
AGRICULTURAL ALTERNATIVES

Dairy Heifer Production Revised September 2000

Heifers are the foundation of any dairy enterprise. Farmers can improve their herds by replacing culled cows with well-fed, healthy, genetically superior 2-year-old heifers. In most herds, dairy farmers replace 25 to 30 percent of the herd each year. These replacements represent a significant financial investment.

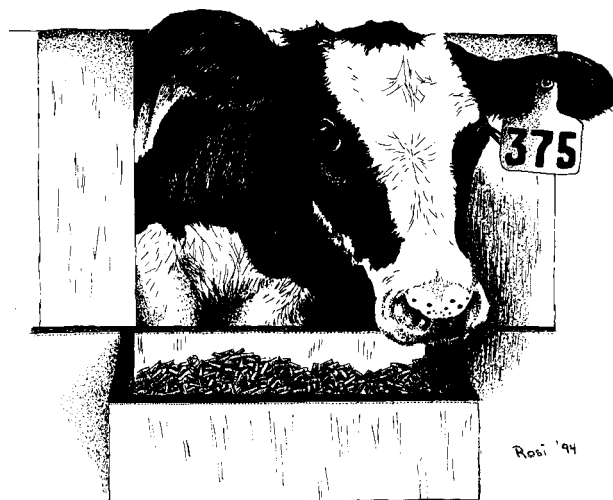
Dairy heifer production in the Northeast and the Midwest has typically been the responsibility of dairy farmers. However, milk producers in other parts of the country often buy bred replacement heifers or contract their own heifers out to other growers.

The dairy farmers' goal should be to raise healthy, well-grown heifers that calve and enter the milking herd by 22 to 24 months of age. Producers should strive for an average calving age of 23 months. Research and field data indicate that lifetime production and profitability increase with calving slightly below 24 months of age.

Housing

As the dairy heifer grows, its housing requirements change. Heifers should be kept in dry, well-ventilated, draft-free quarters that have sufficient bedding. Humidity and odor control are necessary for the heifer's health and comfort. In addition, you must have a handling facility for routine health examinations and breeding.

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Before weaning, keep calves in individual pens to isolate them from older animals. Several types of calf facilities are recommended, including individual calf hutches, pens with three solid or slatted walls and a slatted front opening for feeding, and calf hutches grouped together in a three-sided building. For the first month or two following weaning, house three to five calves in a large hutch or shed with an outside yard. Calves 4 to 11 months of age need 6 inches of bunk space; calves 12 to 17 months need 12 inches of bunk space; and heifers over 18 months need 18 inches of bunk space to ensure proper feeding. When the calves are 4 months old, they should be moved to a grow-out facility.

Nutrition

For the first three days of its life, a calf should receive two equal feedings of colostrum and transition milk daily. After that, feed pasteurized whole milk, fresh or fermented

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colostrum or waste milk, or milk replacer twice a day. Feed at a rate of 10 percent of initial body weight from birth to weaning. Within several days of birth, offer the calf fresh water and small amounts of grain. When weaning occurs at 4 to 6 weeks of age, the calf should be consuming at least 1.5–2.0 pounds of grain per day. Following weaning, and once the calves are consuming 5 to 6 pounds of grain daily, they can have hay or other forage on a free-choice basis. Regardless of the type of forage fed, all ages of heifers should receive a grain mixture. The amount fed will depend partly on the calf's age, but primarily on the quality of the forage.

After the calves are 9 months old, they can be put on pasture supplemented with small amounts of grain and forages. Ionophores (monensin and lasalocid) are feed additives that can be fed to help improve the heifers' dietary energy efficiency. Feeding ionophores will enhance heifer growth and increase their feed utilization. Fresh water must be continually available at all stages of the dairy heifer's life.

Breeding

Heifers should be ready to breed at 13 to 15 months so they are able to calve around 24 months. The keys to a successful breeding program are proper nutrition, a preventive health program, routine heat detection, and timely insemination. Keeping accurate heat dates and breeding records are important aspects of a heifer-breeding program.

Health Program

The first few months of a calf's life are critical for producing a healthy animal. Digestive and respiratory diseases that occur in young calves often result from overcrowding, poor ventilation, improper nutrition, inadequate sanitation, and cold, wet weather. Therefore, the best kind of health program is a preventive one (good housing and feeding program).

A good management practice for farmers is to dehorn calves and remove extra teats at a young age. It is less stressful on the heifers when done at an early age. In addition, vaccinate heifers at 4 to 8 months of age and before breeding.

Parasites are a potential health problem. A routine deworming program for young calves should start at weaning and continue until 8 months of age. Heifers should be dewormed 3 and 6 weeks after they are put on pasture and in the fall after confinement. Coccidiosis can cause diarrhea in calves beginning at 3 weeks of age. Incorporating a prevention product, i.e., coccidiostat or ionophore, can help control coccidiosis. Calves also should be treated for external parasites such as flies, mange mites, and lice.

Keep accurate vaccination and health records to help prevent unnecessary death loss and ensure healthy heifers. Ear tags, neck chains, or freeze brands are good identifica-

tion methods to help maintain accurate records. Consult with a veterinarian to plan an effective preventive health program.

Biosecurity

Biosecurity is a set of production management practices that reduce or prevent the introduction of diseases onto a farm. Every person who is involved with the farm (production management, labor, service provider, especially breeder and veterinarian services) plays a part in minimizing the introduction of disease into a herd.

Before animals are brought to the farm, follow the recommended production management processes:

- Check the history of the herd's health to determine if calves are coming from a reputable source.
- Implement a reasonable animal-testing program on all heifers that enter the grower's herd.
- Quarantine and observe any new animals introduced to the farm for 2 to 4 weeks to minimize the spread of the following health concerns: bovine viral disease, Salmonella, foot rot, Johne's Disease, and hairy warts.

Having a good health program is important. Consult with a veterinarian, extension specialist, or other agricultural professional with knowledge of a good health plan.

Sample Budgets

Included in this publication are three annual budgets for dairy heifer replacement production. The first two summarize the receipts, costs, and net returns of conventional confined production for large and small breeds. The third is for a pasture production system. These sample budgets should help ensure that all costs and receipts are included in your calculations. Costs and returns are often difficult to estimate in budget preparation because they are numerous and variable. Therefore, you should think of these budgets as approximations and make appropriate adjustments in the "Your Estimate" column to reflect your specific production and resource situation. More information on the use of livestock budgets can be found in *Agricultural Alternatives: Enterprise Budget Analysis*.

Sample Dairy Heifer Budget (small breeds)

Birth to freshening (24 months); total confined production system, feeding corn silage and hay.

Items	Quantity	Unit	Price	Total	Your Estimate
Variable costs					
Heifer purchase	1	head	\$80.00	\$80.00	_____
Mortality costs (7% death loss)	1	head		\$5.60	_____
Feed					
Milk replacer	30	pounds	\$0.75	\$22.50	_____
Calf starter	3.9	cwt	\$14.00	\$54.60	_____
Heifer grain mix ¹	15.1	cwt	\$11.00	\$166.10	_____
Hay	1.7	tons	\$115.00	\$195.50	_____
Silage ²	4.9	tons	\$32.00	\$156.80	_____
<i>Total feed costs</i>				\$595.50	_____
Labor	35	hour	\$6.00	\$210.00	_____
Vet and medicine	1	head	\$13.00	\$13.00	_____
Breeding	1	head	\$32.00	\$32.00	_____
Utilities	1	head	\$22.00	\$22.00	_____
Bedding	1.1	tons	\$37.00	\$40.70	_____
Misc. and supplies	1	head	\$39.00	\$39.00	_____
Interest				\$93.40	_____
<i>Total variable cost</i>				\$1,131.20	_____
Fixed costs					
Equipment				\$37.00	_____
Building				\$38.00	_____
Management				\$25.00	_____
<i>Total fixed costs</i>				\$100.00	_____
Total costs³ (a purchased heifer)				\$1,231.20	_____
Total costs (a contract heifer where the grower does not own the heifer)				\$1,151.20	_____

Net returns for five different prices.

	Prices received for heifers				
	\$950	\$1,000	\$1,100	\$1,150	\$1,200
Purchased heifer	(\$281)	(\$231)	(\$131)	(\$81)	(\$31)
Contract heifer	(\$201)	(\$151)	(\$51)	(\$1)	\$49

¹ Prices include processing and mixing charges.

² Silage includes corn silage and/or hay crop silage.

³ A grower would need to charge \$1.69/day (\$1,231.20/730 days) to recover total costs.

Initial resource requirements
(small breeds, confined production)

- Land: 1/3 acre
- Labor: 35 hours
- Capital
 - Livestock (1 heifer): \$80
 - Building: \$750
 - Equipment: \$200

Sample Dairy Heifer Budget (large breeds)

Birth to freshening (24 months); total confined production system, feeding silage and hay.

Items	Quantity	Unit	Price	Total	Your Estimate
Variable costs					
Heifer purchase	1	head	\$150.00	\$150.00	_____
Mortality costs (7% death loss)	1	head		\$10.50	_____
Feed					
Milk replacer	40	pounds	\$0.75	\$30.00	_____
Calf starter	8	cwt	\$14.00	\$112.00	_____
Heifer grain mix ¹	22	cwt	\$11.00	\$242.00	_____
Hay	3	tons	\$115.00	\$345.00	_____
Silage ²	7	tons	\$32.00	\$224.00	_____
<i>Total feed costs</i>				\$953.00	_____
Labor	35	hour	\$6.00	\$210.00	_____
Vet and medicine	1	head	\$13.00	\$13.00	_____
Breeding	1	head	\$32.00	\$32.00	_____
Utilities	1	head	\$22.00	\$22.00	_____
Bedding	1.1	tons	\$37.00	\$40.70	_____
Misc. and supplies	1	head	\$39.00	\$39.00	_____
Interest				\$132.32	_____
<i>Total variable cost</i>				\$1,602.52	_____
Fixed costs					
Equipment				\$37.00	_____
Building				\$38.00	_____
Management				\$25.00	_____
<i>Total fixed costs</i>				\$100.00	_____
Total costs³ (a purchased heifer)				\$1,702.52	_____
Total costs (a contract heifer where the grower does not own the heifer)				\$1,552.52	_____

Net returns for five different prices.

	Prices received for heifers				
	\$1,200	\$1,300	\$1,350	\$1,400	\$1,450
Purchased heifer	(\$503)	(\$403)	(\$353)	(\$303)	(\$253)
Contract heifer	(\$353)	(\$253)	(\$203)	(\$153)	(\$103)

¹ Prices include processing and mixing charges.

² Silage includes corn silage and/or hay crop silage.

³ A grower would need to charge \$2.33/day (\$1,702.52/730 days) to recover total costs.

Initial resource requirements
(large breeds, confined production)

- Land: 1/3 acre
- Labor: 35 hours
- Capital
 - Livestock (1 heifer): \$150
 - Building: \$750
 - Equipment: \$200

Sample Dairy Heifer Budget (large breeds, pasture system)

Birth to freshening (24 months); 1 year confined, 1 year pasture production system, feeding silage and hay.

Items	Quantity	Unit	Price	Total	Your Estimate
Variable costs					
Heifer purchase	1	head	\$150.00	\$150.00	_____
Mortality costs (7% death loss)	1	head		\$10.50	_____
Feed					
Milk replacer	40	pounds	\$0.75	\$30.00	_____
Calf starter	8	cwt	\$14.00	\$112.00	_____
Heifer grain mix ¹	14.8	cwt	\$11.00	\$162.80	_____
Hay	1.6	tons	\$115.00	\$184.00	_____
Silage ²	4.3	tons	\$32.00	\$137.60	_____
Heifer pasture					
Heifer grain mix ¹	1.8	cwt	\$9.00	\$16.20	_____
Pasture	8.6	tons	\$18.00	\$154.80	_____
Hay	0.4	tons	\$115.00	\$46.00	_____
Silage ²	1.2	tons	\$32.00	\$38.40	_____
<i>Total feed costs</i>				\$881.80	_____
Labor	35	hour	\$6.00	\$210.00	_____
Vet and medicine	1	head	\$13.00	\$13.00	_____
Breeding	1	head	\$32.00	\$32.00	_____
Utilities	1	head	\$22.00	\$22.00	_____
Bedding	1.1	tons	\$37.00	\$40.70	_____
Misc. and supplies	1	head	\$39.00	\$39.00	_____
Interest				\$125.91	_____
<i>Total variable cost</i>				\$1,524.91	_____
Fixed costs					
Equipment				\$37.00	_____
Building				\$38.00	_____
Management				\$25.00	_____
Total fixed costs				\$100.00	_____
Total costs³ (a purchased heifer)				\$1,624.91	_____
Total costs (a contract heifer where the grower does not own the heifer)				\$1,474.91	_____

Net returns for five different prices.

	Prices received for heifers				
	\$1,250	\$1,300	\$1,350	\$1,400	\$1,450
Purchased heifer	(\$375)	(\$325)	(\$275)	(\$225)	(\$175)
Contract heifer	(\$225)	(\$175)	(\$125)	(\$75)	(\$25)

¹ Prices include processing and mixing charges.

² Silage includes corn silage and/or hay crop silage.

³ A grower would need to charge \$2.23/day (\$1,624.91/730 days) to recover variable costs and fixed costs including labor and management.

Initial resource requirements
(large breeds, pasture system)

- Land: 3/4 acres
- Labor: 35 hours
- Capital
 - Livestock (1 heifer): \$150
 - Building: \$750
 - Equipment: \$200

For More Information

Greaser, G. and J. Harper. *Agricultural Alternatives: Enterprise Budget Analysis*. University Park, Pa.: Penn State Cooperative Extension, 1994.

Heinrichs, A. J. *Feeding the Dairy Heifer*. EC387. University Park, Pa.: Penn State Cooperative Extension, 1991.

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1998-2000 Professional Dairy Heifer Growers Northeast Regional Conference Proceedings. Contact Jud Heinrichs, (814) 863-3916.

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Periodicals

Dairy Herd Management
PO Box 1423
Lincolnshire, IL 6006

Farmshine
PO Box 219
Brownstown, PA 17508

Feedstuffs
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Ephrata, PA 17522

Pennsylvania Country Folks
Lee Publication, Inc.
Palatine Bridge, NY 13428

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Camp Hill, PA 17011

Associations

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American Jersey Cattle Club
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Reynoldsburg, OH 43068

American Milking Shorthorn Society
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Beliot, WI 53512

Ayrshire Breeders Association
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Brattleboro, VT 05302

Brown Swiss Cattle Breeders
PO Box 1038
Beliot, WI 53511

Holstein Association
1 Holstein Place
Brattleboro, VT 05301

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