

Labor Used in Cattle Feeding



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Labor Used in Cattle Feeding

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FATTENING CATTLE for market is a major enterprise on many Minnesota farms. The number of cattle on feed in Minnesota has risen steadily from 294,000 in 1950 to 400,000 in 1959. This gain is due to an increase in both the number of farmers feeding cattle and the number of cattle fed per farm. Farmers who are beginning a cattle-feeding enterprise or expanding an existing one need accurate information in order to plan the cattle-feeding operation to fit their individual farm situations. This bulletin is intended to provide information on the labor requirements for cattle feeding as affected by the tasks performed and the number of cattle fed.

Source of Information

Data on the labor used in the care of feeder cattle were obtained from 59 farmers in southern Minnesota. These farmers, members of either the Southwestern or Southeastern Minnesota Farm Management Association, kept records of the labor used on their feeder cattle chores during the 1956-57

feeding year. The amount of time they spent on such regular chores as feeding and bedding was recorded each day for one week of each month. For such non-routine chores as repair of fences and equipment, care of sick animals, and hauling manure, they recorded the information daily throughout each

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month. Since the labor for each of these tasks was recorded separately, the amount of labor used for feeding grain could be determined apart from the labor used for feeding silage, feeding hay, bedding, and other tasks.

Previous studies have shown that the number of hours of labor needed to produce 100 pounds of beef decreases as the number of cattle fed is increased.² Some of the savings in labor obtained by large lots are due, however,

Large Lots Are Efficient in Labor

Results from this study indicate that larger lots require less labor per head than smaller lots, even though similar equipment and procedures are used. This is because a certain amount of time is required for each task regardless of the number of cattle in the lot. With larger lots, this fixed time is spread over a greater number of cattle, and as a result, less labor is used per head.

Table 1 presents a brief picture of some of the results of this study. The data are calculated for calves fed for a period of 47 weeks. The feeding program includes 4 weeks on hay with a limited amount of grain fed; 22 weeks on a full feed of silage, limited grain, and hay; and 21 weeks on a full feed of grain. All feeding is done twice a day and hand methods are used. Labor includes that for grinding feed on the farm and for disposal of manure.

Under the conditions described, the average amount of labor per head decreases rapidly as the number of cattle increases up to about 50 head, after which the labor efficiency improves

to labor-saving equipment and procedures. In order to arrive at a uniform comparison, each task (feeding hay for example) was classified according to the equipment and procedures used. Only those lots in which tasks were performed in a similar manner and with similar equipment were included in each classification. The effect of the number of cattle fed was then determined for each task within a classification.

more slowly. While average labor per head in the lot decreases as the number fed increases, total labor used in caring for the cattle increases as more are fed. However, table 1 illustrates that doubling the number of animals does not double the amount of labor used. For example, 40 head of cattle use 423 hours per year, while 80 head use 630 hours, only 207 hours more. For the feeding program described, each additional 20 head of cattle increases the labor required by 104 hours per year.

Table 1. Effect of number of cattle on amount of labor used annually for calves on feed for 47 weeks, with hand feeding methods used

Number	Avg. hours per animal	Total hours
20	15.95	319
40	10.58	423
60	8.77	526
80	7.88	630
100	7.31	731
120	6.97	836

² Hasbargen, P. R. and Pond, G. A., "Planning Farms for Increased Profits," Minn. Agr. Expt. Sta. Bul. 445, December, 1957.

Labor Requirements for Feeding Cattle by Jobs

The labor used in feeding cattle was divided into the various tasks. Table 2 contains a complete list of these tasks with the hours of labor required per week for each job. This is given for lot sizes ranging from 20 to 120 head.

The column at the right of table 2 (per 10 added), gives the additional time required per 10 head in the lot.

This represents the variation in time, which depends upon the number of animals in the lot. The data in this column can be utilized to determine the labor needs for lot sizes between those given. For example, 30 head fed hay with limited grain and no silage would use 1.60 hours (1.51 + .087) of labor per week.

Table 2. Number of hours of labor used per week for cattle feeding, by tasks

Task and Method	Number of head in the lot						per 10 added
	20	40	60	80	100	120	
	hours per week						
<i>Hay feeding (either once or twice a day)</i>							
(1) Fed with limited grain, no silage	1.51	1.69	1.86	2.04	2.21	2.38	.087
(2) Fed with silage or full feed of grain	.94	1.12	1.29	1.47	1.64	1.81	.087
<i>Grain Feeding</i>							
(3) Limited feed, once a day	.86	1.10	1.33	1.57	1.80	2.03	.117
(4) Limited feed, twice a day	1.43	1.67	1.90	2.14	2.37	2.60	.117
(5) Full feed, twice a day	1.44	2.38	3.33	4.27	5.21	6.15	.471
(6) Fed on pasture, twice a day	1.76	2.26	2.75	3.25	3.74	4.23	.247
<i>Silage feeding</i>							
(7) Upright silo, twice a day	2.52	3.39	4.25	5.12	5.98	6.84	.432
<i>Bedding—November-April</i>							
(8) Bedded 4 or more times per week	.60	1.10	1.60	2.10	2.60	3.10	.250
(9) Bedded 2 or 3 times per week	.35	.68	1.01	1.34	1.67	2.00	.165
(10) Bedded once a week	.24	.40	.55	.71	.86	1.01	.077
(11) Bedded less often	.43	.43	.43	.43	.43	.43	.....
<i>Watering and observing in dry lot</i>							
(12) Winter—November-March	.72	.72	.72	.72	.72	.72	.....
(13) Summer—April-October	.54	.54	.54	.54	.54	.54	.....
<i>Care and treatment of sick animals</i>							
(14) Calves	.12	.12	.12	.12	.12	.12	.....
(15) Yearlings or two-year olds	.05	.05	.05	.05	.05	.05	.....
<i>Pasturing</i>							
(16) Daily rotational grazing	1.98	1.98	1.98	1.98	1.98	1.98	.....
(17) Care on corn stalk pasture	1.14	1.14	1.14	1.14	1.14	1.14	.....
<i>Feed Grinding</i>							
(18) Limited feed of grain (5 lbs. per day)	.31	.62	.92	1.23	1.54	1.85	.154
(19) Full feed of grain with silage (10 lbs. per day)	.62	1.23	1.85	2.46	3.08	3.70	.308
(20) Full feed of grain (15 lbs. per day)	.92	1.85	2.77	3.70	4.62	5.54	.462
<i>Manure disposal</i>							
(21) Removal once or twice a year	1.03	1.18	1.32	1.47	1.61	1.75	.072
(22) Removal every two months or more often	1.71	1.98	2.25	2.52	2.79	3.06	.135
<i>Miscellaneous jobs</i>							
(23) Repairs, hauling supplies, etc.	.30	.46	.62	.78	.94	1.10	.080
Total per week*	4.50	6.87	9.22	11.59	13.93	16.27	1.177
Total per month (per week × 4.2857)	19.29	29.44	39.51	49.67	59.70	69.73	5.044

* Totals for lines 2, 5, 10, 13, 14, 20, and 23.

An explanation and discussion of the tasks listed in table 2 follows:

1. Hay feeding—The labor requirements given are for baled hay stored either in a barn, hay shed, or stack—all situated near where the hay is fed. During the period when the cattle receive a limited feed of grain and no silage, more hay is consumed than when silage or a full feed of grain is fed. This accounts for the greater amount of time used during this period. No significant difference in labor requirements was noted between the time required to feed hay once a day and the time required to feed hay twice a day.

2. Grain feeding—Grain feeding includes supplements fed. The labor requirements given are for grain stored either in a feed wagon or in a bin situated near the feed bunks. The grain is distributed to the cattle either in a basket or with a shovel. Cattle fed a limited grain ration once a day require less labor than those fed twice a day. Full feeding takes considerably more time, especially as the number fed increases. Feeding on pasture is intermediate in labor requirements between limited and full feeding.

3. Silage feeding—Silage is stored in an upright silo and is fed twice a day. The labor used in removing silage from the silo as well as the labor used in distributing the silage to the feed bunks is included. This task uses more labor per week than any other single task.

4. Bedding—The bedding used is straw and/or corncobs. Ordinarily, cattle bedded with corncobs need to be bedded less often. The number of times bedded per week is the chief factor influencing the amount of labor required. Bedding is usually done only during the winter.

5. Watering and observing in dry lot—Labor used on this job is divided into two periods. The winter period extends from the time the cattle are put in the lot through March. The summer

period extends from April until the cattle are sold. Time spent looking after a watertank heater is included. Time spent in this activity was reported by 35 percent of the lots in the winter, and by 21 percent of the lots in the summer. The information in table 2 shows the average time spent by those reporting this job. The number of animals did not affect measurably the time spent on this task.

6. Care and treatment of sick animals—The amount of time spent in this task varies widely. The time reported does not include time spent by a veterinarian. More time is used in this task for calves than for older cattle.

7. Pasturing—The time spent for daily rotational grazing includes going to pasture and moving fences. If cattle must be brought in from pasture every day for feed, the time spent will be about the same as that for daily rotational grazing. Care on cornstalk pasture is time for daily observing and occasionally driving cattle to and from fields.

8. Feed grinding—The labor includes the time used in removing the grain from the crib or granary and the grinding time. Time spent unloading the feed is not included; usually cattle are fed directly from the feed wagon. Feed is handled without the use of special equipment other than a grinder of average size. The amount of time required for grinding depends upon the rate of feeding. Labor requirements are given for feeding rates of 5, 10, and 15 pounds of grain fed per head per day. These data are computed from a labor requirement of 0.044 hours per 100 pounds of grain ground.

9. Manure disposal—This includes manure cleaned both from lots outside the barn and from the barn. A tractor manure loader is used for all cleaning. Labor requirements are reported on a weekly basis while the cattle are in dry lot. Periods when cattle are in the

dry lot at night only are counted as half time. Lots in which manure is removed from the barn only once or twice a year require less labor than those in which it is removed more often.

10. Miscellaneous jobs—Included here are tasks that are irregular in nature. The major items included are repairing equipment and fences, moving bunks, and hauling feed and supplies.

From the information in table 2, one can estimate the labor needed in a particular week to feed and care for various numbers of cattle. First, determine the tasks that must be performed during the week. Then check the labor requirement figures for each of these tasks and add them together for each lot size. For example, if hay is fed with a full feed of grain, check line 2 (0.94-

1.81 hrs. per week). If a full feed of grain is fed twice a day, check line 5 (1.44-6.15 hrs. per week). If no bedding is done during this week, ignore this task. In this way, indicate the other jobs to be included, such as watering and observation, care and treatment of sick animals, pasturing, feed grinding, and miscellaneous jobs. Upon adding the checked figures in each column, one will arrive at the estimated total labor per week for any lot size between 20 and 120 head.

By multiplying the total labor needed per week by 4.2857, the amount of labor required in a month can be found. For example, if during June the tasks described in lines 2, 5, 10, 13, 14, 20, and 23 are performed, the total labor per week and for the month will be as shown at the bottom of table 2. This data is useful when labor is scarce.

When Is Labor Likely To Be Scarce?

In making decisions about the number of cattle that will be fed and the equipment to be used, keep in mind that the amount of labor used annually is not nearly as important as the amount of labor used at a particular season of the year. At certain times of the year, such as during hay-making, the labor supply may be inadequate to handle the work that needs to be done. These critical periods, which usually occur in late spring or summer when labor is needed for crop production, may prevent a farmer from expanding the size of his livestock enterprise.

The first step in estimating the effect on labor needs of changes in the cattle-feeding operation is to determine the months in which labor is likely to be short. The data in table 3 will help here.

With the cropping system and the average number of hours of labor per acre needed for each crop in mind, one can estimate from the data in table 3 the amount of labor that will be needed for crop production. For example, if normally 80 acres of corn are raised for grain, the total amount of labor used on this crop would be 80 times 6.4 hours, or a total of 512 hours. Of this 15.5 percent, or 79.4 hours, is needed in June. In the same way, the labor needed each month for other crops can be estimated.

To the crop labor should be added the labor used for miscellaneous jobs not directly involved in crop or livestock production. On farms with emphasis on beef and hogs, these items usually average about 44 percent of the combined

Table 3. Total labor and percentage distribution of labor, by months*

	Oats	Flax	Soybeans	Corn for grain	Corn for Silage	Alfalfa	Misc.
Total hours of labor, per acre	5.0	4.7	4.5	6.4	10.5	6.1	†
	percentage distribution by months						
January							5.6
February							5.3
March .....	.8			.2	.1	.1	5.9
April	16.8	6.0	2.0	1.6	1.1	.2	6.6
May	10.0	16.2	24.2	25.3	17.2	.5	7.9
June .....	.6	8.1	20.9	15.5	10.5	36.4	11.4
July	16.4	5.1	12.4	7.8	5.2	30.8	10.3
August	41.6	28.7	2.0	3.1	2.1	14.4	11.2
September	6.2	26.1	9.1	12.7	61.0	16.9	12.3
October	3.2	6.2	23.6	27.3	2.4	.7	10.0
November	4.4	3.6	5.8	6.4	.3		7.3
December .....				.1	.1		6.3
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Hasbargen, P. R. and Pond, G. A., "Planning Farms for Increased Profits," Minn. Agr. Exp. Sta. Bul. 445, December, 1957.

† Misc. labor includes labor used on farmstead upkeep, new building construction, building repair, machinery and equipment repair, tractor repair, truck and auto repair, wood cutting, garden work, exchange work, and other miscellaneous jobs. Total labor required for these tasks amounted to 44 percent of the combined crop and livestock labor on farms with emphasis on beef and hogs. (This does not include time spent at farm meetings, off-farm employment, or public service work.)

Table 4. Monthly distribution of labor on a 160-acre farm

Month	80 acres			10 acres		Total crop and misc.	Total avail.	Avail. for livestock
	30 acres oats	corn grain	corn silage	30 acres alf. hay	1,000 hours misc.			
	hours of labor							
January					56.0	56.0	300	244.0
February					53.0	53.0	300	247.0
March	1.2	1.0	.1	.2	59.0	61.5	300	238.5
April	25.2	8.2	1.2	.3	66.0	100.9	300	199.1
May	15.0	129.5	18.1	.9	78.0	241.5	300	58.5
June .....	.9	79.4	11.0	66.6	114.0	271.9	300	28.1
July	24.6	39.9	5.5	56.4	103.0	229.4	300	70.6
August	62.4	15.9	2.2	26.4	112.0	218.9	300	81.1
September	9.3	65.0	64.0	30.9	123.0	292.2	300	7.8
October	4.8	139.8	2.5	1.3	100.0	248.4	300	51.6
November	6.6	32.8	.3		73.0	112.7	300	187.3
December .....		.5	.1		63.0	63.6	300	236.4
Total hours	150.0	512.0	105.0	183.0	1,000.0	1,950.0	3,600	1,650.0

crop and livestock labor, or approximately 30 percent of the total labor. The total crop and miscellaneous labor for each month can now be subtracted from the estimated total labor available. This will give the amount of labor available for livestock production each month.

Table 4 shows these calculations for a 160-acre farm with a corn, corn, corn, oats, alfalfa-brome rotation. On this farm, from May through October, inclusive, the amount of labor available is likely to limit the number of cattle that can be handled.

Fitting the Cattle-feeding Program to the Labor Available

The farm example (table 4) has only 28.1 hours of labor available for livestock production in the month of June. It is assumed that during June the tasks in lines 2, 5, 10, 13, 14, 20, and 23 of table 2 are performed. In this case, 40 head of feeder cattle would use about 6.87 hours of labor per week, or 29.4 hours per month (6.87×4.2857). Each additional 10 head needs 5.04 hours, or 0.50 hours per head (labor per 10 additional, table 2). Thus 38 head would use 28.4 hours (29.4 hours minus 2×0.50) for the month of June. This is all the labor available for livestock production in June.

This method of arriving at the maximum number of feeder cattle that can be cared for during a particular month will not provide an absolute limit on the number of cattle a farmer can handle. Farmers differ from the average in speed and efficiency of working. The methods and equipment used in doing the work may differ from those described in this bulletin. This example, however, illustrates how labor can be a factor in preventing a farmer from increasing the size of his cattle-feeding operation.

There are several alternative ways of overcoming a seasonal labor shortage. An obvious way is to work more hours or to use additional family labor during the periods of peak labor loads. Note that each additional 10 head takes only a little more than an hour more labor per week, or about 10 minutes a day. By working only 30 additional minutes per day during June, a farmer could increase the number of cattle fed from 38 to 68 head. The returns from these additional cattle should give a high return for these extra hours.

Farmers need not, however, limit the number of cattle they have on feed in other months of the year to the number that can be handled during the

month when labor available for livestock is in shortest supply. Table 4 shows that this farmer has 58.5 hours of labor available for livestock production in May. If the cattle are fed and handled as they are during June, 100 head of cattle will use 59.70 hours of labor (see table 2). As each additional animal takes 0.50 hours, 98 head will use 58.7 hours (59.70 minus 2×0.50) for the month of May. Similarly, one can determine the number of animals that can be handled during other months of the year. A cattle-feeding program can be planned to take into account the labor restrictions during certain months. By feeding more cattle during the slack winter months and fewer during the summer, labor is not likely to restrict the total number of cattle that can be handled in a year.

Another alternative is to lower the amount of labor needed for a given number of cattle. A farmer can do this by either eliminating or reducing the time spent on certain of the tasks performed. One task that could be eliminated during the summer is silage feeding. Eliminating this task can reduce the labor load by 2.52 hours per week for 20 head to 6.84 hours per week for 120 head. Hay feeding could be eliminated by pasturing the cattle, which will save from 1.51 to 2.38 hours, provided no time is spent in daily rotational grazing. Daily rotational grazing takes about as much time as hay feeding for lots up to 80 head. Bedding once a week rather than every day saves some labor when cattle are in dry lot.

Another consideration is to hire additional labor services during critical months. This can be either in the form of custom work or seasonal labor.

A final possibility is to invest in some labor-saving equipment, such as a self-feeding bunker silo, silo unloaders, silage- and grain-distributing de-

vices, or self-feeders. In order to determine whether an investment in labor-saving equipment will be profitable, one should compare the annual cost with the annual returns. The annual cost is the sum of the annual depreciation, interest on investment, repairs, power, taxes, and insurance. The

Total Labor and Seasonal Distribution for Some Typical Cattle-feeding Programs

As demonstrated in the previous section, the amount of labor used in the months when labor is in greatest demand may limit the number of cattle that can be fed. Farmers who plan a cattle-feeding program to fit their labor supply throughout the year need to determine the amount and seasonal distribution of labor needed for various cattle-feeding programs. Using the labor requirements for each job as presented in table 2, the amount of labor needed for alternative feeding programs can be estimated.

For convenience, labor requirements by periods both per week and total per period for 6 typical cattle-feeding programs are outlined in tables 5, 6, 7, 8, 9, and 10. The labor requirements presented in these tables are based on the use of the hand-feeding methods described earlier in this report. For each of the programs given, the cattle-feeding year is divided into periods ranging from one to five, depending upon the jobs performed. The labor required each month for a particular program depends upon the date on which the cattle are purchased. For example, consider a group of calves purchased on October 15 and fed on a liberal roughage program, as outlined in table 5. These calves would be fed hay and limited grain until November 15, full feed of silage, limited grain and hay

annual return can be measured in terms of the use that is made of the labor saved such as additional returns from increase in number of livestock fed, decrease in the amount of labor hired, returns due to timeliness of operation for fieldwork, or in the value put on increased ease of work and leisure time.

until April 18, and a full feed of grain for the rest of the feeding period.

Manure disposal is not included with the labor requirements of any period because the most common procedure involves cleaning the lot out only once or twice per feeding season. This job is done usually during slack labor periods and often involves exchange work. Ordinarily, therefore, it does not compete with other work for labor.

Added to the total labor requirements for all lot sizes are 15 hours for buying and selling. Many cattle feeders spend more time in buying and selling while others spend considerably less. In any event, time spent on this job should be added to the total labor requirements for cattle feeding.

Following are descriptions of 6 typical cattle-feeding programs:

A. Long-fed calves on a liberal roughage ration: Good to choice steer calves weighing about 400 pounds are purchased in the fall. They are fed a limited amount of grain and good hay for the first 4 weeks. This is followed by a full feed of silage, limited grain, and hay for the next 22 weeks. For the last 21 weeks, they are fed a full feed of grain and some hay. In the 47 weeks on feed, these cattle should gain about 550 pounds; they are sold in the early fall at approximately 950 pounds.

B. Yearling steers fed a liberal roughage ration: Good to choice yearling steers weighing about 650 pounds are purchased in the fall. They are placed on cornstalk pasture for the first 6 weeks. This is followed by a full feed of silage, limited grain, and hay for the next 12 weeks. For the last 18 weeks, a full feed of grain with hay is fed. In the 36 weeks on feed, these cattle should gain about 500 pounds; they are sold in the early summer at approximately 1,150 pounds.

C. Pasture-fed calves: Good to choice steer calves weighing about 400 pounds are purchased in the fall. They are fed a limited amount of grain and good hay for the first 4 weeks. This is followed by a full feed of silage, and limited grain and hay for the next 25 weeks. They are then put on pasture with grain for 13 weeks followed by 9 weeks on a full feed of grain with some hay in dry lot. In the 51 weeks on feed, these cattle should gain about 550 pounds; they are sold in the fall at approximately 950 pounds.

D. Yearling steers fed a liberal grain ration: Good to choice yearling steers weighing about 700 pounds

are purchased in the fall and are put on cornstalk pasture for the first 3 weeks. This is followed by a full feed of grain with hay for the next 24 weeks. In the 27 weeks on feed, these cattle should gain about 425 pounds; they are sold in the late spring at approximately 1,125 pounds.

E. Two-year-old steers on full feed: Good 2-year-old steers weighing about 850 pounds are purchased in the fall. They are brought to a full feed of grain with hay and are full fed for 17 weeks. In the 17 weeks on feed, the cattle should gain about 275 pounds and they are sold in March or April at approximately 1,125 pounds.

F. Heifer calves fed a liberal grain ration: Good to choice heifer calves weighing about 400 pounds are purchased in the fall. They are fed good hay with small amounts of grain for the first 4 weeks. This is followed by a full feed of silage, limited grain, and hay for the next 10 weeks. For the last 24 weeks, a full feed of grain with hay is fed. In the 38 weeks on feed, these cattle should gain about 450 pounds; they are sold in the summer at approximately 850 pounds.

Summary

Cattle feeding is gaining in importance as an enterprise on Minnesota farms. In planning farm operations that include feeder cattle, information on the amount of labor input for this enterprise is needed. Although labor is not a major consideration in cattle feeding on most farms, it was found that during certain seasons of the year, labor may limit the size of this enterprise.

This bulletin presents labor requirements for feeding cattle according to jobs performed and related to the number fed. It was found that even using hand-feeding methods, large numbers of cattle were more efficient in use of labor than small numbers. Increasing size of small lots, however, gave greater increase in efficiency than that obtained by increasing size of large lots.

Table 5. Hours of labor used by feeding periods, long-fed calves on liberal roughage ration

Periods	Number of head in the lot						per 10 added
	20	40	60	80	100	120	
<i>I. Hay and limited grain in dry lot (4 weeks)</i>							
	hours per week						
(1) Hay feeding	1.51	1.69	1.86	2.04	2.21	2.38	.087
(4) Grain feeding	1.43	1.67	1.90	2.14	2.37	2.60	.117
(9) Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
(12) Watering and observation	.72	.72	.72	.72	.72	.72	
(14) Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
(18) Feed grinding (5 lbs. per head per day)	.31	.62	.92	1.23	1.54	1.85	.154
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.74	5.96	7.15	8.37	9.57	10.77	.603
Total for 4 weeks	18.96	23.84	28.60	33.48	38.28	43.08	2.412
<i>II. Full feed of silage, limited grain, and hay in dry lot (22 weeks)</i>							
(2) Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
(4) Grain feeding	1.43	1.67	1.90	2.14	2.37	2.60	.117
(7) Silage feeding	2.52	3.39	4.25	5.12	5.98	6.84	.432
(9) Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
(12) Watering and observation	.72	.72	.72	.72	.72	.72	
(14) Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
(18) Feed grinding (5 lbs. per head per day)	.31	.62	.92	1.23	1.54	1.85	.154
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	6.69	8.78	10.83	12.92	14.98	17.04	1.035
Total for 22 weeks	147.18	193.16	238.26	284.24	329.56	374.88	22.770
<i>III. Full feed of grain with hay in dry lot (21 weeks)</i>							
(2) Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
(5) Grain feeding	1.44	2.38	3.33	4.27	5.21	6.15	.471
(13) Watering and observing	.54	.54	.54	.54	.54	.54	
(14) Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
(20) Feed grinding (15 lbs. per head per day)	.92	1.85	2.77	3.70	4.62	5.54	.462
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.26	6.47	8.67	10.88	13.07	15.26	1.100
Total for 21 weeks	89.46	135.87	182.07	228.48	274.47	320.46	23.100
<i>Manure disposal (47 weeks)</i>							
(21) Total per week in lot	1.03	1.18	1.32	1.47	1.61	1.75	.072
Total for 47 weeks	48.41	55.46	62.04	69.09	75.67	82.25	3.384
<i>Buying and Selling</i>							
Total for year	15.00	15.00	15.00	15.00	15.00	15.00	
Total labor for 47-week period	319.01	423.33	525.97	630.29	732.98	835.67	51.686
Total labor per head	15.95	10.58	8.77	7.88	7.33	6.96	

The job which was found to require the largest amount of labor per week was silage feeding from an upright silo. Other jobs which use a large amount of labor are: grain feeding, feed grinding, and manure disposal. Some practices which were found to reduce labor

needs are: (1) feeding grain once rather than twice a day when cattle are on limited feed of grain, (2) bedding at intervals less frequent than every day, (3) removal of manure only once or twice a year rather than more frequently.

Table 6. Hours of labor used, by feeding periods, yearling steers on a liberal roughage ration

Periods	Number of head in the lot						per 10 added
	20	40	60	80	100	120	
<i>I. Cornstalk pasture (6 weeks)</i>							
	hours per week						
(1) Hay feeding	1.51	1.69	1.86	2.04	2.21	2.38	.087
(15) Care and treatment of sick animals	.05	.05	.05	.05	.05	.05	
(17) Care and observation on cornstalk pasture	1.14	1.14	1.14	1.14	1.14	1.14	
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	3.00	3.34	3.67	4.01	4.34	4.67	.167
Total for 6 weeks	18.00	20.04	22.02	24.06	26.04	28.02	1.002
<i>II. Limited feed of grain, silage, and hay on dry lot (12 weeks)</i>							
(2) Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
(4) Grain feeding	1.43	1.67	1.90	2.14	2.37	2.60	.117
(7) Silage feeding	2.52	3.39	4.25	5.12	5.98	6.84	.432
(9) Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
(12) Watering and observation	.72	.72	.72	.72	.72	.72	
(15) Care and treatment of sick animals	.05	.05	.05	.05	.05	.05	
(18) Feed grinding (5 lbs. per head per day)	.31	.62	.92	1.23	1.54	1.85	.154
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	6.62	8.71	10.76	12.85	14.91	16.97	1.035
Total for 12 weeks	79.44	104.52	129.12	154.20	178.92	203.64	12.420
<i>III. Full feed of grain with hay on dry lot (18 weeks)</i>							
(2) Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
(5) Grain feeding	1.44	2.38	3.33	4.27	5.21	6.15	.471
(13) Watering and observation	.54	.54	.54	.54	.54	.54	
(15) Care and treatment of sick animals	.05	.05	.05	.05	.05	.05	
(20) Feed grinding (15 lbs. per head per day)	.92	1.85	2.77	3.70	4.62	5.54	.462
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.19	6.40	8.60	10.81	13.00	15.19	1.100
Total for 18-week period	75.42	115.20	154.80	194.58	234.00	273.42	19.800
<i>Manure disposal (33 weeks)</i>							
(21) Total per week in lot	1.03	1.18	1.32	1.47	1.61	1.75	.072
Total for 33 weeks	33.99	38.94	43.56	48.51	53.13	57.75	2.376
<i>Buying and selling</i>							
Total for year	15.00	15.00	15.00	15.00	15.00	15.00	
Total labor for 36-week period	221.85	293.70	364.50	436.35	507.09	577.83	35.598
Total labor per head	11.09	7.34	6.08	5.45	5.07	4.82	

The seasonal distribution of labor needs for crop production and miscellaneous jobs in southern Minnesota is presented as a basis for determining the amount of labor which may be available for livestock each month of the year. An example has been used to show how this may be matched against the seasonal labor requirements for cattle feeding. In this manner the data in this

bulletin can be used to determine the size and type of cattle-feeding enterprise best suited to the labor supply on a particular farm.

In the final section labor requirements by feeding periods for six typical cattle-feeding programs were presented for use in planning the labor needs for feeding cattle.

Table 7. Hours of labor used by feeding periods, pasture-fed calves

Periods	Number of head in the lot						per 10 added
	20	40	60	80	100	120	
<i>I. Hay and limited grain in dry lot (4 weeks)</i>							
	hours per week						
(1) Hay feeding	1.51	1.69	1.86	2.04	2.21	2.38	.087
(4) Grain feeding	1.43	1.67	1.90	2.14	2.37	2.60	.117
(9) Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
(12) Watering and observation	.72	.72	.72	.72	.72	.72	
(14) Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
(18) Feed grinding (5 lbs. per head per day)	.31	.62	.92	1.23	1.54	1.85	.154
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.74	5.96	7.15	8.37	9.57	10.77	603
Total for 4 weeks	18.96	23.84	28.60	33.48	38.28	43.08	2.412
<i>II. Full Feed silage, limited grain and hay in dry lot (25 weeks)</i>							
(2) Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
(4) Grain feeding	1.43	1.67	1.90	2.14	2.37	2.60	.117
(7) Silage feeding	2.52	3.39	4.25	5.12	5.98	6.84	.432
(9) Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
(12) Watering and observation	.72	.72	.72	.72	.72	.72	
(14) Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
(18) Feed grinding (5 lbs. per head per day)	.31	.62	.92	1.23	1.54	1.85	.154
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	6.69	8.78	10.83	12.92	14.98	17.04	1.035
Total for 25 weeks	167.25	219.50	270.75	323.00	374.50	426.00	25.875
<i>III. Pasture with grain (13 weeks)</i>							
(6) Grain-fed on pasture	1.76	2.26	2.75	3.25	3.74	4.23	.247
(14) Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
(16) Daily rotational grazing	1.98	1.98	1.98	1.98	1.98	1.98	
(19) Feed grinding (10 lbs. per head per day)	.62	1.23	1.85	2.46	3.08	3.70	.308
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.78	6.05	7.32	8.59	9.86	11.13	.635
Total for 13 weeks	62.14	78.65	95.16	111.67	128.18	144.69	8.255
<i>IV. Full feed of grain with hay on dry lot (9 weeks)</i>							
(2) Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
(5) Grain feeding	1.44	2.38	3.33	4.27	5.21	6.15	.471
(9) Bedding	.54	.54	.54	.54	.54	.54	
(12) Watering and observation	.72	.72	.72	.72	.72	.72	
(14) Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
(20) Feed grinding (15 lbs. per head per day)	.92	1.85	2.77	3.70	4.62	5.54	.462
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.26	6.47	8.67	10.88	13.07	15.26	1.100
Total for 9 weeks	38.34	58.23	78.03	97.92	117.63	137.34	9.900
<i>Manure disposal (38 weeks)</i>							
(21) Total per week in lot	1.03	1.18	1.32	1.47	1.61	1.75	.072
Total for 38 weeks in lot	39.14	44.84	50.16	55.86	61.18	66.50	2.736
<i>Buying and selling</i>							
Total for the year	15.00	15.00	15.00	15.00	15.00	15.00	
Total labor for 51-week period	340.83	440.06	537.70	636.93	734.77	832.61	49.178
Total labor per head	17.04	11.00	8.96	7.96	7.35	6.94	

Table 8. Hours of labor used by feeding periods, yearling steers fed a liberal grain ration

Periods	Number of head in the lot						per 10 added
	20	40	60	80	100	120	
<i>I. Cornstalk pasture (3 weeks)</i>							
	hours per week						
(1) Hay feeding	1.51	1.69	1.86	2.04	2.21	2.38	.087
(15) Care and treatment of sick animals	.05	.05	.05	.05	.05	.05	
(17) Care and observation on cornstalk pasture	1.14	1.14	1.14	1.14	1.14	1.14	
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	3.00	3.34	3.67	4.01	4.34	4.67	.167
Total for 3 weeks	9.00	10.02	11.01	12.03	13.02	14.01	.501
<i>II. Full feed of grain with hay in dry lot (24 weeks)</i>							
(2) Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
(5) Grain feeding	1.44	2.38	3.33	4.27	5.21	6.15	.471
(9) Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
(12) Watering and observation	.72	.72	.72	.72	.72	.72	
(15) Care and treatment of sick animals	.05	.05	.05	.05	.05	.05	
(20) Feed grinding (15 lbs. per head per day)	.92	1.85	2.77	3.70	4.62	5.54	.462
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.72	7.26	9.79	12.33	14.85	17.37	1.265
Total for 24-week period	113.28	174.24	234.96	295.92	356.40	416.88	30.360
<i>Manure disposal (25 weeks)</i>							
(21) Total per week in lot	1.03	1.18	1.32	1.47	1.61	1.75	.072
Total for 25 weeks	25.75	29.50	33.00	36.75	40.25	43.75	1.800
<i>Buying and selling</i>							
Total for year	15.00	15.00	15.00	15.00	15.00	15.00	
Total labor for 27-week period	163.03	228.76	293.97	359.70	424.67	489.64	32.661
Total labor per head	8.15	5.72	4.90	4.50	4.25	4.08	

Table 9. Hours of labor used, by feeding periods, two-year-old steers on full feed

Periods	Number of head in the lot						per 10 added
	20	40	60	80	100	120	
<i>Full feed of grain and hay in dry lot (17 weeks)</i>							
	hours per week						
(2) Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
(5) Grain feeding	1.44	2.38	3.33	4.27	5.21	6.15	.471
(9) Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
(12) Watering and observation	.72	.72	.72	.72	.72	.72	
(15) Care and treatment of sick animals	.05	.05	.05	.05	.05	.05	
(20) Feed grinding (15 lbs. per head per day)	.92	1.85	2.77	3.70	4.62	5.54	.462
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.72	7.26	9.79	12.33	14.85	17.37	1.265
Total for 17-week period	80.24	123.42	166.43	209.61	252.45	295.29	21.505
<i>Manure disposal (17 weeks)</i>							
(21) Total per week in lot	1.03	1.18	1.32	1.47	1.61	1.75	.072
Total for 17-week period	17.51	20.06	22.44	24.99	27.37	29.75	1.224
<i>Buying and selling</i>							
Total for year	15.00	15.00	15.00	15.00	15.00	15.00	
Total labor for 17-week period	112.75	158.48	203.87	249.60	294.82	340.04	22.729
Total labor per head	5.64	3.96	3.40	3.12	2.95	2.83	

Table 10. Hours of labor used by feeding periods, heifer calves fed a liberal grain ration

Periods	Number of head in the lot						per 10 added
	20	40	60	80	100	120	
hours per week							
<i>I. Hay and limited grain in dry lot (4 weeks)</i>							
(1) Hay feeding	1.51	1.69	1.86	2.04	2.21	2.38	.087
(4) Grain feeding	1.43	1.67	1.90	2.14	2.37	2.60	.117
(9) Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
(12) Watering and observation	.72	.72	.72	.72	.72	.72	
(14) Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
(18) Feed grinding (5 lbs. per head per day)	.31	.62	.92	1.23	1.54	1.85	.154
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.74	5.96	7.15	8.37	9.57	10.77	.603
Total for 4 weeks	18.96	23.84	28.60	33.48	38.28	43.08	2.412
<i>II. Full feed of silage, limited grain, and hay (10 weeks)</i>							
(2) Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
(4) Grain feeding	1.43	1.67	1.90	2.14	2.37	2.60	.117
(7) Silage feeding	2.52	3.39	4.25	5.12	5.98	6.84	.432
(9) Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
(12) Watering and observation	.72	.72	.72	.72	.72	.72	
(14) Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
(18) Feed grinding (5 lbs. per head per day)	.31	.62	.92	1.23	1.54	1.85	.154
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	6.69	8.78	10.83	12.92	14.98	17.04	1.035
Total for 10 weeks	66.90	87.80	108.30	129.20	149.80	170.40	10.350
<i>III. Full feed of grain with hay in dry lot (24 weeks)</i>							
(2) Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
(5) Grain feeding	1.44	2.38	3.33	4.27	5.21	6.15	.471
(13) Watering and observation	.54	.54	.54	.54	.54	.54	
(14) Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
(20) Feed grinding (15 lbs. per head per day)	.92	1.85	2.77	3.70	4.62	5.54	.462
(23) Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.26	6.47	8.67	10.88	13.07	15.26	1.100
Total for 24 weeks	102.24	155.28	208.08	261.12	313.68	366.24	26.400
<i>Manure disposal (38 weeks)</i>							
(21) Total per week in lot	1.03	1.18	1.32	1.47	1.61	1.75	.072
Total for 38-week period	39.14	44.84	50.16	55.86	61.18	66.50	2.735
<i>Buying and selling</i>							
Total for year	15.00	15.00	15.00	15.00	15.00	15.00	
Total labor for 38-week period	242.24	326.76	410.14	494.66	577.94	661.22	41.898
Total labor per head	12.11	8.17	6.84	6.18	5.78	5.51	

Beef from Grasslands

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A view of the building and feeding lot area at Rosemount.