

Lesson 4: Herd Management

Dairy herd management is an important part of dairy production. Dairy operations require a large investment and usually operate on narrow profit margins. Producers must be aware of many factors to run a successful dairy operation. These factors are production costs, facility requirements, raising replacement heifers, reproductive management, nutritional needs, methods of feeding, record keeping, and marketing milk.

Production Costs

Start up costs for dairy operations are quite high and require a large investment of capital. However, the types of production costs associated with dairy operations are very similar to other animal production systems. Dairy farms require more facilities than beef cattle production. Feed costs are the major cost of a dairy operation on a daily basis. Dairy operations are also extremely labor intensive, and the producer may have to hire outside help for milking. Other costs are marketing fees, fees for milk testing, veterinary fees and medicine, and building repair and maintenance.

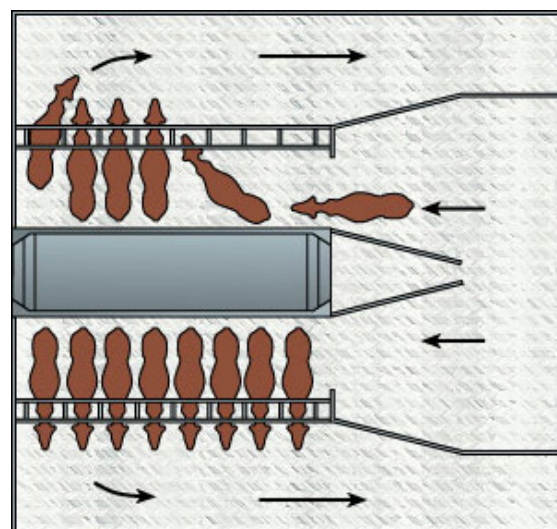
Dairy cattle can generate income from the sale of milk and cattle, including youngstock (calves and heifers), breeding bulls, and cull cows. The worksheet pictured in Figure 4.1 (see page 10) allows dairy producers to calculate income after deducting operating expenses. The producer can use this information on income and expenses to make management decisions that will allow him or her to lower costs and increase profits.

Facilities

Dairy production has extensive facility requirements. The basic dairy facility requirements are a milking parlor, free stall or stanchion barn, feed storage, waste storage, and heifer development facilities.

Milking parlors are required for modern dairies that produce Grade A milk, or milk that is pure enough to use for fluid milk consumption. Cows are brought to the milking parlor for milking. Modern parlors are computer controlled and highly automated. In the parallel milking parlor, illustrated in Figure 4.2, the cows stand at a 90° angle on both sides of a pit where the milkers stand. The milking unit is attached

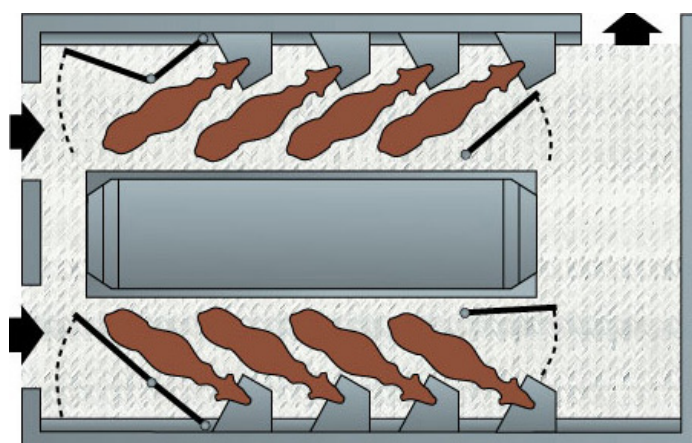
Figure 4.2 - Parallel Milking Parlor



between the hind legs. Another design is the herringbone design. In a herringbone milking parlor, cows stand at an angle on both sides of a pit. The design allows easy access to each cow's udder from the side for putting on and removing the milking units. A herringbone milking parlor is shown in Figure 4.3.

Cows spend most of their time in the pasture or in free stall or stanchion barns. Free stall barns have a series of separate stalls where cows can lay down. They can move freely between the stalls. Stanchion barns are similar to free stall barns, but a headgate or a chain and collar confine the cows to their stalls. The stanchion barn allows cows to be fed separately, and the amount of feed can be regulated according to their production level.

Figure 4.3 - Herringbone Milking Parlor



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Figure 4.1 - Monthly Worksheet for a Dairy Operation

Monthly Worksheet

Name of farm: _____ Name of operator: _____ Month: _____

Gross income	Your farm	Example farm
1. (a) Pounds of milk sold for the month (from your milk check)		181,903
(b) Divide (a) by 100 to get milk sales in hundredweights		1,819
2. Gross milk price (\$ per hundredweight)		\$12.50
3. Compute gross milk sales by multiplying 1(b) by step 2		22,738
4. Livestock sales related to dairy		3,000
5. Capital revolvments and other dairy income		0
6. Add lines 3, 4 and 5 for total gross receipts		25,738
Variable expenses	Your farm	Example farm
7. (a) Market value of purchased concentrates, alternative feeds, vitamins and minerals		6,250
(b) Market value of purchased forages consumed		2,873
(c) Market value of home-raised grains consumed		667
(d) Market value of home-raised haylage and silage consumed		0
(e) Market value of home-raised hay consumed		0
8. Estimate the monthly value of pasture consumed		
(a) Average number of head on pasture for the month		20
(b) Monthly pasture charge		\$5
(c) Multiply (a) by (b)		100
9. Total 7(a) through 7(e) and 8(c) to compute the total value of feedstuffs consumed		9,890
10. Estimate the true cost of labor for the dairy enterprise		
(a) Amount spent for hired labor for the month (including benefits)		2,000
(b) Hours of unpaid family labor		330
(c) Value of family labor		\$5
(d) Multiply (b) and (c)		1,650
(e) Value of your operator labor		200 hours x 8 = 1,600
(f) Portion of time the labor force was used on the dairy enterprise		75%
(g) Add lines (a), (d) and (e) and multiply by (f)		5,250 x .75 = 3,938
11. Milk check deductions		1,764
12. Expenses for DHIA fees		200
13. Expenses for artificial insemination		283
14. Expenses for veterinary fees and medicine		500
15. Expenses for dairy supplies; the portion of the following costs related to the dairy only		667
16. Expenses for fuel and oil		.3 x 299 = 90
17. Utility bills		.5 x 558 = 279
18. Building repairs		208
19. Machinery repairs		.33 x 1,050 = 347
20. Farm taxes		0
21. Farm insurance		.5 x 300 = 150
22. Any legal and professional fees		.5 x 42 = 21
23. Car and truck expenses		.5 x 333 = 167
24. Other expenses		100
25. (a) Interest payments		1,567
(b) Portion of the interest payment that went for the dairy enterprise		75%
(c) Multiply (a) by (b)		1,175
26. Get estimate for annual depreciation expenses of dairy enterprise. Divide this by figure 12		642
27. Estimate total operating expenses by adding steps 9, 10(g), 11 through 24, 25(c) and 26		20,419
28. Estimate income over operating expenses by subtracting step 27 from step 6		5,318

From *How to Compute Your Cost of Producing Milk (G3651)*, University Extension agricultural publications, University of Missouri-Columbia.

Feed storage facilities are another requirement for dairy operations because of the large amount of feed fed to each cow. Upright silos and pit silos hold corn silage or haylage. Most dairies also have grain and bulk bins that hold prepared feeds or supplements.

Most dairies also require waste storage facilities because of the amount of production that takes place in confinement in barns, which generates a lot of manure. Producers may store wastes in lagoons and holding tanks. Lagoons are artificial waste holding areas that resemble ponds. A water-tight concrete or coated steel tank may also be used for manure storage. The tank may be above or below ground.

Finally, dairy farms usually raise their own replacement females. Producers usually raise heifers in hutches where each is kept individually until weaning. After weaning, they are moved to group pens to be raised.

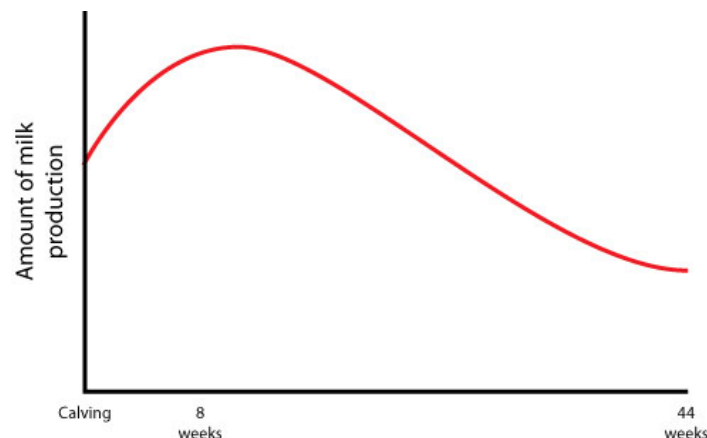
Raising Dairy Replacements

Many dairy producers raise their own replacement animals; other producers specialize in raising replacement heifers for other producers. Dairy producers who raise replacement heifers should consider the number of females needed each year as well as proper development. Heifers should be ready to calve at approximately 24 months of age and weigh 1,000 to 1,300 pounds, depending on the breed. Careful feeding is essential if heifers are to reach this weight at the right time for breeding. Small, thin heifers give less milk. Producers should also not allow heifers to become too fat. Research has shown that excessive fat deposits in the udder may reduce future milk production.

Reproductive Management

Good reproductive management is essential for success in the dairy industry. Cows must become pregnant and calve for milk production, or lactation, to begin. Lactation normally peaks at approximately eight weeks after calving. It then slowly declines, as shown on the graph in Figure 4.4.

Figure 4.4 - Lactation Curve



Cows must be rebred between 40 and 100 days after calving to maintain the cycle of milk production. The producer should “dry off,” or stop milking, the cows at approximately 40 to 50 weeks of lactation, depending on the level of milk production and the expected calving date. Most dairy operators will dry cows off when milk production dips below 35 to 40 pounds daily. The dry period with no milk production allows the cow to replenish her body and rest and prepare to have her next calf. The dry period should last 40 to 70 days, with an average of 60 days. When the cow gives birth, the lactation cycle begins again.

Most dairy cows are artificially inseminated. Artificial insemination (AI) permits the dairy producer to use bulls that are genetically superior. It also helps control the spread of reproductive diseases. Artificial insemination permits producers to keep more accurate records about reproduction, including breeding dates used to calculate the expected calving dates needed to figure the proper dry period. Artificial insemination is also used because of the problems associated with keeping a dairy bull on the farm, since dairy bulls are often very aggressive. Some producers also use embryo transfer to increase the spread of superior genetics in the herd by using superior cows.

Nutritional Requirements

Dairy cattle have the same basic nutritional needs as all animals. Dairy cattle require energy (from carbohydrates and fats), protein, vitamins, minerals, and water. However, lactating dairy cows produce a lot of milk, and they therefore require large quantities of feed stuffs. The cow’s nutritional needs are highest when lactation peaks.

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Lactating cows consume 3 to 4 percent of their body weight as dry matter. A 1,000 pound dairy cow would require 30 to 40 pounds of dry feed per day. Roughages (forages) should make up at least 40 percent of the diet to maintain correct microbe populations in the rumen. The cow's production level (pounds of milk produced daily) and body condition (thin to fat) determine the exact nutrient needs of the cow. The poorer a cow's body condition is, the higher her nutritional requirements will be; poor body condition also affects the lactation curve, which will not peak as high.

Feeding Dairy Cattle

Dairy producers can meet the nutritional needs of their cattle through different feeding methods. The traditional feeding method involves feeding forages and grain separately. Producers may feed the forages as pasture or as hay or silage. Protein supplements, or concentrates, are added to the diet to increase the amount of protein. They may be fed in the barn mangers or in the milking parlor during milking.

Management-intensive grazing can also be used effectively in dairy production. With management-intensive grazing, producers rotate cows between grazing units in a preplanned cycle; they are moved when they consume the forages on the grazing unit. This type of grazing system helps lower costs by reducing the costs associated with equipment for harvesting forages and purchased feeds.

A method of feeding that is becoming more common is feeding a total mixed ration (TMR). A total mixed ration is a mixture of all the feed ingredients needed by dairy cattle, including forages, grain, and supplements; the cattle receive all these components of their diet at once. The advantages of total mixed rations include being able to feed a precisely balanced ration and reduced labor. However, special equipment for weighing and mixing the ration must be purchased; existing facilities may also need to be modified to feed total mixed rations.

Record Keeping in Dairy Operations

Proper record keeping is essential to successful dairy production. Dairy producers should record milk weights and milk composition test results and breeding and calving information for all the cows in their herd.

Milk composition test results are available from the Dairy Herd Improvement Association (DHIA). DHIA is a recording service that monitors and records information on milk production levels and milk composition for individual cows. The association also transfers records to the respective breed associations. Independent personnel collect these records to maintain the accuracy of the data. DHIA is a voluntary association, but many producers use its resources and services.

Dairy producers should also record when cows are bred and when they calve to maintain maximum production per cow. Producers who use registered animals are required to provide actual birth dates and pedigrees listing the animal's ancestors for each animal registered with the breed association.

Marketing Milk

Most of the milk sold is marketed through cooperatives, such as Mid-America Dairymen (Mid-Am). The producer is a member of the cooperative and sells milk directly to it. The cooperative combines milk from many producers. A larger quantity of milk gives it more marketing flexibility; the cooperative also has more options for places where the milk may be shipped.

The federal government sets base milk prices for producers to keep consumer milk prices fairly constant throughout the year. Producers receive bonuses based on the fat and protein content of their milk, low bacteria counts, and low somatic cell counts. Somatic cells are white blood cells, which fight infections. A low somatic cell count indicates that the herd is healthy.

Summary

Dairying generally requires a significant investment. It has many associated costs, including large capital outlays for facilities and cows. Dairy operators must manage production carefully, be good nutritionists, and keep accurate records for success in the dairy industry. The United States government sets the base milk price received by producers. Most milk is marketed through a cooperative.

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