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ST. PAUL, MINNESOTA
UNITED STATES OF MINNESOTA

CUSTOM REARING ARRANGEMENTS FOR DAIRY REPLACEMENT HEIFERS: CONCEPTS AND CONSIDERATIONS

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Introduction

Management of a modern dairy operation requires management expertise and labor in many different areas. Dairymen are often required to be specialists in the milking herd, crops, soils, and replacement animals. It is difficult to maintain technical management expertise in all enterprise areas.

As a result of high labor demand, many dairymen are considering reducing enterprises and focusing on those enterprises for which labor and management resources are available and/or result in the best financial return.

Custom rearing of replacement heifers is one method to reduce labor and management requirements. Custom rearing simply involves the owner of replacement heifers transferring management, cost, and labor of rearing to a custom feeder. The custom feeder returns animals to the owner at a later date, under prearranged rearing guidelines, for a fixed fee.

This system is attractive to both the owner and custom feeder. The owner reduces labor and management requirements. The custom feeder is able to develop a viable full or part time business.

Custom Rearing: Advantages and Disadvantages

Custom rearing of dairy replacement animals has advantages for the owner and custom feeder. The following lists represent common advantages and disadvantages of such an arrangement.

Owner Advantages

- Decrease labor requirements
- Increase milking herd management
- Increase facility capacity for milking cows
- Herd expansion without capital investment
- Increase feed inventory for milking cows
- Possibly better replacement heifers

Owner Disadvantages

- Lose outlet for low quality feeds
- Lose management control
- Owner/custom feeder conflicts
- Possibly poorer replacement heifers
- Fixed cost of non-use replacement facilities

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Custom Feeder Advantages

- Business opportunity
- Use of obsolete facilities
- Recapture of fixed cost of unused facilities
- Scheduled working hours
- Use and marketing of forage and grain crops

Custom Feeder Disadvantages

- Increased repair requirements of facilities
- Owner/custom feeder conflicts
- Increased farm presence

Responsibilities

When exploring possibilities of custom rearing of replacement heifers, what the responsibilities of the owner and feeder are is of primary importance. Custom rearing of replacement animals can be accomplished in an infinite number of settings. The owner and feeder should review all possible options prior to negotiating a contract. This process is required because it raises questions in areas often overlooked which can result in conflict at a later date.

Table 1 defines areas of responsibilities which may or may not be a part of a custom rearing arrangement (Hoffman, 1992a).

Table 1. List of possible responsibilities in a custom rearing arrangement.

<u>Feed</u>	<u>Breeding</u>	<u>Veterinary</u>	<u>General</u>	
Forage	Breeding services	Deworming	Bedding	Identification
Grain	Semen & semen cost	Dehorning	Insurance	Power/fuel
Protein supplement	Sire selection	Hoof trimming	Barn repairs	Maintenance
Mineral	Heat detection aids	Emergency care	Labor	Part-time labor
Salt	Pregnancy checking	External parasites	Death loss	Manure hauling
Feed additives	Heat detection	Medications	Fly control	Trucking
		Autopsy	Growth monitoring	
		Vaccinations	Electric & water	

Animal Numbers and Rearing Guidelines

Specific animal numbers and performance guidelines should be incorporated into custom rearing arrangements. Dairy replacement animals have a wide range of growth and size characteristics and it is important that the custom feeder attempt to meet growth expectations of the owner. Variation in growth is normal and the owner needs to understand that some leeway in growth guidelines is acceptable.

Weight is an adequate monitoring tool, but custom feeders could unconsciously meet weight specifications by beef feedlot feeding systems which are not conducive to future milking ability (Hoffman and Funk, 1992). Body condition scoring systems and height measurements should be employed to safeguard against over- or under-conditioned animals.

Table 2 lists weight, height, and body condition scores of Holstein replacement heifers from selected high-producing Wisconsin herds (Hoffman and Funk, 1991). These data should serve as an excellent evaluation tool for monitoring replacement heifer growth.

Table 2. Growth rates of Holstein replacement heifers from high producing Wisconsin herds.*

Age (months)	Weight (lbs)	Height (inches)	Body condition score
0	94	32	2.00
2	185	34	2.25
4	280	37	2.25
6	400	41	2.50
8	520	44	2.50
10	650	46	2.75
12	775	49	2.75
14	875	50	3.00
16	975	51	3.25
18	1050	52	3.25
20	1150	53	3.50
22	1275	54	3.50
24	1340	54	3.75

* Based on heifers calving at 24 months. Body scores based on 5-point system.

Contracts

A written contract should be utilized for the protection of both the owner and custom feeder. The main benefit of a contract is to identify the responsibilities of the custom feeder and the owner. Contracts should also specify growth guidelines and indicate fee arrangements. Tables 1 to 4 in this paper are designed to highlight common items included in contracts. Additional items can be put in any contract if they are important to the owner and/or custom feeder.

Contract Fees

There are no simple formulas or quoted prices for contract rearing of replacement heifers. Fees depend primarily on two factors: size of the replacement heifer and responsibilities of the contract.

Table 3 lists the cost of raising a dairy replacement from birth to calving at 24 months of age (Hoffman, 1992b). Daily cost under this example would be \$1.54 per day (\$1110.15 ÷ 720 days).

Table 3. An example of heifer raising costs (0 to 24 months).

Item	Price/Unit	Units	Cost/hd
Feed Cost			
Forage	\$55.00/ton	6.5 ton	\$357.50
Grain	\$2.25/bu	20.0 bu	\$45.00
Protein	\$200.00/ton	300.0 lbs	\$30.00
Mineral	\$24.00/cwt	60.0 lbs	\$14.40
Salt	\$8.00/cwt	45.0 lbs	\$3.60
Milk replacer	\$70.00/cwt	40.0 lbs	\$28.00
Starter	\$13.00/cwt	150.0 lbs	\$19.50
Livestock Cost			
Bedding	\$40.00/ton	1.0/ton	\$40.00
Vet & Med	\$25.00/ton	1.0/hfr	\$25.00
Breeding	\$16.00/ton	1.5/hfr	\$24.00
Power & Fuel	\$22.00/ton	1.0/hfr	\$22.00
Supplies	\$20.00/ton	1.0/hfr	\$20.00
Interest*	10.00 %	1.0/hfr	\$58.15
Labor & Management			
Labor	\$6.00/hr	24.0 hrs	\$144.00
Management	\$12.00/hr	1.0 hrs	\$12.00
Fixed Cost			
	Opportunity Value**	CRC%***	Maximum Capacity
Buildings	\$40,000.00	14%	80
Equipment	\$30,000.00	17%	80
TOTAL COST/hd			\$1,110.15

* Interest = 10.0% on .50% of the feed and livestock cost for two years.

** Opportunity value = Current debt, fair market value or rental value divided by CRC%, whichever is higher.

*** CRC = Capital recovery charge/year. Includes items such as interest, depreciation, taxes, insurance, and repairs.

Custom rearing contracts are seldom simple. Custom rearing arrangements may be from weaning to breeding, breeding to calving, or other combinations of age and weight. Obviously there are dramatic cost differences, because younger, lighter heifers may have significantly lower feed costs than late gestation heifers.

Table 4 prorates the total expenses by age and weight brackets. The "increment percent" in the right-hand column estimates the percent of total rearing cost that is required to raise a heifer in 100-pound increments.

Table 4. Effect of starting weight on heifer raising costs.

Start weight (lbs)	Age (mo)	% Total cost	Increment %*
100	0.0	100.0	8.0
200	2.0	92.0	5.0
300	4.0	87.0	6.0
400	6.0	81.0	6.0
500	8.0	75.0	7.0
600	10.0	68.0	8.0
700	12.0	60.0	8.0
800	14.0	52.0	8.0
900	16.0	44.0	9.0
1000	18.0	35.0	11.0
1100	20.0	24.0	12.0
1200	22.0	12.0	12.0
1300	24.0	0.0	-

* The proportion of total cost incurred at that weight range.

For example, a custom feeder has calculated the total cost (0 to 24 months) of rearing a heifer to be \$1.54 per day. The cost to raise heifers from weaning (200 pounds) to breeding (800 pounds) would not, however, be \$1.54/day.

It would take 12 months (14 months minus 2 months) or 365 days and 40 percent of total cost would be incurred during this time frame (add "increment percents" from Table 4 for 200 through 700 pounds). The daily cost would then be:

$$(\$1,110 \times 0.40) \div (365 \text{ days}) = \$1.22 \text{ per day.}$$

In a similar calculation, a bred heifer raised from (800 pounds at 14 months) to calving (1,300 pounds at 24 months) would be:

$$(\$1,110 \times 0.52) \div (305 \text{ days}) = \$1.89 \text{ per day.}$$

These methods to calculate heifer cost are "generic," but demonstrate key concepts. A specific set of calculations will need to be made for each custom rearing arrangement as responsibilities and animal size will vary cost substantially.

Special Considerations

There are four areas that require special consideration when developing custom heifer rearing arrangements. These issues will generally dominate discussions between custom feeders and owners. They are death loss, unthrifty animals, payment methods, and risk reduction. A discussion of these issues is as follows.

Death Loss

Death loss should not be written into a contract as owner payment of normal death loss and custom feeder payment of abnormal death loss. Such procedures lead to confusion and conflict between the custom feeder and owner because "normal" and "abnormal" are not quantifiable terms. Cause of animal deaths should be determined by a third party, namely a veterinarian. The death should be classified as owner related, custom feeder related, or unknown. The owner should be responsible for all owner related deaths. The custom feeder should be responsible for custom feeder related and unknown deaths and cost of veterinary services.

Unthrifty Animals

It is the responsibility of the custom feeder to immediately notify the owner of any animal with unthrifty performance. As a consequence, the owner can make decisions early regarding the animal. The custom feeder will avoid later delivery of an animal not meeting age, weight, or height (growth) criteria.

Payment Methods

Two common payment methods exist: monthly and per animal at the time of return to the owner. Monthly billing is generally preferred as cash flows of the custom feeder and owner remain relatively stable.

Risk Reduction

Elements of risk are equally associated for the custom feeder and the owner. The custom feeder should investigate methods of reducing payment default and catastrophic risk. Payment default penalties can be written into the contract. Temporary transfer of ownership and/or lien procurement are methods to reduce payment default risk. Catastrophic risk is reduced by proper insurance programs.

The owner incurs risk of catastrophic loss of animals while under the management of the custom feeder and performance loss due to improperly reared animals. The owner should seek assurance that all animals, facilities, etc., are adequately insured. Risk of performance loss due to improper rearing of animals can be reduced by continuous monitoring of animals. If the custom feeder is unwilling to make management changes, the owner should have options to remove the animals from the custom rearing arrangement.

Concerns and Conflicts of Custom Heifer Rearing Arrangements

As more dairy producers and custom operators participate in custom rearing arrangements, a better understanding of concerns and conflicts has emerged.

In 1993 we surveyed or contacted 40 dairy producers and custom operators regarding specific impressions of the business of custom heifer rearing. These surveys or contacts were

not formal and cannot be universally compiled due to the uniqueness of each arrangement. We have made our best attempt to highlight these concerns and conflicts in the following text.

Dairy Producer Concerns

Overcrowded facilities. Dairy producers have high expectations of their selected custom operator. When custom operators place replacement heifers in overcrowded, inadequate facilities and animals become muddy and unthrifty, conflict often occurs. As a general rule, dairy producers expect replacement heifers to be reared in a clean, dry, well ventilated area. Dairy producers commonly terminate custom rearing arrangements when their animals are placed in overcrowded, inadequate facilities.

Disease control. In conjunction with overcrowded facilities, dairy producers express concern about disease transfer when replacement heifers from multiple farms are reared in the custom operator's facilities. Vague or unclarified vaccination and treatment programs create additional concerns. In general, dairy producers prefer a strong link or communication between veterinarians of the custom operator and dairy producer. In general, disease control has not been a major problem in custom heifer rearing arrangements.

Flat rate fees. Dairy producers express concern of custom operators charging a universal flat rate daily fee for all heifers reared on their operation. In essence, dairy producers understand that not all heifers cost the same to rear; therefore, fees should be different. Dairy producers prefer fees based on actual responsibilities and animals involved.

Lack of communication. Dairy producers prefer frequent updates on the progress, problems, and cost of the arrangement.

Respect of producer's expectations. Dairy producers prefer replacement heifers reared in a manner conducive to their operation and expectations. Arrangements between producers and custom operators with large differences in management philosophy of rearing replacement heifers most often fail. Specifically, if producers request a specific weight, height, and age of calving, they expect a custom operator to make every effort to meet these requirements.

Custom Operator Concerns

Profit margins. Custom operators quickly develop or realize true cost of rearing replacement heifers. Custom operators with excellent management and business skills feel they should receive fees with adequate margins to reflect their expertise. Excellent custom operators have concerns about fee comparisons between excellent and poorly managed custom heifer rearing operations.

Changing producer expectations. Custom operators prefer to rear replacement heifers for producers who provide clear, concise expectations as to how replacement heifers

are to be reared. Custom operators become frustrated with producers who frequently change expectations or don't communicate desired changes.

Consistent animal numbers. Customer operators pursuing a full-time custom heifer rearing business express concern over large changes in animal numbers. Large animal inventory changes can occur. Financially planning and managing such changes are difficult.

Transition of animals. Transition of animals from the custom operator's housing system back to the dairy producer's housing system can be difficult. Frequently replacement heifers raised in open housing have difficulty adapting to stanchions or free stalls. Other transitions have also presented problems. Custom operators prefer producers who are sensitive to these issues and take an active role in re-acclimating animals to the producer's housing systems.

Custom Rearing Heifers: Full vs. Part Time

A full time custom heifer rearing business is a high volume, low margin business. Potential returns to labor and management of custom heifer operations varying in size and daily fee charges are listed in Table 5 on the following page. Returns to labor and management are inadequate (< \$14,000) for any size operation (100 to 500 head) when daily fees are less than \$1.20/head/day. Adequate (> \$25,000) full time returns to labor and management are only achieved with daily fees of \$1.30 - \$1.50/head/day in combination with 300 to 500 head. The values in Table 5 are considered minimum values in assessing profitability of full time custom heifer rearing operations. Custom heifer rearing operations with higher capital investments will require higher fees to assure profitability. The calculations in Table 5 are generic and all custom heifer rearing operations need to individually calculate profit potential.

Operations of 300 to 500 head require facilities similar to contract feedlot operations. In general, existing heifer facilities from traditional dairy operations (60 to 80 cows) will be inadequate to rear replacement heifers on a full time basis. Facilities must be designed to handle large volumes of cattle efficiently. Subcomponents of high volume facilities may include handling and corral areas, head gates, mobile TMR mixers, expanded forage storage, fenceline bunks, manure storage, lot runoff control, expanded roadways, loading chutes, expanded drives for semi trailers, etc.

Custom rearing heifers on a part time basis also provides opportunity. The most critical factor in part time custom heifer rearing operations would be adequate fees to assure profitability. Total returns to labor and management are limited due to carrying capacity of facilities and labor available.

Potential also exists in pasture based custom heifer rearing operations, either on a full or part time basis. Little information is available on the profitability of such operations. Careful calculation of all variable and fixed cost is required to assess the viability of individual pasture based custom heifer rearing operations.

Table 5. Estimated returns to labor and management of custom heifer rearing operations of various size and differing fees.¹

Item	No. of Heifers				
	100	200	300	400	500
Income \$					
\$1.00 head/day	36500	73000	109500	146000	182500
\$1.10 head/day	40150	80300	120450	160600	200750
\$1.20 head/day	43800	87600	131400	175200	219000
\$1.30 head/day	47450	94900	142350	189800	237250
\$1.40 head/day	51100	102200	153300	204400	255500
\$1.50 head/day	54750	109500	164250	219000	273750
Feed Cost² \$					
Forage	17875	35750	53625	71500	89375
Grain	2250	4500	6750	9000	11250
Protein	1500	3000	4500	6000	7500
Mineral	720	1440	2160	2880	3600
Salt	180	360	540	720	900
Livestock Cost \$					
Bedding	2000	4000	6000	8000	10000
Vet & Med	1250	2500	3750	5000	6250
Breeding	1200	2400	3600	4800	6000
Power & Fuel	1100	2200	3300	4400	5500
Supplies	1000	2000	3000	4000	5000
Interest	2900	5800	8700	11600	14500
Total Variable Cost \$	31975	63950	95925	127900	159875
Fixed Cost ³ \$	12000	22500	31500	39000	45000
Total Cost \$	43975	86450	127425	166900	204875
Returns to Labor & Management @					
\$1.00 head/day	-7475	-13450	-17925	-20900	-22375
\$1.10 head/day	-3825	-6150	-6975	-6300	-4125
\$1.20 head/day	-175	1150	3975	8300	14125
\$1.30 head/day	3475	8450	14925	22900	32375
\$1.40 head/day	7125	15750	25875	37500	50625
\$1.50 head/day	10775	23050	36825	52100	68875

¹ Rearing time frame = 3 to 24 months.

² Amounts per head and values extracted from Table 3.

³ Fixed cost based on a buildings and equipment investment of 800.00, 750.00, 700.00, 650.00, and 600.00 \$/head for a 100, 200, 300, 400, and 500 head operation, respectively. A 15% capital recovery charge was assessed to each total investment to estimate fixed cost.

Conclusion

Custom rearing of replacement heifers is a viable alternative to rearing and offers many advantages. Custom rearing replacement heifers is also a viable business opportunity. Full time custom heifer rearing is, however, a high volume, low margin business. Successful custom heifer rearing arrangements are when the owner and custom feeder discuss responsibilities, growth guidelines, develop a written contract, and communicate frequently to assure a mutually beneficial arrangement.

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