

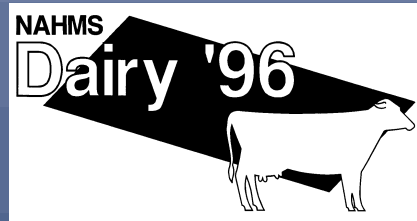
United States  
Department of  
Agriculture

Animal and Plant  
Health  
Inspection  
Service

Veterinary  
Services

# Part III: Reference of 1996 Dairy Health and Health Management

National Animal Health Monitoring System



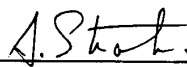
November 1996

## 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).

The Dairy '96 study was a cooperative effort between State and Federal agricultural statisticians, animal health officials, university researchers, and extension personnel. We want to thank the National Agricultural Statistics Service (NASS) enumerators and State and Federal Veterinary Medical Officers (VMO's) who visited the farms and collected data for their hard work and dedication to the National Animal Health Monitoring System (NAHMS).

The roles of the producer, Area Veterinarian in Charge (AVIC), NAHMS Coordinator, VMO, Animal Health Technician (AHT), and NASS enumerator were critical in providing quality data for Dairy '96 reports. All participants are to be commended for their efforts, particularly the producers whose voluntary efforts made the study possible.



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Dr. Al Strating, Director  
Centers for Epidemiology & Animal Health

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# Introduction

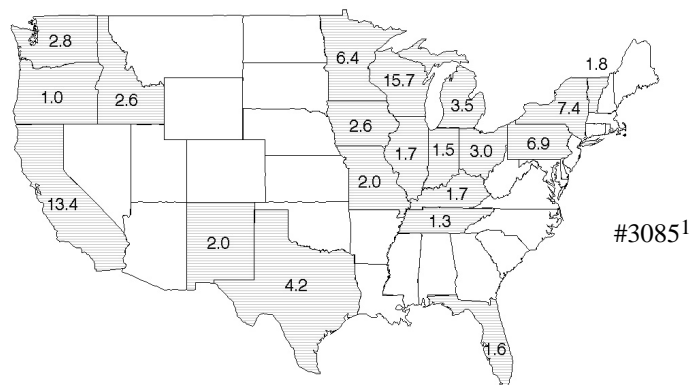
The National Animal Health Monitoring System's (NAHMS) Dairy '96 study was designed to provide both participants and the industry with information on the nation's milk cows for education and research. This report is the third in a series of releases documenting Dairy '96 study results.

The first NAHMS national study of dairy health and management was the 1991-92 National Dairy Heifer Evaluation Project (NDHEP). NDHEP study results provided an overview of dairy herd management practices concentrating on the preweaned heifer.

Dairy '96 was the second NAHMS national study of the dairy industry. The 20 states participating in Dairy '96 (shown in the map at right) represented 83.1 percent of the U.S. milk cows on January 1, 1996.

NAHMS is sponsored by the USDA:APHIS:Veterinary Services (VS). The USDA's National Agricultural Statistics Service (NASS) collaborated with VS to select a statistically-valid sample yielding 2,542 producers for Dairy '96. NASS enumerators collected data for *Part I: Reference of 1996 Dairy Management Practices* via a questionnaire administered on-farm in January 1996. *Part II: Changes in the U.S. Dairy Industry: 1991-1996*, combines results of the 1991-92 NDHEP with Dairy '96 results for comparable items and was released in September 1996. State and federal Veterinary Medical Officers (VMO's) and Animal Health Technicians (AHT's) collected data for *Part III: Reference of 1996 Dairy Health and Health Management* from February 20 through May 24, 1996, from 1,219 operations that had 30 or more milk cows on January 1, 1996.

Percent of U.S. Milk Cow Inventory, January 1, 1996, for States Participating in the NAHMS Dairy '96 Study



Total = 83.1 percent of the U.S. milk cow inventory.

States: CA, FL, ID, IL, IN, IA, KY, MI, MN, MO, NM, NY, OH, OR, PA, TN, TX, VT, WA, and WI.

#3085<sup>1</sup>

<sup>1</sup> Identification numbers are assigned to each graph in this report for public reference.

The 20-state target population with 30 or more milk cows represented:

- 82.7 percent of milk cows on U.S. operations with 30 or more milk cows.
- 85.6 percent of milk cow operations in the U.S. with 30 or more milk cows (see the table below).
- 79.4 percent of all milk cows in the U.S.
- 56.2 percent of all milk cow operations in the U.S.

Within the 20 Dairy '96 states, the target population with 30 or more milk cows represented: 95.5 percent of all milk cows and 70.0 percent of all milk cow operations in the 20 states.

For questions about this report or additional Dairy '96 and NAHMS results, please contact:

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555 South Howes  
Fort Collins, CO 80521  
Telephone: (970) 490-7800  
Internet: NAHMS\_INFO@aphis.usda.gov

Target Population - Milk Cows			
States	Milk Cow Inventory - January 1, 1996*		
	All Operations (1,000 Head)	Operations with 30 or More Milk Cows (1,000 Head)	Percent All Milk Cows
United States (50 states)	9,412.0	9,035.5	96.0
Dairy '96 (20 states)	7,818.0	7,469.0	95.5
20 states as percent of United States	83.1	82.7	—

\* Source: USDA's National Agricultural Statistics Service (NASS).

Target Population - Milk Cow Operations			
States	Operations with Milk Cows, 1995*		
	All Operations	Operations with 30 or More Milk Cows	
	Number	Number	Percent All Operations
United States (50 states)	140,090	91,940	65.6
Dairy '96 (20 states)	112,400	78,670	70.0
Dairy '96 states as percent of United States	80.2	85.6	—

\* Source: USDA's National Agricultural Statistics Service (NASS).

Dairy '96 reports are accessible on the World Wide Web at <http://www.aphis.usda.gov/vs/ceah/cahm> (menu choices: National Animal Health Monitoring System and Dairy Cattle.)

Discussions on selected topics are also accessible on the Internet through [gopher.aphis.usda.gov](http://gopher.aphis.usda.gov) (menu choices: APHIS Information: Animal Health Information; Animal Health Monitoring, Risk Assessments, and Emerging Issues).

## Terms Used in This Report

**Cow:** female dairy bovine that has calved at least once.

**Cow/heifer average:** the average value for all cows; the reported value for each operation multiplied by the number of cows on that operation (if the reported value is a sub-group of all cows on the operation, it may be directly used) is summed over all operations and divided by the number of cows on all operations. This way, the result is adjusted for the number of cows on each operation. For instance, on page 19, cow average percent of cows born and raised on the operation is the sum over all operations of reported number of head born and raised divided by the sum of all cows over all operations.

**Heifer:** female dairy bovine not yet calved.

**Operation average:** the average value for all operations; a single value for each operation is summed over all operations reporting divided by the number of operations reporting. For instance, operation average percent of cows born and raised on the same operation (shown on page 19) is calculated by first calculating the percent for each operation (since the number of head were reported), then summing the percent over all operations, and lastly dividing the sum by the number of operations reporting.

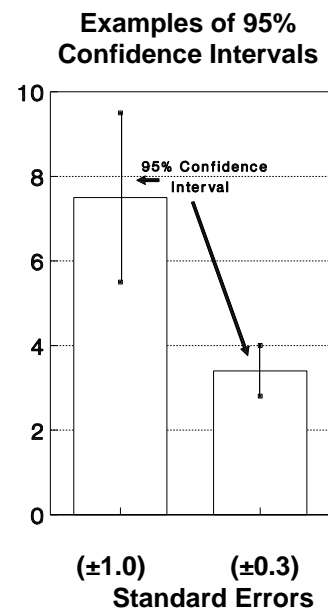
**Population estimates:** averages and proportions weighted to represent the population. Most of the estimates in this report are provided with a measure of variability called the standard error and denoted by ( $\pm$ ). Chances are 95 out of 100 that the interval created by the estimate plus or minus two standard errors will contain the true population value. In the example above, an estimate of 7.5 with a standard error of  $\pm 1.0$  results in a range of 5.5 to 9.5 (two times the standard error above and below the estimate.) The second estimate of 3.4 shows a standard error of  $\pm 0.3$  results with a range of 2.8 and 4.0.

**Regions:**

- **Midwest:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin.
- **Southeast:** Florida, Kentucky, and Tennessee.
- **Northeast:** New York, Pennsylvania, and Vermont.
- **West:** California, Idaho, New Mexico, Oregon, Texas, and Washington.

**Sample profile:** information that describes characteristics of the reporting operations from which Dairy '96 data were collected.

**Standard error:** see population estimates above.



#999

# Section 1: Population Estimates

## A. Dairy Health Management

### 1. Inventory distribution

a. Percent of milk cows (including dry, sick, and cull cows) by current or most recently finished lactation number:

<u>Lactation Number</u>	<u>Operation</u>		<u>Cow</u>	
	<u>Average</u>	<u>Standard Error</u>	<u>Average</u>	<u>Standard Error</u>
First	30.1	(± 0.5)	32.0	(± 0.4)
Second	24.7	(± 0.4)	26.0	(± 0.3)
Third or more	<u>45.2</u>	(± 0.6)	<u>42.0</u>	(± 0.5)
Total	100.0		100.0	

b. Number of bred heifers as a percent of dairy cows:

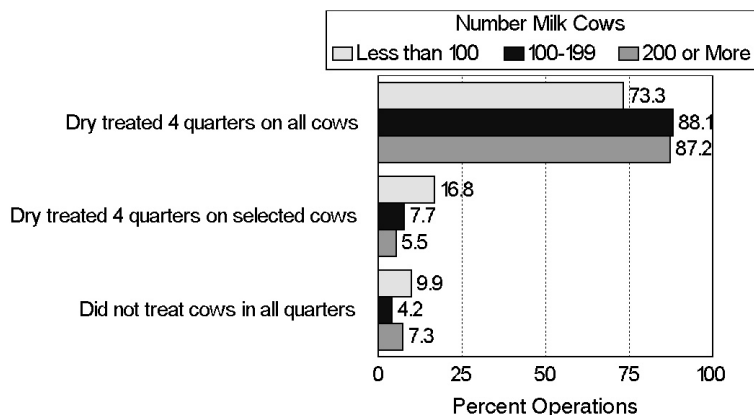
<u>Operation</u>		<u>Heifer</u>	
<u>Average</u>	<u>Standard Error</u>	<u>Average</u>	<u>Standard Error</u>
25.2	(± 0.5)	24.8	(± 0.7)

### 2. Mastitis preventive management

a. Percent of operations by use of dry cow tubes (mammary infusions) to treat cows at final milk out by herd size:

<u>Use</u>	<u>Percent Operations</u>							
	<u>Less than 100</u>	<u>Standard Error</u>	<u>100-199</u>	<u>Standard Error</u>	<u>200 or More</u>	<u>Standard Error</u>	<u>Total</u>	<u>Standard Error</u>
Dry treated all four quarters on all or almost all the cows	73.3	(± 2.1)	88.1	(± 2.6)	87.2	(± 2.0)	76.5	(± 1.7)
Dry treated all four quarters on selected cows only	16.8	(± 1.7)	7.7	(± 2.1)	5.5	(± 1.5)	14.6	(± 1.4)
Did not dry treat cows in all four quarters	<u>9.9</u>	(± 1.5)	<u>4.2</u>	(± 1.7)	<u>7.3</u>	(± 1.5)	<u>8.9</u>	(± 1.2)
Total	100.0		100.0		100.0		100.0	

Percent Operations by Use of Dry Cow Tubes To Treat Cows at Final Milk Out by Herd Size



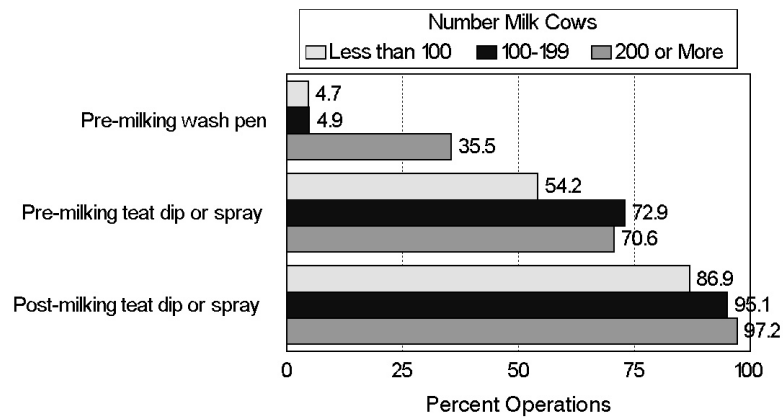
#3305



b. Percent of operations routinely using the following management practices at milking time by herd size:

Use	<u>Percent Operations</u>						Total	Standard Error
	Less than 100	Standard Error	100-199	Standard Error	200 or More	Standard Error		
Pre-milking wash pen	4.7	(± 0.9)	4.9	(± 1.1)	35.5	(± 2.6)	7.0	(± 0.8)
Pre-milking teat dip or spray	54.2	(± 2.2)	72.9	(± 3.2)	70.6	(± 2.8)	58.3	(± 1.8)
Post-milking teat dip or spray	86.9	(± 1.5)	95.1	(± 1.8)	97.2	(± 0.8)	88.9	(± 1.2)

Percent Operations Routinely Using the Following Management Practices at Milking Time by Herd Size



#3306

c. Of operations that routinely used a post-milking teat dip or spray, percent that used the following types of post-milking teat dip or spray by frequency of use:

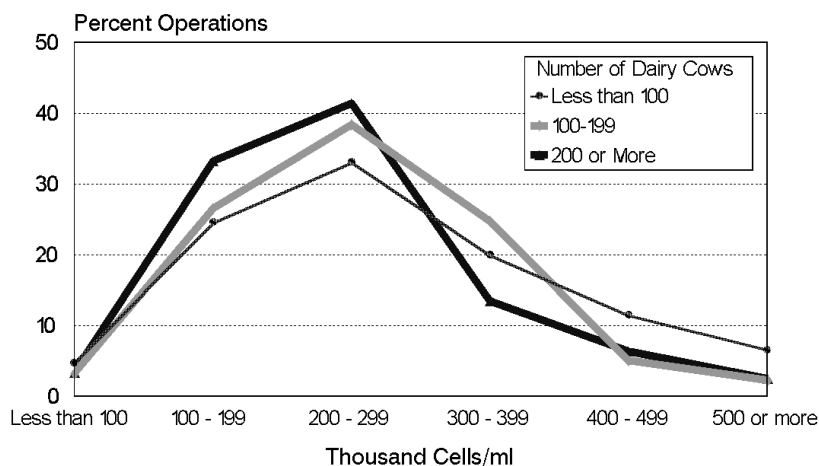
Type	<u>Percent Operations</u>						Total
	Always	Standard Error	Sometimes	Standard Error	Never	Standard Error	
Iodine	59.9	(± 1.9)	8.4	(± 1.1)	31.7	(± 1.8)	100.0
Chlorhexidine	22.4	(± 1.6)	8.1	(± 1.1)	69.5	(± 1.8)	100.0
Other	12.7	(± 1.3)	3.3	(± 0.6)	84.0	(± 1.4)	100.0

3. Milk quality

a. Percent of operations by average reported bulk tank somatic cell count for milk shipped in the past 6 months by herd size:

Cells/ml	Percent Operations Number Dairy Cows						Total	Standard Error
	Less than 100	Standard Error	100-199	Standard Error	200 or More	Standard Error		
Less than 100,000	4.7	(± 0.9)	3.3	(± 1.4)	3.3	(± 1.8)	4.4	(± 0.7)
100,000-199,000	24.5	(± 1.9)	26.5	(± 3.1)	33.2	(± 3.3)	25.4	(± 1.6)
200,000-299,000	33.0	(± 2.1)	38.3	(± 3.5)	41.4	(± 3.3)	34.4	(± 1.7)
300,000-399,000	19.9	(± 1.8)	24.7	(± 3.1)	13.4	(± 1.9)	20.2	(± 1.5)
400,000-499,000	11.4	(± 1.4)	5.0	(± 1.5)	6.3	(± 1.5)	10.1	(± 1.2)
500,000 or more	<u>6.5</u>	(± 1.1)	<u>2.2</u>	(± 0.8)	<u>2.4</u>	(± 1.1)	<u>5.5</u>	(± 0.9)
Total	100.0		100.0		100.0		100.0	

Percent Operations by 6-Month Average Bulk Tank Somatic Cell Count Level by Herd Size



#3307

b. Percent of operations by average reported bacteria count (colony forming units [CFU] per milliliter) for milk shipped in the last 6 months by herd size:

CFU/ml	Percent Operations Number Dairy Cows						Total	Standard Error
	Less than 100	Standard Error	100-199	Standard Error	200 or More	Standard Error		
Less than 1,000	11.9	(± 1.4)	15.6	(± 2.6)	16.0	(± 2.3)	12.8	(± 1.2)
1,000-2,999	31.1	(± 2.1)	29.3	(± 3.1)	34.8	(± 3.3)	31.1	(± 1.7)
3,000-4,999	26.5	(± 2.0)	24.7	(± 3.2)	24.1	(± 3.1)	26.0	(± 1.6)
5,000-9,999	20.9	(± 1.8)	18.5	(± 2.9)	15.9	(± 2.3)	20.2	(± 1.5)
10,000 or more	<u>9.6</u>	(± 1.3)	<u>11.9</u>	(± 2.5)	<u>9.2</u>	(± 1.9)	<u>9.9</u>	(± 1.1)
Total	100.0		100.0		100.0		100.0	

4. Labor management

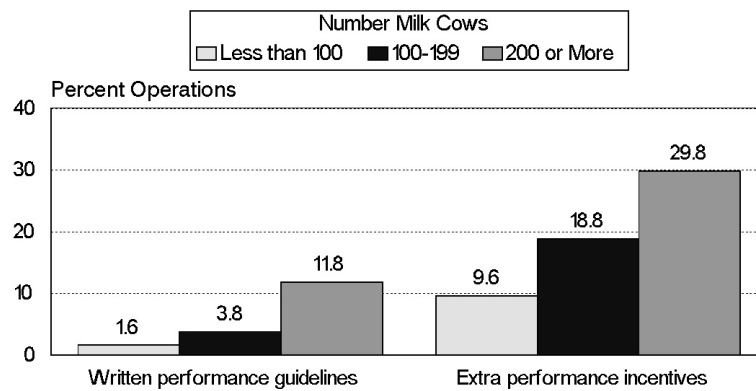
a. Percent of operations that used written guidelines for evaluating the performance of milking personnel and/or animal handlers by herd size:

Less than 100		Standard Error		100-199		Standard Error		200 or More		Standard Error		Total		Standard Error	
1.6	(± 0.5)	3.8	(± 1.4)	11.8	(± 2.6)	2.7	(± 0.5)								

b. Percent of operations that provided extra incentives (monetary or other) to milking personnel and/or animal handlers related to their work performance by herd size:

Less than 100		Standard Error		100-199		Standard Error		200 or More		Standard Error		Total		Standard Error	
9.6	(± 1.2)	18.8	(± 2.9)	29.8	(± 3.0)	12.5	(± 1.1)								

Percent Operations by Methods of Performance Management for Milking Personnel and/or Animal Handlers by Herd Size



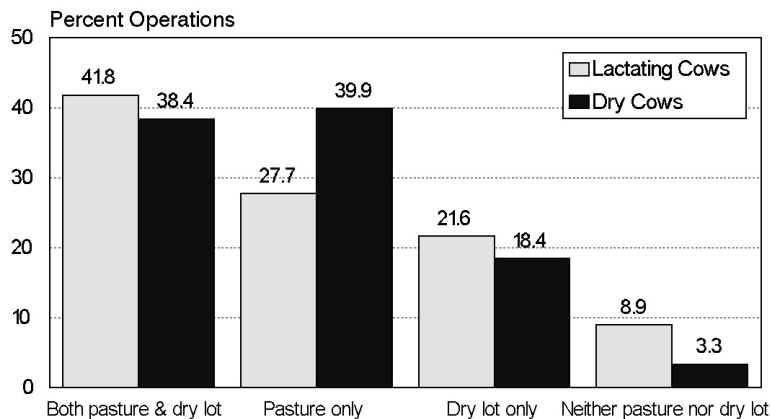
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5. Cow access to outside areas - summer

a. Percent of operations (and cows on those operations) that had outside areas accessible to *lactating cows* on a daily basis during summer 1995:

<u>Type of Area</u>	<u>Percent Operations</u>	<u>Standard Error</u>	<u>Percent Cows<sup>1</sup></u>	<u>Standard Error</u>
Both pasture and dry lot	41.8	(± 1.8)	31.7	(± 1.4)
Pasture only	27.7	(± 1.7)	18.5	(± 1.1)
Dry lot only	21.6	(± 1.4)	37.5	(± 1.4)
Neither pasture nor dry lot	<u>8.9</u>	(± 0.9)	<u>12.3</u>	(± 0.9)
Total	100.0		100.0	

Percent Operations by Lactating vs. Dry Cow Access to Outside Areas in Summer



i. For operations where lactating cows had access to either pasture or dry lot on a daily basis during the summer of 1995, percent of operations (and cows on those operations) with cow access to the following heat stress preventives:

<u>Overhead Shade</u>		<u>Overhead Sprinklers or Misters</u>	
<u>Percent Operations</u>	<u>Standard Error</u>	<u>Percent Cows</u>	<u>Standard Error</u>
75.1	(± 1.7)	77.2	(± 1.5)
7.3	(± 0.7)	17.0	(± 2.0)

<sup>1</sup> Percent of total milk cow inventory at time of the Dairy '96 interview.

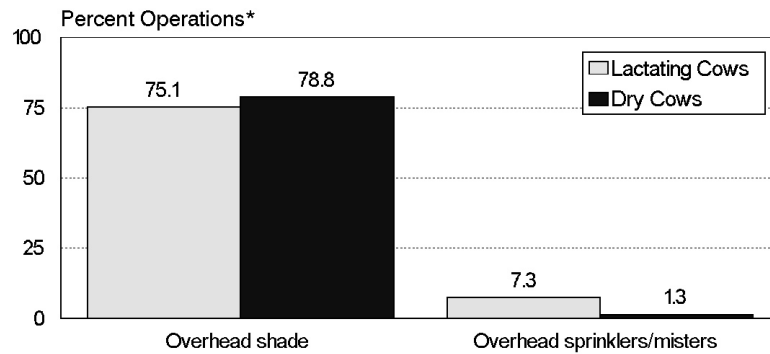
b. Percent of operations (and cows on these operations) that had outside areas accessible to *dry cows* on a daily basis during summer 1995:

<u>Type of Area</u>	<u>Percent Operations</u>		<u>Percent Cows<sup>1</sup></u>	
		<u>Standard Error</u>		<u>Standard Error</u>
Both pasture and dry lot	38.4	(± 1.8)	30.7	(± 1.5)
Pasture only	39.9	(± 1.7)	34.6	(± 1.7)
Dry lot only	18.4	(± 1.3)	32.0	(± 1.7)
Neither pasture or dry lot	<u>3.3</u>	(± 0.6)	<u>2.7</u>	(± 0.4)
Total	100.0		100.0	

i. For operations where dry cows had access to either pasture or dry lot on a daily basis during the summer of 1995, percent of operations (and cows on these operations) with cow access to the following heat stress preventives:

<u>Percent Operations</u>	<u>Overhead Shade</u>		<u>Overhead Sprinklers or Misters</u>				
	<u>Standard Error</u>	<u>Percent Cows</u>	<u>Standard Error</u>	<u>Percent Operations</u>	<u>Standard Error</u>	<u>Percent Cows</u>	<u>Standard Error</u>
78.8	(± 1.5)	74.3	(± 1.8)	1.3	(± 0.3)	2.4	(± 0.7)

**Percent Operations\* with Lactating vs. Dry Cow Access to the Following Heat Stress Preventives in Summer**



\*For operations where specified cows had access to either pasture or dry lot on a daily basis during the summer of 1995.

1 Percent of total milk cow inventory at time of the Dairy '96 interview.

## 6. Cow access to outside areas - winter

a. Percent of operations (and cows on these operations) where *lactating cows* had access to outside areas during winter 1995-1996:

<u>Type of Area</u>	Percent <u>Operations</u>	Standard <u>Error</u>	Percent <u>Cows</u>	Standard <u>Error</u>
Both pasture and dry lot	11.4	(± 1.1)	10.8	(± 1.0)
Pasture only	5.5	(± 0.9)	4.5	(± 0.6)
Dry lot only	57.5	(± 1.7)	59.6	(± 1.4)
Neither pasture nor dry lot	<u>25.6</u>	(± 1.5)	<u>25.1</u>	(± 1.2)
Total	100.0		100.0	

b. Percent of operations (and cows on these operations) where *dry cows* had access to outside areas during winter 1995-1996:

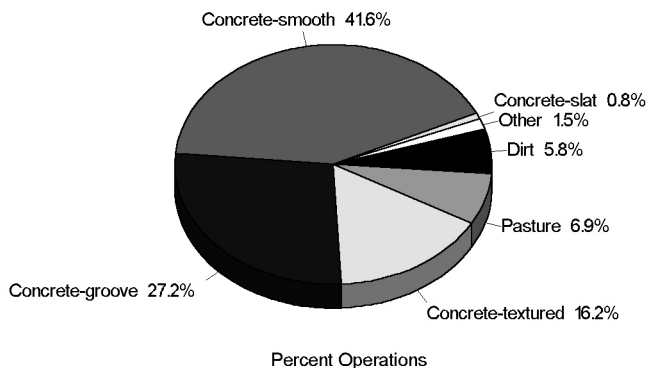
<u>Type of Area</u>	Percent <u>Operations</u>	Standard <u>Error</u>	Percent <u>Cows</u>	Standard <u>Error</u>
Both pasture and dry lot	11.4	(± 1.1)	12.5	(± 1.2)
Pasture only	9.5	(± 0.9)	11.0	(± 1.1)
Dry lot only	56.7	(± 1.7)	56.3	(± 1.7)
Neither pasture or dry lot	<u>22.4</u>	(± 1.4)	<u>20.2</u>	(± 1.1)
Total	100.0		100.0	

7. Flooring and bedding

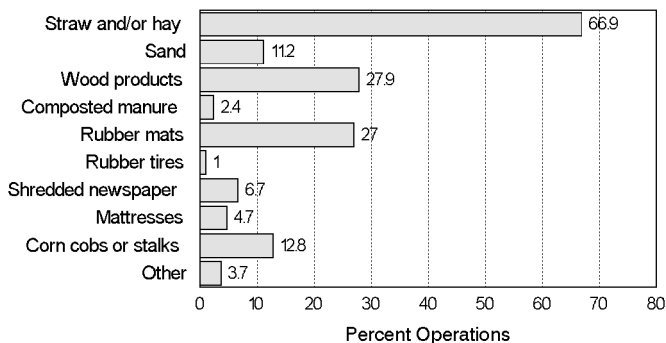
a. Percent of operations (and cows on these operations) by predominant flooring type on which lactating cows walked:

<u>Type of Flooring</u>	<u>Percent Operations</u>	<u>Standard Error</u>	<u>Percent Cows</u>	<u>Standard Error</u>
Concrete-groove	27.2	(± 1.4)	39.3	(± 1.7)
Concrete-slat	0.8	(± 0.3)	1.6	(± 0.7)
Concrete-textured	16.2	(± 1.4)	17.2	(± 1.7)
Concrete-smooth	41.6	(± 1.8)	26.7	(± 1.4)
Dirt	5.8	(± 0.8)	9.6	(± 1.0)
Pasture	6.9	(± 1.0)	4.6	(± 0.6)
Other	<u>1.5</u>	(± 0.4)	<u>1.0</u>	(± 0.3)
Total	100.0		100.0	

Percent Operations by Predominant Flooring Type on Which Lactating Cows Walked



Percent Operations by Bedding Types Used for Lactating Cows



b. Percent of operations by bedding types used for lactating cows in the 90 days prior to the Dairy '96 interview:

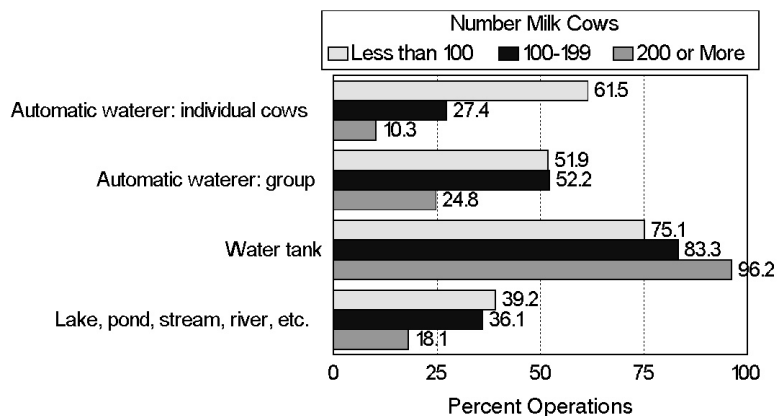
<u>Type of Bedding</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Straw and/or hay	66.9	(± 1.5)
Sand	11.2	(± 1.0)
Wood products	27.9	(± 1.5)
Composted manure	2.4	(± 0.4)
Rubber mats	27.0	(± 1.6)
Rubber tires	1.0	(± 0.3)
Shredded newspaper	6.7	(± 0.9)
Mattresses	4.7	(± 0.6)
Corn cobs or stalks	12.8	(± 1.3)
Other	3.7	(± 0.8)

8. Cow drinking water

a. Percent of operations by sources of drinking water for cows during the 12 months prior to the Dairy '96 interview by herd size:

Sources	Percent Operations							
	Less than 100		Standard Error		Standard Error		Standard Error	
	100		100-199		200 or More		Total	
Automatic waterer for use by individual cows	61.5	(± 2.0)	27.4	(± 3.3)	10.3	(± 2.0)	52.5	(± 1.6)
Automatic waterer for use by a group of cows, but one cow drinks at a time	51.9	(± 2.2)	52.2	(± 3.4)	24.8	(± 3.0)	50.0	(± 1.8)
Water tank that allows more than one cow to drink at a time	75.1	(± 1.9)	83.3	(± 2.5)	96.2	(± 1.1)	77.9	(± 1.5)
Lake, pond, stream, river, etc.	39.2	(± 2.1)	36.1	(± 3.4)	18.1	(± 2.2)	37.1	(± 1.7)
Other	1.3	(± 0.5)	0.8	(± 0.5)	0.2	(± 0.2)	1.1	(± 0.4)

Percent Operations by Sources of Drinking Water for Cows and Herd Size



b. For operations that used a water tank that allowed more than one cow to drink at a time, percent of operations by number of times per year the tank is drained and solids and scum are cleaned out:

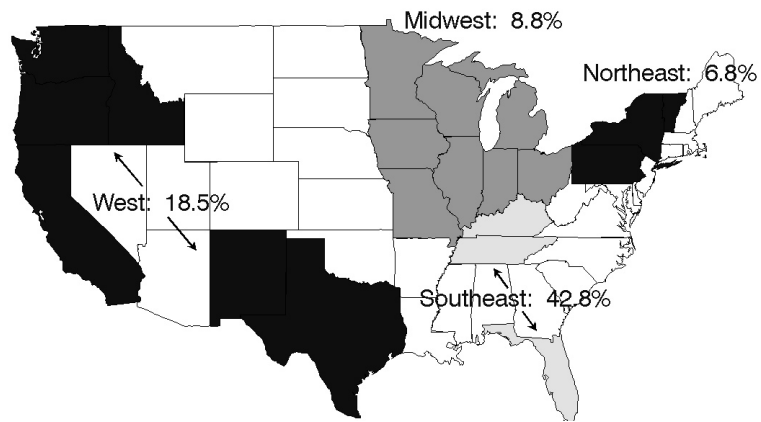
Frequency (Times per Year)	Percent Operations	Standard Error
0	8.4	(± 1.2)
1	14.5	(± 1.3)
2	21.0	(± 1.7)
3	8.1	(± 1.1)
4-6	18.3	(± 1.6)
7-12	16.0	(± 1.6)
More than 12	13.7	(± 1.4)
Total	100.0	



c. Percent of operations where the water that cows drink is usually chlorinated by region:

<u>Region</u>	<u>Percent Operations</u>	<u>Standard Error</u>
West	18.5	(± 2.4)
Midwest	8.8	(± 1.4)
Northeast	6.8	(± 1.5)
Southeast	42.8	(± 7.5)
All regions	10.7	(± 1.0)

Percent Operations Where the Water that Cows Drank Was Usually Chlorinated by Region



i. Percent of operations where the water that cows drink is usually chlorinated by herd size:

<u>Number Dairy Cows</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Less than 100	9.5	(± 1.2)
100-199	14.2	(± 2.3)
200 or more	16.3	(± 2.3)
All herds	10.7	(± 1.0)

### B. Antibiotic Injection Management

1. Antibiotic injections - usage

a. Percent of operations by percent of milk cows that received at least one antibiotic injection during the 12 months prior to the Dairy '96 interview:

<u>Percent Milk Cows</u>	<u>Percent Operations</u>	<u>Standard Error</u>
0	3.9	(± 0.8)
1-9	48.9	(± 1.8)
10-39	39.5	(± 1.7)
40-59	5.0	(± 0.9)
60-99	1.4	(± 0.4)
100	<u>1.3</u>	(± 0.4)
Total	100.0	

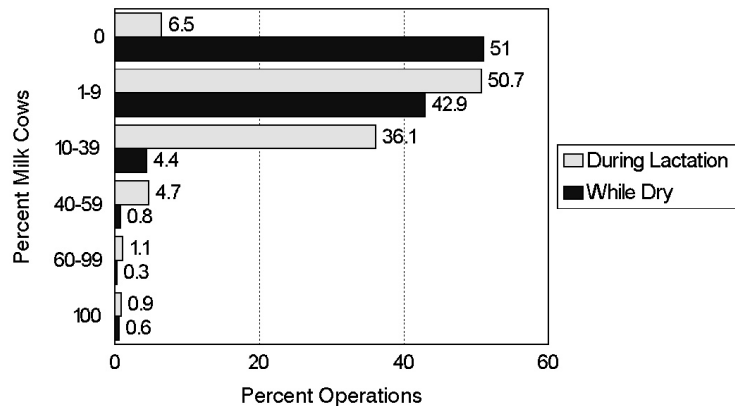
b. Percent of operations by percent of all milk cows that received at least one antibiotic injection *during lactation*:

<u>Percent Milk Cows</u>	<u>Percent Operations</u>	<u>Standard Error</u>
0	6.5	(± 1.0)
1-9	50.7	(± 1.8)
10-39	36.1	(± 1.7)
40-59	4.7	(± 0.9)
60-99	1.1	(± 0.4)
100	<u>0.9</u>	(± 0.3)
Total	100.0	

c. Percent of operations by percent of all milk cows that received at least one antibiotic injection *while dry*:

<u>Percent Milk Cows</u>	<u>Percent Operations</u>	<u>Standard Error</u>
0	51.0	(± 1.8)
1-9	42.9	(± 1.8)
10-39	4.4	(± 0.8)
40-59	0.8	(± 0.3)
60-99	0.3	(± 0.2)
100	<u>0.6</u>	(± 0.3)
Total	100.0	

Percent Operations by Percent of All Milk Cows that Received at Least One Antibiotic Injection During Lactation or While Dry

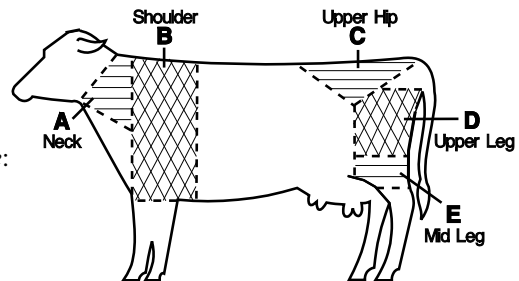


2. Antibiotic injections - route and site

a. For operations where at least one percent of the cows received an antibiotic injection in the 12 months prior to the Dairy '96 interview, percent of operations by percent of all milk cows that received at least one antibiotic injection by route of administration:

Percent Milk Cows	Percent Operations					
	Muscle		Route Under the Skin		Intravenous	
	Standard	Error	Standard	Error	Standard	Error
0	1.2	(± 0.3)	84.9	(± 1.3)	53.9	(± 1.8)
1-9	55.1	(± 1.8)	13.7	(± 1.2)	40.3	(± 1.8)
10-39	37.5	(± 1.8)	1.4	(± 0.4)	5.6	(± 0.8)
40-59	3.8	(± 0.8)	0.0	(± 0.0)	0.2	(± 0.2)
60-99	1.2	(± 0.4)	0.0	(± 0.0)	0.0	(± 0.0)
100	<u>1.2</u>	(± 0.4)	<u>0.0</u>	(± 0.0)	<u>0.0</u>	(± 0.0)
Total	100.0		100.0		100.0	

b. For operations where at least one percent of the cows received an antibiotic injection via muscle (intramuscular) in the 12 months prior to the Dairy '96 interview, percent of operations by percent of milk cows that received at least one antibiotic injection by site:



Percent Milk Cows	Percent Operations					
	A: Neck		B: Shoulder		C: Upper Hip	
	Standard	Error	Standard	Error	Standard	Error
0	86.1	(± 1.1)	93.1	(± 1.0)	43.8	(± 1.8)
1-9	11.9	(± 1.1)	6.4	(± 1.0)	38.1	(± 1.8)
10-39	1.9	(± 0.5)	0.5	(± 0.2)	15.9	(± 1.3)
40-59	0.0	(± 0.0)	0.0	(± 0.0)	1.8	(± 0.5)
60-99	0.1	(± 0.1)	0.0	(± 0.0)	0.2	(± 0.1)
100	<u>0.0</u>	(± 0.0)	<u>0.0</u>	(± 0.0)	<u>0.2</u>	(± 0.2)
Total	100.0		100.0		100.0	

Percent Milk Cows	D: Upper Leg		E: Mid Leg		Another Location	
	Standard	Error	Standard	Error	Standard	Error
0	28.4	(± 1.6)	95.6	(± 0.7)	100.0	(± 0.0)
1-9	44.5	(± 1.8)	3.1	(± 0.6)	0.0	(± 0.0)
10-39	24.5	(± 1.6)	1.1	(± 0.4)	0.0	(± 0.0)
40-59	1.5	(± 0.6)	0.1	(± 0.1)	0.0	(± 0.0)
60-99	0.5	(± 0.2)	0.0	(± 0.0)	0.0	(± 0.0)
100	<u>0.6</u>	(± 0.3)	<u>0.1</u>	(± 0.1)	<u>0.0</u>	(± 0.0)
Total	100.0		100.0		100.0	

3. Antibiotic injections given by a veterinarian

a. For operations where at least one percent of cows received an antibiotic injection in the 12 months prior to the Dairy '96 interview, percent of operations by percent of antibiotic injections given by a veterinarian by herd size:

Percent Injections	Percent Operations							
	Less than 100		Standard 100-199		Standard 200 or More		Standard Total	
	100	Error	100-199	Error	200 or More	Error	Total	Error
0	25.8	(± 2.0)	24.0	(± 2.8)	43.6	(± 3.3)	26.9	(± 1.6)
1-9	48.5	(± 2.3)	60.7	(± 3.4)	49.3	(± 3.5)	50.4	(± 1.9)
10-39	11.9	(± 1.5)	9.3	(± 2.2)	4.9	(± 1.3)	10.9	(± 1.2)
40-59	7.2	(± 1.2)	3.4	(± 1.2)	1.8	(± 0.8)	6.2	(± 0.9)
60-99	4.9	(± 1.0)	2.6	(± 1.4)	0.4	(± 0.3)	4.3	(± 0.8)
100	1.7	(± 0.6)	0.0	(± 0.0)	0.0	(± 0.0)	1.3	(± 0.5)
Total	100.0		100.0		100.0		100.0	

4. Antibiotic records

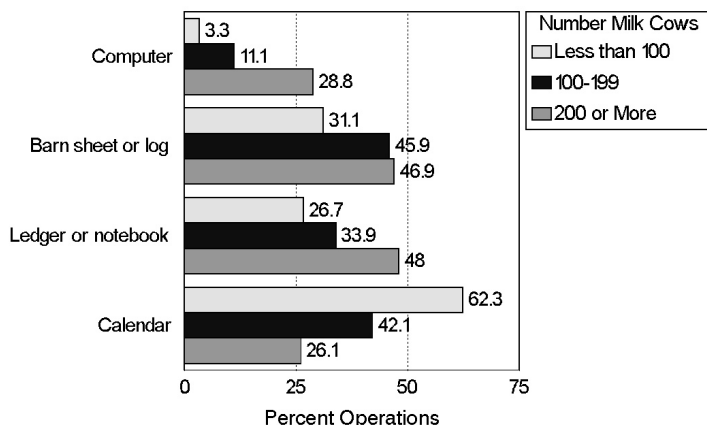
a. Percent of operations that routinely recorded antibiotic treatment in some way by herd size:

	Percent Operations							
	Less than 100		Standard 100-199		Standard 200 or More		Standard Total	
	100	Error	100-199	Error	200 or More	Error	Total	Error
	67.9	(± 2.1)	79.3	(± 2.8)	88.8	(± 2.0)	71.2	(± 1.7)

b. For operations that routinely recorded antibiotic treatment, percent of operations by record type and herd size:

Record Type	Percent Operations							
	Less than 100		Standard 100-199		Standard 200 or More		Standard Total	
	100	Error	100-199	Error	200 or More	Error	Total	Error
Computer	3.3	(± 0.9)	11.1	(± 2.7)	28.8	(± 3.2)	7.0	(± 0.9)
Barn sheet or log	31.1	(± 2.4)	45.9	(± 3.9)	46.9	(± 3.6)	35.1	(± 2.0)
Ledger or notebook	26.7	(± 2.4)	33.9	(± 3.8)	48.0	(± 3.7)	29.9	(± 1.9)
Calendar	62.3	(± 2.6)	42.1	(± 3.9)	26.1	(± 3.2)	55.6	(± 2.1)
Other	3.7	(± 1.0)	12.6	(± 2.9)	11.2	(± 2.1)	5.9	(± 0.9)

Percent Operations\* by Antibiotic Record Type and Herd Size



\*For operations that routinely recorded antibiotic treatment.

5. Identification of cows given antibiotics

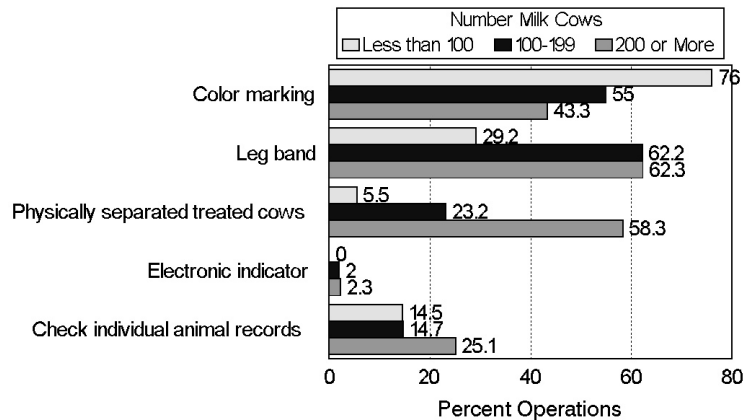
a. Percent of operations that used a method of identifying cows that had been given antibiotics to keep their milk out of the bulk tank for shipping by herd size:

		<u>Percent Operations</u>						
		Number Dairy Cows						
Less than	Standard	Standard	200	Standard		Standard		
<u>100</u>	<u>Error</u>	<u>100-199</u>	<u>Error</u>	<u>or More</u>	<u>Error</u>	<u>Total</u>	<u>Error</u>	
85.8	(± 1.6)	96.5	(± 1.3)	96.5	(± 1.1)	88.2	(± 1.3)	

b. Of operations that used a method to identify cows that had been given antibiotics to keep their milk out of the bulk tank for shipping, percent of operations by identification method and herd size:

		<u>Percent Operations</u>						
		Number Dairy Cows						
Method	Less than	Standard	Standard	200	Standard		Standard	
	<u>100</u>	<u>Error</u>	<u>100-199</u>	<u>Error</u>	<u>or More</u>	<u>Error</u>	<u>Total</u>	<u>Error</u>
Color marking	76.0	(± 2.0)	55.0	(± 3.6)	43.3	(± 3.3)	69.8	(± 1.7)
Leg band	29.2	(± 2.0)	62.2	(± 3.5)	62.3	(± 3.4)	37.4	(± 1.7)
Physically separated treated cows from untreated cows	5.5	(± 1.0)	23.2	(± 3.0)	58.3	(± 3.4)	12.7	(± 1.0)
Electronic indicator	0.0	(± 0.0)	2.0	(± 0.9)	2.3	(± 0.9)	0.5	(± 0.2)
Check individual animal records	14.5	(± 1.8)	14.7	(± 2.7)	25.1	(± 3.1)	15.4	(± 1.4)
Other	13.6	(± 1.7)	4.8	(± 1.7)	4.3	(± 1.5)	11.4	(± 1.3)

Percent Operations\* by Cow Identification Method and Herd Size



\*For operations that used a method to identify cows that had been given antibiotics.

## C. Biosecurity (Disease Preventive) Management

### 1. Cow and heifer source

#### a. Percent of total milk cow inventory at time of Dairy '96 interview by source:

<u>Source</u>	<u>Operation Average</u>	<u>Standard Error</u>	<u>Cow Average</u>	<u>Standard Error</u>
Born and raised on this operation	80.4	(± 1.0)	74.3	(± 1.5)
Born on this operation, but raised elsewhere	1.4	(± 0.2)	3.2	(± 0.8)
Not born on this operation	<u>18.2</u>	(± 0.9)	<u>22.5</u>	(± 1.3)
Total	100.0		100.0	

#### b. Percent of operations by maximum number of cows or springing heifers introduced to the herd in the previous 12 months from other operations or markets *at any one time* as a percent of cow inventory at the time of the Dairy '96 interview:

<u>Percent Introduced</u>	<u>Percent Operations</u>	<u>Standard Error</u>
0	55.7	(± 1.8)
0.1-4.9	15.2	(± 1.2)
5.0-9.9	11.0	(± 1.3)
10.0-14.9	7.3	(± 1.0)
15.0-29.9	6.7	(± 0.9)
30.0 or more	<u>4.1</u>	(± 0.7)
Total	100.0	

### 2. Herd health

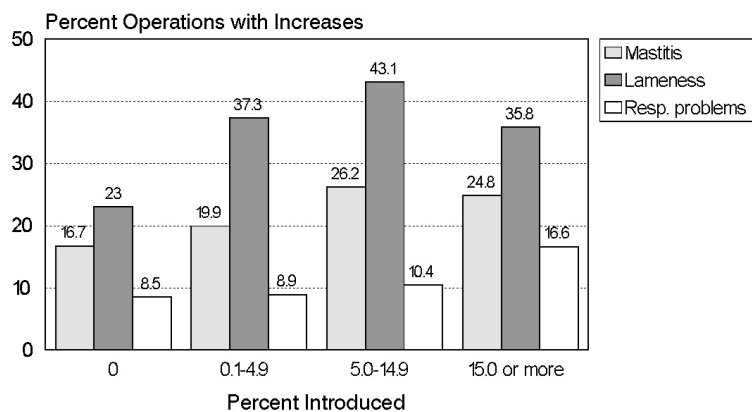
#### a. Percent of operations by changes in specified health conditions in 1995 compared to previous years:

<u>Health Condition</u>	<u>Increased in 1995</u>		<u>Stayed the Same in 1995</u>		<u>Decreased in 1995</u>		<u>Total</u>
	<u>Percent Operations</u>	<u>Standard Error</u>	<u>Percent Operations</u>	<u>Standard Error</u>	<u>Percent Operations</u>	<u>Standard Error</u>	
Mastitis	19.7	(± 1.5)	47.2	(± 1.8)	33.1	(± 1.7)	100.0
Lameness	30.2	(± 1.6)	47.8	(± 1.8)	22.0	(± 1.5)	100.0
Respiratory problems	9.7	(± 1.1)	68.5	(± 1.7)	21.8	(± 1.5)	100.0
Diarrhea lasting more than 48 hours	10.6	(± 1.1)	70.4	(± 1.7)	19.0	(± 1.4)	100.0
Abortions	16.0	(± 1.3)	64.4	(± 1.8)	19.6	(± 1.5)	100.0

b. Percent of operations with increases in the following health conditions during 1995 (compared to previous years) by maximum number of cows or springing heifers introduced at any one time as a percent of cow inventory:

Percent Introduced	Percent Operations									
	Mastitis	Standard Error	Lameness	Standard Error	Respiratory	Standard Error	Diarrhea (>48 Hours)	Standard Error	Abortions	Standard Error
0	16.7	(± 1.9)	23.0	(± 2.0)	8.5	(± 1.4)	10.1	(± 1.5)	17.5	(± 1.9)
0.1-4.9	19.9	(± 3.4)	37.3	(± 4.0)	8.9	(± 2.7)	8.5	(± 2.1)	13.9	(± 2.8)
5.0-14.9	26.2	(± 4.2)	43.1	(± 4.6)	10.4	(± 2.6)	15.0	(± 2.9)	15.6	(± 3.0)
15.0 or more	24.8	(± 4.5)	35.8	(± 5.0)	16.6	(± 4.0)	9.6	(± 3.0)	11.7	(± 3.0)

Percent Operations with Increases in the Following Health Conditions by Introduction\* of Cows or Springing Heifers



\*At any one time during 1995.

3. Access to feed bunks and storage units

a. Percent of operations where outside feed bunks were built to keep rain and/or snow off the feed by region:

Response	Percent Operations									
	West	Stand. Error	Midwest	Stand. Error	Northeast	Stand. Error	Southeast	Stand. Error	Total	Stand. Error
Yes	24.6	(± 2.6)	26.4	(± 2.1)	21.8	(± 2.9)	55.2	(± 7.8)	26.4	(± 1.6)
No	63.8	(± 2.9)	52.7	(± 2.5)	37.9	(± 3.4)	28.1	(± 7.0)	48.6	(± 1.8)
Cows not fed outside	<u>11.6</u>	(± 2.1)	<u>20.9</u>	(± 2.2)	<u>40.3</u>	(± 3.4)	<u>16.7</u>	(± 5.7)	<u>25.0</u>	(± 1.6)
Total	100.0		100.0		100.0		100.0		100.0	

b. Percent of operations where storage units used for grain or concentrates prevented access by the following animals by herd size:

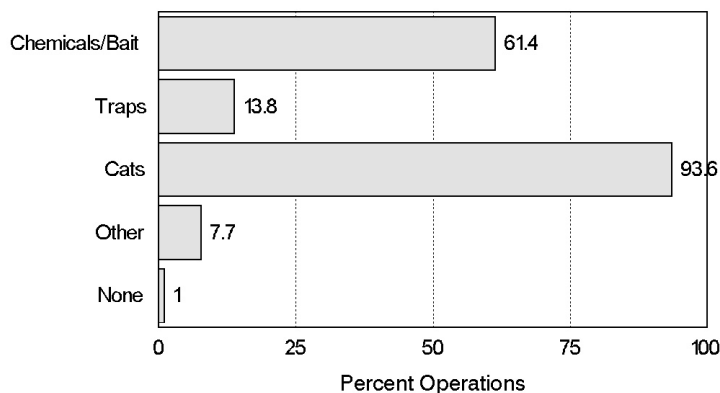
Animal	Percent Operations							
	Less than 100	Standard Error	Standard 100-199	Standard Error	200 or More	Standard Error	Total	Standard Error
Dogs	56.9	(± 2.2)	58.0	(± 3.5)	41.3	(± 3.4)	55.9	(± 1.8)
Cats	51.7	(± 2.2)	56.1	(± 3.5)	40.2	(± 3.4)	51.5	(± 1.8)
Birds	51.1	(± 2.2)	51.7	(± 3.6)	40.1	(± 3.3)	50.4	(± 1.8)
Rodents	46.0	(± 2.3)	46.4	(± 3.5)	39.2	(± 3.4)	45.6	(± 1.8)
None of the above	27.7	(± 2.0)	34.4	(± 3.3)	54.5	(± 3.4)	30.7	(± 1.6)

4. Rodent and fly control

a. Percent of operations by methods of rodent control routinely used by herd size:

Methods	Percent Operations Number Dairy Cows							
	Less than 100	Standard Error	100-199	Standard Error	200 or More	Standard Error	Total	Standard Error
Chemicals/bait	61.7	(± 2.2)	63.1	(± 3.4)	54.9	(± 3.3)	61.4	(± 1.8)
Traps	14.7	(± 1.7)	13.1	(± 2.5)	5.7	(± 1.3)	13.8	(± 1.4)
Cats	94.7	(± 1.0)	92.7	(± 1.8)	83.7	(± 2.7)	93.6	(± 0.8)
Other	8.4	(± 1.3)	5.2	(± 1.6)	5.9	(± 1.3)	7.7	(± 1.0)
None	0.5	(± 0.3)	1.6	(± 0.8)	4.5	(± 1.8)	1.0	(± 0.3)

Percent Operations by Methods of Rodent Control Routinely Used



b. Percent of operations by fly control methods used in the past year by herd size:

Methods	Percent Operations Number Dairy Cows							
	Less than 100	Standard Error	100-199	Standard Error	200 or More	Standard Error	Total	Standard Error
Environmental fly control	91.7	(± 1.2)	86.3	(± 2.5)	84.0	(± 2.7)	90.3	(± 1.0)
Products administered to animals	46.4	(± 2.2)	48.3	(± 3.5)	42.8	(± 3.3)	46.5	(± 1.8)
Treated ear tags	15.1	(± 1.6)	19.0	(± 2.9)	14.1	(± 2.7)	15.6	(± 1.3)
Biologic control	2.7	(± 0.7)	2.9	(± 1.3)	11.6	(± 2.1)	3.4	(± 0.6)
Other	5.4	(± 1.1)	5.1	(± 2.0)	2.0	(± 0.9)	5.1	(± 0.9)
None	1.0	(± 0.4)	7.9	(± 2.1)	5.5	(± 1.7)	2.4	(± 0.5)



## 5. Dehorning

a. Percent of operations that routinely dehorned heifers by herd size:

<u>Number Dairy Cows</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Less than 100	98.6	(± 0.5)
100-199	99.8	(± 0.1)
200 or more	93.7	(± 1.6)
Total	98.4	(± 0.4)

b. For operations that routinely dehorned heifers, percent of operations by primary dehorning method by herd size:

<u>Methods</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Caustic paste	6.7	(± 1.0)
Electric dehorner	40.2	(± 1.7)
Spoons or gouges	33.9	(± 1.8)
Saws, Barnes or Keystone (guillotine) dehorners	<u>19.2</u>	(± 1.5)
Total	100.0	

c. For operations that routinely dehorned with spoons or gouges, or saws, Barnes, Keystone (guillotine) dehorners, percent of operations by routine method of cleaning dehorning equipment:

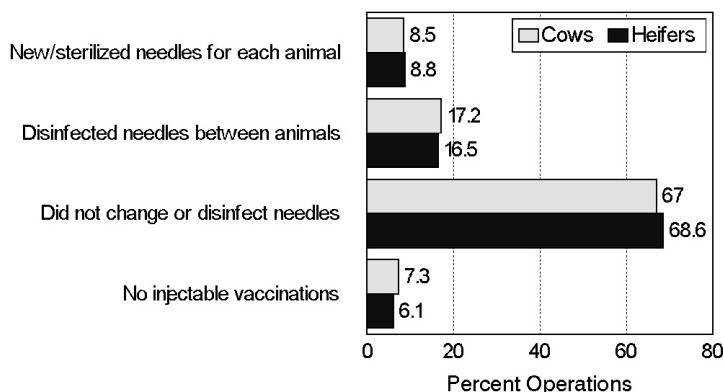
<u>Cleaning Methods</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Washed with water between each animal	34.3	(± 2.6)
Chemically disinfected between each animal	38.3	(± 2.6)
Neither washed nor disinfected between each animal	53.6	(± 2.7)

6. Vaccination procedures

a. Percent of operations by producer description of procedures used to vaccinate *cows* by injection by herd size:

Procedures	Less than		Percent Operations				Standard	
	100	Error	Standard	200	Standard	Error	Total	Error
			100-199	or More				
Changed needles for each animal using new or sterilized needles	7.6	(± 1.1)	12.5	9.7	(± 2.3)	8.5	(± 1.0)	
Did not change needles, but disinfected needles between animals using solution or alcohol pad	18.8	(± 1.8)	11.8	10.9	(± 1.9)	17.2	(± 1.4)	
Did not change needles or disinfect between animals	65.3	(± 2.1)	71.5	76.3	(± 2.9)	67.0	(± 1.7)	
Did not use injectable vaccinations	<u>8.3</u>	(± 1.3)	<u>4.2</u>	<u>3.1</u>	(± 1.3)	<u>7.3</u>	(± 1.0)	
Total	100.0		100.0	100.0		100.0		

Percent Operations by Procedures Used\* to Vaccinate Cows and Heifers by Injection



\*Producer description of procedures.

b. Percent of operations by producer description of procedures used to vaccinate *heifers* by injection by herd size:

Procedures	Less than		Percent Operations				Standard	
	100	Error	Standard	200	Standard	Error	Total	Error
			100-199	or More				
Changed needles for each animal using new or sterilized needles	8.1	(± 1.2)	12.0	9.3	(± 2.3)	8.8	(± 1.0)	
Did not change needles, but disinfected needles between animals using solution or alcohol pad	18.0	(± 1.7)	11.7	10.1	(± 1.9)	16.5	(± 1.4)	
Did not change needles or disinfect between animals	67.3	(± 2.1)	71.2	77.7	(± 2.9)	68.6	(± 1.7)	
Did not use injectable vaccinations	<u>6.6</u>	(± 1.1)	<u>5.1</u>	<u>2.9</u>	(± 1.0)	<u>6.1</u>	(± 0.9)	
Total	100.0		100.0	100.0		100.0		

7. Artificial insemination and rectal palpation

a. Percent of inseminated/exposed heifers and cows by method:

<u>Method</u>	<u>Operation</u>		<u>Percent of</u>	
	<u>Average</u>	<u>Standard</u>	<u>Exposed</u>	<u>Standard</u>
	<u>Percent</u>	<u>Error</u>	<u>Heifers/Cows</u>	<u>Error</u>
Artificial insemination	65.0	(± 1.4)	69.3	(± 1.4)
Natural service	34.7	(± 1.4)	36.1	(± 1.4)
Embryo transfer	0.5	(± 0.1)	0.6	(± 0.2)

b. Percent of operations by usual methods of performing rectal palpation and artificial insemination:

<u>Frequency</u>	<u>Rectal Palpation</u>		<u>Artificial Insemination</u>	
	<u>Percent</u>	<u>Standard</u>	<u>Percent</u>	<u>Standard</u>
	<u>Operations</u>	<u>Error</u>	<u>Operations</u>	<u>Error</u>
Used same sleeve for more than one cow	74.4	(± 1.6)	20.4	(± 1.4)
Used a new sleeve for each cow	17.7	(± 1.4)	65.3	(± 1.7)
Used bare arm	0.0	(± 0.0)	0.0	(± 0.0)
Not performed	<u>7.9</u>	(± 1.1)	<u>14.3</u>	(± 1.3)
Total	100.0		100.0	

8. Exposure

a. Percent of operations from which cattle left the operation for fairs or shows and returned to the operation by herd size:

<u>Number Dairy Cows</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Less than 100	15.9	(± 1.5)
100-199	24.3	(± 3.1)
200 or more	25.9	(± 2.8)
Total	17.9	(± 1.3)

b. Percent of operations that separated sick cows to prevent nose-to-nose contact with other cows and heifers by herd size:

		<u>Percent Operations</u>					
		<u>Number Dairy Cows</u>		<u>200</u>		<u>Total</u>	
<u>Less than</u>	<u>Standard</u>	<u>100-199</u>	<u>Standard</u>	<u>or More</u>	<u>Standard</u>	<u>Total</u>	<u>Standard</u>
<u>100</u>	<u>Error</u>	<u>Error</u>	<u>Error</u>	<u>Error</u>	<u>Error</u>	<u>Error</u>	<u>Error</u>
13.5	(± 1.5)	23.6	(± 2.9)	46.8	(± 3.3)	17.5	(± 1.3)

## 9. Calving and heifer management during 1996

a. Percent of operations by how soon newborn dairy calves were usually separated from their mothers:

<u>Hours</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Less than 1 hour	13.1	(± 1.3)
1-6	38.3	(± 1.8)
7-12	23.0	(± 1.5)
13-24	12.1	(± 1.2)
More than 24	<u>13.5</u>	(± 1.3)
Total	100.0	

b. Separation from dam

i. Operation average percent of heifer calves born on the operation that stayed with their dams more than 24 hours:

<u>Percent Operations</u>	<u>Standard Error</u>
15.1	(± 1.3)

ii. Percent of operations by percent of heifer calves born on the operation that remained with their dams more than 24 hours:

<u>Percent Heifers</u>	<u>Percent Operations</u>	<u>Standard Error</u>
0	64.8	(± 1.8)
0-4.9	7.6	(± 1.0)
5.0-24.9	12.1	(± 1.2)
25.0-49.9	1.1	(± 0.4)
50.0 - 99.9	2.3	(± 0.6)
100	<u>12.1</u>	(± 1.2)
Total	100.0	

c. Percent of operations where teats and udders were usually washed before colostrum was collected (or before nursing):

<u>Percent Operations</u>	<u>Standard Error</u>
68.2	(± 1.7)

d. Percent of operations by frequency of using calving area as a hospital area for sick cows:

<u>Frequency</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Frequently	16.0	(± 1.3)
Occasionally	38.9	(± 1.8)
Never	<u>45.1</u>	(± 1.8)
Total	100.0	

e. Percent of operations by bedding routines used for calving areas:

<u>Routines</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Bedding material added between each calving	70.4	(± 1.5)
Bedding material added every 2-5 calvings	12.6	(± 1.1)
Bedding material added after 5 or more calvings	3.5	(± 0.5)
Bedding not used	<u>13.5</u>	(± 1.1)
Total	100.0	

f. Percent of operations by how often equipment used for manure handling was also used to handle feed fed to heifers less than 12 months of age by herd size:

<u>Frequency</u>	<u>Less than 100</u>		<u>Standard Error</u>		<u>Percent Operations</u>		<u>Number Dairy Cows</u>	
	<u>100</u>	<u>Error</u>	<u>100-199</u>	<u>Error</u>	<u>Standard</u>	<u>200</u>	<u>Standard</u>	<u>All</u>
At least weekly	10.9	(± 1.4)	19.4	(± 2.9)	13.4	(± 2.1)	12.4	(± 1.2)
Less than weekly	9.9	(± 1.3)	12.0	(± 2.4)	13.7	(± 2.6)	10.5	(± 1.1)
Not a practice	<u>79.2</u>	(± 1.8)	<u>68.6</u>	(± 3.4)	<u>72.9</u>	(± 3.0)	<u>77.1</u>	(± 1.5)
Total	100.0		100.0		100.0		100.0	

g. Percent of operations where heifers less than 12 months of age shared common feed or water sources with adult cattle:

<u>Less than 100</u>	<u>Standard Error</u>	<u>Percent Operations</u>		<u>Number Dairy Cows</u>		<u>All Operations</u>	<u>Standard Error</u>
		<u>100-199</u>	<u>Standard Error</u>	<u>Standard</u>	<u>200</u>		
28.4	(± 2.1)	16.2	(± 2.7)	19.4	(± 2.5)	25.9	(± 1.7)

h. Direct contact between heifers and adult cows

i. After removal from the dam, operation average age (in months) at which heifers first had direct contact with adult cows in the herd:

<u>Average Age (Months)</u>	<u>Standard Error</u>
16.8	(± 0.3)

ii. Percent of operations by age (in months) at which heifers first had direct contact with adult cows in the herd after separation from the dam:

<u>Age (in Months)</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Less than 3.0	8.4	(± 1.1)
3.0-5.9	3.3	(± 0.7)
6.0-8.9	5.6	(± 0.9)
9.0-11.9	1.4	(± 0.4)
12.0-14.9	15.3	(± 1.4)
15.0-17.9	14.6	(± 1.3)
18.0 or more	<u>51.4</u>	(± 1.8)
Total	100.0	

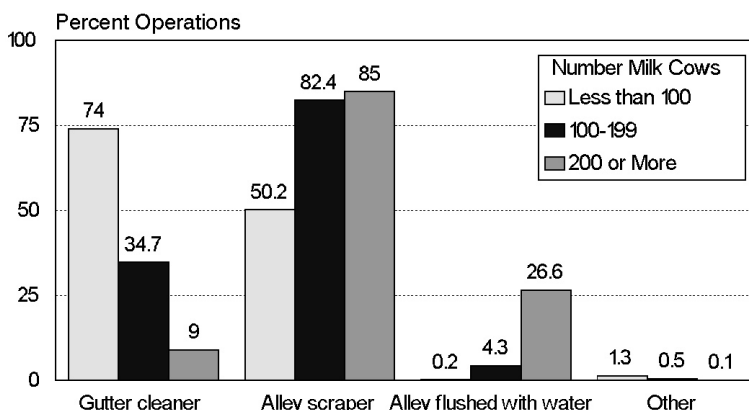
### D. Manure Management

1. Manure removal

a. Percent of operations by method of removing manure from cow housing areas by herd size:

<u>Method</u>	<u>Percent Operations</u>		<u>Number Dairy Cows</u>				<u>Total</u>	
	<u>Less than 100</u>	<u>Standard Error</u>	<u>100-199</u>	<u>Standard Error</u>	<u>200 or More</u>	<u>Standard Error</u>	<u>Total</u>	<u>Standard Error</u>
Gutter cleaner	74.0	(± 1.5)	34.7	(± 3.5)	9.0	(± 2.3)	63.2	(± 1.3)
Alley scraper (mechanical or tractor)	50.2	(± 2.2)	82.4	(± 2.7)	85.0	(± 2.2)	57.7	(± 1.7)
Alley flushed with water	0.2	(± 0.1)	4.3	(± 1.4)	26.6	(± 2.5)	2.8	(± 0.3)
Other	1.3	(± 0.5)	0.5	(± 0.4)	0.1	(± 0.1)	1.1	(± 0.4)

Percent Operations by Method of Removing Manure from Cow Housing Areas and Herd Size



b. Of operations that flushed alleys with water, percent of operations that recycled water from cow housing areas for multiple flushings:

<u>Percent Operations</u>	<u>Standard Error</u>
54.4	(± 6.2)

2. Manure storage

a. Percent of operations by distance between manure storage area and nearest well (and nearest waterway or body of water):

<u>Distance (in Feet)</u>	<u>Well</u>		<u>Waterway or Body of Water</u>	
	<u>Percent Operations</u>	<u>Standard Error</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Less than 50	2.0	(± 0.6)	4.7	(± 0.9)
50-99	3.4	(± 0.7)	2.3	(± 0.5)
100-199	13.5	(± 1.4)	4.6	(± 0.8)
200-499	43.3	(± 2.0)	14.6	(± 1.5)
500 or more	<u>37.8</u>	(± 1.9)	<u>73.8</u>	(± 1.7)
Total	100.0		100.0	

b. Percent of operations by waste storage system used by herd size:

<u>System</u>	<u>Percent Operations</u>		<u>Number Dairy Cows</u>		<u>Percent Operations</u>		<u>Standard Error</u>	
	<u>Less than 100</u>	<u>Standard Error</u>	<u>100-199</u>	<u>Standard Error</u>	<u>200 or More</u>	<u>Standard Error</u>	<u>Total</u>	<u>Standard Error</u>
Below-floor slurry or deep pit	4.7	(± 0.9)	19.6	(± 2.6)	16.9	(± 2.5)	7.9	(± 0.8)
Slurry storage in tanks	3.2	(± 0.8)	10.9	(± 2.1)	17.5	(± 2.9)	5.4	(± 0.7)
Slurry storage in earth-basin	13.5	(± 1.4)	25.2	(± 3.3)	27.8	(± 3.2)	16.3	(± 1.2)
Anaerobic lagoon with cover	0.2	(± 0.1)	0.3	(± 0.2)	1.1	(± 0.6)	0.3	(± 0.1)
Anaerobic lagoon without cover	5.7	(± 0.9)	18.2	(± 2.1)	46.7	(± 3.3)	10.7	(± 0.8)
Aerated lagoon	0.5	(± 0.3)	3.3	(± 1.3)	8.3	(± 1.7)	1.5	(± 0.3)
Manure pack (inside barn)	22.3	(± 1.8)	20.4	(± 2.9)	14.1	(± 2.8)	21.4	(± 1.5)
Outside storage for solids (not in dry lot or pen)	37.9	(± 2.2)	33.0	(± 3.3)	30.1	(± 3.0)	36.6	(± 1.8)
Outside storage within dry lots or pens	14.8	(± 1.7)	11.5	(± 2.2)	22.0	(± 2.8)	14.9	(± 1.4)
Solids in a building without cattle access	2.8	(± 0.7)	4.1	(± 1.3)	2.4	(± 0.9)	3.0	(± 0.6)
Other	2.1	(± 0.6)	1.8	(± 0.9)	1.6	(± 0.7)	2.0	(± 0.5)

c. For operations that used a lagoon for waste storage, percent using single and multiple stage lagoons:

<u>Stage</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Single stage lagoon	84.0	(± 2.0)
Multiple stage lagoon	16.6	(± 2.0)

d. Percent of operations that separated solid waste from liquids before being placed in some type of storage tank or lagoon:

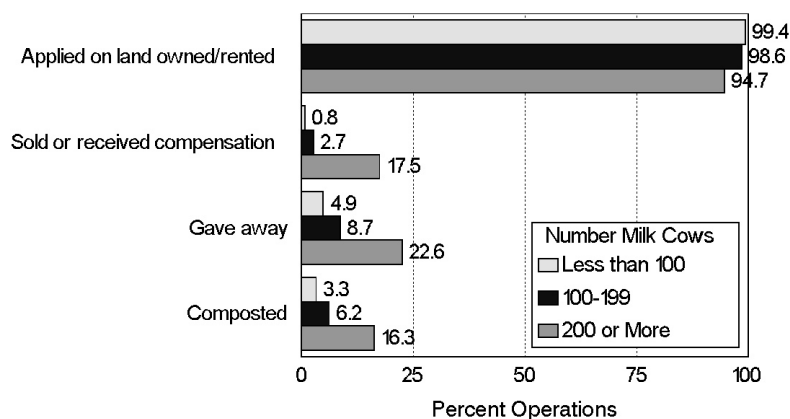
<u>Response</u>	<u>Percent Operations</u>	<u>Standard Error</u>
Yes	2.3	(± 0.4)
No	29.5	(± 1.5)
No storage tank or lagoon	<u>68.2</u>	(± 1.5)
Total	100.0	

3. Manure disposal

a. Percent of operations by manure disposal methods used by herd size:

Methods of Disposal	Percent Operations							
	Less than 100		Standard 100-199		Standard 200 or More		Standard Total	
		Error		Error		Error		Error
Applied on land owned or rented by the operation	99.4	(± 0.3)	98.6	(± 0.6)	94.7	(± 1.1)	98.9	(± 0.3)
Sold it or received other compensation	0.8	(± 0.3)	2.7	(± 0.8)	17.5	(± 2.4)	2.3	(± 0.3)
Gave away	4.9	(± 0.9)	8.7	(± 1.7)	22.6	(± 2.6)	6.8	(± 0.8)
Composted	3.3	(± 0.9)	6.2	(± 1.9)	16.3	(± 2.2)	4.7	(± 0.7)

Percent Operations by Manure Disposal Methods Used and Herd Size



i. For operations that applied manure on land owned or rented, percent of operations by frequency of application and season:

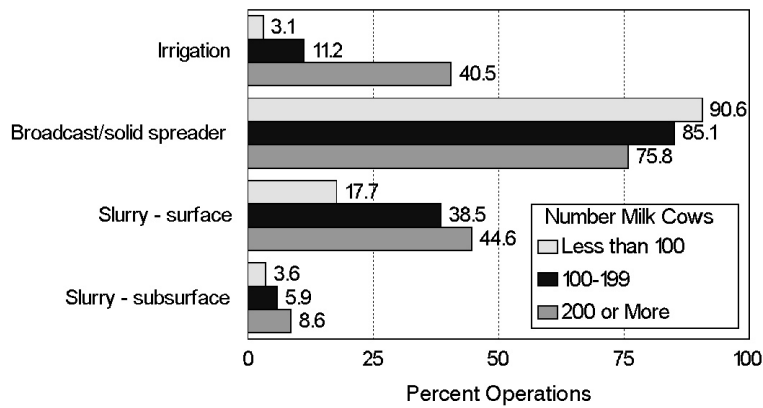
Frequency	Summer		Winter	
	Percent Operations	Standard Error	Percent Operations	Standard Error
Daily	30.4	(± 1.7)	46.5	(± 1.7)
Weekly	25.5	(± 1.7)	14.7	(± 1.3)
Monthly	10.8	(± 1.0)	7.8	(± 0.9)
Less often then monthly	33.3	(± 1.7)	31.0	(± 1.6)
Total	100.0		100.0	



ii. For operations that applied manure to owned or rented land, percent of operations that used the following applications/methods by herd size:

Application/Method	Percent Operations							
	Less than 100		Standard 100-199		200 or More		Standard Total	
		Error		Error		Error		Error
Irrigation	3.1	(± 0.7)	11.2	(± 1.6)	40.5	(± 3.1)	7.0	(± 0.6)
Broadcast/solid spreader	90.6	(± 1.3)	85.1	(± 2.3)	75.8	(± 3.1)	88.7	(± 1.1)
Slurry (surface application)	17.7	(± 1.6)	38.5	(± 3.4)	44.6	(± 3.3)	22.7	(± 1.4)
Slurry (subsurface injection)	3.6	(± 0.7)	5.9	(± 1.9)	8.6	(± 2.2)	4.3	(± 0.7)
Other method	0.0	(± 0.0)	0.4	(± 0.4)	1.0	(± 0.8)	0.1	(± 0.1)

Percent Operations\* that Used the Following Methods for Manure Application by Herd Size

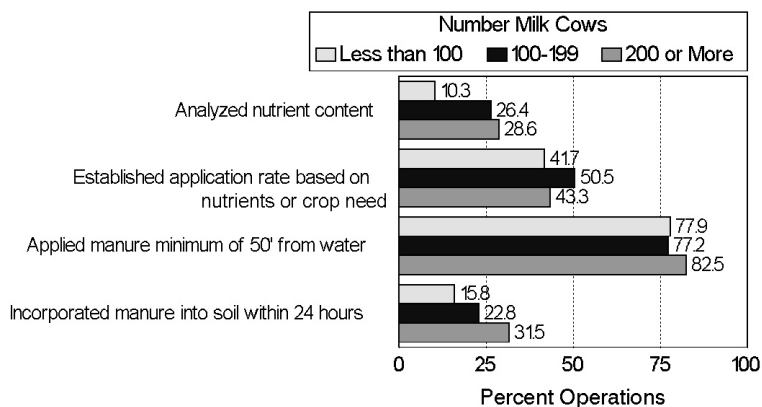


\*For operations that applied manure on land owned or rented.

iii. For operations that applied manure to owned or rented land, percent of operations routinely performing specified practices by herd size:

Practices	Less than 100		Standard Error		100-199		Standard Error		200 or More		Standard Error		Total		Standard Error	
	100	Standard Error	100-199	Standard Error	200 or More	Standard Error	Total	Standard Error								
Analyzed nutrient content of manure	10.3	(± 1.3)	26.4	(± 3.4)	28.6	(± 3.3)	14.0	(± 1.2)								
Established manure application rate based on manure nutrients and/or crop needs	41.7	(± 2.2)	50.5	(± 3.5)	43.3	(± 3.4)	43.2	(± 1.8)								
Applied manure a minimum of 50 feet from water bodies	77.9	(± 1.9)	77.2	(± 3.1)	82.5	(± 2.5)	78.1	(± 1.6)								
Incorporated manure into soil within 24 hours after application	15.8	(± 1.5)	22.8	(± 3.2)	31.5	(± 3.3)	17.9	(± 1.3)								

Percent Operations\* Routinely Performing Specified Manure Disposal Practices by Herd Size



\*For operations that applied manure on land owned or rented.

**A. Cattle Inventory on January 1, 1996**

1. Total cattle and calves on hand:

<u>Size Group</u>	<u>Number Operations Reporting</u>
Less than 50	11
50-99	204
100-399	733
400 or more	<u>271</u>
Total	1,219

2. Total dairy cows, dry or milked:

<u>Size Group</u>	<u>Number Operations Reporting</u>
Less than 50	196
50-99	434
100-299	412
300 or more	<u>177</u>
Total	1,219

3. Total dairy heifers:

<u>Size Group</u>	<u>Number Operations Reporting</u>
Less than 10	34
10-29	161
30-49	258
50-99	366
100 or more	<u>400</u>
Total	1,219

Note: Data from the above sampled operations were weighted to represent all dairy operations with at least 30 milk cows in the 20 states participating in the study.

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