td>
<td>(±3.7)</td>
</tr>
<tr>
<td>All bedding removed</td>
<td>19.4</td>
<td>45.2</td>
<td>63.1</td>
</tr>
<tr>
<td>Stan. Error (±17.1)</td>
<td>(±6.8)</td>
<td>(±7.6)</td>
<td>(±5.7)</td>
</tr>
<tr>
<td>All bedding removed and washed with water</td>
<td>0.0</td>
<td>4.9</td>
<td>14.6</td>
</tr>
<tr>
<td>Stan. Error (±0.0)</td>
<td>(±2.8)</td>
<td>(±1.5)</td>
<td>(±4.0)</td>
</tr>
<tr>
<td>All bedding removed and disinfectant applied</td>
<td>8.7</td>
<td>1.7</td>
<td>6.1</td>
</tr>
<tr>
<td>Stan. Error (±6.0)</td>
<td>(±3.6)</td>
<td>(±1.7)</td>
<td>(±3.4)</td>
</tr>
<tr>
<td>Other, such as scraping manure</td>
<td>11.6</td>
<td>7.4</td>
<td>9.2</td>
</tr>
<tr>
<td>Stan. Error (±3.6)</td>
<td>(±6.4)</td>
<td>(±4.0)</td>
<td>(±3.7)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

#### Percent of Producers Using Hutches

<table>
<thead>
<tr>
<th>Yes</th>
<th>43.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stan. Error</td>
<td>(±3.7)</td>
</tr>
</tbody>
</table>

#### Percent of Producers Using All-in/All-out

<table>
<thead>
<tr>
<th>Yes</th>
<th>25.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stan. Error</td>
<td>(±15.5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Yes</th>
<th>76.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stan. Error</td>
<td>(±21.8)</td>
</tr>
</tbody>
</table>

---

1 Based on two study participants.

2 Based on one study participant.

3 Based on two study participants.
### C. Preweaning Hygiene (continued)

<table>
<thead>
<tr>
<th>Cleaning Method</th>
<th><em>Hutch</em></th>
<th><em>Cow Barn</em></th>
<th><em>Other Barn</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Only soiled bedding removed</td>
<td>0.0  —  6.6  —  12.7 — 0.0  —  20.6 —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stan. Error</td>
<td>(±0.0) — (±6.8) — (±6.7) — (±0.0) — (±1.3) —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All bedding removed</td>
<td>0.0 — 72.0 — 66.2 — 100.0 — 52.7 —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stan. Error</td>
<td>(±0.0) — (±14.9) — (±9.4) — (±0.0) — (±12.9) —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All bedding removed and washed with water</td>
<td>0.0 — 0.0 — 8.3 — 0.0 — 0.0 —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stan. Error</td>
<td>(±0.0) — (±0.0) — (±5.7) — (±0.0) — (±0.0) —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All bedding removed and disinfectant applied</td>
<td>0.0 — 9.5 — 6.0 — 0.0 — 12.8 —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stan. Error</td>
<td>(±0.0) — (±7.1) — (±3.5) — (±0.0) — (±7.8) —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposed to sunlight</td>
<td>0.0 — 0.0 — 0.0 — 0.0 — 0.0 —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stan. Error</td>
<td>(±0.0) — (±0.0) — (±0.0) — (±0.0) — (±1.9) —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other, such as scraping manure</td>
<td>100.0 — 11.9 — 6.8 — 0.0 — 11.0 —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stan. Error</td>
<td>(±0.0) — (±10.1) — (±4.3) — (±0.0) — (±4.9) —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0 — 100.0 — 100.0 — 100.0 —</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. How many days are the facilities usually empty between groups?

<table>
<thead>
<tr>
<th>Average Days for Operations Using All-in/All-out</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.8 — 2.4 — 2.5 — 1.6 — 12.0 —</td>
</tr>
</tbody>
</table>

**D. Disease Agents**

1. During the last 6 months, have there been any health events involving the DIGESTIVE SYSTEM in heifers on this operation, such as scours, diarrhea, bloat, or hardware disease?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>75.9</td>
</tr>
<tr>
<td>No</td>
<td>24.1</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

b. Were specific diseases, agents, or causes identified?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>37.5</td>
</tr>
<tr>
<td>No</td>
<td>62.5</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

---

1 Based on two study participants.
D. Disease Agents (continued)

2. a. During the last 6 months, have there been any health events involving the RESPIRATORY SYSTEM in heifers on this operation, such as pneumonia, coughing, diphtheria, or sinus infection?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>52.8 (±2.2)</td>
</tr>
<tr>
<td>No</td>
<td>47.2 (±2.2)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

b. Were specific diseases, agents, or causes identified?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>16.9 (±1.9)</td>
</tr>
<tr>
<td>No</td>
<td>83.1 (±1.9)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

3. a. During the last 6 months, have there been any health events involving the MUSCLES, BONES, OR JOINTS in heifers on this operation, such as lameness, arthritis, abscesses, or sudden death?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>24.3 (±1.8)</td>
</tr>
<tr>
<td>No</td>
<td>75.7 (±1.8)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

b. Were specific diseases, agents, or causes identified?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>49.9 (±4.0)</td>
</tr>
<tr>
<td>No</td>
<td>50.1 (±4.0)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4. a. During the last 6 months, have there been any health events involving the NERVOUS SYSTEM in heifers on this operation, such as circling, head tilting, or blindness?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>5.0 (±1.0)</td>
</tr>
<tr>
<td>No</td>
<td>95.0 (±1.0)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

b. Were specific diseases, agents, or causes identified?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>47.5 (±9.7)</td>
</tr>
<tr>
<td>No</td>
<td>52.5 (±9.7)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

c. During the past 2 years, did you have any adult cows die or get culled because of the following signs?

<table>
<thead>
<tr>
<th>Sign</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggressiveness:</td>
<td>4.0</td>
<td>(±0.7)</td>
</tr>
<tr>
<td>Belligerence (eagerness to fight):</td>
<td>0.8</td>
<td>(±0.3)</td>
</tr>
<tr>
<td>Increased vocalization:</td>
<td>0.4</td>
<td>(±0.3)</td>
</tr>
<tr>
<td>Unexplained lack of coordination:</td>
<td>3.4</td>
<td>(±0.6)</td>
</tr>
<tr>
<td>Other sudden change in behavior:</td>
<td>1.4</td>
<td>(±0.5)</td>
</tr>
</tbody>
</table>

d. How many operations had affected cows?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8.2 (±1.0)</td>
</tr>
</tbody>
</table>
### D. Disease Agents (continued)

e. How many cows were affected?

<table>
<thead>
<tr>
<th>Average Number of Cows in Affected Herds</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>(±0.1)</td>
</tr>
</tbody>
</table>

5. a. During the last 6 months, have there been any health events involving the SKIN OR EYES of heifers on this operation?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>60.2 (±2.1)</td>
</tr>
<tr>
<td>No</td>
<td>39.8 (±2.1)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

b. Were specific diseases, agents, or causes identified?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>93.5 (±1.6)</td>
</tr>
<tr>
<td>No</td>
<td>6.5 (±1.6)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

6. a. During the last 6 months, have there been any health events involving the REPRODUCTIVE SYSTEM in heifers on this operation, such as abortion, infertility, repeat breeder, or vaginal discharge?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>46.1 (±2.3)</td>
</tr>
<tr>
<td>No</td>
<td>53.9 (±2.3)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

b. Were specific diseases, agents, or causes identified?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>22.4 (±2.7)</td>
</tr>
<tr>
<td>No</td>
<td>77.6 (±2.7)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

7. a. During the last 6 months, have there been any problems with MASTITIS in freshened heifers on this operation?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>48.6 (±2.2)</td>
</tr>
<tr>
<td>No</td>
<td>51.4 (±2.2)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

b. Were specific diseases, agents, or causes identified?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>24.4 (±2.8)</td>
</tr>
<tr>
<td>No</td>
<td>75.6 (±2.8)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

8. a. During the last 6 months, have there been any health events involving problems (including unthriftiness) not covered in questions 1-7 with the heifers on this farm?

<table>
<thead>
<tr>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>12.9 (±1.6)</td>
</tr>
<tr>
<td>No</td>
<td>87.1 (±1.6)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>
D. Disease Agents (continued)

b. Was un thriftiness or specific diseases, agents, or causes identified?

<table>
<thead>
<tr>
<th></th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>56.8</td>
<td>(±6.6)</td>
</tr>
<tr>
<td>No</td>
<td>43.2</td>
<td>(±6.6)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

E. Vaccination Practices

1. What vaccinations are routinely used in dry cows?

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leptospirosis</td>
<td>32.6</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>Infectious Bovine Rhinotracheitis (IBR)</td>
<td>33.0</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>Bovine Viral Diarrhea (BVD)</td>
<td>32.0</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>Bovine Respiratory Syncytial Virus (BRSV)</td>
<td>22.3</td>
<td>(±1.6)</td>
</tr>
<tr>
<td>Parainfluenza Type 3 (PI3)</td>
<td>31.1</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>E. coli</td>
<td>10.0</td>
<td>(±0.2)</td>
</tr>
<tr>
<td>Rotavirus/coronavirus</td>
<td>5.0</td>
<td>(±0.9)</td>
</tr>
<tr>
<td>Enterotoxemia</td>
<td>4.0</td>
<td>(±0.7)</td>
</tr>
<tr>
<td>Other clostridia</td>
<td>3.7</td>
<td>(±0.6)</td>
</tr>
<tr>
<td>Hemophilus somnus</td>
<td>10.1</td>
<td>(±1.2)</td>
</tr>
<tr>
<td>Other</td>
<td>7.3</td>
<td>(±0.9)</td>
</tr>
<tr>
<td>No vaccines given</td>
<td>55.6</td>
<td>(±2.0)</td>
</tr>
</tbody>
</table>

2. What vaccination/injectable supplements are routinely used in heifers from:

<table>
<thead>
<tr>
<th>Vaccination or Injectable Supplement</th>
<th>Birth to Weaning</th>
<th>Stan. Error</th>
<th>Weaning to 1st Breeding</th>
<th>Stan. Error</th>
<th>Breeding to 1st Calving</th>
<th>Stan. Error</th>
<th>Any Age Group</th>
<th>Stan. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leptospirosis</td>
<td>4.5</td>
<td>(±0.8)</td>
<td>38.3</td>
<td>(±2.0)</td>
<td>42.8</td>
<td>(±2.1)</td>
<td>56.1</td>
<td>(±2.2)</td>
</tr>
<tr>
<td>Infectious Bovine Rhinotracheitis (IBR)</td>
<td>14.2</td>
<td>(±1.5)</td>
<td>46.0</td>
<td>(±2.1)</td>
<td>43.6</td>
<td>(±2.1)</td>
<td>60.6</td>
<td>(±2.1)</td>
</tr>
<tr>
<td>Bovine Viral Diarrhea (BVD)</td>
<td>9.8</td>
<td>(±1.2)</td>
<td>44.8</td>
<td>(±2.1)</td>
<td>42.1</td>
<td>(±2.1)</td>
<td>58.4</td>
<td>(±2.1)</td>
</tr>
<tr>
<td>Bovine Respiratory Syncytial Virus (BRSV)</td>
<td>8.2</td>
<td>(±1.0)</td>
<td>33.2</td>
<td>(±2.0)</td>
<td>32.5</td>
<td>(±2.1)</td>
<td>44.0</td>
<td>(±2.1)</td>
</tr>
<tr>
<td>Parainfluenza Type 3 (PI3)</td>
<td>12.8</td>
<td>(±1.5)</td>
<td>43.0</td>
<td>(±2.1)</td>
<td>41.9</td>
<td>(±2.1)</td>
<td>57.6</td>
<td>(±2.1)</td>
</tr>
<tr>
<td>Rotavirus/coronavirus</td>
<td>8.5</td>
<td>(±1.2)</td>
<td>1.7</td>
<td>(±0.4)</td>
<td>2.3</td>
<td>(±0.5)</td>
<td>11.1</td>
<td>(±1.3)</td>
</tr>
<tr>
<td>Blackleg/malignant edema</td>
<td>2.8</td>
<td>(±0.4)</td>
<td>18.9</td>
<td>(±1.4)</td>
<td>5.4</td>
<td>(±0.9)</td>
<td>20.7</td>
<td>(±1.4)</td>
</tr>
<tr>
<td>Enterotoxemia</td>
<td>2.3</td>
<td>(±0.4)</td>
<td>6.6</td>
<td>(±0.8)</td>
<td>2.4</td>
<td>(±0.5)</td>
<td>8.7</td>
<td>(±0.9)</td>
</tr>
<tr>
<td>Brucella</td>
<td>1.6</td>
<td>(±0.8)</td>
<td>65.4</td>
<td>(±1.9)</td>
<td>1.0</td>
<td>(±0.4)</td>
<td>66.8</td>
<td>(±1.9)</td>
</tr>
<tr>
<td>Pasteurella</td>
<td>3.0</td>
<td>(±0.6)</td>
<td>4.9</td>
<td>(±0.7)</td>
<td>2.8</td>
<td>(±0.6)</td>
<td>7.7</td>
<td>(±1.0)</td>
</tr>
<tr>
<td>Hemophilus somnus</td>
<td>3.8</td>
<td>(±0.7)</td>
<td>10.8</td>
<td>(±1.2)</td>
<td>10.1</td>
<td>(±1.2)</td>
<td>14.7</td>
<td>(±1.4)</td>
</tr>
<tr>
<td>E. coli</td>
<td>5.9</td>
<td>(±0.9)</td>
<td>1.4</td>
<td>(±0.6)</td>
<td>2.8</td>
<td>(±0.5)</td>
<td>9.3</td>
<td>(±1.1)</td>
</tr>
<tr>
<td>Campylobacter/Vibrio</td>
<td>0.2</td>
<td>(±0.1)</td>
<td>2.8</td>
<td>(±0.5)</td>
<td>1.8</td>
<td>(±0.4)</td>
<td>3.5</td>
<td>(±0.6)</td>
</tr>
<tr>
<td>Selenium/Vitamin E</td>
<td>12.7</td>
<td>(±1.5)</td>
<td>3.5</td>
<td>(±0.6)</td>
<td>9.8</td>
<td>(±1.4)</td>
<td>20.1</td>
<td>(±1.8)</td>
</tr>
<tr>
<td>Other</td>
<td>6.1</td>
<td>(±1.0)</td>
<td>5.1</td>
<td>(±0.9)</td>
<td>4.8</td>
<td>(±0.9)</td>
<td>11.6</td>
<td>(±1.3)</td>
</tr>
<tr>
<td>No vaccines given</td>
<td>65.4</td>
<td>(±2.1)</td>
<td>15.3</td>
<td>(±1.7)</td>
<td>42.5</td>
<td>(±2.1)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
D. Vaccination Practices (continued)

3. Which of the following preventive practices are routinely used in heifers from:

<table>
<thead>
<tr>
<th>Percent of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth to Weaning?</td>
</tr>
<tr>
<td>1st Breeding?</td>
</tr>
<tr>
<td>1st Calving?</td>
</tr>
<tr>
<td>Any Age Group?</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Deworming</td>
</tr>
<tr>
<td>9.5 (±1.2)</td>
</tr>
<tr>
<td>54.4 (±2.2)</td>
</tr>
<tr>
<td>40.1 (±2.1)</td>
</tr>
<tr>
<td>62.2 (±2.2)</td>
</tr>
<tr>
<td>Coccidiostats in feed</td>
</tr>
<tr>
<td>30.3 (±2.0)</td>
</tr>
<tr>
<td>23.8 (±1.8)</td>
</tr>
<tr>
<td>7.0 (±1.1)</td>
</tr>
<tr>
<td>37.8 (±2.0)</td>
</tr>
<tr>
<td>Vitamins A-D-E injection</td>
</tr>
<tr>
<td>9.1 (±1.2)</td>
</tr>
<tr>
<td>2.7 (±0.6)</td>
</tr>
<tr>
<td>2.5 (±0.5)</td>
</tr>
<tr>
<td>11.8 (±1.3)</td>
</tr>
<tr>
<td>Vitamins A-D-E in feed</td>
</tr>
<tr>
<td>44.1 (±2.2)</td>
</tr>
<tr>
<td>50.3 (±2.2)</td>
</tr>
<tr>
<td>44.0 (±2.2)</td>
</tr>
<tr>
<td>57.4 (±2.2)</td>
</tr>
<tr>
<td>Selenium injection</td>
</tr>
<tr>
<td>10.8 (±1.4)</td>
</tr>
<tr>
<td>2.0 (±0.5)</td>
</tr>
<tr>
<td>6.3 (±1.2)</td>
</tr>
<tr>
<td>16.2 (±1.8)</td>
</tr>
<tr>
<td>Selenium in feed/bolus</td>
</tr>
<tr>
<td>31.9 (±2.2)</td>
</tr>
<tr>
<td>42.9 (±2.2)</td>
</tr>
<tr>
<td>40.1 (±2.1)</td>
</tr>
<tr>
<td>50.3 (±2.2)</td>
</tr>
<tr>
<td>Ionophores in feed</td>
</tr>
<tr>
<td>(e.g., Rumensin-, Bovatec-)</td>
</tr>
<tr>
<td>15.2 (±1.6)</td>
</tr>
<tr>
<td>35.3 (±2.1)</td>
</tr>
<tr>
<td>25.4 (±1.9)</td>
</tr>
<tr>
<td>40.0 (±2.2)</td>
</tr>
<tr>
<td>Magnet</td>
</tr>
<tr>
<td>0.2 (±0.1)</td>
</tr>
<tr>
<td>2.8 (±0.5)</td>
</tr>
<tr>
<td>6.0 (±1.0)</td>
</tr>
<tr>
<td>8.8 (±1.1)</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>5.1 (±0.8)</td>
</tr>
<tr>
<td>3.8 (±0.7)</td>
</tr>
<tr>
<td>3.0 (±0.7)</td>
</tr>
<tr>
<td>8.8 (±1.1)</td>
</tr>
<tr>
<td>No preventives given</td>
</tr>
<tr>
<td>30.0 (±1.9)</td>
</tr>
<tr>
<td>16.2 (±1.6)</td>
</tr>
<tr>
<td>24.4 (±1.8)</td>
</tr>
<tr>
<td>— —</td>
</tr>
</tbody>
</table>

4. Which of the following services of an off-farm consultant, such as a veterinarian or extension agent, are routinely used for heifers from birth to first calving? (An individual operation may use a veterinarian, a nonveterinarian, or both.)

<table>
<thead>
<tr>
<th>Percent of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Treatment of sick calves and heifers</td>
</tr>
<tr>
<td>Diagnostic services</td>
</tr>
<tr>
<td>Providing nutrient premixes</td>
</tr>
<tr>
<td>Nutritional consultation</td>
</tr>
<tr>
<td>Housing/ventilation consultation</td>
</tr>
<tr>
<td>Reproductive consultation for heifers</td>
</tr>
<tr>
<td>Other management consultation</td>
</tr>
<tr>
<td>Providing drugs/vaccines</td>
</tr>
<tr>
<td>Vaccination consultation</td>
</tr>
<tr>
<td>Artificial insemination for heifers</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

USDA:APHIS:VS 29
Dairy Heifer Management Report

A. Management

1. Does (do) the same individual(s) routinely care for calves from birth to weaning?

<table>
<thead>
<tr>
<th></th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>100.0</td>
<td>(±0.0)</td>
</tr>
<tr>
<td>No</td>
<td>0.0</td>
<td>(±0.0)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

2. During the last 3 months, how many hours of labor per week were spent caring for heifers from birth to weaning?

<table>
<thead>
<tr>
<th></th>
<th>Average Number</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>8.6</td>
<td>(±0.3)</td>
</tr>
</tbody>
</table>

3. During the last 3 months:
   a. how many visits by a private practitioner were made to this dairy?
      Average 5.7 Visits (±0.2)
   b. on the average, how long did each visit last?
      0.9 Hours (±0.0)
   c. approximately what percentage of the total time per practitioner visit was spent with heifers from birth to weaning?
      3.5 Percent (±0.4)

4. If additional resources were available for improving heifer management from birth to weaning, in which one of the following areas would you choose to make improvements?

<table>
<thead>
<tr>
<th>Area of Operation</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing/structural improvements</td>
<td>64.8</td>
<td>(±2.1)</td>
</tr>
<tr>
<td>Equipment (e.g., for waste, feed, or animal handling)</td>
<td>9.9</td>
<td>(±1.3)</td>
</tr>
<tr>
<td>Health care services/products</td>
<td>8.0</td>
<td>(±1.1)</td>
</tr>
<tr>
<td>Feeds</td>
<td>6.7</td>
<td>(±1.1)</td>
</tr>
<tr>
<td>Records systems</td>
<td>5.9</td>
<td>(±1.0)</td>
</tr>
<tr>
<td>Specialized labor for calf care</td>
<td>4.7</td>
<td>(±0.8)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
B. Feed

1. For calves from 24 hours of age to weaning, which of the following feeds are fed?

<table>
<thead>
<tr>
<th>Feeds</th>
<th>Percent of Operations</th>
<th>Crude Protein</th>
<th>Dry Matter</th>
<th>Fiber</th>
<th>Fat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole milk</td>
<td>69.7</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±2.0)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Fresh or soured colostrum</td>
<td>81.1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±1.8)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Medicated milk replacer</td>
<td>52.9</td>
<td>21.3</td>
<td>—</td>
<td>0.3</td>
<td>18.2</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±2.2)</td>
<td>(±0.1)</td>
<td>—</td>
<td>(±0.0)</td>
<td>(±0.2)</td>
</tr>
<tr>
<td>Nonmedicated milk replacer</td>
<td>11.8</td>
<td>20.9</td>
<td>—</td>
<td>0.3</td>
<td>19.1</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±1.3)</td>
<td>(±0.1)</td>
<td>—</td>
<td>(±0.0)</td>
<td>(±0.3)</td>
</tr>
<tr>
<td>Mastitic milk (mastitis cow)</td>
<td>54.2</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±2.4)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Antibiotic milk (sick cow)</td>
<td>55.9</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±2.3)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Starter grain</td>
<td>91.2</td>
<td>17.4</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±1.2)</td>
<td>(±0.2)</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Hay</td>
<td>71.3</td>
<td>16.4</td>
<td>87.4</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±1.9)</td>
<td>(±0.2)</td>
<td>(±0.3)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Haylage</td>
<td>7.5</td>
<td>18.1</td>
<td>50.4</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±1.4)</td>
<td>(±0.4)</td>
<td>(±1.4)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Silage</td>
<td>6.2</td>
<td>8.9</td>
<td>47.5</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(±1.4)</td>
<td>(±0.5)</td>
<td>(±2.9)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

2. Except for milk proteins, do any of the following age groups receive feedstuffs containing proteins of animal origin?

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percent of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth to weaning</td>
<td>Yes: 6.6</td>
</tr>
<tr>
<td></td>
<td>No: 85.0</td>
</tr>
<tr>
<td></td>
<td>Don’t Know: 8.4</td>
</tr>
<tr>
<td></td>
<td>Total: 100.0</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(± 1.2)</td>
</tr>
<tr>
<td>Weaning to first breeding</td>
<td>Yes: 6.2</td>
</tr>
<tr>
<td></td>
<td>No: 83.8</td>
</tr>
<tr>
<td></td>
<td>Don’t Know: 10.0</td>
</tr>
<tr>
<td></td>
<td>Total: 100.0</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(± 0.9)</td>
</tr>
<tr>
<td>Breeding to first calving</td>
<td>Yes: 4.6</td>
</tr>
<tr>
<td></td>
<td>No: 85.2</td>
</tr>
<tr>
<td></td>
<td>Don’t Know: 10.2</td>
</tr>
<tr>
<td></td>
<td>Total: 100.0</td>
</tr>
<tr>
<td>Standard Error</td>
<td>(± 0.8)</td>
</tr>
</tbody>
</table>
Milk Replacer Quality and Management

The operations described in this section are those that feed milk replacer routinely to calves.

A. Management Information

1. Of the following feed (milk) sources for calves, what percentage of the preweaning feeding period does the calf actually consume the milk?

<table>
<thead>
<tr>
<th>Source</th>
<th>Birth - 3 Weeks</th>
<th>Standard Error</th>
<th>3 Weeks - Weaning</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole milk</td>
<td>9.2 (± 1.1)</td>
<td>5.1 (± 0.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fresh or soured colostrum</td>
<td>13.8 (± 0.6)</td>
<td>2.2 (± 0.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastitic milk</td>
<td>3.8 (± 0.5)</td>
<td>4.6 (± 0.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antibiotic milk (sick cow)</td>
<td>3.0 (± 0.3)</td>
<td>3.4 (± 0.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonmedicated milk replacer</td>
<td>10.6 (± 1.5)</td>
<td>14.0 (± 1.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicated milk replacer</td>
<td>59.6 (± 1.9)</td>
<td>70.6 (± 2.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0.0 (± 0.0)</td>
<td>0.1 (± 0.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Which of the following best describes the amount of this replacer that is routinely fed at one feeding?

a. Birth to 3 weeks

<table>
<thead>
<tr>
<th>Amount Fed</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2 quarts</td>
<td>18.8 (± 2.2)</td>
<td></td>
</tr>
<tr>
<td>2-3 quarts</td>
<td>76.1 (± 2.5)</td>
<td></td>
</tr>
<tr>
<td>More than 3 quarts</td>
<td>5.2 (± 1.4)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

b. Three weeks to weaning

<table>
<thead>
<tr>
<th>Amount Fed</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2 quarts</td>
<td>9.8 (± 1.6)</td>
<td></td>
</tr>
<tr>
<td>2 quarts or more</td>
<td>90.2 (± 1.6)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

3. Which of the following best describes how often this milk replacer is routinely fed?

<table>
<thead>
<tr>
<th>Frequency Fed</th>
<th>Birth - 3 Weeks</th>
<th>Standard Error</th>
<th>3 Weeks - Weaning</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 or more times a day or free choice</td>
<td>1.5 (± 0.7)</td>
<td>1.9 (± 0.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Twice a day</td>
<td>97.9 (± 0.7)</td>
<td>96.5 (± 1.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once a day</td>
<td>0.6 (± 0.2)</td>
<td>1.6 (± 0.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A. Management Information (continued)

4. During winter months, do you feed more milk replacer to the calves?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Percent of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes or warm climate/environment year round</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>35.1 (± 3.0)</td>
</tr>
<tr>
<td>No</td>
<td>64.9 (± 3.0)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

5. Are calves normally fed this milk replacer individually?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Percent of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>97.8 (± 0.7)</td>
</tr>
<tr>
<td>No</td>
<td>2.2 (± 0.7)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

6. How soon after feeding the milk replacer is water available to the calf?

<table>
<thead>
<tr>
<th>Length of Time</th>
<th>Percent of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediately or within 10 minutes</td>
<td>44.7 (± 3.1)</td>
</tr>
<tr>
<td>20 minutes</td>
<td>0.7 (± 0.4)</td>
</tr>
<tr>
<td>30 minutes or more</td>
<td>54.6 (± 3.1)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

7. Which of the following best describes the water temperature in which this replacer is normally mixed?

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Percent of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm/Cold if instructed on label 1</td>
<td>93.2 (± 1.3)</td>
</tr>
<tr>
<td>Cold when warm water should be used</td>
<td>0.7 (± 0.5)</td>
</tr>
<tr>
<td>Hot</td>
<td>6.1 (± 1.2)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

8. After mixing a batch of milk replacer, how long do you store it?

<table>
<thead>
<tr>
<th>Length of Time</th>
<th>Percent of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 24 hours</td>
<td>100.0 (± 0.0)</td>
</tr>
<tr>
<td>24 hours or more</td>
<td>0.0 (± 0.0)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>
A. Management Information (continued)

9. Is a mixed batch normally refrigerated between feedings?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Birth - 3 Weeks</th>
<th>Standard Error</th>
<th>3 Weeks - Weaning</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire batch is used at one feeding</td>
<td>95.4 (± 1.1)</td>
<td>95.6 (± 1.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not refrigerated between feedings</td>
<td>4.6 (± 1.1)</td>
<td>4.4 (± 1.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerated between feedings</td>
<td>0.0 (± 0.0)</td>
<td>0.0 (± 0.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Ingredient Information

1. The feed tag was used to complete the following ingredient information for each age group:

<table>
<thead>
<tr>
<th>Percentage of Ingredients</th>
<th>Birth - 3 Weeks</th>
<th>Standard Error</th>
<th>3 Weeks - Weaning</th>
<th>Standard Error</th>
</tr>
</thead>
</table>
a. Crude protein (minimum):                                  |                 |                |                   |                |
| 22% or more                                                | 56.4 (± 3.1)    | 56.3 (± 3.0)   |
| Less than 22%                                              | 43.6 (± 3.1)    | 43.7 (± 3.0)   |
| Total                                                      | 100.0           | 100.0          |
b. Crude fat (minimum):                                     |                 |                |                   |                |
| Less than 10%                                              | 0.4 (± 0.3)     | 0.3 (± 0.2)    |
| 10-15% and cold month                                      | 11.8 (± 1.8)    | 12.8 (± 1.8)   |
| 10-15% and warm month or environment or 16% or more         | 87.8 (± 1.8)    | 86.9 (± 1.8)   |
| Total                                                      | 100.0           | 100.0          |
c. Crude fiber (maximum):                                   |                 |                |                   |                |
  i. Birth to 3 weeks                                        |                 |                |                   |                |
| Amount                                                     | Percent of Operations | Standard Error |
| 0.5% or less                                               | 91.3            | (± 1.6)        |
| 0.6-1.0%                                                   | 7.6             | (± 1.5)        |
| Greater than 1%                                            | 1.1             | (± 0.6)        |
| Total                                                      | 100.0           |                |
  ii. Three weeks to weaning                                 |                 |                |                   |                |
| Amount                                                     | Percent of Operations | Standard Error |
| 1.0% or less                                               | 99.0            | (± 0.5)        |
| Greater than 1%                                            | 1.0             | (± 0.5)        |
| Total                                                      | 100.0           |                |
A. Ingredient Information (continued)

   d. Protein sources:

   i. Birth to 3 weeks

<table>
<thead>
<tr>
<th>Protein Source</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top three protein sources are all milk OR whey products</td>
<td>92.9</td>
<td>(± 1.5)</td>
</tr>
<tr>
<td>Soy protein or soy isolates are listed in the top 3</td>
<td>6.3</td>
<td>(± 1.4)</td>
</tr>
<tr>
<td>Other</td>
<td>0.8</td>
<td>(± 0.6)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

   ii. Three weeks to weaning

<table>
<thead>
<tr>
<th>Protein Source</th>
<th>Percent of Operations</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top three sources are all milk or whey products OR soy protein or isolates</td>
<td>99.3</td>
<td>(± 0.6)</td>
</tr>
<tr>
<td>Other</td>
<td>0.7</td>
<td>(± 0.6)</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

e. Fat digestability:

<table>
<thead>
<tr>
<th>Fat Source</th>
<th>Birth - 3 Weeks</th>
<th>Standard Error</th>
<th>3 Weeks - Weaning</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butterfat</td>
<td>3.4 (± 1.0)</td>
<td>3.2 (± 1.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lard, lard tallow, animal fat, or coconut oil</td>
<td>93.1 (± 1.4)</td>
<td>92.9 (± 1.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetable oil</td>
<td>3.5 (± 1.0)</td>
<td>3.9 (± 1.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

f. Sugar digestability:

<table>
<thead>
<tr>
<th>Sugar Source</th>
<th>Birth - 3 Weeks</th>
<th>Standard Error</th>
<th>3 Weeks - Weaning</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>No sugar is present</td>
<td>92.8 (± 1.4)</td>
<td>92.2 (± 1.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lactose is present</td>
<td>3.4 (± 1.0)</td>
<td>4.0 (± 1.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maltose or sucrose is present</td>
<td>3.8 (± 1.1)</td>
<td>3.8 (± 1.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### C. Rennet Coagulation Test

1. Results of test:
   a. Birth to 3 weeks
      | Result                        | Percent of Operations | Standard Error |
      | No clot or soft clot formed   | 97.2                 | ± 1.1          |
      | Firm clot formed              | 2.8                  | ± 1.1          |
      | Total                         | 100.0                |                |
   b. Three weeks to weaning
      | Result                        | Percent of Operations | Standard Error |
      | No clot formed                | 89.8                 | ± 1.9          |
      | Soft clot formed              | 8.1                  | ± 1.8          |
      | Firm clot formed              | 2.1                  | ± 0.8          |
      | Total                         | 100.0                |                |

---

1 Several drops of rennet solution were added to approximately 15 milliliters of reconstituted milk replacer. The degree of clotting was then compared to a standard (15 ml of cow’s milk from the bulk tank).