

Two-a-Day Milkings Kill Joy of Dairying for Most Families

By Robert Appleman and Kenneth Thomas

Part-time dairy farming may involve milking a small herd morning and night in addition to holding a full-time job in business or industry. Or replacement females may be raised to be sold as bred dairy replacement heifers, thereby eliminating both the labor and the equipment required in a milking operation. Some youth projects (4-H or FFA) would fit in this category.

Other operators have a cow, or even a few cows, with the family consuming all or most of the milk produced.

A dairy enterprise may be for fun, food or profit. But in any case it requires intensive management, an inflexible daily labor schedule, and a higher per unit capital investment than most other part-time farming enterprises.

Because of the management skills required in keeping even one cow, and the need to milk her twice daily, a dairy cow will seldom be selected as a family fun project.

Since a dairy cow's milk production varies so much during the year (depending on when she last freshened or gave birth to a calf), balancing a family's relatively constant demand for milk and dairy products becomes difficult. Thus, a dairy cow as an economic source of family food may also become questionable.

Therefore, the major focus of this chapter will be on the part-time dairy operation as a source of profit. An alternative program of raising replacement stock for others is also discussed.

When considering the dairy cow for profit, you need to realize that a reasonable level of production must be achieved just to cover feed and other operating expenses. Such levels of production per cow usually require management skills normally

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beyond the abilities of younger family members. In addition, part-time farmers face the further dilemma that the dairy cow is very demanding of their scarcest resource—labor.

Dairy farms can be labor efficient, but this usually requires a size operation beyond the desires and capability of most part-time farmers. The comparative advantages and problems with part-time dairying are outlined in the table.

Breed Selection

The most important consideration in choosing a breed of dairy cattle to establish a dairy farm is the present and future market situation. Most areas favor breeds that produce the largest volume of milk. This undoubtedly explains why 80 to 85 percent of the dairy cattle are Holsteins. There are regions, however, where special milk markets have been developed and other breeds, especially Jersey and Guernsey, are common.

Other factors to consider include:

Personal preference. What breed have other members of the family been associated with?

Resale or salvage value. Larger breed animals are usually worth more when their useful life as milk producers is ended.

Suitability for meat. Half the calves are males. The surplus calves from larger breeds are generally considered superior

Pros and cons of part-time dairying

Advantages

Efficiency

Dairy cattle are efficient in converting forage and grassland into milk.

Permanency

Dairy enterprises will continue to be important. They flourish even in Europe where competition between crops and livestock for limited acreages of available land is much more intense than in the U.S.

Stability

Because it takes 2 years for a heifer to mature, the dairy industry is less subject to large fluctuations in market supplies and prices received. Dairy farming provides a steady, regular income.

Product Quality

There is no satisfactory substitute for fluid milk in the diets of infants and children.

Disadvantages

Confining

Cows must be milked twice daily, every day while lactating, usually about 10 of every 12 months.

Labor

Each cow requires 60 to 80 hours of labor annually. Part-time dairymen often are short of time.

Feed Quality

To achieve acceptable production per cow, top quality forage is required. This is often difficult to purchase and requires excellent management abilities to produce.

Capital

The per unit capital investment is greater than for most other part-time farming enterprises.

Regulations

Milk and milk production are highly regulated and often must comply with stringent health regulations.

Common Dairy Breeds

Breed	Estimated % of the population	Typical annual production			Typical weight	
		Milk	Fat	Fat	Mature cow	Newborn calf
		(lbs)	(lbs)	(%)	(lbs)	(lbs)
Ayrshire	less than 2	11,600	450	3.9	1,200	75
Brown Swiss	less than 1	12,700	510	4.0	1,500	95
Guernsey	less than 10	10,300	470	4.6	1,100	75
Holstein	80-85	14,700	530	3.6	1,500	95
Jersey	less than 10	9,500	470	4.9	1,000	60
Milking Shorthorn	less than 1	10,500	380	3.7	1,250	75

meat producers, although tenderness and taste evaluations of meat from the smaller breeds have been outstanding.

Temperament. When young family members must handle cows, consider this factor: Holsteins are generally superior in this trait but all breeds are acceptable if cattle are handled with gentleness.

Calving difficulty. The Jersey breed has fewer problems with difficult calvings.

Dairy farming seldom is a good enterprise for the part-time farmer unless he has an abundance of family labor. Labor requirements can be reduced some with mechanization, but small herds normally operated by part-time farmers seldom justify the expense of much mechanization beyond installing a milking machine and bulk milk cooler. Even then, to keep costs down most part-time dairymen should be adept at purchasing good used equipment.

The approximate number of cows and replacement females that can be maintained by a part-time dairyman are illustrated in a table. A typical dairy herd consists of 55 percent cows (85% in milk), 25 percent heifers over 10 months old, 12 per-

Number of dairy cows and replacements possible, depending on amount of labor available

Man-hour equivalents per day	Number of dairy cows and replacement heifers			
	Purchase all feed ^a		Raise own feed ^b	
	Milk cows	Total (all ages)	Milk cows	Total (all ages)
2	9	16	7	13
3	14	25	10	18
4	18	33	14	25
5	23	42	17	31

^a Based on 80 hours of labor per cow annually.

^b Based on 105 hours of labor per cow annually.

cent heifers from 6 weeks to 10 months, and 8 percent calves up to 6 weeks of age.

The primary causes of unprofitable dairy operations include low production per cow, high feed costs, and low production per man-year of labor expended. Since the last factor is almost certain to apply to the part-time dairyman, and it may not be possible to avoid high feed costs, it is imperative that a high level of production per cow be achieved if a profit is to be obtained.

A herd of Holsteins should produce at 14,000 pounds per cow annually, or better, to justify a moderate cost facility and provide the desired returns to labor and capital (see table). If only 11,000 pounds of milk per cow is obtained, the return to labor, facilities, and livestock (line 5) is reduced by \$215 when

Estimated costs and returns per Holstein cow, including appropriate share of replacement stock

	Level of production	
	11,000 lbs (\$)	14,000 lbs (\$)
1... Cash income		
Milk hold @ \$9.50/100 lb., net	1,045	1,330
Cull cow and calf sales	135	135
TOTAL	1,180	1,465
2... Feed costs		
Corn equivalent (70 or 90 bushel @ \$2.25)	158	203
Hay equivalent (8.5 tons @ \$60)	510	510
Protein supplement (320 or 520 lbs @ \$9)	29	47
Salt, mineral, milk replacer, etc.	19	19
TOTAL	716	779
3... Other costs		
Health (veterinary and drug)	22	25
Breeding	20	24
Power and fuel	25	25
Bedding	27	27
Repairs, equipment	30	30
Supplies, insurance on livestock, record-keeping, insurance on buildings, equipment, etc.	26	26
TOTAL	150	157
4... Variable costs (2 + 3 = 4)		
TOTAL	866	936
5... Return to labor, facilities, and livestock (1 - 4 = 5)		
TOTAL	314	529
6... Fixed costs		
Buildings (\$300 @ 10%)	30	30
Equipment (\$400 @ 15%)	60	60
Livestock (\$800 @ 8%)	64	64
TOTAL	154	154
7... Return to labor and management (5 - 6 = 7)		
TOTAL	160	375
Value per hour of labor^a	2.00	4.69

^a Based on 80 hours of labor per cow annually.

compared to that achieved at the 14,000-pound level of production. If the combined debt repayment load exceeds that indicated (line 6), then the value for labor expended is lowered still more (line 7).

Feed Needs

Forages are the basic feed for a dairy cow, supplemented with sufficient grain, protein, minerals and vitamins to support high production.

Forage consists of the whole plant, usually rather high in fiber content. Examples are alfalfa hay, corn silage and pasture.

Dairy cows usually consume forage dry matter at about 2.0 to 2.2 pounds per 100 pounds of body weight. Thus, a 1,400 pound Holstein cow will consume between 31 and 34 pounds of 90 percent dry matter hay, or its equivalent, daily. Youngstock more than 3 months of age will consume equivalent amounts of forage, based on body weight at the time.

Some part-time farmers may choose dairy cattle because they have surplus pasture land available. Lush, growing pasture that is properly fertilized and managed can be an excellent source of nutrients. But its value decreases as it matures, and trampling is a problem, resulting in nutrient waste.

Rotating cattle and maintaining fences around small fields, to reduce nutrient losses, requires more labor and is difficult to accomplish. Unless this is done, a high level of production per cow seldom is achieved from pasture.

Concentrate mixtures (feed grains, protein supplement, minerals and vitamins) contain less fiber and are higher in nutrient content. As production increases, the amount of concentrate mixture fed is increased to meet nutrient needs.

Forage quality varies greatly, depending on when it is harvested, how it is handled and how it is stored. Late cut forage (such as alfalfa in full bloom), weather-damaged forage, and feeds stored where water leaches out much of the nutrients

Guidelines for feeding concentrate mixtures

Breed	Amount of milk daily	Amount of concentrate mixture
Holstein and Brown Swiss	0-40 lbs	1 lb per 4 lbs milk
	40-70 lbs	1 lb per 3 lbs milk
	over 70 lbs	1 lb per 2½ lbs milk
Ayrshire, Jersey, Guernsey and Milking Shorthorn	0-30 lbs	1 lb per 3 lbs milk
	30-60 lbs	1 lb per 2½ lbs milk
	over 60 lbs	1 lb per 2 lbs milk

may result in the grain (concentrate) mix feeding schedule being even higher than indicated in the table.

Harvesting losses frequently amount to 20 percent of the forage grown. Storage and feeding losses may approach another 10 to 20 percent. Thus the total forage requirement (hay equivalent) for a Holstein cow and her share of the replacement youngstock may approach 8.5 tons annually. Similarly, the amount of concentrate mixture needed will approach 2.1 and 2.6 tons per cow producing at the 11,000 and 14,000 pound level, respectively.

The kind and form of forage fed varies tremendously in different regions because of climate, topography and soil type. Each state's land grant university, and the county Extension agent, have the expertise and publications available to provide you with specific cropping and feeding programs. Contact them before investing time and effort in planning this phase of the enterprise.

Land, Housing

Land requirements for the dairy enterprise vary considerably with its production potential and type of crop grown. Since forage yields may range from 1.5 to over 6 tons of hay equivalent per acre, the land required when home-grown forages are utilized may range from 1.3 to 5.7 acres per cow, including replacement stock. An average figure frequently used in the Lake States region is 3 acres per cow for forages and 1 acre per cow for feed grains.

Housing needs for dairy cattle, especially milking cows, differ markedly among the major regions. In the North, cows must be protected against snow, winter winds, and sub-zero temperatures. In the South and Southwest, shade is needed to minimize the effects of high summer temperatures on milk production. Providing an overhead roof is desirable in most regions to divert rainwater, keep cattly dry, and improve working conditions.

The general floor area requirements per cow are 40 to 60 sq. ft. in the housing area, 20 to 30 sq. ft. of paved feeding area, and 12 to 18 sq. ft. of holding area.

In terms of overall barn requirements, a stall barn usually provides 80 to 90 sq. ft. of space per cow. When cows are in loose housing, the covered area provided averages about 50 sq. ft. with another 100 sq. ft. of outside concrete slab for feeding and cattle movement.

In stanchion barns, stalls that are too short make it difficult to keep cows clean. Narrow stalls contribute to teat, udder and

leg injuries. Modern standards call for stall platforms 4 ft. wide and from 5-1/2 to 6 ft. long.

When cattle are grouped in loose housing situations, separate areas should be provided for feeding, housing, milking, calving, and maintaining youngstock.

While dry cows and "springer" heifers—those close to calving—are sometimes kept together, separate pens are desirable for the different age groups of youngstock: milkfed calves, calves from weaning to 3 months, calves from 3 to 10 months, heifers from 10 to 15 or 17 months (breeding age), and bred heifers.

Such a division provides the opportunity to vary feeding programs (ration composition), reduce feed costs, avoid competition between large and small heifers, and promote fast growth for maximum profit.

Problem Areas

For the enterprise to be profitable, the dairy manager must be aware of the following potential problem areas, and how to avoid them:

Failure to detect "heat" or time to breed. Observe cattle to be bred for "standing heat" three or more times daily.

Mastitis. Install a good milking system, use good milking procedures, and take the time required to prevent new infections by "dipping teats" with a good disinfectant and treating cows going dry (out of production).

Calf losses. Feed colostrum, provide a dry, well, ventilated calf pen, and observe calves frequently (3 or more times daily).

Poor nutrition—Harvest forage at proper stage of maturity and feed enough concentrate mixture to encourage top production.

Poor genetics. Use genetically superior A.I. (artificial insemination) sires and cull the poor producers.

Disease.—"Pills and shots" will never replace good management. Observe cows frequently and regularly, feed balanced rations, keep housing facilities clean and dry, and practice good sanitation.

Production of quality milk begins on the farm. Each producer is generally regulated by the Grade A Pasteurized Milk Ordinance of the U.S. Public Health Service. Similar but less stringent regulations apply to manufacturing grade milk producers.

Grade A milk must meet specific requirements (different markets vary) for: (1) bacteria, (2) inhibitors—antibiotics, etc., (3) somatic cell count—mastitis, (4) adulteration—added water, and (5) rate of cooling and temperature of holding milk on the farm. Production facilities require an appropriately constructed and maintained milkroom or milkhouse, barn and/or milking area, and a potable water supply. Routine inspection is required.

Some states permit sale of raw milk directly to the consumer provided the consumer purchases the milk at the farm where the milk was produced. Part-time farmers located in a densely populated area occasionally sell milk in this manner to enhance their income potential. Some risk is involved.

Prior to milk pasteurization, many diseases were attributed to consumption of raw milk. Pasteurizing milk destroys any disease-producing bacteria that might be present. Another benefit is that shelf life (storage time) of milk is increased by destroying any spoilage bacteria in the milk.

Home pasteurization of milk can be done several ways. One process requires heating the milk to at least 145° F and holding it continuously at or above this temperature at least 30 minutes. Another process requires a temperature of at least 160° and holding the milk continuously at or above this temperature at least 15 seconds.

Be sure that containers used to store pasteurized milk have been thoroughly sanitized to prevent recontaminating the milk.

Whether milk produced on the farm is consumed entirely by the family or sold directly to another consumer, it is advisable to pasteurize it.

Replacement Stock

A part-time farmer with a limited supply of labor and capital, but an excess of land suitable for forage production, may wish to raise replacement heifers for neighboring dairymen. This approach has special appeal when the part-timer is in a dairy area and is living on a farmstead with surplus buildings.

“Contract” raising of replacement females for another dairyman can incorporate the advantages of the other dairyman raising his own (knowledge of the production potential, minimizing opportunity to introduce disease, and control of growth rate, time of breeding and selection of sire). It minimizes the disadvantages of the other dairyman raising his own (removes competition with the milking herd for labor, space, feed and capital).

Two types of contracts are in general use. In one, the heifer

raiser agrees to raise replacement heifers for a dairyman for a set period and at a specified monetary rate, which is either in terms of dollars per month or cents per pound of gain.

The second type of contract includes an option-to-purchase clause, in which calves are sold to the heifer raiser and the dairyman retains first option to buy back any animal prior to freshening (calving).

The amount of forage required to raise replacement heifers from 6 weeks to freshening at 24 to 28 months is between 4.5 and 5.8 tons of hay equivalent (2.5 tons per year). This means that about 3.4 heifers can be grown out on the forage needed to maintain each cow and her share of the replacements.

Thus, 17 "springer" heifers can be raised annually on the same land that will support only 10 cows. At the same time, labor required to feed and care for these animals will be reduced one-third to about 50 or 55 hours annually.

Successful contract raising of heifers depends primarily on locating dairymen interested in supplying calves and purchasing "springer" heifers, ability of the grower to raise the calves satisfactorily, and the nature and completeness of the contract between the cooperating dairyman and heifer raiser.

Heifer raising operations in many regions of the U.S. have a *potentially* higher return per head than beef enterprises. The main disadvantages of raising dairy heifers are:

- The time from purchase of the calf until sale of the grown animal is relatively long.
- Farm family members must "catch" or observe the heifers in heat (ready to be bred by artificial insemination) or use a bull. The first alternative takes time and effort, the latter may be dangerous and expensive.
- Management requirements for raising replacement heifers are higher than for most beef enterprises.

A dairy farm operator needs a wide variety of skills. Experience is the best teacher in both animal husbandry and management decision-making. The part-timer should ask himself the following questions:

- Why do I want to be a dairy farmer?
- Why do I think there is a good future in dairying?
- Do I have the ability to work with animals and get adequate production from them?
- Am I willing and able to work long and inflexible hours?
- Can I obtain animals that will become the foundation of a high producing and profitable herd?
- Can I get sufficient capital to begin a profitable dairy operation?