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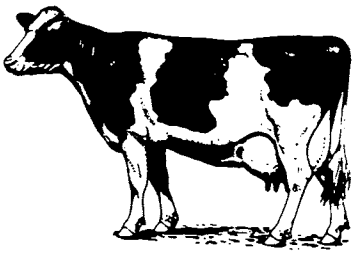

Dairy Update

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Contract Raising of Dairy Replacements: Concepts and Considerations

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Every dairy farm needs a good supply of healthy, well grown, genetically superior replacement heifers. Considerable cost and time (labor) is involved in developing a quality heifer from birth to freshening. Most dairy farms raise their own replacements, but on some farms labor and facilities limit the feeding and management required for an optimal supply of replacement heifers. In these situations, cost of raising replacements is increased either because of delayed freshening beyond 24 months and/or reduced milk production.

Contract or custom raising of heifers may be an option for retaining ownership of quality replacements while transferring raising responsibilities to someone else (custom grower). Contract rearing simply involves the owner of replacements transferring the labor and management required for rearing to a custom grower for a fee. This system can be beneficial to both dairy producers and to those who want to raise dairy cattle without milking.

Pros and Cons for Owners and Growers

Dairy Herd Owners - Advantages to Contract Raising

Decrease labor requirements: Replacements typically require about .8 to 1 hour per month from birth for freshening. The total labor requirement to raise a replacement to 24 months is about 20 to 24 hours.

Increase milking herd management: Shifting the time and energy spent on replacements to the milking herd may result in more milk, greater efficiency and increased profit.

Increase facility capacity of milking herd: On some farms, heifer facilities may be used for milking or dry cow to allow for herd expansion.

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Increase feed inventory for milking herd: Home grown feeds used by replacements can be used to feed more milking cows. Replacements typically consume about one third of the dairy herd's annual forage intake.

Potential for better replacement heifers: In some situations, professional heifer growers can offer better management because of focusing on only one enterprise and having facilities to effectively group heifers for optimum growth.

Potential to lower replacement costs: Some farms may be able to lower replacement rearing costs by contracting because of savings professional growers gain through effective grouping strategies with more animals and managing for a first calving age of 23 to 25 months.

Dairy Herd Owners - Disadvantages to Contract Raising

Give up outlet for lower quality feeds: Replacements heifers are often an outlet for lower quality forages or feed not eaten by the milking herd.

Owner/custom grower conflicts: Disagreements should be minimized with contracts that clarify who is responsible for what. See list of considerations.

May lose management control: Performance standards and measures need to be spelled out in the contract and monitored; growth, breeding, etc.

Possibly poorer replacement heifers: There is always a risk the contractor will not perform up to expectations. Protective measures are a good set of standards and monitoring system.

Unused facilities: There is a cost involved when usable existing facilities are not used. Fixed costs of depreciation, repairs, taxes and opportunity costs continue whether or not they are used.

Possible increased costs of replacements: Contracting may be more costly than raising them yourself depending on current/future costs and the contract arrangements.

Potential exposure to diseases: Bringing animals together from various places will increase the risk of spreading diseases. Vaccination programs will help reduce this risk for both the owner and custom grower.

Custom Grower - Advantages to Contract Raising

Business opportunity: Contract raising offers a viable business opportunity for some people.

Use of existing facilities: Many farms have facilities that could be used or inexpensively modified for raising replacements.

Flexible scheduled working hours: Unlike milking cows, much of the time required for raising replacements can be flexibly scheduled.

Use and market for forage and grain crops: Maintaining forage in a crop rotation is critically important for sustaining long term soil productivity. Contract raising of replacements offers a way to add value to these crops and maintain the farm's productivity potential.

Custom Grower - Disadvantages to Contract Raising

Facility repair and maintenance: Facilities will need to be kept in good repair and maintained to be efficient and provide animal comfort.

Owner/grower conflicts: Disagreements can happen. Good will, compromise and clear contracts can minimize them.

Labor and management commitment: Like most endeavors contract raising is a business and should be done in a professional manner. This means commitment of time and expertise to meet the customer's expectations.

Cost of Raising Replacements

The cost of raising herd replacements is second only to feed costs in many dairy budgets. Current costs and performance are important considerations in deciding to have someone else raise your replacements.

Wisconsin workers have compiled a detailed breakdown of rearing costs by growth period (Appendix A). Comparing your costs to those in Appendix A can be a good starting point. They estimate the cost from birth to freshening at 24 months to be $1133 excluding charges for labor; management and the calf. The total estimated cost is $1425 when labor, management and value of the calf are included. They also estimate the cost for each month calving is delayed past 24 months to be $60, or $2 per day. These estimates are within the typical range reported in Minnesota Business Management records in 1992. There is a wide range in these costs from farm to farm.

The primary factors affecting the cost of raising replacements are:

- Number of replacements raised for size of milking herd
- Age at first calving
- Feeding and management regimes
- Facilities that contribute to animal health, comfort and labor efficiency
- Herd size

Number of herd replacements: How many herd replacements should you raise? What is the optimum economic tradeoff between the cost of raising more to increase the herd replacement rate versus lower replacement rearing costs and lower herd culling levels? The number of unfreshened replacements on hand also increases as the age at first calving increases.

Table 1 shows the number of herd replacements needed to maintain herd size of 100 cows varies from 51 to 133 depending on the age at first calving and herd replacement rate. Eleven percent loss for reproductive failure and deaths were factored into these values.

Table 1. Number of herd replacements per 100 cows needed to maintain herd size by age at first calving and herd replacement rate.*

	Age at first calving					
Cull rate	22	24	26	28	30	32
25%	51	56	60	65	70	74
35%	71	78	84	91	98	103
45%	92	100	108	117	125	133

*Values were factored for 11% losses due to death and reproductive failure.

Herds typically carry 90 to 100 replacements per 100 cows. Note from the table, herds needing 90 or more replacements have older first calving ages or a very high herd replacement rate. The benefits of high replacement rate have to be weighed against the cost of raising them.

Table 2 shows the replacement costs per 100 pounds of milk produced. These costs vary from $.77 to $1.95 per 100 pounds of milk depending on the herd replacement rate and herd average milk pounds. The additional costs for each month over a 24-month age at first calving ranged from $.07 to $.18 per 100 pounds produced.

Age at first calving: A summary of Minnesota DHI Holstein herds by age of first calving (Table 3) shows no advantage in calving older than 25 months. Only 31% of the herds calve at 25 months or before; production stayed the same or declined after that time with little difference in culling. "Older heifers do not make more milk, they make less profit." With the added cost for each month over 24 to first calving ranging from $.07 to $.18 per cwt of milk, the potential savings from reducing first freshening age by two months is $.14 to $.36 per cwt of milk produced. By reducing the age by just 2 months, a typical 50-cow herd can add up to $2700 to their bottom line by decreasing rearing costs.

Feeding and management regimes: A wide variety of feeding and management regimes are used to raise replacement heifers. The growth goals of all regimes should be 1.6 to 1.8 pounds average daily gain from birth to calving at 24 months, 1300 pounds at calving (Holstein), and 53 inches wither height. Heifers should not be over conditioned at calving. Table 4 provides a guide for establishing age, weight, height and body condition score expectations. These values are based on high producing Wisconsin dairy herds.

Table 2. Replacement costs per 100 pounds of milk.

	Herd average milk pounds					
	15,000		18,000		21,000	
	Age at 1st calving (months)					
Replacement rate	24 mo	Per mo over 24 mo	24 mo	Per mo over 24 mo	24 mo	Per mo over 24 mo
25%	$1.08	$.10	$.90	$.08	$.77	$.07
35%	$1.52	$.14	$1.26	$.12	$1.08	$.10
45%	$1.95	$.18	$1.63	$.15	$1.39	$.13

Estimates are based on rearing costs of $1200 to 24 months and $60 per month over 24 months and cull cow prices of $550 per head culled.

$$\text{Replacement cost} = \frac{(\text{Rearing cost} - \text{Cull cow value}) \times \text{Replacement rate}}{\text{Herd average cwt}}$$

Table 3. Performance by age at first calving.*

Avg age 1st calving	% herds	DHI herd avg milk	Peak 1st	PTA$ 1st	Production index 1st	% 1st lact culls	% 1st lact
<24	3	17622	60.8	147	103	11	32
24-25	28	18770	66.0	164	103	12	36
26-27	31	18651	66.3	164	103	13	36
28-29	18	18326	66.3	160	102	12	35
30-31	12	17685	64.8	155	101	12	35
32-33	7	17121	63.3	150	101	10	32
>33	4	17788	65.9	158	101	11	31

*Based on Minnesota DHI Holstein herds, 1993.

Table 4. Growth rates of Holstein replacement heifers calving at 24 months of age in high producing Wisconsin herds.

Age (mo)	Weight (lb)		Height (in)	Body condition score
1	130		31.8	2.0
2	175		33.4	2.25
3	220		35.2	
4	275		37.1	2.25
5	335		39.0	
6	410		41.1	2.50
7	475		42.8	
8	520		43.8	2.50
9	600		45.4	
10	655		46.5	2.75
11	705		47.4	
12	775		48.5	2.75
13	825	Breeding age	49.1	3.00
14	870		49.7	3.00
15	940		50.4	
16	950		50.6	3.25
17	990		51.0	
18	1070		51.7	3.25
19	1130		52.2	
20	1185		52.7	3.50
21	1210		52.9	
22	1265		53.3	3.50
23	1300		53.5	
24	1375		54.1	3.75

*Body condition scores based on a 5-point scale (1 = thin, 5 = fat).

Wisconsin workers have showed the variability in monthly costs over the rearing periods. These costs varied from about $45 per month in the 3 to 12-month age period compared to $85 per month in 0 to 3-month period (Table 5). These variations are of critical importance in establishing contract fees relative to the age the replacements enter and leave the contract period. Wisconsin workers have shown potential cost savings up to 20% with the use of well managed intensive rotational grazing in the 3-24 months rearing period.

The inability to appropriately group replacement heifers can lead to a mixture of adequately grown, overconditioned, and underconditioned heifers. Grouping heifers by age, condition score and growth rate results in efficient use of feed and growth performances conducive to good health and future milk production. Grouping strategies can also impact breeding results. Herds using a bull to bred heifers commonly have a wide spread in age and size of first calving. Larger

spreads in size and age of animals in a group are often a tradeoff with large enough groups for efficient management.

Table 5. Replacement heifer budget summary.[1]

Cost summary	0-3 months	3-12 months	12-24 months	0-24 months	Over 24 months ($/mo)
Feed costs	$49.99	$141.12	$313.36	$516.68	$25.68
Total variable costs (includes feed)	$80.84	$202.21	$439.20	$722.26	$29.25
Total fixed costs	$36.80	$131.85	$242.10	$410.75	$23.75
Labor charge ($8/hr.)	$40.00	$72.00	$80.00	$192.00	$6.40
Calf value ($100)	$100.00	--	--	$100.00	$100.00
TOTAL[2]	$257.64	$406.06	$761.30	$1425.01	$60.10
Average total costs per month	$85.88	$45.12	$63.44	$59.37	$60.10

[1] Luening, R.A., R.M. Klemme and W.T. Howard. 1991. Wisconsin Farm Enterprise Budgets - Dairy Cows and Replacements. University of Wisconsin-Extension Publication A2731.

[2] Excludes death losses and management charge.

Facilities that contribute to animal health, comfort and labor efficiency: Future performance is hindered by less than full health and vigor through the growing period. Replacements are often relegated to makeshift quarters frequently lacking the needed ventilation, bedding, and ease of cleaning. One or all of these can impact animal health and future performance. Recent observations show a close linkage between cleanliness of the replacement rearing area to increased incidence of mastitis in first lactation.

Dairying is labor intensive and people on dairy farms are usually fully employed. Care for replacements are often treated secondary in the list of priorities. Critical care activities from cleaning, heat detection to vaccination and record keeping are often short changed.

Herd size: New York workers did a detailed cost accounting of heifer rearing costs on a large number of farms. The costs ranged from $25 to $52 per month. Lower costs were in larger herds where fixed or overhead costs were spread over more animals.

Selecting A Grower

First lactation and herd life production is affected by the feeding and management care of the replacement animals. The grower-caretaker of the replacements, therefore, becomes critically important. Professionally minded growers that are in the business are highly focused on successful outcomes and their customers expectations. They will want their business to continue with repeat business. They will also be knowledgeable about their business and be competitive with home grown costs.

The owner-grower arrangements must be mutually beneficial to the owner and the grower. Select a grower whose views on performance expectations, responsibilities and terms agree with yours.

Expectations: Performance expectations, with a mutually agreeable system for monitoring and reporting, should be specified in a written agreement. Weight, height, and body condition scores are key performance measures. They reflect the animal's general health and vigor and response to the feeding and management provided. It's important that the owner and grower come to agreement about performance expectations. It's also important that the grower attempts to meet the owner's expectations. However, the owner must also realize some variation in growth is normal, and must provide some leeway in the growth characteristics required.

The weight, height, and body condition scores by age, shown in Table 4, can be used as a basis for establishing performance expectations. These values are representative of replacements that calved at 24 months in high producing Wisconsin dairy herds.

Record keeping, monitoring and reporting performance are important considerations. A failsafe system for identification is a must combined with an accurate record of animals. Growth and performance should be routinely monitored (measured) and compared to the agreed upon standards or expectations. Height is the best monitor for growth. Weight can be an adequate monitoring measure, but should be employed with body condition scoring to safeguard against over- or under-condition animals. Caution should be given to over conditioning, which may limit future milk production.

Record keeping/reporting: Good records will be the only way for both the owner and grower to know if performance expectations are being met. Routine body weights and body condition scores (such as monthly) will be the grower's basis for checking on the feeding and management program. It will also be the time for vaccinations and treatments and adjusting groups.

Monthly weights and body condition scores will also give the owner confidence in the grower's performance, as well as a way to monitor performance. The reporting system should contain vaccinations, treatments, breedings, and any significant observations on individual animals. Growers can be expected to keep the owner informed of any sickness, losses, or unthriftiness.

Responsibilities: Clear understandings up front on who is responsible for what will minimize potential conflicts. The checklist below (Table 6) is for raising the questions for discussion between owner and grower, to review options and come to agreement. The areas of responsibilities may be stated in the contract.

Table 6. Responsibilities checklist.

	Grower	Owner	Other
Breeding			
Breeding service			
Semen & semen cost			
Sire selection			
Heat detection aids			
Pregnancy checking			
Heat detection			
Feed			
Ration balancing			
Forage			
Grain			
Protein supplement			
Mineral			
Salt			
Feed additives			
Veterinary			
Autopsy			
Routine health care			
Emergency health care			
Medications			
Vaccinations			
Deworming			
Dehorning			
Hoof trimming			
Fly & parasite control			
Death losses			
General			
Identification			
Record keeping			
Growth monitoring			
Labor			
Insurance			
Bedding			
Manure hauling			
Trucking			
Electric & water			
Repairs & maintenance			

Special Contract Considerations

Death loss: Who is responsible for death losses? The contract should clarify who is responsible for death losses and how losses will be settled. A recent national dairy heifer survey showed these losses to average 8.4% from birth to weaning, and 2.2% from weaning to age at first calving (USDA, 1993). The owner should have notification of any deaths, circumstances, and any veterinarian determinations in all cases of deaths. One approach is to share the loss. The owner loses the animal, the grower loses the feed and care costs of the animal since received. Another strategy is to have cause of death be determined by a third party, a veterinarian. The death is classified as owner related, grower related or unknown. The owner is responsible for all owner-related and unknown deaths. The grower is responsible for grower-related deaths and costs of veterinary services. Losses due to unknown causes are shared equally.

Unthrifty animals: The owner should be informed of any unthrifty animals and those not meeting performance standards. The owner can then make decisions regarding these animals. This will avoid later conflict when the animal does not meet performance expectations (weight, height, body condition).

Payment methods: The contract should state the total amount for raising animals along with the frequency of payment. Monthly billing is usually preferred, to even out the cash flows for both the owner and the grower. Payment at time of return to owner is sometimes used.

Minimize risk: Growers and owners are exposed to some risks. Catastrophic risks can be reduced by proper insurance programs. The owner should seek assurance that animals and facilities are adequately insured. The grower can reduce the risk of payment defaults with penalties written into the contract. Temporary transfer of ownership and/or procurement of liens can reduce payment default risks.

Owners can minimize risk of performance loss due to improper or unacceptable rearing by continuously monitoring the animals. If the grower is unable or unwilling to make changes, the owner should have the option to remove the animals at any time.

Contract fees: There have been several different approaches for establishing fees to the grower, for rearing dairy heifers. The grower usually provides feed, labor and facilities. Death losses, breeding fees, drugs, veterinary services, and transportation are usually negotiated within agreements, based on weight gain, daily head charge, or feed plus yardage. The owner in the final analysis wants a replacement with maximum production potential and minimal cost.

Types of Contracts

Gain based contracts: Owner and grower agree on a price, usually per pound of gain, during the contract period. The price per pound may vary because of differences in cost of gain at various ages. Feed, breeding, drugs, etc. may be built in to the gain charge or handled separately.

The advantage of gain-based contracts is the ease of calculations. The owner can count on the cost of replacement rearing, regardless of changes in feed price. The grower may be impacted by changes in feed prices. Gain-based agreements should account for differences in receiving weight of incoming animals and breeding weights. Some gain-based contracts use a step wise pricing scheme to compensate for receiving weights, for example: $.02 increase in contract price for each 50 pound increment above 450 pounds receiving weight. Conflicts can develop between owner and grower with gain-based contracts, because higher rates of gain cost less per unit. Growers favor high gain rates because of the favorable economics, but these may be detrimental to the replacement, and not in the best interest of the owner.

Daily charges on a head basis: A fixed charge, per day, per head, is used by some. This has the advantage of being simple, it is easy to use for planning cash flows for the owner and provides for simple billing. Receiving and breeding weights need to be considered when establishing the price because gains at heavier weights are more costly. These contracts should specify expected rates of growth, and breeding size. Days on contract will be affected by time of breeding. As with many contracts, other expenses are negotiated.

Feed plus yardage: The owner pays for the feed with a daily yardage charge of $.15-.25 per day, to cover labor facilities and grower operating cost. The owner carries more risk for changes in feed prices, so the total cost of rearing becomes more variable to the owner. Gain is less important to the grower, so potential for conflicts between owner and grower on the rates of gain are reduced. These contracts will need to negotiate source of feeds, ration formulation, purchasing and delivery, plus the items to be covered in the yardage charge (heat detection, breeding, veterinary drugs, death loss, etc.). Good records will need to be kept on feed used. Sometimes the grower provides the feed and sells it to the owner.

Ration cost only: Ration cost includes feeds, plus a markup to cover labor and other expenses, normally included in yardage. Costs for additional expenses are negotiated. Minimum and maximum gain levels, feed sources, ration formulation, etc., are mutually agreed upon. Rearing costs are less predictable for the owner.

Option to purchase: The owner sells the replacement to the grower, with the reserved right to purchase at current or pre-determined price. The owner could retain partial interest in each animal that is transferred to the grower if the owner elects not to repurchase at the end of the contract. This arrangement shifts most of the risk to the grower, including changes in feed prices, death losses, and other costs. Under this option, the grower's investment costs in animals can be substantial and can expect an uneven income flow, at least until well established, with regular periodic sales. The owner's risk is reduced when a predetermined purchase price is established. The owner frees up money invested in replacement animals for other uses.

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Replacement [illegible]ifer budget, November 1991 (Wisconsin Farm Enterprise Budgets - Dairy Co[illegible]d Replacements) APPENDIX A

	Price/ unit	0 to 3 months Amt	0 to 3 months $ value	3 to 12 months Amt	3 to 12 months $ value	12 to 24 months Amt	12 to 24 months $ value	Summary budget total 0 to 24 months Amt	Summary budget total 0 to 24 months $ value	Per month over 24 months Amt	Per month over 24 months $ value	Line no.
II. Variable Costs												
A. Feed requirements												
1. Forage-as is-$60[3]/ton or $.030/lb DM $65/ton or $0.325/lb	$70/ton	138 lb	$4.14	2970 lb	$89.10	10092 lb	$302.76	13200 lb	$396.00	825 lb	$24.75	1
2. Corn equiv. (no. 2 shelled)	$2.40/bu	3 bu	7.20	14 bu	33.60	4 bu	9.60	21 bu	50.41	0 bu[4]	0	2
3. Soybean meal (44% CP)	$10.75/cwt	50 lb	5.38	100 lb	10.75	20 lb	2.15	170 lb	18.28	0 lb	0[4]	3
4. DiCal (24% Cal-18% P)	$21/cwt	5 lb	1.05	25 lb	5.25	30 lb	6.30	60 lb	12.60	3.5 lb	0.74	4
5. TM salt	$11/cwt	2 lb	0.22	22 lb	2.42	25 lb	2.75	49 lb	5.39	1.75 lb	0.19	5
6. Milk replacer	$80/cwt	40 lb	32.00	--	--	--	--	40 lb	32.00	--	--	6
7. TOTAL FEED COSTS			$49.99		$141.12		$313.56		$514.68		$25.68	7
B. Livestock costs												
1. Bedding-$40/ton	$2/cwt	250 lb	$5.00	850 lb	$17.00	1100 lb	$22.00	2200 lb	$44.00	90 lb	$1.880	1
2. Veterinarian & medicine			8.00		6.00		8.00		22.00		0.60	2
3. Breeding			--		--		25.00		25.00		--	3
4. Power & fuel			4.00		8.00		7.00		19.00		1.30	4
5. Supplies, etc.			2.35		1.55		15.50		19.40		0.20	5
6. Overhead			2.00		6.00		8.00		16.00		--	6
7. TOTAL LIVESTOCK COSTS			$21.35		$38.55		$85.50		$145.40		$3.90	7
8. Interest[1]			9.50		22.54		30.14		62.18		.37	8
9. TOTAL VARIABLE COSTS			$80.84		$202.21		$439.20		$722.26		$29.95	9
III. Fixed Costs												
1. Buildings: $500 new cost Capital recovery charge, repairs,taxes & insurance (15%)			$18.75		$56.25		$75.00		$150.00		$6.25	1
2. Equipment: $300 new cost Capital recovery charge, repairs & insurance (18%)			$13.50		$40.50		$54.00		$108.00		$4.50	2
3. Livestock: Avg heifer investment[2] Interest, taxes & insurance (13%) Avg heifer value at 1½ mo-$140 (0 to 3) Avg heifer value at 7½ mo-$360 (3 to 12) Avg heifer value at 18 mo-$870 (12 to 14) Avg heifer value at 24 mo-$1200 (2 years)			$4.55		$35.10		$113.10		$152.75		$13.00	3
4. TOTAL FIXED COSTS			$36.80		$131.85		$242.10		$410.75		$23.75	4
5. Total cost except for labor, mgmt, calf	5 hr	$8/hr	$117.64	9 hr	$334.06	10 hr	$681.30	24 hr	$1133.01		$53.70	5
6. Labor charge			$40.00		$72.00		$80.00		$192.00		$6.40	6
7. Calf value $100			$100.00		--		--		$100.00		--	7
IV. TOTAL OF ABOVE COSTS (Excluding death loss & mgmt charge)			$257.64		$406.06		$761.30		$1425.01		$60.10	IV

[1] Interest charges were calculated at a 13% annual rate for the average investment. Thus a 6½% rate was used. In the 0-3 mo budget, the interest was 200% of 6½%, 3-12 mo 175% of 6½%, 12-24 mo 100% of 6½%, and per mo over 24 mo 100% of 13% - 12 to reflect the heifer investment over the total time period involved.

[2] The numbers in each column represent the average value added during the period of growth. For example, the heifer gains $80 in mo 0-3, $360 in mo 3-12, and $660 in mo 12-24. Value at birth $100, end of 3 mo $180, end of 12 mo $540, and end of 24 mo $1200.

[3] A forage ration of hay (15% CP) and corn silage (8% CP) is used.

[4] If the heifer is held over 24 mo, some of the grain normally fed in the 12-24 mo period is fed later. The per mo feed costs over 24 mo represent extra feed costs necessary to maintain heifers and is essentially the penalty feed cost of delayed freshening.