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Dairy Herd Management Practices Focusing on Preweaned Heifers

April 1991 - July 1992

NAHMS

National Dairy Heifer Evaluation Project

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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

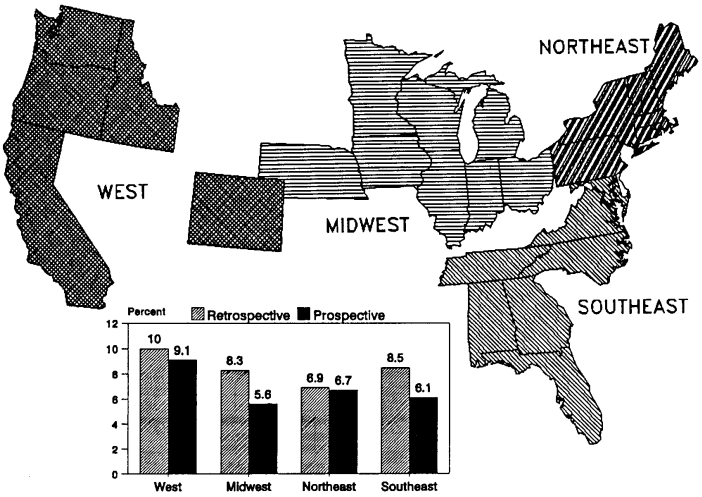
maintained records and monitored health events of heifers born on the operation during the 3-month period. Results were again extrapolated to the U.S. dairy population.

- 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.

Heifer Calf Deaths as a Percent of Heifer Calves Born Alive or Moved onto the Operation



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)?

Average	Standard Error
14.1	(±0.8)

2. How many are:

	Average	Standard Error
a. beef cows (including beef heifers that have calved and cull beef cows, but not cull dairy cows)?	1.8	(±0.2)
b. beef heifers (that have not calved) including newborns?	1.5	(±0.2)

3. How many are:

a. dairy cows (including dairy heifers that have calved)?		85.7	(±1.3)
i. being milked (including culls)?	72.5		(±1.2)
ii. dry?	13.2		(±0.3)
b. dairy heifers (that have not calved) including newborns?		66.3	(±1.3)
i. newborn to weaning age?	8.5		(±0.3)
ii. dairy heifers weaning age to 4 months old?	9.5		(±0.3)
iii. 4 months to breeding age?	25.5		(±0.5)
iv. breeding age and older?	22.8		(±0.5)

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

169.4	(±2.9)

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)?

Average	Standard Error
16.7	(±0.4)

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

Average	Standard Error
7.1	(±0.2)

C. Dairy Herd Information

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

Type of Operation:		Percent of Operations	Standard Error	Percent of Cows	Standard Error
Grade A	90.7	(±1.2)	94.6	(±0.7)	
Grade B	9.0	(±1.2)	5.2	(±0.7)	
Contract heifer operation		.2	(±0.1)	0.1	(±0.1)
Other		.1	(±0.1)	0.1	(±0.1)
Total		100.0		100.0	

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

Breed	Percent of Operations	Standard Error	Percent of Cows	Standard Error
Holstein	94.9	(±0.7)	95.8	(±0.6)
Jersey	2.4	(±0.4)	2.5	(±0.4)
Ayrshire	0.6	(±0.3)	0.4	(±0.2)
Brown Swiss	1.0	(±0.4)	0.7	(±0.3)
Guernsey	0.9	(±0.3)	0.6	(±0.2)
Other	0.2	(±0.2)	0.0	(±0.0)
Total	100.0		100.0	

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

Herd Average Percent	Standard Error	Percent of Cows	Standard Error
16.7	(±1.0)	15.8	(±0.8)

b. Percent of operations by percent of herd registered:

Percent of Herd Registered	Percent of Operations	Standard Error
0	59.7	(±0.1)
1-25	19.6	(±0.1)
26-50	7.4	(±0.1)
51-75	3.2	(±0.1)
76-99	4.2	(±0.1)
100	5.9	(±0.1)
Total	100.0	

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

Average Pounds per Cow	Standard Error
16,703.2	(±96.4)

b. Was average estimated or calculated?

Information Source	Percent of Operations	Standard Error
Estimated	46.1	(±1.8)
Calculated	53.9	(±1.8)

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

Average Days per Cow	Standard Error
61.1	(±0.5)

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)

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

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

	Average Months per Cow	Standard Error
Calving interval	12.8	(±0.0)

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

	Percent of Operations	Standard Error
Yes	1.9	(±0.4)
No	98.1	(±0.4)
Total	100.0	

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:

Marketing Option	Percent of Operations	Standard Error	Average Age When Sold	Standard Error
Sold for replacements before they were weaned (from liquid ration)?	10.0	(±1.0)	2.0 Days	(±0.2)
Sold for veal or some other purpose before weaning (from liquid ration)?	13.9	(±1.3)	1.4 Weeks	(±0.1)

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?

	Percent of Operations	Standard Error
Yes	1.6	(±0.3)
No	98.4	(±0.3)
Total	100.0	

b. Were any of the dairy heifers contracted out:

Age	Percent of Operations	Average Age When Contracted Out	Average Length of Contract
Newborns to 4 months old when contracted out?	0.7	31.4 Days	16.0 Months
Standard Error	(±0.2)	(±9.6)	(±1.8)
Heifers 4 months to breeding age when contracted out?	0.8	9.3 Month	13.7 Months
Standard Error	(±0.2)	(±1.4)	(±1.3)
Heifers breeding age (but not yet calved) when contracted out?	0.2	14.5 Months	9.6 Months
Standard Error	(±0.1)	(±0.6)	(±0.8)

D. Dairy Heifers

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

Age	Percent of Operations	Standard Error
0 Hours (before nursing)	28.0	(±1.7)
Less than 12 hours	39.6	(±1.7)
12-24 hours	22.0	(±1.4)
More than 24 hours	10.4	(±1.0)
Total	100.0	

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

Method of Delivery	Percent of Operations	Standard Error
During first nursing	33.7	(±1.7)
Hand feeding from bucket or bottle	64.0	(±1.7)
Hand feeding using esophageal feeder	2.3	(±0.6)
Total	100.0	

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

	Percent of Operations	Standard Error
Yes	40.8	(±2.9)
No	59.2	(±2.9)
Total	100.0	

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

Source	Percent of Operations Hand Feeding	Standard Error
First milk from mother	94.6	(±0.7)
Pooled milk from several cows, exlcuding first calf heifers	2.3	(±0.4)
Pooled milk from several cows, including first calf heifers	0.9	(±0.3)
Stored milk from individual cows (not pooled)	1.9	(±0.5)
Commercial colostrum substitute	0.3	(±0.2)
Total	100.0	

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

Source	Percent of Operations Hand Feeding	Standard Error
Two quarts or less	25.6	(±1.8)
More than two, but less than four quarts	48.2	(±2.1)
Four or more quarts	26.2	(±1.9)
Total	100.0	

D. Dairy Heifers (continued)

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

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

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

	Average Age in Days	Standard Error
a. grain or other concentrated feeds?	9.7	(±0.4)
b. hay or other roughages?	23.0	(±0.7)
c. free choice of water?	25.8	(±0.9)

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

Factor	Percent of Operations	Standard Error
Age	43.0	(±1.8)
Weight	26.4	(±1.6)
Grain intake	26.9	(±1.5)
Other	3.7	(±0.6)
Total	100.0	

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

Average Age in Weeks	Standard Error
7.9	(±0.1)

9. a. Are calves ever separated into groups?

	Percent of Operations	Standard Error
Yes	79.8	(±1.4)
No	20.2	(±1.4)
Total	100.0	

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

Factor	Percent of Operations That Group Calves	Standard Error
Age	48.0	(±2.0)
Weight or size	47.4	(±2.0)
Other	4.6	(±0.8)
Total	100.0	

D. Dairy Heifers (continued)

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

	Average	Standard Error
	7.8 Weeks	(±0.2)

d. What is the average weight (at first grouping)? (Answers were usually estimated.) 190.7 Pounds (±2.4)

e. What is the average number per group? 7.5 Calves (±0.1)

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

	Percent of Operations	Standard Error	Average Age When Removed	Standard Error
Yes	53.3	(±1.8)	133.9 Days	(±3.0)

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

	Percent of Operations	Standard Error	Average Age Dehorned	Standard Error
Yes	95.2	(±0.8)	4.1 Months	(±0.1)

b. What is the primary method of horn removal?

Method of Removal	Percent of Operations That Dehorn	Standard Error
Caustic paste	7.4	(±1.0)
Electric dehorner	35.0	(±1.7)
Scoop, cut, or gouge	45.3	(±1.8)
Saw	10.5	(±1.2)
Other	1.8	(±0.4)
Total	100.0	

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

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

D. Dairy Heifers (continued)

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

Identification Type	Percent of Operations	Standard Error	Percent of Animals	Standard Error
Ear tags (all kinds)	80.5	(±1.6)	85.0	(±1.2)
Collars	1.3	(±0.4)	1.1	(±0.4)
Photograph or sketch	4.7	(±0.9)	3.3	(±0.6)
Freeze branding	0.9	(±0.3)	1.2	(±0.3)
Other methods of branding	0.6	(±0.2)	0.8	(±0.3)
Tattoo (other than tattoo for brucellosis)	2.6	(±0.5)	2.5	(±0.4)
Other	2.1	(±0.5)	1.7	(±0.4)
None	7.3	(±1.2)	4.4	(±0.7)
Total	100.0		100.0	

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.)

	Percent of Operations			
Health Problem	First	Standard Error	Second	Standard Error
Scours, diarrhea	53.8	(±1.8)	7.4	(±0.8)
Respiratory problems	12.1	(±1.1)	26.6	(±1.6)
Trauma	0.2	(±0.1)	0.4	(±0.2)
Joint or naval problems	1.1	(±0.3)	2.2	(±0.5)
Other	1.9	(±0.5)	1.4	(±0.4)
No reason/unknown	3.4	(±0.8)	6.5	(±0.9)
No illness or deaths	27.5	(±1.7)	55.5	(±1.8)
Total	100.0		100.0	

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?

Percent Preweaning Heifer Death Loss	Standard Error
8.4	(±0.4)

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.)

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

c. Percent of deaths by cause:

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

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)?

Percent Death Loss	Standard Error
2.2	(±0.1)

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.)

	Percent of Operations			
Cause of Death	First	Standard Error	Second	Standard Error
Scours, diarrhea	10.8	(±1.4)	3.1	(±0.8)
Respiratory problems	30.9	(±2.5)	4.6	(±0.9)
Trauma	8.7	(±1.3)	2.4	(±0.6)
Joint or naval problems	1.8	(±0.7)	0.4	(±0.3)
Other	26.1	(±2.2)	6.1	(±1.1)
No reason/unknown	21.7	(±2.2)	14.2	(±1.9)
No deaths	0.0	(±0.0)	69.2	(±2.3)
Total	100.0		100.0	

E. Births, Illnesses, and Deaths (continued)

c. Percent of deaths by cause:

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

F. Housing

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

	Percent of Operations								
	NO BUILDING (run loose in lot or pasture)	HUTCH Individual	HUTCH Super (group)	COW BARN Individual Pens	COW BARN Group Pens	COW BARN Tied	OTHER BARN Individual Pens	OTHER BARN Group Pens	OTHER BARN Tied
Winter months?	1.2	30.5	2.2	14.6	21.8	15.9	20.5	12.8	4.7
Standard Error		(±0.3)	(±1.6)	(±0.4)	(±1.3)	(±1.5)	(±1.3)	(±1.4)	(±1.1)	(±0.8)
Summer months?	5.6	32.4	2.8	13.6	18.0	13.5	19.1	14.0	4.4
Standard Error	(±0.8)	(±1.6)	(±0.5)	(±1.3)	(±1.4)	(±1.2)	(±1.4)	(±1.2)	(±0.8)

2. How old is the structure?

Material	Hutches?	Percent of Operations Individual Hutches?	Super Barn?	Cow Barn?	Other
<5 years		59.6	54.7	3.2	12.6
Standard Error		(±2.7)	(±8.5)	(±0.9)	(±1.9)
5-10 years		34.3	21.6	5.7	15.5
Standard Error		(±2.7)	(±6.1)	(±1.5)	(±2.2)
11-20 years		5.2	13.5	10.0	21.5
Standard Error		(±1.0)	(±6.2)	(±1.6)	(±2.4)
> 20 years		0.9	10.2	81.1	50.4
Standard Error		(±0.4)	(±6.0)	(± 2.2)	(±2.9)
Total		100.0	100.0	100.0	100.0

F. Housing (continued)

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

Material	Percent of Operations: Individual Hutches?	Super Hutches?	Cow Barn?	Other Barn?
Wood	53.5	83.7	88.6	89.5
Standard Error	(±2.9)	(±6.3)	(± 1.7)	(±1.7)
Concrete	0.0	0.0	9.1	3.3
Standard Error	(±0.0)	(±0.0)	(± 1.5)	(±1.0)
Stone	0.0	0.0	0.5	1.4
Standard Error	(±0.0)	(±0.0)	(± 0.4)	(±0.8)
Metal	4.0	12.1	1.8	5.4
Standard Error	(±0.9)	(±6.1)	(± 0.6)	(±1.2)
Fiberglass/plastic	42.5	4.2	0.0	0.4
Standard Error	(±2.9)	(±2.2)	(± 0.0)	(±0.3)
Total	100.0	100.0	100.0	100.0

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

Material	Percent of Operations: Individual Hutches?	Super Hutches?	Cow Barn?	Other Barn?
None	0.1	0.1	0.1	0.6
Standard Error	(±0.1)	(±0.1)	(± 0.1)	(±0.2)
Wood	48.2	55.2	52.1	48.5
Standard Error	(±2.9)	(±8.6)	(± 2.8)	(±2.9)
Concrete	0.0	1.0	26.1	10.9
Standard Error	(±0.0)	(±1.0)	(± 2.5)	(±1.7)
Stone	0.0	0.0	7.1	2.9
Standard Error	(±0.0)	(±0.0)	(± 1.5)	(±1.1)
Metal	7.3	39.6	14.3	36.0
Standard Error	(±1.5)	(±8.7)	(± 2.2)	(±2.8)
Fiberglass/plastic	44.2	4.1	0.1	0.4
Standard Error	(±2.9)	(±2.2)	(± 0.1)	(±0.2)
Asphalt/tar	0.2	0.0	0.2	0.7
Standard Error	(±0.2)	(±0.0)	(± 0.2)	(±0.4)
Total	100.0	100.0	100.0	100.0

F. Housing (continued)

5. What kind of floor is in the:

Material	Percent of Operations: Individual Hutches?	Super Hutches?	Cow Barn?	Other Barn?
Wood	3.1	8.5	2.1	3.5
Standard Error	(±0.8)	(±5.3)	(± 0.7)	(±0.8)
Concrete	5.5	14.1	90.5	75.4
Standard Error	(±1.7)	(±5.4)	(± 1.4)	(±2.2)
Stone/gravel	14.5	16.1	1.6	2.7
Standard Error	(±2.0)	(±5.6)	(± 0.6)	(±0.8)
Metal	0.5	1.3	0.5	0.1
Standard Error	(±0.2)	(±1.3)	(± 0.4)	(±0.1)
Fiberglass/plastic	0.0	2.1	0.3	0.3
Standard Error	(±0.0)	(±2.0)	(± 0.3)	(±0.3)
Dirt/sand	76.4	57.9	5.0	18.0
Standard Error	(±2.5)	(±8.3)	(± 0.9)	(±2.0)
Total	100.0	100.0	100.0	100.0

G. General Operation

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

Person(s)	Percent of Operations	Standard Error
One individual	72.7	(±1.5)
Partners	26.0	(±1.4)
Hired manager	1.3	(±0.4)
Total	100.0	

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

Education Level	Percent of Operations	Standard Error
Grade school	10.4	(±1.0)
High school	59.5	(±1.8)
Some college	13.3	(±1.0)
BA or BS degree	9.5	(±1.1)
Graduate school	1.3	(±0.3)
Technical school	6.0	(±0.9)
Total	100.0	

3. What type of business is this operation?

Business Type	Percent of Operations	Standard Error
Sole proprietorship	72.9	(±1.5)
Partnership	23.6	(±1.5)
Corporation	3.5	(±0.4)
Total	100.0	

G. General Operation (continued)

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

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

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

Record-Keeping System	Percent of Operations	Standard Error
Hand written such as a ledger or notebook	60.4	(±1.8)
Computer located on the operation	6.8	(±1.0)
Computer located off the operation	2.8	(±0.7)
Dairy Herd Improvement Association (DHIA)	27.8	(±1.5)
Other system	2.2	(±0.5)
Total	100.0	

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

	Percent of Operations					
Source	First	Standard Error	Second	Standard Error	Third	Standard Error
Cooperative Extension Service/university	7.5	(±1.0)	11.1	(±1.2)	10.6	(± 1.5)
Veterinarian	83.7	(±1.3)	13.5	(±1.4)	2.3	(± 0.7)
Medical supply salespersons	1.2	(±0.4)	11.2	(±1.3)	8.4	(± 1.6)
Producer association	0.1	(±0.0)	1.3	(±0.4)	4.1	(± 1.5)
Other producers	0.5	(±0.3)	9.8	(±1.3)	14.6	(± 2.2)
Consultants	1.3	(±0.4)	8.0	(±1.0)	8.0	(± 1.7)
Dairy magazines or agricultural journals	3.1	(±0.6)	38.1	(±2.1)	40.9	(± 2.9)
Radio, television, or newspaper	0.0	(±0.0)	1.4	(±0.7)	5.6	(± 1.3)
Other	2.6	(±0.5)	5.6	(±0.9)	5.5	(± 1.1)
Total	100.0		100.0		100.0	

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

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

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

b. Is the person described above male or female?

Gender	Percent of Operations	Standard Error
Male	69.6	(±1.6)
Female	30.4	(±1.6)
Total	100.0	

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?

	Percent of Operations			
Class of Animal	None	Standard Error	At least 1 Animal	Standard Error
Calves not yet weaned	90.4	(±1.2)	9.6	(±1.2)
Heifers weaned but not yet bred	88.8	(±1.3)	11.2	(±1.3)
Bred heifers not yet calved	80.7	(±1.6)	19.3	(±1.6)
Lactating cows and/or heifers	74.2	(±2.0)	25.8	(±2.0)
Dry cows	90.0	(±1.4)	10.0	(±1.4)
Bulls	77.6	(±1.7)	22.4	(±1.7)
Other cattle	96.7	(±0.7)	3.3	(±0.7)

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

	Operations Bringing on at Least One Animal			
Class of Animal	Percent Yes	Standard Error	Average Days Quarantined	Standard Error
Calves not yet weaned	27.9	(±6.1)	40.3	(±8.0)
Heifers weaned but not yet bred	23.1	(±5.1)	24.3	(±3.7)
Bred heifers not yet calved	12.8	(±3.2)	14.4	(±2.4)
Lactating cows and/or heifers	5.5	(±1.9)	18.2	(±7.3)
Dry cows	9.0	(±4.4)	17.8	(±4.4)
Bulls	12.5	(±3.0)	19.4	(±4.0)
Other cattle	34.0	(±9.6)	65.8	(±30.8)

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.)

Animal Types	Percent of OperationsYes	Standard Error
Chickens/other poultry	10.6	(±1.4)
Horses	15.0	(±1.6)
Pigs	5.5	(±1.0)
Sheep	3.0	(±0.6)
Goats	3.1	(±0.7)
Beef cattle	17.3	(±1.7)
Deer	56.1	(±2.2)

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

	Percent of Operations	Standard Error
Yes	5.1	(±1.1)
No	94.9	(±1.1)
Total	100.0	

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

	Percent of Operations	Standard Error
Yes	46.6	(±2.3)
No	53.4	(±2.3)
Total	100.0	

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?

Practices	Percent of Operations	Standard Error
Utensils are not shared between calves	15.5	(±1.6)
Utensils are shared but not routinely rinsed or washed between calves	36.8	(±2.1)
Utensils are shared and routinely rinsed with water only between calves	29.8	(±2.0)
Utensils are shared and routinely washed and/or santized between calves	17.9	(±1.7)
	100.0	

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.)

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

B. Maternity Hygiene

	BUILDING				NO BUILDING			
					Drylot		Pasture	
	Freestall	Individual Animal Area	Multiple Animal Area	Tiestall or Stanchion	Individual Animal	Multiple Animal	Individual Animal	Multi. Animal
1. For the next 3 months, where will calves be born?								
				Percent of Operations				
Location	4.8	44.7	16.4	29.9	1.6	13.5	2.7	36.5
Stan. Error	(±0.8)	(±2.2)	(±1.5)	(±2.1)	(±0.5)	(±1.3)	(±0.7)	(±2.1)
2. Will the calving area be separate from the dry cows?								
				Percent of Operations Yes				
Yes	48.9	91.7	44.2	38.2	97.8	26.4	64.4	20.3
Stan. Error	(±8.6)	(±1.9)	(±5.0)	(±4.3)	(±1.5)	(±4.6)	(±13.5)	(±2.6)

B. Maternity Hygiene (continued)

	BUILDING				NO BUILDING			
					Drylot		Pasture	
	Freestall	Individual Animal Area	Multiple Animal Area	Tiestall or Stanchion	Individual Animal	Multiple Animal	Individual Animal	Multi. Animal

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

Time in Calving Area	Percent of Operations by Facility Type							
< 3 days	33.8	65.7	20.9	16.1	79.3	13.3	46.8	9.1
Stan. Error	(±8.0)	(±3.3)	(±3.6)	(±3.0)	(±10.3)	(±3.8)	(±13.4)	(±2.1)
3-5 days	11.7	19.1	9.3	7.8	2.1	2.6	10.6	2.3
Stan. Error	(±5.9)	(±3.0)	(±2.1)	(±2.2)	(±2.2)	(±1.2)	(±6.3)	(±1.0)
6-10 days	16.7	7.6	10.9	6.7	0.9	6.0	3.3	5.1
Stan. Error	(±6.0)	(±1.8)	(±2.9)	(±2.0)	(±0.7)	(±1.5)	(±2.5)	(±1.2)
>10 days	37.8	7.6	58.9	69.4	17.7	78.1	39.3	83.5
Stan. Error	(±8.6)	(±1.7)	(±4.8)	(±3.9)	(±9.9)	(±4.1)	(±13.8)	(±2.5)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

	BUILDING				DRYLOT	
	Freestall	Individual Animal Area	Multiple Animal Area	Tiestall or Stanchion	Individual Animal	Multiple Animal

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

	Percent of Operations Using Bedding by Facility Type					
Yes	87.2	99.8	93.2	99.8	31.5	31.6
Standard Error	(±5.5)	(±0.2)	(±2.1)	(±0.2)	(±12.8)	(±5.0)

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

	Percent of Producers Using Bedding by Facility Type					
Straw/hay	46.0	86.0	71.4	81.7	88.7	74.9
Standard Error	(±9.5)	(±2.0)	(±5.1)	(±3.1)	(±8.5)	(±7.1)
Sand	12.4	0.1	5.8	0.0	0.0	0.0
Standard Error	(±6.3)	(±0.1)	(±4.6)	(±0.0)	(±0.0)	(±0.0)
Sawdust/wood shavings	23.1	8.3	12.4	12.3	11.3	12.6
Standard Error	(±7.1)	(±1.5)	(±2.7)	(±2.5)	(±8.5)	(±4.5)
Newspaper	2.8	2.9	1.2	3.2	0.0	0.0
Standard Error	(±2.2)	(±1.0)	(±0.5)	(±1.4)	(±0.0)	(±0.0)
Corn cobs/ stalks	15.7	2.3	7.8	2.8	0.0	12.1
Standard Error	(±7.4)	(±1.0)	(±2.7)	(±1.6)	(±0.0)	(±5.7)
Other	0.0	0.4	1.4	0.0	0.0	0.4
Standard Error	(±0.0)	(±0.2)	(±0.6)	(±0.0)	(±0.0)	(±0.4)
Total	100.0	100.0	100.0	100.0	100.0	100.0

B. Maternity Hygiene (continued)

	BUILDING				DRYLOT	
	Freestall	Individual Animal Area	Multiple Animal Area	Tiestall or Stanchion	Individual Animal	Multiple Animal
5. a. Will the calving facilities be routinely emptied of animals and cleaned?						
	Percent of Producers Indicating Yes by Facility Type					
Yes	64.1	76.5	55.6	82.7	46.2	22.0
Standard Error	(±8.3)	(±2.7)	(±5.3)	(±3.6)	(±15.7)	(±4.1)
b. On an average, how many calvings occur between the cleaning of the calving facilities?						
Number of Calvings	Percent of Producers Using Facility Type					
1	53.6	46.0	16.8	89.3	34.2	5.1
Standard Error	(±8.6)	(±3.3)	(±4.0)	(±3.1)	(±15.5)	(±2.1)
2-3	8.7	21.5	11.1	0.8	21.8	6.0
Standard Error	(±5.4)	(±2.8)	(±2.6)	(±0.8)	(±11.8)	(±2.5)
4-6	7.7	15.1	17.0	1.6	3.6	4.8
Standard Error	(±3.8)	(±2.4)	(±3.4)	(±0.7)	(±2.6)	(±2.5)
>6	11.2	14.6	38.8	3.4	4.5	26.8
Standard Error	(±4.5)	(±2.2)	(±4.9)	(±2.5)	(±2.7)	(±4.6)
Not cleaned	18.8	2.8	16.3	4.9	35.9	57.3
Standard Error	(±6.4)	(±1.2)	(±4.9)	(±1.8)	(±15.5)	(±5.2)
Total	100.0	100.0	100.0	100.0	100.0	100.0
c. What is the primary cleaning method to be used (for those that clean calving facilities)?						
	Percent of Producers					
Removal of soiled bedding only	19.3	21.5	13.2	51.8	11.8	17.5
Standard Error	(±7.2)	(±2.9)	(±3.3)	(±4.6)	(±7.1)	(±7.7)
Removal of all bedding	46.5	66.4	74.0	38.6	37.4	27.5
Standard Error	(±9.7)	(±3.2)	(±4.1)	(±4.5)	(±17.1)	(±6.5)
Removal of bedding and washed with water	9.6	1.7	0.8	1.0	0.0	0.0
Standard Error	(±8.9)	(±0.7)	(±0.4)	(±0.7)	(±0.0)	(±0.0)
Removal of bedding and washed with disinfectant0.5	4.5	2.2	2.8	0.0	0.4	
Standard Error	(±0.5)	(±1.4)	(±0.9)	(±2.6)	(±0.0)	(±0.4)
Other (such as scraping)	24.1	5.9	9.8	5.7	50.8	54.6
Standard Error	(±7.8)	(±1.5)	(±2.6)	(±2.0)	(±18.6)	(±8.4)
Total	100.0	100.0	100.0	100.0	100.0	100.0
6. Will lime be routinely used in the calving area?						
	Percent of Producers Using Lime					
Yes	22.0	45.9	33.6	62.4	2.7	9.3
Standard Error	(±6.4)	(±3.3)	(±5.2)	(±4.3)	(±1.8)	(±3.0)

B. Maternity Hygiene (continued)

	BUILDING				NO BUILDING			
					Drylot		Pasture	
	Freestall	Individual Animal Area	Multiple Animal Area	Tiestall or Stanchion	Individual Animal	Multiple Animal	Individual Animal	Multi. Animal
7. How long will the calf remain in the calving area (number of days)?								
	Average Number of Days							
Days	0.7	1.0	0.8	3.0	0.5	0.6	0.7	0.8
Standard Error	(±0.2)	(±0.1)	(±0.2)	(±2.2)	(±0.0)	(±0.0)	(±0.1)	(±0.0)

C. Preweaning Hygiene

		HUTCH		COW BARN			OTHER BARN		
	No Building	Individual	Group (Super)	Individual	Group	Tied	Individual	Group	Tied
1. a. After separation from the dam, where are heifer calves housed during the summer/warm months?									
	Percent of Producers								
Location	1.9	35.2	4.2	12.5	17.4	17.5	21.9	9.4	4.7
Stan. Error	(±0.6)	(±2.0)	(±0.8)	(±1.6)	(±1.8)	(±1.6)	(±1.9)	(±1.3)	(±1.0)
b. After separation from the dam, where are heifer calves housed during the winter/cold months?									
	Percent of Producers								
Location	0.3	33.0	3.6	12.8	18.6	18.2	23.1	9.3	4.7
Stan. Error	(±0.1)	(±2.0)	(±0.7)	(±1.6)	(±1.8)	(±1.6)	(±1.9)	(±1.3)	(±1.0)
c. What facilities are currently in use?									
	Percent of Producers								
Location	1.4	34.2	3.6	12.7	17.0	16.5	21.8	9.0	4.5
Stan. Error	(±0.5)	(±2.0)	(±0.7)	(±1.6)	(±1.7)	(±1.6)	(±1.8)	(±1.3)	(±1.0)
2. Of those facilties 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.)									
	Average per Calf								
Square Feet	—	29.3	45.5	18.1	63.2	17.0	27.0	82.4	18.2
Stan. Error	—	(±0.5)	(±7.0)	(±1.8)	(±6.1)	(±1.3)	(±1.3)	(±12.1)	(±3.2)
b. How many square feet are accessible to each preweaned calf in the outside areas? (Total square feet of uncovered structure for each calf.)									
	Average per Calf								
Square Feet	329.6	22.8	45.5	1.3	16.1	2.3	2.1	2,268.0	1.2
Stan. Error	(±138.9)	(±1.5)	(±31.9)	(±0.6)	(±10.4)	(±1.2)	(±0.7)	(±2260.6)	(±0.8)
3. a. What is the total number of preweaned calves currently in the preweaning facilities and outside access areas? (Total number of preweaned calves.)									
	Average Number of Calves per Herd								
Number	5.0	9.9	23.8	4.9	4.7	3.9	9.2	6.2	5.8
Stan. Error	(±2.0)	(±1.2)	(±11.3)	(±0.6)	(±0.5)	(±0.3)	(±0.8)	(±0.9)	(±1.3)

C. Preweaning Hygiene (continued)

	HUTCH			COW BARN			OTHER BARN		
	No Building	Individual	Group (Super)	Individual	Group	Tied	Individual	Group	Tied
b. How many other livestock are currently in the preweaning facilities and outside access areas? (Livestock = cattle, sheep, horses, goats, and pigs.)									
	Average Number of Other Livestock per Herd								
Number	1.9	—	—	10.6	15.4	24.3	5.7	8.0	9.1
Stan. Error	(±1.2)	—	—	(±2.5)	(±3.1)	(±3.0)	(±1.0)	(±1.9)	(±2.7)
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
Stan. Error	(±15.7)	(±2.0)	(±5.8)	(±5.0)	(±3.1)	(±3.9)	(±4.5)	(±5.4)	(±6.1)
Sand	16.3	0.2	0.4	0.0	0.6	0.1	0.0	0.1	0.0
Stan. Error	(±15.7)	(±0.1)	(±0.4)	(±0.0)	(±0.6)	(±0.1)	(±0.0)	(±0.0)	(±0.0)
Sawdust/wood shavings	0.0	10.1	12.5	19.4	11.7	18.7	14.1	10.7	16.8
Stan. Error	(±0.0)	(±1.7)	(±5.7)	(±4.5)	(±2.8)	(±3.6)	(±2.6)	(±3.4)	(±5.6)
Newspaper	0.0	0.9	0.0	2.2	0.6	2.1	4.3	0.0	2.4
Stan. Error	(±0.0)	(±0.5)	(±0.0)	(±1.4)	(±0.6)	(±1.4)	(±2.1)	(±0.0)	(±1.8)
Corn cobs/stalks	0.0	0.8	0.8	2.1	1.1	0.0	6.9	6.2	0.4
Stan. Error	(±0.0)	(±0.6)	(±0.8)	(±1.6)	(±1.0)	(±0.0)	(±3.8)	(±4.3)	(±0.4)
Other	0.0	1.1	0.0	1.1	0.0	0.0	0.3	2.5	0.5
Stan. Error	(±0.0)	(±0.6)	(±0.0)	(±1.1)	(±0.0)	(±0.0)	(±0.1)	(±1.3)	(±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)	(±9.1)	(±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)	(±6.3)	(±2.2)
Monthly	23.3	50.2	76.0	9.4	20.6	3.1	27.7	47.8	18.2
Stand. 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

C. Preweaning Hygiene (continued)

		HUTCH		COW BARN			OTHER BARN		
	No Building	Individual	Group (Super)	Individual	Group	Tied	Individual	Group	Tied
c. What is the primary cleaning method used while calves are present?									
Cleaning Method	Percent of Producers That Clean Preweaning Facilities								
Only soiled bedding removed									
	71.9	21.7	25.1	41.0	26.7	33.5	10.8	9.9	24.2
Stan. Error	(±19.1)	(±6.6)	(±17.8)	(±7.8)	(±6.0)	(±5.4)	(±3.7)	(±4.0)	(±8.5)
All bedding removed									
	19.4	62.5	64.0	45.2	59.9	52.6	63.1	76.1	55.0
Stan. Error	(±17.1)	(±6.8)	(±17.2)	(±7.6)	(±6.2)	(±5.9)	(±5.7)	(±6.2)	(±11.3)
All bedding removed and washed with water									
	0.0	0.6	0.0	4.9	2.3	0.1	2.2	0.0	0.0
Stan. Error	(±0.0)	(±0.5)	(±0.0)	(±2.8)	(±1.5)	(±0.1)	(±2.0)	(±0.0)	(±0.0)
All bedding removed and disinfectant applied									
	0.0	3.6	1.7	1.5	1.8	1.6	14.6	6.1	6.2
Stan. Error	(±0.0)	(±1.7)	(±1.3)	(±1.0)	(±1.0)	(±1.6)	(±4.0)	(±3.4)	(±3.1)
Other, such as scraping manure									
	8.7	11.6	9.2	7.4	9.3	12.2	9.3	7.9	14.6
Stan. Error	(±6.0)	(±3.6)	(±6.4)	(±4.0)	(±3.4)	(±3.7)	(±2.8)	(±3.3)	(±6.5)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
6. Are hutches or individual shelters routinely moved after every calf leaves the facility?									
	Percent of Producers Using Hutches								
Yes	—	43.5	—	—	—	—	—	—	—
Stan. Error	—	(±3.7)	—	—	—	—	—	—	—
7. a. For those using group pens, are the facilities operated as all-in, all-out?									
	Percent of Producers								
Yes	25.6	—	49.2	—	28.1	100.0[1]	—	37.1	0.0[2]
Stan. Error	(±15.5)	—	(±13.2)	—	(±5.0)	(±0.0)	—	(±7.7)	(±0.0)
b. For those operated as all-in, all-out, are the facilities routinely cleaned between groups?									
	Percent of Producers Using All-in/All-out								
Yes	76.5	—	45.5	—	91.9	100.0[3]	—	97.2	—
Stan. Error	(±21.8)	—	(±20.7)	—	(±4.9)	(±0.0)	—	(±1.3)	—

1 Based on two study participants.

2 Based on one study participants.

3 Based on two study participants.

C. Preweaning Hygiene (continued)

	HUTCH			COW BARN			OTHER BARN		
	No Building	Individual	Group (Super)	Individual	Group	Tied	Individual	Group	Tied
c. What is the primary cleaning method used between groups?									
Cleaning Method	Percent of Producers Using All-in/All-out								
Only soiled bedding removed									
	0.0	—	6.6	—	12.7	0.0	—	20.6	—
Stan. Error	(±0.0)	—	(±6.8)	—	(±6.7)	(±0.0)	—	(±11.3)	—
All bedding removed									
	0.0	—	72.0	—	66.2	100.0[1]	—	52.7	—
Stan. Error	(±0.0)	—	(±14.9)	—	(±9.4)	(±0.0)	—	(±12.9)	—
All bedding removed and washed with water									
	0.0	—	0.0	—	8.3	0.0	—	0.0	—
Stan. Error	(±0.0)	—	(±0.0)	—	(±5.7)	(±0.0)	—	(±0.0)	—
All bedding removed and disinfectant applied									
	0.0	—	9.5	—	6.0	0.0	—	12.8	—
Stan. Error	(±0.0)	—	(±7.1)	—	(±3.5)	(±0.0)	—	(±7.8)	—
Exposed to sunlight									
	0.0	—	0.0	—	0.0	0.0	—	3.0	—
Stan. Error	(±0.0)	—	(±0.0)	—	(±0.0)	(±0.0)	—	(±1.9)	—
Other, such as scraping manure									
	100.0	—	11.9	—	6.8	0.0	—	11.0	—
Stan. Error	(±0.0)	—	(±10.1)	—	(±4.3)	(±0.0)	—	(±4.9)	—
Total	100.0		100.0		100.0	100.0		100.0	
8. How many days are the facilities usually empty between groups?									
	Average Days for Operations Using All-in/All-out								
	2.8	—	2.4	—	2.5	1.6	—	12.0	—
Stan. Error	(±0.9)	—	(±1.2)	—	(±1.0)	(±0.3)	—	(±5.8)	—

D. Disease Agents

1. a. 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?

	Percent of Operations	Standard Error
Yes	75.9	(±2.0)
No	24.1	(±2.0)
Total	100.0	

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

Yes	37.5	(±2.4)
No	62.5	(±2.4)
Total	100.0	

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?

	Percent of Operations	Standard Error
Yes	52.8	(±2.2)
No	47.2	(±2.2)
Total	100.0	

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

Yes	16.9	(±1.9)
No	83.1	(±1.9)
Total	100.0	

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?

	Percent of Operations	Standard Error
Yes	24.3	(±1.8)
No	75.7	(±1.8)
Total	100.0	

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

Yes	49.9	(±4.0)
No	50.1	(±4.0)
Total	100.0	

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?

	Percent of Operations	Standard Error
Yes	5.0	(±1.0)
No	95.0	(±1.0)
Total	100.0	

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

Yes	47.5	(±9.7)
No	52.5	(±9.7)
Total	100.0	

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

Sign	Percent of Operations	Standard Error
Aggressiveness:	4.0	(±0.7)
Belligerence (eagerness to fight):	0.8	(±0.3)
Increased vocalization:	0.4	(±0.3)
Unexplained lack of coordination:	3.4	(±0.6)
Other sudden change in behavior:	1.4	(±0.5)

d. How many operations had affected cows?

	Percent of Operations	Standard Error
Yes	8.2	(±1.0)

D. Disease Agents (continued)

e. How many cows were affected?

Average Number of Cows in Affected Herds	Standard Error
1.5	(±0.1)

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

	Percent of Operations	Standard Error
Yes	60.2	(±2.1)
No	39.8	(±2.1)
Total	100.0	

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

Yes	93.5	(±1.6)
No	6.5	(±1.6)
Total	100.0	

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?

	Percent Operations	Standard Error
Yes	46.1	(±2.3)
No	53.9	(±2.3)
Total	100.0	

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

Yes	22.4	(±2.7)
No	77.6	(±2.7)
Total	100.0	

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

	Percent of Operations	Standard Error
Yes	48.6	(±2.2)
No	51.4	(±2.2)
Total	100.0	

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

Yes	24.4	(±2.8)
No	75.6	(±2.8)
Total	100.0	

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?

	Percent of Operations	Standard Error
Yes	12.9	(±1.6)
No	87.1	(±1.6)
Total	100.0	

D. Disease Agents (continued)

b. Was unthriftiness or specific diseases, agents, or causes identified?

	Percent of Operations	Standard Error
Yes	56.8	(±6.6)
No	43.2	(±6.6)
Total	100.0	

E. Vaccination Practices

1. What vaccinations are routinely used in dry cows?

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

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

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

D. Vaccination Practices (continued)

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

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

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.)

	Percent of Operations			
	Veterinarian	Standard Error	Nonveterinarian	Standard Error
Treatment of sick calves and heifers	80.2	(±1.6)	9.4	(±1.1)
Diagnostic services	76.2	(±2.0)	5.3	(±1.0)
Providing nutrient premixes	4.0	(±0.9)	63.8	(±2.1)
Nutritional consultation	16.6	(±1.7)	71.2	(±1.9)
Housing/ventilation consultation	12.8	(±1.7)	23.5	(±1.7)
Reproductive consultation for heifers	58.2	(±2.1)	12.6	(±1.6)
Other management consultation	14.0	(±1.5)	27.1	(±2.0)
Providing drugs/vaccines	86.3	(±1.8)	28.8	(±2.0)
Vaccination consultation	81.2	(±1.8)	4.5	(±0.8)
Artificial insemination for heifers	2.1	(±0.4)	54.5	(±2.2)
Other	0.5	(±0.3)	3.2	(±0.7)

Dairy Heifer Management Report

A. Management

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

	Percent of Operations	Standard Error
Yes	100.0	(±0.0)
No	0.0	(±0.0)
Total	100.0	

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

	Average Number	Standard Error
Hours	8.6	(±0.3)

3. During the last 3 months,:

	Average	Standard Error
a. how many visits by a private practitioner were made to this dairy?	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?

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

B. Feed

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

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

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

Age Group	Percent of Operations: Yes	No	Don't Know	Total
Birth to weaning	6.6	85.0	8.4	100.0
Standard Error	(± 1.2)	(± 1.6)	(± 1.2)	
Weaning to first breeding	6.2	83.8	10.0	100.0
Standard Error	(± 0.9)	(± 1.5)	(± 1.3)	
Breeding to first calving	4.6	85.2	10.2	100.0
Standard Error	(± 0.8)	(± 1.5)	(± 1.3)	

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?

	Average Percent of Preweaning Feeding Period			
Source	Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
Whole milk	9.2	(± 1.1)	5.1	(± 0.9)
Fresh or soured colostrum	13.8	(± 0.6)	2.2	(± 0.4)
Mastitic milk	3.8	(± 0.5)	4.6	(± 0.5)
Antibiotic milk (sick cow)	3.0	(± 0.3)	3.4	(± 0.3)
Nonmedicated milk replacer	10.6	(± 1.5)	14.0	(± 1.8)
Medicated milk replacer	59.6	(± 1.9)	70.6	(± 2.2)
Other	0.0	(± 0.0)	0.1	(± 0.1)
Total	100.0		100.0	

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

a. Birth to 3 weeks

Amount Fed	Percent of Operations	Standard Error
Less than 2 quarts	18.8	(± 2.2)
2-3 quarts	76.1	(± 2.5)
More than 3 quarts	5.2	(± 1.4)
Total	100.0	

b. Three weeks to weaning

Amount Fed	Percent of Operations	Standard Error
Less than 2 quarts	9.8	(± 1.6)
2 quarts or more	90.2	(± 1.6)
Total	100.0	

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

	Percent of Operations			
Frequency Fed	Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
3 or more times a day or free choice	1.5	(± 0.7)	1.9	(± 0.8)
Twice a day	97.9	(± 0.7)	96.5	(± 1.0)
Once a day	0.6	(± 0.2)	1.6	(± 0.6)
Total	100.0		100.0	

A. Management Information (continued)

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

Answer	Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
	Percent of Operations			
Yes or warm climate/environment year round	35.1	(± 3.0)	34.1	(±2.6)
No	64.9	(± 3.0)	65.9	(±2.6)
Total	100.0		100.0	

5. Are calves normally fed this milk replacer individually?

Answer	Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
	Percent of Operations			
Yes	97.8	(± 0.7)	96.1	(± 0.8)
No	2.2	(± 0.7)	3.9	(± 0.8)
Total	100.0		100.0	

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

Length of Time	Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
	Percent of Operations			
Immediately or within 10 minutes	44.7	(± 3.1)	58.2	(± 2.7)
20 minutes	0.7	(± 0.4)	1.7	(± 0.7)
30 minutes or more	54.6	(± 3.1)	40.1	(± 2.7)
Total	100.0		100.0	

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

Temperature	Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
	Percent of Operations			
Warm/Cold if instructed on labe l	93.2	(± 1.3)	93.2	(±1.3)
Cold when warm water should be used	0.7	(± 0.5)	1.2	(± 0.7)
Hot	6.1	(± 1.2)	5.6	(± 1.1)
Total	100.0		100.0	

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

Length of Time	Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
	Percent of Operations			
Less than 24 hours	100.0	(± 0.0)	100.0	(± 0.0)
24 hours or more	0.0	(± 0.0)	0.0	(± 0.0)
Total	100.0		100.0	

A. Management Information (continued)

9. Is a mixed batch normally refrigerated between feedings?

Answer	Percent of Operations Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
Entire batch is used at one feeding	95.4	(± 1.1)	95.6	(± 1.0)
Not refrigerated between feedings	4.6	(± 1.1)	4.4	(± 1.0)
Refrigerated between feedings	0.0	(± 0.0)	0.0	(± 0.0)
Total	100.0		100.0	

B. Ingredient Information

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

Percentage of Ingredients	Percent of Operations Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
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

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

ii. Three weeks to weaning

Protein Source	Percent of Operations	Standard Error
Top three sources are all milk or whey products OR soy protein or isolates	99.3	(± 0.6)
Other	0.7	(± 0.6)
	100.0	

e. Fat digestability:

Fat Source	Percent of Operations: Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
Butterfat	3.4	(± 1.0)	3.2	(± 1.0)
Lard, lard tallow, animal fat, or coconut oil	93.1	(± 1.4)	92.9	(± 1.4)
Vegetable oil	3.5	(± 1.0)	3.9	(± 1.0)
Total	100.0		100.0	

f. Sugar digestability:

Sugar Source	Percent of Operations: Birth - 3 Weeks	Standard Error	3 Weeks - Weaning	Standard Error
No sugar is present	92.8	(± 1.4)	92.2	(± 1.5)
Lactose is present	3.4	(± 1.0)	4.0	(± 1.1)
Maltose or sucrose is present	3.8	(± 1.1)	3.8	(± 1.0)
Total	100.0		100.0	

C. Rennet Coagulation Test[1]

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).

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