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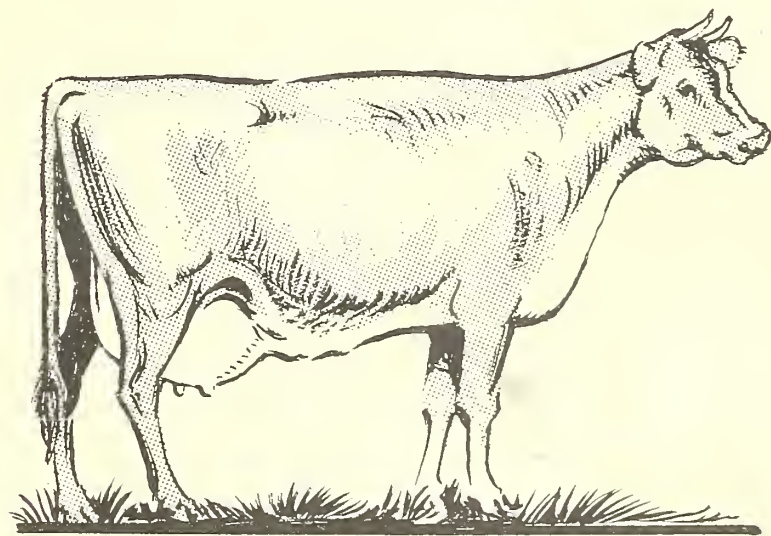
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DAIRY COWS: Housing and Methods of Milking



U. S. DEPARTMENT OF AGRICULTURE
Economic Research Service
Farm Economics Division

P R E F A C E

This report contains information obtained from more than 18,000 schedules from voluntary crop reporters of the U. S. Department of Agriculture in February 1958. Farmers were asked to report the number of cows milked and the method of milking used. Information was also requested on bulk tanks and type of housing used. Operators with loose housing were asked where the grain was fed to their cows.

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Growth Through Agricultural Progress

DAIRY COWS HOUSING AND METHODS OF MILKING

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INTRODUCTION

With improved management practices, annual milk production per cow in the United States increased from an average of 4,600 pounds in 1940 to 6,800 pounds in 1959. This was an 11-percent increase in total milk production despite a decline of 24 percent in the number of cows on farms. In addition to the increase in milk production, the use of man labor in handling cows has improved. By using modern milking machines, a dairyman can now milk 4 to 5 times as many cows in an hour as could the fastest hand milkers a score of years ago. Consequently, with fewer cows and with a great deal less labor, the American dairyfarmer has been able to produce abundant supplies of milk.

Farmers have enlarged herd size to increase their milk production. This has resulted in greater efficiency of operation and a higher income for the farmer. The number of dairy herds was a third less in 1954 than in 1939, but about 80 percent of this reduction was in herds of less than 5. In 1954, 8 percent of the herds had 20 or more cows compared with 3 percent in 1939.

Data from the 1958 survey excluding herds of 4 cows or less showed that the small herds were scattered through the various sizes of farms. Of all herds, 44 percent contained from 5 to 9 cows, the percentage declining as the size of the herd increased. Only 2 percent of the herds had 50 or more cows (table 1). Some farmers keep small herds to use as nurse cows, others for production of milk for home use. Still other operators keep small herds as 4-H projects for their children and as show or breeding stock. Large herds represented a small proportion of the herds in 1958, even on large farms. With the exception of the Northeast, Pacific, and Southeast Regions, herds of 50 cows and over constituted less than 15 percent of all herds on farms of 500 acres and more.

METHODS OF MILKING COWS

Satisfactory milking machines were developed many years ago and were in widespread use on dairy farms as early as 1920. Their use has increased steadily, but they have not entirely replaced hand milking. In 1958, about 30 percent of all dairy cows in the United States were milked by hand (table 2). This percentage varied according to regions; it was lowest in the specialized dairy areas of the Northeast, Lake States, and West Coast. Hand milking was highest in the Appalachian and Southern States, with the exception of Florida, where a large proportion of the dairy cows were in small herds on general farms.

The use of milking machines also varies greatly by size of herd. In 1958, in all except the Northeast, Lake States, and Mountain Regions, about 90 percent of the cows in herds of less than five were milked by hand (table 3). In herds of 20 cows or more, most of the milking was done by machine, although this differed by regions. In herds of 50 or more cows, hand milking was practically nonexistent.

New techniques in milking, handling, feeding, and housing have been extremely effective in reducing the labor necessary for milking cows. Twenty years ago the milking parlor was virtually unheard of. Most cows were milked by hand, and an efficient dairyman could hand-milk 10 cows per hour. 1/ In 1958, with mechanical milkers, three times as many cows were milked per hour in a stanchion barn and more than four times as many in a modern herringbone milking parlor. 2/

Pipeline milking, bulk tanks, automatic feeding, milking parlors, and loose housing are among the most important innovations that have increased milk production per man, or per man-hour of labor, during the last 15 years. The amount of labor per cow is usually less in milking parlors than in stanchions. Pipelines, bulk tanks, and automatic feeders are labor-saving devices that can be installed in either stanchion or milking-parlor systems.

Despite increases in other systems of milking, the use of a regular milking machine in a stanchion barn is still the most prevalent method. In 1958, about 60 percent of all cows in herds of 5 or more were still milked in this way (table 4). The percentage was higher in the Northeast and the Lake States, and lower in the South and the Southwest. Regular and pipeline milkers consist basically of the same units - vacuum pump and milkers - except that the milker with the pipeline unit is modified to pump the milk from each cow to a central location, usually a bulk tank.

1/ Brodell, A. P., and Cooper, M. R. Labor Aspects of Machine and Hand Milking. U. S. Dept. Agr., Bur. Agr. Econ., F. M. 43, 13 pp. July 1943.

2/ Lindsey, M. M. The Herringbone Milking System. U. S. Dept. Agr. Prod. Res. Rpt. 45, 33 pp., illus. September 1960.

Elevated walk-through milking parlors, in which the operator can milk a cow at a more desirable level, were becoming established on farms before World War II. Since the War, many variations of milking parlors have been built. One of the most recent is the herringbone-type parlor, an innovation from New Zealand introduced in the United States in 1957. Lindsey's study^{3/} shows that with a pipeline system an operator in a double-5 herringbone milking parlor can milk 50 cows per hour compared with 30 in a stanchion barn.

Despite the labor-saving economies of milking in a parlor over milking in a stanchion barn, acceptance of milking parlors has not been rapid in some areas. It has been hindered by such factors as the investment in existing milking facilities, the traditional way of doing things, local regulations, and more stringent regulations in some milk markets.

In the United States, approximately 13 percent of the cows in herds of more than four are milked in parlors of various types and sizes (table 5). Obviously, some reservations should be made for the local terminology concerning milking parlors. For example, 32 percent of the cows in the Southeast were reported to be milked in parlors. Here, many of the parlors reported consisted of two or more stanchions in which the cows were milked in shifts. If the same terminology were used in other areas, California would show an increase in milking parlors because many large herds are milked in shifts in stanchion barns. The well-established, older dairy areas of the Northeast and the Lake States had the lowest percentage of cows milked in parlors.

Normally a greater proportion of the larger herds was milked in parlors. Close to 30 percent of the herds of 50 or more cows were milked in parlors in 1958 (tables 5 and 6). The proportion of all parlors represented in this size herd group, however, was small in some areas - 1 percent in the Northern Plains, for example (table 7). Nevertheless, more than 60 percent of the herds of 50 or more cows in this region were milked in parlors.

Operators in the United States with herds of 20 to 29 cows had about a fourth of the milking parlors on farms in 1958. Nearly 60 percent of the milking parlors in the Lake States were on farms having herds of this size.

Of the 80,000 milking parlors used in 1958, 37 percent were 5-stall parlors or larger, 30 percent were 4-stall, 20 percent 3-stall, and 13 percent 2-stall (table 7). Thirty percent of the milking parlors in the Southeast and Delta Regions were 2-stall; about 40 percent of those in the Northern Plains 4-stall.

^{3/} See footnote 2, p. 4.

Milking by pipeline is a labor-saving method and is increasingly used in milk production. Many installations have been made in stanchion barns, particularly in Florida and California. Between 1945 and 1950, producers in both States established a system of stanchion-pipeline milking, which flourished to the extent that in 1958, nearly half of the dairy cows in both States were milked by pipeline in stanchion barns (table 4). These two States are the exceptions; otherwise, installation of pipeline milkers has nearly paralleled the increase in milking parlors.

There was considerable unused stanchion capacity in some areas of the United States, whereas in other regions, shift milking of cows in stanchions was evident in 1958. The United States average in 1958 was 1.2 stanchions per cow milked in stanchion barns (table 8). Unused stanchion capacity was highest in the northern part of the Nation, excluding the West, particularly in the Lake States where there were 1.5 stanchions per cow milked. Shift milking in stanchions was apparent in the West and in the Southeast, with 0.4 stanchions per cow milked.

More than half of the estimated 800,000 stanchion barns in the United States in 1958 were in the Lake States and Corn Belt (table 9). More than half the estimated number of stanchion barns had a capacity of 14 or fewer cows. Less than 0.7 percent of all stanchion barns were in the Southeast.

HOUSING OF COWS

Milk cows are housed mainly in stanchion barns, tie stalls, and loose housing. Loose housing is generally used in conjunction with milking parlors. In areas where the weather is mild the year round, a large percentage of the cows are given no housing. Half the milk cows in Florida, Arizona, New Mexico, and California are not housed in any type of shelter (table 10). Loose housing is used for a majority of the milk cows in all regions except the Northeast, Lake States, and Pacific Regions.

Costs of housing milk cows vary by regions and by type of milking system in use. Usually, housing costs more per cow where the weather is severe. Investment per cow milked varies as to type of milking system and size of milking herd. Probably the best method of comparison is the 1-man dairy farm operating at capacity. Using this method, Lindsey showed that average investment was \$380 per cow milked in a stanchion barn, \$215 per cow milked in a 3-in-line side-opening parlor, and \$184 per cow milked in a double-4 herringbone parlor. 4/

4/ See footnote 2, p. 4.

BUJK MILK TANKS

Bulk milk handling is one of the most important basic changes to occur in the handling of milk in the last decade. It is rapidly replacing can milk coolers. Combined with the pipeline system, use of a bulk tank saves much of the effort formerly expended in moving milk cans and lifting them into and out of coolers.

As of January 1, 1956, there were an estimated 30,000 bulk milk tanks on farms in the United States. By January 1959, the number had increased to 110,000 and by January 1960 to 140,000, with more than 50 percent in the Lake States, Corn Belt, and Pacific Regions. Nearly 60 percent of the bulk tanks on farms in January 1959 were of the 250- to 500-gallon capacity and more than 25 percent were from 100- to 250-gallon capacity. ^{5/}

Distribution of bulk tanks varies considerably among size of herd groups (table 11). In 1958, the largest percentage, about a third of the total, were among herds of 20 to 29 cows. In the Southeast, more than 50 percent, and in the Pacific region about 45 percent, of the bulk tanks were on farms with herds of 50 or more milking cows.

Prices of bulk tanks vary according to size and type of tank. Size of tank in turn depends upon the frequency of pickup, along with the production of the herd, plus a reserve for seasonal peaks and increased production (table 12). The direct-expansion type of milk cooler is more expensive initially than the ice-bank cooler of similar capacity. Peak-load demand is greater in a direct-expansion cooler, necessitating a larger motor and compressor than is required for the ice-bank unit.

The 1958 price of a bulk tank installed averaged from \$1,800 for tanks under 200 gallons to about \$3,900 for tanks of 500 gallons and over (table 13). In 1958, the average cost of 500-gallon or larger bulk tanks with installation was highest in Florida. One cause of this was the comparatively large number of 750- and 1,000-gallon tanks in that State.

As size of their herds and production per cow have increased, dairymen have altered their systems to accommodate increased milk production. In the process, many have added bulk handling and some have replaced small bulk tanks with larger tanks. Most used tanks are sold to other dairy farmers at a portion of the cost of a similar new tank. Sales of used tanks may have influenced somewhat the average price of tanks reported in some States.

^{5/} Estimates for 1960 from the Dairy Industry Supplies Association, Washington, D. C.

GRAIN FEEDING

A very small percentage of the cows housed in loose housing units are fed grain in the immediate area. Although most cows housed in loose housing areas are milked in parlors, only 50 percent were fed grain in these parlors in 1958 (table 14). Surprisingly enough, another 40 percent were fed grain in stanchion units. The rest were fed grain either in the tie stalls or the loafing area. Less than one-half of 1 percent of the cows housed in loose housing units were fed no grain.

TABLE 1. - Dairy herds: Percentage distribution by size of herd, size of farm, and region, 1958

Region and size of farm	Size of herd					
	5 to 9 cows	10 to 14 cows	15 to 19 cows	20 to 29 cows	30 to 49 cows	50 cows and over
	Percent	Percent	Percent	Percent	Percent	Percent
Northeast-----	18	19	18	24	16	5
Less than 50 acres-----	70	18	7	4	1	$\frac{1}{1}$
50 to 99 acres-----	30	35	18	14	3	$\frac{1}{1}$
100 to 179 acres-----	19	22	24	25	9	1
180 to 259 acres-----	12	15	17	31	22	3
260 to 499 acres-----	8	7	11	28	34	12
500 acres and over-----	6	1	7	23	32	31
Lake States-----	26	27	21	19	6	1
Less than 50 acres-----	70	25	4	1	$\frac{1}{1}$	$\frac{1}{1}$
50 to 99 acres-----	40	30	20	10	$\frac{1}{1}$	$\frac{1}{1}$
100 to 179 acres-----	25	28	23	20	4	$\frac{1}{1}$
180 to 259 acres-----	21	27	21	22	8	1
260 to 499 acres-----	18	25	19	23	12	3
500 acres and over-----	21	9	32	15	14	9
Corn Belt-----	50	26	12	9	3	$\frac{2}{1}$
Less than 50 acres-----	75	18	5	2	$\frac{1}{1}$	$\frac{1}{1}$
50 to 99 acres-----	57	33	8	2	$\frac{1}{1}$	$\frac{1}{1}$
100 to 179 acres-----	51	28	12	8	1	$\frac{1}{1}$
180 to 259 acres-----	47	24	13	11	4	1
260 to 499 acres-----	43	22	14	13	6	2
500 acres and over-----	58	16	8	9	5	4
Northern Plains-----	58	26	9	5	2	$\frac{2}{1}$
Less than 50 acres-----	57	43	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$
50 to 99 acres-----	65	27	6	2	$\frac{1}{1}$	$\frac{1}{1}$
100 to 179 acres-----	68	21	7	3	1	$\frac{1}{1}$
180 to 259 acres-----	60	23	8	7	2	$\frac{1}{1}$
260 to 499 acres-----	56	26	10	6	2	$\frac{1}{1}$
500 acres and over-----	56	28	8	5	2	1
Appalachian-----	61	18	8	7	4	2
Less than 50 acres-----	78	15	4	3	$\frac{1}{1}$	$\frac{1}{1}$
50 to 99 acres-----	74	16	5	4	1	$\frac{1}{1}$
100 to 179 acres-----	61	20	9	6	3	1
180 to 259 acres-----	55	18	10	9	6	2
260 to 499 acres-----	48	14	11	13	9	5
500 acres and over-----	48	30	2	5	6	9

See footnotes at end of table.

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TABLE 1. - Dairy herds: Percentage distribution by size of herd, size of farm, and region, 1958
 --Continued

Region and size of farm	Size of herd					
	5 to 9 cows	10 to 14 cows	15 to 19 cows	20 to 29 cows	30 to 49 cows	50 cows and over
	Percent	Percent	Percent	Percent	Percent	Percent
Southeast-----	63	10	5	6	8	8
Less than 50 acres-----	84	8	5	2	1	<u>1/</u>
50 to 99 acres-----	75	10	8	4	2	1
100 to 179 acres-----	70	11	5	6	6	2
180 to 259 acres-----	58	15	3	8	9	7
260 to 499 acres-----	54	9	2	9	15	11
500 acres and over-----	50	6	7	5	10	22
Delta-----	61	15	8	7	6	3
Less than 50 acres-----	84	6	6	4	<u>1/</u>	<u>1/</u>
50 to 99 acres-----	70	17	7	4	2	<u>1/</u>
100 to 179 acres-----	63	18	10	5	3	1
180 to 259 acres-----	53	20	5	9	11	2
260 to 499 acres-----	50	10	7	15	12	6
500 acres and over-----	43	15	13	4	11	14
Southern Plains-----	56	17	7	9	7	4
Less than 50 acres-----	86	6	4	3	1	<u>1/</u>
50 to 99 acres-----	80	8	5	4	3	<u>1/</u>
100 to 179 acres-----	65	12	9	8	5	1
180 to 259 acres-----	55	17	8	10	6	4
260 to 499 acres-----	40	31	7	6	11	5
500 acres and over-----	50	13	5	14	9	9
Mountain-----	50	23	10	10	5	2
Less than 50 acres-----	67	23	5	4	1	<u>1/</u>
50 to 99 acres-----	50	25	10	10	4	1
100 to 179 acres-----	41	31	11	11	4	2
180 to 259 acres-----	35	29	13	12	7	4
260 to 499 acres-----	36	25	12	14	10	3
500 acres and over-----	60	15	9	8	6	2
Pacific-----	31	16	10	15	14	14
Less than 50 acres-----	41	22	11	16	6	4
50 to 99 acres-----	26	18	12	23	14	7
100 to 179 acres-----	24	17	13	15	17	14
180 to 259 acres-----	22	16	11	13	22	16
260 to 499 acres-----	21	12	8	11	25	23
500 acres and over-----	48	4	1	3	8	36
United States-----	44	22	13	13	6	2

1/ None reported.

2/ Less than 0.5 percent.

TABLE 2. - Milk cows: Percentage distribution by specified method of milking in regions and States, 1958

Region and State	Number of milk cows on farms, 1958	Percentage of cows milked by -		
		Pipeline milker	Regular milker	Hand
	Thousands	Percent	Percent	Percent
Northeast-----	3,241	5	83	12
New England-----	633	5	85	10
New York-----	1,280	5	86	9
New Jersey-----	138	4	89	7
Pennsylvania-----	930	3	80	17
Delaware-----	31	9	77	14
Maryland-----	229	12	72	16
Lake States-----	4,321	3	83	14
Michigan-----	759	4	78	18
Wisconsin-----	2,226	3	86	11
Minnesota-----	1,336	2	82	16
Corn Belt-----	3,729	4	62	34
Ohio-----	789	5	65	30
Indiana-----	514	4	65	31
Illinois-----	718	4	65	31
Iowa-----	949	3	64	33
Missouri-----	759	5	50	45
Northern Plains-----	1,387	4	48	48
North Dakota-----	324	3	51	46
South Dakota-----	289	3	49	48
Nebraska-----	380	4	42	54
Kansas-----	394	5	50	45
Appalachian-----	2,050	5	33	62
Virginia-----	371	8	35	57
West Virginia-----	172	4	29	67
North Carolina-----	352	9	27	64
Kentucky-----	566	3	33	64
Tennessee-----	589	4	37	59

--Continued

TABLE 2. - Milk cows: Percentage distribution by specified method of milking in regions and States, 1958 --Continued

Region and State	Number of milk cows on farms, 1958	Percentage of cows milked by -		
		Pipeline milker	Regular milker	Hand
	Thousands	Percent	Percent	Percent
Southeast-----	971	16	29	55
South Carolina-----	143	6	25	69
Georgia-----	290	8	37	55
Florida-----	214	47	29	24
Alabama-----	324	8	23	69
Delta States-----	1,055	6	36	58
Mississippi-----	479	6	33	61
Arkansas-----	291	3	37	60
Louisiana-----	285	9	41	50
Southern Plains-----	1,033	16	37	47
Oklahoma-----	344	9	39	52
Texas-----	689	19	36	45
Mountain-----	686	13	55	32
Montana-----	90	2	50	48
Idaho-----	212	10	72	18
Wyoming-----	36	5	45	50
Colorado-----	136	9	45	46
New Mexico-----	46	16	42	42
Arizona-----	51	59	23	18
Utah-----	100	11	65	24
Nevada-----	15	20	37	43
Pacific-----	1,300	41	46	13
Washington-----	251	10	62	28
Oregon-----	180	16	58	26
California-----	869	55	39	6
United States-----	19,773	8	60	32

TABLE 3. - Milk cows: Percentage distribution by specified method of milking and by size of herd and region, 1958

Region and number of cows in herd	Number of milk cows on farms, 1958	Percentage of cows milked by -		
		Pipeline milker	Regular milker	Hand
	Thousands	Percent	Percent	Percent
Northeast-----	3,241	5	83	12
1 to 4 -----	176	1/	15	85
5 to 9 -----	180	1/	56	44
10 to 14 -----	327	2/	85	15
15 to 19 -----	425	2	90	8
20 to 29 -----	827	3	92	5
30 to 49 -----	843	5	91	4
50 and over -----	463	20	79	1
Lake States -----	4,321	3	83	14
1 to 4 -----	143	1/	25	75
5 to 9 -----	488	1/	55	45
10 to 14 -----	860	2/	85	15
15 to 19 -----	940	1	91	8
20 to 29 -----	1,220	3	92	5
30 to 49 -----	558	7	89	4
50 and over -----	112	22	76	2
Corn Belt-----	3,729	4	62	34
1 to 4 -----	531	1/	10	90
5 to 9 -----	925	1/	46	54
10 to 14 -----	822	2/	76	24
15 to 19 -----	533	3	89	8
20 to 29 -----	563	10	85	5
30 to 49 -----	280	20	75	5
50 and over -----	75	47	53	1/
Northern Plains -----	1,387	4	48	48
1 to 4 -----	205	1/	6	94
5 to 9 -----	463	1/	35	65
10 to 14 -----	353	2/	61	39
15 to 19 -----	155	5	79	16
20 to 29 -----	139	10	81	9
30 to 49 -----	64	47	53	1/
50 and over -----	8	52	48	1/

See footnotes at end of table.

--Continued

TABLE 3. - Milk cows: Percentage distribution by specified method of milking and by size of herd and region, 1958 --Continued

Region and number of cows in herd	Number of milk cows on farms, 1958	Percentage of cows milked by -		
		Pipeline milker	Regular milker	Hand
	<u>Thousands</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
South ^{3/} -----	5,109	8	31	61
1 to 4 -----	1,938	<u>1/</u>	1	99
5 to 9 -----	987	<u>1/</u>	13	87
10 to 14 -----	464	<u>2/</u>	52	48
15 to 19 -----	292	3	75	22
20 to 29 -----	388	7	84	9
30 to 49 -----	451	16	81	3
50 and over -----	589	49	50	1
Mountain -----	686	13	55	32
1 to 4 -----	125	<u>1/</u>	13	87
5 to 9 -----	134	<u>1/</u>	50	50
10 to 14 -----	125	<u>1/</u>	73	27
15 to 19 -----	64	5	82	13
20 to 29 -----	83	9	87	4
30 to 49 -----	80	29	71	<u>1/</u>
50 and over -----	75	70	30	<u>1/</u>
Pacific -----	1,300	41	46	13
1 to 4 -----	117	<u>1/</u>	7	93
5 to 9 -----	73	<u>1/</u>	55	45
10 to 14 -----	71	1	79	20
15 to 19 -----	63	5	85	10
20 to 29 -----	132	6	87	7
30 to 49 -----	185	17	82	1
50 and over -----	659	73	27	<u>1/</u>
United States -----	19,773	8	60	32

1/ None reported.

2/ Less than 0.5 percent.

3/ Appalachian, Southeast, Delta States, and Southern Plains Regions.

TABLE 4. - Milk cows: Percentage distribution by milking location and method of milking in regions and States, 1958 1/2

Region and State	Number of cows milked in herds of 5 and over	Percentage of cows milked in -									
		Milking parlors		Stanchion barns		All other locations					
		Pipeline milker	Regular milker	Pipeline milker	Regular milker	Hand	All other locations (unspecified)				
Thousands	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
Northeast	3,065	3	1	3	83	6	4				
New England	591	4	2	1	86	5	2				
New York	1,242	2	1	4	86	5	2				
New Jersey	133	2	1	2	91	3	1				
Pennsylvania	858	2	1	3	78	8	8				
Delaware	29	4	2	5	77	7	5				
Maryland	212	6	2	5	75	8	4				
Lake States	4,178	2	2	1	82	11	2				
Michigan	694	4	5	2/	76	12	3				
Wisconsin	2,201	1	1	2	84	10	2				
Minnesota	1,283	2	1	1	82	12	2				
Corn Belt	3,198	5	13	1	54	19	8				
Ohio	683	6	12	1	54	14	13				
Indiana	446	4	19	2	51	17	7				
Illinois	615	4	11	1	62	17	5				
Iowa	835	3	6	2	63	20	6				
Missouri	619	6	21	1	36	26	10				
Northern Plains	1,182	5	6	1	46	30	12				
North Dakota	295	4	1	2/	49	31	15				
South Dakota	248	3	7	1	46	27	16				
Nebraska	319	4	6	1	41	38	10				
Kansas	320	8	10	1	48	25	8				

See footnotes at end of table.

--Continued

TABLE 4. - Milk cows: Percentage distribution by milking location and method of milking in regions and States, 1958 1/ --Continued

Region and State	Number of cows milked in herds of 5 and over	Percentage of cows milked in --									
		Milking parlors		Stanchion barns		All other locations		Pipeline milker		Hand	
		Pipeline milker	Regular milker	Pipeline milker	Regular milker	Pipeline milker	Regular milker	Hand	Hand	Percent	Percent
Thousands	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
Appalachian-----	1,269	7	15	2	35	14					27
Virginia-----	234	7	9	6	46	11					21
West Virginia-----	95	6	10	1	42	24					17
North Carolina-----	162	19	18	2	37	11					13
Kentucky-----	370	3	19	1	29	17					31
Tennessee-----	408	6	16	3/	31	13					34
Southeast-----	527	16	16	14	34	3					17
South Carolina-----	60	18	11	3/	42	6					23
Georgia-----	160	12	21	5	42	4					16
Florida-----	162	19	11	38	26	3/					6
Alabama-----	145	15	19	6	31	3					26
Delta States-----	645	6	19	3	34	14					24
Mississippi-----	303	4	7	5	43	16					25
Arkansas-----	162	5	22	3/	28	17					28
Louisiana-----	180	11	36	2	25	8					18
Southern Plains-----	730	11	14	10	36	15					14
Oklahoma-----	259	8	18	3	33	30					8
Texas-----	471	13	12	14	37	7					17

See footnotes at end of table.

--Continued

TABLE 4. - Milk cows: Percentage distribution by milking location and method of milking in regions and States, 1958^{1/} --Continued

Region and State	Number of cows milked in herds of 5 and over	Percentage of cows milked in -										
		Milking parlors		Stanchion barns		Pipeline milker		Regular milker		Hand		All other locations (unspecified)
		Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent		
Mountain-----	561	10	16	5	46	18	5	5	5	5	5	
Montana-----	66	4	16	5	38	28	9	9	9	9	9	
Idaho-----	128	9	12	1	63	12	3	3	3	3	3	
Wyoming-----	22	5	9	11	25	41	9	9	9	9	9	
Colorado-----	11	6	14	3	47	24	6	6	6	6	6	
New Mexico-----	32	10	11	8	46	20	5	5	5	5	5	
Arizona-----	41	40	13	25	16	4	2	2	2	2	2	
Utah-----	83	9	30	6	37	13	5	5	5	5	5	
Nevada-----	12	10	25	7	33	19	6	6	6	6	6	
Pacific-----	1,183	13	8	31	42	5	1	1	1	1	1	
Washington-----	207	10	19	3	53	14	1	1	1	1	1	
Oregon-----	143	18	20	1	50	10	1	1	1	1	1	
California-----	833	13	3	43	38	2	1	1	1	1	1	
United States-----	16,538	5	8	5	61	13	8	8	8	8	8	

1/ Excludes herds of less than 5 cows.

2/ Less than 0.5 percent.

3/ None reported.

TABLE 5. - Milk cows: Percentage distribution by milking location and method of milking, by size of herd, and region, 1958 1/2

Region and number of cows in herd	Percentage of cows milked in -											
	Number of milk cows in herds of 5 and over			Milking parlors			Stanchion barns			All other locations		
	Thousands	Percent	Percent	Pipeline milker	Regular milker	Percent	Pipeline milker	Regular milker	Percent	Hand	Percent	Percent
Northeast	3,065	3	1	3	83	6	4					
5 to 9	180	2/	2/	2/	49	31	20					
10 to 14	327	3/	1	1	81	10	7					
15 to 19	425	3/	2	1	85	7	5					
20 to 29	827	1	2	2	87	5	3					
30 to 49	843	3	1	2	88	3	3					
50 and over	463	11	3/	9	77	1	2					
Lake States	4,178	2	2	1	82	11	2					
5 to 9	488	2/	2/	2/	53	39	8					
10 to 14	860	3/	1	2/	82	14	3					
15 to 19	940	3/	1	1	90	7	1					
20 to 29	1,220	2	4	1	87	5	1					
30 to 49	558	5	2	2	85	4	2					
50 and over	112	16	2	6	74	2	2/					
Corn Belt	3,198	5	13	1	54	19	8					
5 to 9	925	2/	4	2/	37	40	19					
10 to 14	822	3/	14	2/	60	19	7					
15 to 19	533	2	17	1	69	8	3					
20 to 29	563	9	21	1	62	5	2					
30 to 49	280	17	18	3	54	5	3					
50 and over	75	44	9	3	44	2/	2/					

See footnotes at end of table.

--Continued

TABLE 5. - Milk cows: Percentage distribution by milking location and method of milking, by size of herd, and region, 1958 1/2 --Continued

Region and number of cows in herd	Number of milk cows in herds of 5 and over	Percentage of cows milked in -											
		Milking parlors			Stanchion barns			All other locations					
		Pipeline milker	Regular milker	Percent	Pipeline milker	Regular milker	Percent	Hand	Percent	Percent	Percent	Percent	
Northern Plains	1,182	5	6	1	46	30	12						
5 to 9	463	2/	1	2/	33	48	18						
10 to 14	353	3/	3	3/	54	31	12						
15 to 19	155	5	12	3/	64	11	8						
20 to 29	139	10	15	3/	60	9	6						
30 to 49	64	46	22	1	31	2/	2/						
50 and over	8	48	23	4	25	2/	2/						
South 4/	3,171	8	15	4	32	14	27						
5 to 9	987	2/	2	2/	9	27	62						
10 to 14	464	3/	15	2/	32	22	31						
15 to 19	292	3	26	3/	42	11	18						
20 to 29	388	7	29	3/	53	7	4						
30 to 49	451	13	26	3	53	3	2						
50 and over	589	27	12	21	38	1	1						
Mountain	561	10	16	5	46	18	5						
5 to 9	134	2/	3	0	42	41	14						
10 to 14	125	2/	14	0	53	27	6						
15 to 19	64	5	22	0	58	13	2						
20 to 29	83	9	26	0	61	3	1						
30 to 49	80	17	35	12	36	2/	2/						
50 and over	75	43	6	27	24	2/	2/						

See footnotes at end of table.

--Continued

TABLE 5. - Milk cows: Percentage distribution by milking location and method of milking, by size of herd, and region, 1958 1/ --Continued

Region and number of cows in herd	Number of milk cows in herds of 5 and over	Percentage of cows milked in -								
		Milking parlors		Stanchion barns		Pipeline milker		Hand		All other locations (unspecified)
		Pipeline milker	Regular milker	Pipeline milker	Regular milker	Pipeline milker	Regular milker	Hand	Percent	
Thousands	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent		
Pacific	1,183	13	8	31	42	5			1	
5 to 9	73	2/	2	2/	48	41			9	
10 to 14	71	2/	8	1	69	20			2	
15 to 19	63	4	15	1	70	9			1	
20 to 29	132	5	20	1	67	7			2/	
30 to 49	185	8	15	9	67	1			2/	
50 and over	659	20	4	53	23	3/			2/	
United States	16,538	5	8	5	61	13			8	

1/ Excludes herds of less than 5 cows.

2/ None reported.

3/ Less than 0.5 percent.

4/ Appalachian, Southeast, Delta States, and Southern Plains Regions.

TABLE 6. - Dairy herds: Percentage milked in milking parlors, by size of herd and by region, 1958

Region	Size of herd					
	5 to 9 cows	10 to 14 cows	15 to 19 cows	20 to 29 cows	30 to 49 cows	50 cows and over
	Percent	Percent	Percent	Percent	Percent	Percent
Northeast-----	0.5	1.0	2.3	2.6	3.8	9.3
Lake States-----	---	1.1	1.5	4.8	6.2	13.4
Corn Belt-----	4.0	12.3	19.7	30.8	37.8	51.9
Northern Plains-----	1.7	2.9	14.2	22.0	67.0	62.0
Appalachian-----	4.6	16.1	29.4	37.5	38.3	34.5
Southeast-----	5.8	11.7	38.6	29.7	49.9	40.7
Delta-----	1.6	15.5	37.3	29.3	28.3	49.9
Southern Plains-----	---	.9	27.5	27.5	44.6	46.5
Mountain States-----	4.9	14.5	24.4	38.1	51.2	57.3
Pacific States-----	2.4	9.0	17.4	23.4	18.2	29.6
United States-----	3.0	9.3	10.9	14.5	19.3	28.8

TABLE 7. - Milking parlors: Percentage distribution by size of herd, number of stalls, and regions, 1958

Region	All milking parlors		Percentage of milking parlors on farms with herds of -					
			5 to 9 cows	10 to 14 cows	15 to 19 cows	20 to 29 cows	30 to 49 cows	50 cows and over
	Number	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Northeast-----	2,224	2.9	1/	9	19	27	24	21
Lake States -----	4,300	5.6	1/	14	9	56	17	4
Corn Belt-----	28,482	36.7	15	28	20	25	10	2
Northern Plains --	5,603	7.2	14	13	27	24	21	1
Appalachian-----	11,669	15.1	22	25	16	20	12	5
Southeast and Delta	9,133	11.8	19	12	16	19	18	16
Southern Plains --	5,365	6.9	5	12	18	18	31	16
Mountain -----	5,894	7.6	15	23	16	23	16	7
Pacific -----	4,763	6.2	6	11	11	26	19	27
United States -	77,433	100	14	21	18	25	15	27
Percentage of milking parlors with -								
	2 stalls	3 stalls	4 stalls	5 to 8 stalls	9 stalls or more			
	Percent	Percent	Percent	Percent	Percent			
Northeast-----	6	12	31	45	6			
Lake States -----	3	34	37	20	6			
Corn Belt-----	8	22	30	37	3			
Northern Plains --	15	19	43	21	2			
Appalachian-----	24	20	26	24	6			
Southeast and Delta	30	9	22	30	9			
Southern Plains --	3	21	32	41	3			
Mountain -----	11	25	36	25	3			
Pacific -----	6	20	28	35	11			
United States -	13	20	30	32	5			

1/ None reported.

TABLE 8. - Stanchion barns: Average number of stanchions per cow milked, by region, 1958

Region	Where average number of stanchions -				
	Average number of stanchions per cow	Equals or exceeds number of cows	Is less than number of cows		
	Number	Percent	Number	Percent	
			Average number of stanchions per cow	Average number of stanchions of herds	
				Percentage of herds	
				Number per cow	
Northeast-----	1.4	93	1.5	7	0.8
Lake States-----	1.5	96	1.5	4	.8
Corn Belt-----	1.2	81	1.4	19	.5
Northern Plains-----	1.3	83	1.6	17	.5
Appalachian-----	1.0	62	1.5	38	.5
Southeast-----	.4	36	1.9	64	.3
Delta States-----	.6	42	1.5	58	.4
Southern Plains-----	.7	53	1.8	47	.4
Mountain-----	.8	60	1.3	40	.5
Pacific-----	.8	72	1.9	28	.3
United States-----	1.2	83	1.5	17	.5

TABLE 9. - Stanchion barns: Percentage distribution by number of stanchions and by region, 1958

Region	All stanchion barns	Percentage of stanchion barns with -						
		5 to 9 stanchions ; and over	10 to 14 stanchions ; and over	15 to 19 stanchions ; and over	20 to 29 stanchions ; and over	30 to 49 stanchions ; and over	50 stanchions ; and over	
	Number	Percent	Percent	Percent	Percent	Percent	Percent	
Northeast-----	122,444	7.5	15.4	16.9	30.4	23.0	6.8	
Lake States-----	242,288	9.0	24.6	24.5	30.1	11.0	.8	
Corn Belt-----	206,658	39.2	36.3	12.8	8.9	2.6	.2	
Northern Plains----	95,791	51.0	34.4	9.8	4.3	.5	1/	
Appalachian-----	39,501	45.3	34.4	7.0	8.0	3.7	1.6	
Southeast-----	5,074	37.0	23.5	9.1	21.7	5.5	3.2	
Delta States-----	13,674	59.3	32.4	4.0	3.6	.7	1/	
Southern Plains----	23,280	65.2	26.5	6.5	1.5	.5	1/	
Mountain-----	28,273	63.2	27.0	5.4	3.5	.5	.4	
Pacific-----	29,628	22.4	24.4	15.2	18.2	15.5	4.3	
United States --	806,611	28.3	28.1	15.8	17.9	8.3	1.6	

1/ None reported.

TABLE 10. - Milk cows: Percentage distribution by type of housing in regions and States, 1958

Region and State	Percentage of cows housed in -				
	Stanchion barns	Loose housing	Stanchion barns and loose housing	Tie stalls	No housing
	Percent	Percent	Percent	Percent	Percent
Northeast-----	86	7	4	3	<u>1/</u>
New England-----	93	4	2	1	---
New York-----	93	3	2	2	---
New Jersey-----	93	1	5	1	---
Pennsylvania-----	77	12	4	7	---
Delaware-----	84	9	3	4	---
Maryland-----	63	16	18	3	---
Lake States-----	92	4	1	3	<u>1/</u>
Michigan-----	81	13	3	3	---
Wisconsin-----	95	2	1	2	---
Minnesota-----	93	3	1	3	---
Corn Belt-----	42	49	5	4	<u>1/</u>
Ohio-----	33	58	4	5	---
Indiana-----	37	52	6	5	---
Illinois-----	54	37	6	3	---
Iowa-----	62	28	7	3	---
Missouri-----	17	73	4	6	---
Northern Plains-----	44	45	5	6	<u>1/</u>
North Dakota-----	73	11	5	11	---
South Dakota-----	62	26	3	9	---
Nebraska-----	28	61	7	4	---
Kansas-----	21	71	5	3	---
Appalachian-----	23	58	3	14	2
Virginia-----	31	46	11	11	1
West Virginia-----	57	31	3	9	<u>1/</u>
North Carolina-----	12	74	1	8	5
Kentucky-----	24	53	3	19	1
Tennessee-----	13	69	1	16	1

See footnote at end of table.

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TABLE 10. - Milk cows: Percentage distribution by type of housing in regions and States, 1958 --Continued

Region and State	Percentage of cows housed in -				
	Stanchion barns	Loose housing	Stanchion barns and loose housing	Tie stalls	No housing
	Percent	Percent	Percent	Percent	Percent
Southeast-----	7	56	1	6	30
South Carolina-----	14	66	1/	7	13
Georgia-----	7	61	1	7	24
Florida-----	1/	52	1/	/	48
Alabama-----	8	48	2	9	33
Delta States-----	5	68	1	7	19
Mississippi-----	7	65	1	7	20
Arkansas-----	8	75	1/	6	11
Louisiana-----	1/	66	1/	10	24
Southern Plains-----	11	77	1	4	7
Oklahoma-----	17	70	1	5	7
Texas-----	8	80	1/	4	8
Mountain-----	15	72	4	2	7
Montana-----	15	78	6	1	1/
Idaho-----	19	75	4	2	1/
Wyoming-----	21	71	4	4	1/
Colorado-----	19	75	3	2	1
New Mexico-----	9	34	4	2	51
Arizona-----	6	40	3	1	50
Utah-----	9	86	4	1/	1
Nevada-----	5	68	1/	1/	27
Pacific-----	23	32	6	1	38
Washington-----	49	45	5	1	1/
Oregon-----	39	55	4	2	1/
California-----	11	23	6	1	59
United States-----	51	35	3	5	6

1/ None reported.

TABLE 11. - Bulk milk tanks: Percentage distribution, by size of herd and by region, 1958

Region	Percentage of bulk tanks on farms with herds of -					
	5 to 9 cows	10 to 14 cows	15 to 19 cows	20 to 29 cows	30 to 49 cows	50 cows and over
	Percent	Percent	Percent	Percent	Percent	Percent
Northeast	0.6	10.0	10.7	24.8	36.3	17.6
Lake States	.7	8.1	16.3	43.7	26.4	4.8
Corn Belt	5.8	14.7	21.3	35.2	18.0	5.0
Northern Plains	1.8	20.3	23.5	35.6	18.2	.6
Appalachian	1.2	7.2	16.8	32.4	24.8	17.6
Southeast	<u>1/</u>	<u>1/</u>	3.3	11.7	33.2	51.8
Delta	<u>1/</u>	<u>1/</u>	<u>1/</u>	6.4	54.7	38.9
Southern Plains	<u>1/</u>	6.0	14.7	25.6	22.2	31.5
Mountain	<u>1/</u>	5.9	11.7	21.0	42.5	18.9
Pacific	<u>1/</u>	6.9	11.6	18.4	19.6	43.5
United States	1.8	10.0	15.5	32.2	25.9	14.6

1/ None reported.

TABLE 12. - Bulk milk tanks: Size needed, by level of production and size of herd

Size of tank needed ^{1/}	Cows averaging annual production of -							
	7,000 pounds	8,000 pounds	9,000 pounds	10,000 pounds	11,000 pounds	12,000 pounds	13,000 pounds	14,000 pounds
	Cows in herd	Cows in herd	Cows in herd	Cows in herd	Cows in herd	Cows in herd	Cows in herd	Cows in herd
100 gallons	14	13	11	10	9	8	8	7
200 gallons	28	25	22	20	18	16	15	14
300 gallons	42	38	33	30	27	24	23	21
400 gallons	56	50	44	40	36	33	30	28
500 gallons	70	63	55	49	45	41	38	35
600 gallons	84	75	66	59	54	49	45	42
1,000 gallons	140	125	110	99	89	82	75	69
	<u>Gallons</u>	<u>Gallons</u>	<u>Gallons</u>	<u>Gallons</u>	<u>Gallons</u>	<u>Gallons</u>	<u>Gallons</u>	<u>Gallons</u>
Daily production per cow ^{2/}	2.7	3.0	3.4	3.8	4.2	4.6	5.0	5.4

^{1/} For every-other-day pickup. Additional 25 percent tank capacity included for expansion.
^{2/} 305-day average, rounded to nearest 0.1 gallon.

TABLE 13. - Bulk milk tanks: Average cost installed, by size of tank, in regions and States, 1958

Region and State	Size of tank				
	Under 200 gallons	200 to 299 gallons	300 to 399 gallons	400 to 499 gallons	500 gallons and over
	Dollars	Dollars	Dollars	Dollars	Dollars
Northeast-----	1,720	2,337	2,776	3,083	3,814
New England -----	1,691	2,227	2,650	2,849	3,411
New York-----	2,001	2,631	2,953	3,294	4,046
New Jersey -----	1,836	2,013	2,744	3,084	3,238
Pennsylvania-----	1,757	2,222	2,735	3,010	4,076
Delaware -----	---	---	---	---	---
Maryland -----	1,400	2,324	2,592	3,038	3,743
Lake States -----	1,892	2,293	2,599	2,930	3,533
Michigan -----	1,687	2,209	2,659	2,946	3,314
Wisconsin -----	1,938	2,327	2,699	3,151	4,008
Minnesota -----	1,849	2,282	2,360	2,707	3,325
Corn Belt-----	1,815	2,254	2,790	3,051	3,066
Ohio-----	1,601	2,055	2,410	2,767	2,894
Indiana -----	1,806	2,260	2,778	3,544	3,158
Illinois -----	1,824	2,364	3,076	2,872	3,260
Iowa -----	2,135	2,127	2,840	3,330	3,875
Missouri -----	1,958	2,381	2,571	2,382	4,152
Northern Plains -----	1,827	2,231	2,455	2,993	4,047
North Dakota-----	---	2,404	---	2,767	---
South Dakota -----	1,825	2,187	2,075	3,200	---
Nebraska -----	---	2,151	2,574	---	4,276
Kansas -----	1,829	2,301	2,413	3,104	3,792
Appalachian-----	1,698	2,223	2,533	2,688	3,858
Virginia -----	1,645	2,395	2,470	2,699	3,612
West Virginia -----	2,425	2,442	2,600	2,964	3,500
North Carolina -----	1,657	2,258	2,703	2,769	3,846
Kentucky -----	1,757	2,130	2,605	2,750	4,244
Tennessee -----	1,350	2,063	2,438	2,279	4,297

--Continued

TABLE 13. - Bulk milk tanks: Average cost installed, by size of tank, in regions and States, 1958 --Continued

Region and State	Size of tank				
	Under 200 gallons	200 to 299 gallons	300 to 399 gallons	400 to 499 gallons	500 gallons and over
	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>
Southeast-----	1,765	2,137	2,528	3,189	4,154
South Carolina ----	---	1,750	---	2,433	3,599
Georgia -----	1,765	2,281	2,559	3,000	3,720
Florida -----	---	---	---	3,290	5,700
Alabama -----	---	2,125	2,492	3,583	3,960
Delta States -----	2,154	2,231	2,426	2,752	4,600
Mississippi-----	---	2,224	2,200	2,600	---
Arkansas-----	---	2,300	2,325	---	---
Louisiana -----	2,154	---	2,651	2,826	4,600
Southern Plains ----	2,000	2,036	2,465	3,334	4,368
Oklahoma -----	---	1,770	2,194	2,940	3,431
Texas -----	2,000	2,290	2,819	3,469	4,930
Mountain -----	1,701	2,191	2,589	2,929	3,557
Montana -----	---	2,250	2,525	3,500	---
Idaho -----	1,000	2,454	2,545	2,800	4,461
Wyoming -----	---	---	2,600	---	---
Colorado -----	---	2,250	2,576	2,844	3,975
New Mexico -----	---	---	2,464	2,488	4,172
Arizona -----	---	---	1,800	2,930	2,870
Utah -----	1,897	2,094	2,955	2,833	3,604
Nevada -----	---	---	---	2,950	3,100
Pacific-----	1,775	2,151	2,469	2,639	4,110
Washington -----	1,609	2,173	2,548	2,889	3,893
Oregon-----	2,128	2,130	2,442	2,897	3,943
California -----	---	2,000	2,319	2,350	4,166
United States ---	1,826	2,262	2,650	2,981	3,866

TABLE 14. - Grain feeding: Percentage of cows housed in loose housing that were fed in designated locations, by regions, 1958

Region	Percentage of cows fed in -				Percentage of cows not fed grain
	Milking parlor	Stanchions	Tie stalls	Loafing area	
	Percent	Percent	Percent	Percent	Percent
Northeast-----	61	27	11	1	1/
Lake States-----	78	22	1/	1/	1/
Corn Belt-----	42	49	8	1	2/
Northern Plains-----	27	61	9	2	1
Appalachian-----	37	40	21	1	1
Southeast-----	42	42	16	1/	1/
Delta-----	33	48	18	1	1/
Southern Plains-----	37	46	9	8	1/
Mountain-----	36	59	4	1/	1
Pacific-----	65	28	6	1	2/
United States-----	50	40	9	1	2/

1/ None reported. 2/ Less than 0.5 percent.



