

Heifer Management Programs for Large and Small Operations

Robert E. James

Dept. of Dairy Science, Virginia Polytechnic Institute and State University, Blacksburg, VA
24061-0315
E-mail: jamesre@vt.edu

■ Take Home Messages

- Rapid changes are occurring in the dairy industry characterized by herd expansion, greater environmental stewardship and increases in specialization.
- The dairy heifer grower has emerged as a facilitator of herd expansion and profit.
- The dairy heifer grower must produce a higher quality product (the heifer) at a lower cost than the producer.
- Cost control is achieved with close attention to feeding, labor efficiency and effective health programs.
- Quality is assured when the grower can document desired growth through effective performance monitoring programs and records.

■ Introduction.

The dairy industry in North America is rapidly changing under the influence of narrowing profit margins and environmental pressures. Herd sizes have increased to enable producers to capture the benefits of economies of scale. Pressures are also being exerted upon producers to limit or eliminate the nitrogen or phosphorus leaving the farm site. Historically, dairy producers have not done a good job managing the heifer enterprise. A recent survey in the U.S. revealed that 7 – 10% of the calves born die within the first three months of life. In addition, heifers are too old (28 + months) and / or too small (<550 kg) at 1st calving to enable them to produce to their genetic ability during the first lactation. These pressures have resulted in many dairy producers evaluating their heifer rearing enterprise and considering letting a specialist raise their heifers.

In 1996, a heifer management conference was held in Harrisburg after which a group of dairy heifer growers and university and industry personnel gathered to consider the formation of a Professional Dairy Heifer Growers Association (PDHGA). From these humble beginnings the PDHGA was formed in 1998 and has grown to approximately 350 members with 6 regional associations. Forty-one dairy industry companies have signed on as sustaining members. The extent of the heifer growing industry is still poorly defined. Several years ago a major dairy publication estimated that there were 3,442 dairy heifer growers in the U.S. with an average herd size of 225 animals. This same survey estimated that about 8% of the heifers in the U.S. were reared by heifer growers. It was also noted that the number of heifers grown off the farm of birth had increased by over 500% during the previous 10 years. The next 10 years will be a time of rapid change in the dairy industry. The professional dairy heifer grower can play an important role in:

- allowing dairy producers to use resources to milk more cows
- reducing the nutrient load on a fixed land base by moving heifers off the farm.
- improving the quality of replacements entering the herd.

The challenges faced by the professional heifer grower are numerous and include the following.

- In addition to the daily management decisions involved in growing the replacement, the grower must also market their business. This involves recruiting new clients as well as keeping current clients satisfied.
- Many growers start out small, with business from a neighbor or two. If dairy producers are pleased, the business can grow exponentially. This presents challenges for the grower as they adapt to managing hired labor, increased disease from co-mingled heifers and greatly increased feed resources.
- Frequently, growers begin rearing heifers using a former dairy facility. These facilities are often not well suited to replacement heifers and must undergo considerable modification, which is often unsatisfactory. Once an adequate revenue flow has been established, the grower can construct facilities designed especially for heifers.
- A records system is critical to enable the grower to control costs and evaluate business decisions. In addition, records systems are needed to bill clients on a timely basis, monitor performance, document health procedures and problems and record owner and parentage identification. Ideally, these systems should enable the grower and owner of dairy heifers to exchange information in a compatible electronic format. Unfortunately few records systems exist for effective management of the dairy heifer enterprise.

The size of the growing operation is largely a function of the income desired by the heifer grower. Table 1 shows the projected income at various combinations of income per head per day and number of head per operation. From what is known about profit margins in the heifer business it will be difficult to make the net margins shown in the shaded area. If margins are this high, one can expect that the owner of the heifers will be able to find other growers willing to grow the heifers at substantially less cost or they may find it more economical to do themselves. This table also shows that it would be difficult to support a family on less than 300 heifers. Profit margins in the heifer growing business are traditionally small. Many dairy producers are not aware of the true costs to rear a replacement heifer and they are often underestimated. Likewise, many growers underestimate costs and charge too little.

Table 1. Estimated family living draw or salary at various combinations of heifer enterprise size and net income/head.

	Projected family living draw / salary			
	\$30,000	\$50,000	\$70,000	\$90,000
# head on feed	Net Income per head per day			
100	\$0.82	\$1.37	\$1.92	\$2.47
200	\$0.41	\$0.68	\$0.96	\$1.23
300	\$0.27	\$0.46	\$0.64	\$0.82
400	\$0.21	\$0.34	\$0.48	\$0.62
500	\$0.16	\$0.27	\$0.38	\$0.49
600	\$0.14	\$0.23	\$0.32	\$0.41
800	\$0.10	\$0.17	\$0.24	\$0.31
1000	\$0.08	\$0.14	\$0.19	\$0.25
1200	\$0.07	\$0.11	\$0.16	\$0.21
1400	\$0.06	\$0.10	\$0.14	\$0.18

Smith, T. R. (1999)

The range in size of growing operations among PDHGA membership is large, ranging from over 15,000 to less than 50. For the purpose of this presentation, a large grower is defined as one with a one-time capacity of more than 500 heifers.

Large grower operations tend to have the following characteristics:

- Feeding and housing tend to be feed lot oriented. In more temperate climates, housing consists of shade, a windbreak and dirt lots with mounds to enable heifers access to drier bedding. In more severe winter climates, heifers are housed on bedded packs or free stall barns.

- ▶ Feeding programs tend to be commodity oriented. A principal advantage of the large grower is their ability to purchase trailer lots of low cost commodities and byproducts. Nutritional consultants are also used.
- ▶ Co-mingling of heifers from more dairies is more common and represents a significant immediate and long-term health risk. Likewise, the grower is more likely to have stricter requirements for vaccinations and health test to enter the facility. The Agway heifer growing operation in New York and Pennsylvania requires blood testing for several diseases prior to entering the facility.
- ▶ Animal ID and record systems to document heifer performance and health are more developed.
- ▶ Written protocols exist for nearly all procedures. Notably these growers have strict procedures for vaccinations at client dairies, testing of incoming animals and aggressive post entrance vaccination programs.
- ▶ Hired, rather than family labor is the rule. Written employee manuals are common.

Several heifer grower management systems are discussed to provide examples of programs used by large and small growers.

Colorado based heifer grower – 1,500 head on feed with a half dozen clients. They have been in business for over 10 years. One client sends calves during the first week of life to the grower but most heifers enter the facility as 150 kg heifers and leave 2 months prior to expected calving. Most clients are located within 100 miles of the dairy, but two clients are located more than 1,600 km away in Minnesota. This facility was formerly a small (<2,500 head) beef feedlot in northeastern Colorado. It has a grain storage facility, bunker silos and a commodity shed. Heifers are housed on dirt lots with fence-line feeders and no shade or wind breaks. Prolonged cold or wet weather is rare. A key factor in profitability of this grower lies in their TMR feeding program. This region of Colorado produces exceptional quality alfalfa and an abundance of vegetables for human food consumption. The grower has standing contracts with alfalfa growers to take rained-on and poorer quality alfalfa silage. Carrots, onions, cull navy beans, wet brewers grains and beet pulp are common ration ingredients. A typical ration for 225 kg heifers is shown in Table 2. Feed cost for these animals is less than US \$.45/day. Clients are required to follow a specific vaccination protocol for heifers prior to their arrival at the growers. Heifers are weighed and hip heights measured during routine handling for vaccination and breeding. For those clients located at some distance from the farm, a videotape of the client's heifers is sent periodically. Records were maintained on an Excel spreadsheet, but are now kept using an Access based program (Heifer Dot.Dat) provided by a firm in Minnesota. Labor consists of the owner, one full time worker and several part time

workers. The biggest challenge of this grower is that the feed yard is located adjacent to a small town and the odor of the operation creates problems with neighbors.

Table 2. Example rations for growing a 225 kg. heifer at an average daily gain of 815 g/day.

Example herd	kg DM	CP (%)	RUP ¹ (%of CP)	ME (Mcal/kg)	NDF (%)	\$/day
Colorado heifer grower	6.0	11.2%	45.4%	2.2	46%	.443

Gr. Wheat Straw –1.45kg., Wet Brewers Grain – 2.9 kg, Carrots – 1.8 kg., Wet beet pulp – 1.8 kg, Corn Screenings – 1.1 kg., Alfalfa Silage – 3.6 kg - Included Rumensin

Wisconsin Heifer grower	5.5	15.0	27.8	2.38	43.8	\$.63
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Alfalfa silage - 1.78 kg, Corn silage – 8.00 kg., Corn gluten meal – 2.0 kg, mineral supplement –1kg.

All rations fed as total mixed rations for ad libitum intake with prevailing feed prices as of December 2000.

¹RUP = rumen undegradable protein

Wisconsin based heifer grower – 1,000 head with three long-standing clients located within an hour's drive. Calves are picked up once a week from clients and returned on a weekly schedule two months before calving. They entered the heifer business when the demands of milking cows at the outdated family farm became too great. Wet calves are raised in the bottom of the dairy barn that was formerly used to milk cows. A second farm, a mile away was purchased to rear post-weaned heifers. It was a 400-cow dairy with free stalls and several outbuildings that were modified to accommodate heifers. Bunker silos, commodity sheds and equipment are located at this farm. Weaned heifers are fed total mixed rations based upon corn and alfalfa silage and byproducts such as corn gluten feed. Animals are in total confinement. The key to profitability of the operation has been the use of high quality, locally grown forage and the use of low cost byproducts and grains. A sample ration is shown in Table 2.

Records are kept using the Heifer Dot.Dat program. Clients are encouraged to visit their animals periodically, by appointment only. Vaccination and herd health protocols have been established over the long relationship with their clients and the respective veterinarian. The grower and her sibling and two full time workers that also assist with the growing and harvest of crops provide Labor. The biggest challenge of this grower has been to adapt the former dairy cow facilities to rearing heifers and to the handling and management of feed and manure on the facility.

Many heifer growers start small and grow their business as cash flow and client growth permits. However, some smaller growers view the heifer enterprise as part-time employment and a productive use of their current land and facility resources. Small operations tend to have the following characteristics:

- The enterprise has fewer clients that are usually located within a few miles of the grower. Transportation and biosecurity risks are usually less.
- Feeding programs are variable, but tend to be oriented towards pasture-based systems with minimal housing to reduce investment.
- Written protocols are not as common.
- Labor is usually provided by the owner, family or part-time help.
- Debt load is usually low, since many operators were formerly dairymen and are looking to exit the dairy business or were beef cow-calf operators looking for a more profitable venture.

Example of a small growing operation.

Virginia based heifer grower - 350 heifers with 4 long standing clients. The owner is a veterinarian with a dairy practice. The heifer operation is a part-time activity with labor provided by one full time worker and part time help provided by the grower and his family. This operation used to be a buy-sell operation but has transitioned to a contract growing operation. Heifers arrive weighing approximately 150 kg and leave two months prior to calving. Most heifers come from the veterinarian's herd clients. The only buildings are an office and handling facility used to vaccinate, breed and weigh heifers using electronic scales, a commodity shed and a trench silo. Heifers are weighed every time they are handled and results are recorded in the Heifer Dot.Dat system used by the growers described previously. This facility is a pasture-based system using fescue/red clover, orchardgrass, alfalfa and warm season perennials to provide summer grazing. Paddocks are strip grazed with electric fences being moved every three to four days depending upon forage availability. Each paddock has a fence-line feeder where a total mixed ration can be fed based upon tropical corn silage, poultry litter and byproducts when pasture is not available during summer drought or winter snow cover. In addition to the TMR, anhydrous ammonia treated round bales of fescue or other grass hay is fed during the winter. During mild winters and when rainfall is adequate, heifers may obtain more than 75% of their nutrients from pasture for 10 – 11 months of the year. The key to profitability of this operation is the use of well-managed pasture and TMR supplementation when pasture forage is insufficient to maintain growth. The biggest challenge of this operation has been to design a system, which enables the owner to manage the operation with a minimum of labor and supervision, yet minimize the risk of inadequate growth.

■ **Current State of the Heifer Growing Business and Prospects for the Future.**

Current financial and environmental pressures will encourage growth of the heifer growing business as dairies attempt to utilize their facilities to milk more cows and to reduce the nitrogen and phosphorous loads on their land areas. The heifer growing business is in its infancy. A survey of 24 dairy heifer growers in Virginia revealed an average herd size of 225. Only 58% monitored growth and only 58% tested forages and balanced rations. More than half of the growers did not use AI. Experience with members of PDHGA reveals a different management frame of mind. PDHGA members view the dairy producer as their competitor. If they are to be successful, they must know their costs of production and convince the dairy producer that they will add value to the heifer for the money spent.

A big mistake made by the heifer grower is not charging enough. Many growers enter the business with an agreement to rear heifers for US\$1/day. If the grower receives the heifer at 4 months of age and returns them to the dairy 2 months prior to calving, they will gross about US\$545. Budgets for rearing dairy herd replacements between birth and calving are between US\$1000 and US\$1400. If 24 months age at first calving is the goal, then it should cost an average of US\$1.36 to \$1.92 per day. Convincing the dairy producer that is the cost to raise a replacement is difficult.

Another challenge faced by growers involves the multiple roles they must play. Dairy producers concentrate on managing their operations to produce milk as economically as possible without worrying about marketing their milk on a daily basis. The heifer grower is faced with the task of heifer management just like the dairy producer. However, the grower must also be a marketer of his or her product, the dairy heifer. To be successful, they must not only identify and secure clients to optimize use of their growing facilities but the grower must minimize risks of poor growth performance and control costs better than the dairy producer – a challenging task. The grower must also be able to demonstrate the added value they are imparting to the heifer to justify any added costs. This is achieved by providing documented achievement of acceptable standards of growth to the original owner. The grower must also manage health risks through the establishment of agreed upon protocols for entering animals and design of effective vaccination programs. Special concern must be addressed to problems with Johne's disease, BVD, Brucellosis, TB and other more common infectious diseases. Poorly grown heifers (either too small or too fat) and introduction of disease into the milking herd will quickly destroy a grower's reputation and business.

Many growers enter the business with a limited view of the future with no or little expansion in mind, particularly if they are using facilities formerly occupied

by the milking herd. If the grower is successful, the business rapidly grows as more producers learn of the grower's abilities. Unfortunately, many dairy cow facilities do not make good facilities for heifers and as free stalls are improperly sized and the layout of the dairy facility may not have been designed to efficiently handling animals, feed or manure. A lack of vision towards the future can lead to overcrowding and a reduction in quality of animals leaving the facility. To be successful the grower must have a business plan, much the same as that of a progressive dairy producer. Due to the lower profit margins associated with growing heifers the grower must develop a strategy, which will enable the achievement of three goals.

1. Labor efficiency in handling heifers, feeding and managing manure. Much of this is accomplished by designing facilities especially for heifer rearing.
2. Economical feeding of heifers. The grower must capitalize on low cost feed ingredients. If low cost feeds are not available, it is unlikely that the grower can be competitive. A significant part of feed economy involves minimization of under and over feeding. Facilities must exist to enable heifers to stay warm and dry, or else maintenance expenses become too high in the winter. However, these facilities must be cost effective in that the savings in feed costs and improved growth must be able to offset added costs of the facility. The grower must also think "outside the box" when it comes to feeding the dairy heifer. Heifers, especially those over 6 months of age, don't require high levels of nutrients. Byproducts and high fiber ingredients such as straw, cotton gin trash and lower quality hay can be used effectively in many TMR's. Routine testing of ingredients and ration formulation are required.
3. Minimize risks associated with biosecurity. Incoming animals must be quarantined and facilities must exist for humane handling of animals during treatment.

■ References:

- Smith, T. R. and A. K. Christenson. (1999) Financial benchmarks for the profitable heifer grower operation. In: Proc. 3rd Annual PDHGA National Conference. Prof. Dairy Heifer Growers Assoc. Savoy, IL. pp. 103 – 110.

