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**CUSTOM RAISING DAIRY REPLACEMENTS:  
PRACTICES AND COSTS, 1990**

**BY  
JASON A. KARSZES  
AND  
B.F. STANTON**

**DEPARTMENT OF AGRICULTURAL ECONOMICS  
NEW YORK STATE COLLEGE OF AGRICULTURE & LIFE SCIENCES  
A STATUTORY COLLEGE OF THE STATE UNIVERSITY  
CORNELL UNIVERSITY, ITHACA, NY 14853-7801**

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# **CUSTOM RAISING DAIRY REPLACEMENTS: PRACTICES AND COSTS, 1990**

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As the dairy industry becomes more competitive and farms increase in size, there will be increasing pressure for specialization of functions. One area in which specialization is occurring is the raising of dairy replacements. This report provides information on the management practices, costs, services offered, and rates charged by custom growers of dairy replacements along with a discussion of pricing, contracts, and the options of owning versus boarding dairy replacements.

The management practices followed by custom growers of dairy replacements was determined by mail surveys returned by 34 custom growers of dairy replacements in New York. This list includes both growers who own all animals and growers who board all animals. Descriptive characteristics and management practices for these 34 farms is provided in Table 1.

The typical custom grower of dairy replacements averaged 136 heifers on the farm during the year. On 41 percent of the farms, the majority of the animals are owned by one or more dairy farmers. Fifty-nine percent of these farms owned more than half of the animals they are raising. The average length of stay on the farm is 15 months and the average growth rate is 1.43 pounds. Balancing rations for energy, protein, and other factors was done on 60 percent of the farms. Feed additives were used on the majority of farms.

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The authors are, respectively, Graduate Research Assistant and Professor in the Department of Agricultural Economics, Cornell University. This report is based on work reported more fully in Jason A. Karszes' M.S. thesis, "Raising Dairy Replacements: Practices and Costs, New York, 1990."

Table 1. AVERAGE MANAGEMENT PRACTICES  
34 New York Custom Growers, 1990

<u>Enterprise Description</u>	<u>Average</u>
Number of farms	34
Number of heifers	136
Number of groups	4
Age arriving, months	9
Weight arriving, pounds	492
Age leaving, months	24
Weight leaving, pounds	1,143
Length of stay, months	17
Rate of gain per day, pounds	1.43
<u>Percent of Animals Boarded</u>	<u>Percent of Farms</u>
Average percent boarded	45
Board 100 percent	24
Board 50-100 percent	17
Own 50-100 percent	25
Own 100 percent	34
<u>Ration Balancing</u>	
Consultant	33
Done on farm	24
Consultant/done on farm	3
No ration balancing	40
<u>Feed Additives</u>	
Bovatec	65
Rumensin	6
Salt	82
Minerals	76
Other	21
Bovatec or Rumensin	68
<u>Pasture Management Practices</u> <sup>1</sup>	
Use pasture as a feed source	59
Rotational grazing	50
Fertilization program	65
Reseeding in last five years	20
Annual mowing	80
<u>Breeding Practices</u>	
Artificial insemination only	36
Bull only	28
Both	36
<u>Health Practices</u>	
Pregnancy checks	71
Worming program	74
Fly treatment	47
Lice and grub program	24
Lepto vaccination	76
BVD vaccination	76
Dehorning	82
<u>Housing Types</u>	
Freestall	35
Bedded pack	68
Tie stall/stanchions	23

<sup>1</sup> Percentage calculated out of farms reporting pasture use.

To obtain an estimate of the expenses associated with raising heifers on custom grower farms personal interview records were obtained from 18 custom growers in New York. Along with the expense information, data were collected on rates charged, services offered, and contracts used. Summary information on the total expenses in raising dairy replacements on these 18 farms and the middle range of observations (including 50 percent of observations around the median) is presented in Table 2. This summary includes both expenses paid by the custom grower for boarded and owned animals and by the owner of boarded animals. The cost of \$1.42 per day per animal is an estimate of the cost to raise a dairy replacement when all services are provided by the custom grower and represents the average reported from the eighteen farms. It is not the total cost of the boarded animal to the owner. It does not include the rate per day per animal paid by the owner to have the animal boarded.

Table 2. COSTS TO RAISE DAIRY REPLACEMENTS  
18 New York Custom Growers, 1990

	<u>Average</u>	<u>Interquartile Range</u>
Number of animals	178	103-228
Weeks on farm <sup>1</sup>	83	81- 95
	<u>Cost per Day per Animal</u>	
Feed	\$ .87	\$ .74 - \$1.00
Bedding	.04	.02 - .07
Health	.02	.01 - .03
Breeding	.04	.01 - .06
Labor	.24	.10 - .35
Trucking	.01	.00 - .01
Machinery operation	.04	.01 - .06
Machinery overhead	.04	.01 - .04
Building operation	.02	.00 - .04
Building overhead	.07	.03 - .09
Death loss	.00	.00 - .00
Interest on investment	.02	.01 - .02
Total cost per day per animal	<u>\$1.42</u>	<u>\$1.24 - \$1.52</u>

<sup>1</sup> This number represents how long the animal is a part of the heifer-raising enterprise. It does not represent how long the animal is raised until it calves. The majority of these farms are custom growers of heifers and the animal is sold or sent back to the owner before it calves.

The average cost figures, rates charged, and the middle range of observations for each of the areas reported for the expenses paid only by the custom grower are reported in Table 3. This is the average and middle range of observations for the 15 farms that vary in services provided in their custom operations for boarded animals. This summary does not include the three farms that owned all of the replacement heifers. The middle range of rates charged per animal per day is \$1.15 to \$1.30. The full range reported was \$1.00 to \$1.50. Within this range of rates charged is a full spectrum of services provided.

Table 3. OPERATING COSTS AND RATES CHARGED FOR BOARDED ANIMALS  
15 New York Custom Growers, 1990

	<u>Average</u>	<u>Interquartile Range</u>
Total number of animals <sup>1</sup>	162	103-228
Number of animals boarded	118	45-150
Total weeks on farm, all animals <sup>1</sup>	81	73- 95
Weeks on farm, boarded animals	60	41- 81
Rate per day per animal	\$1.24	\$1.15 - \$1.30
	<u>Cost per Day per Animal</u>	
Feed	\$ .79	\$ .65 - \$ .98
Bedding	.04	.02 - .07
Health	.01	.00 - .02
Breeding	.01	.00 - .01
Labor	.24	.10 - .33
Trucking	.00	.00 - .00
Machinery operation	.05	.02 - .07
Machinery overhead	.03	.01 - .03
Building operation	.02	.00 - .03
Building overhead	.07	.03 - .08
Death loss	.00	.00 - .00
Interest on investment	.02	.01 - .02
Total cost per day per animal	<u>\$1.29</u>	<u>\$1.10 - \$1.47</u>

<sup>1</sup> This number includes both boarded and owned animals.

The fewest services provided were housing, bedding, corn silage, and the labor and machinery to feed the animals and spread manure for the rate received per day per animal. All other feeds, health services, trucking costs, and breeding services were paid for by the owner of the animal. Expenses paid by the owner also included a handling charge paid to the custom grower for each animal that has to be caught for whatever reason.

The most services provided included everything done for the animal. This includes all feed, health, trucking, and breeding expenses. Some of the custom boarders provided this service and the custom farms that owned all the animals also paid all these expenses.

Feed costs are the largest component of expenses paid by the custom growers to raise dairy replacements. Fifty-nine to sixty-six percent of the total expense was feed costs. The next largest cost area is labor, comprising from 11 to 22 percent of the total cost. The remaining cost areas all make up from 12 to 30 percent of the total cost to board the animal.

## **EXPLANATION OF EXPENSES CALCULATED**

### **FEED**

Feed expense is the cost of all feed that is fed to the group, based on the average amount fed per day. The cost is determined by the market value of homegrown feeds and the price paid for purchased feeds. This number also includes the cost of nutrient testing of homegrown feeds and consulting cost for balancing rations, if provided by the farmer or owner.

### **BEDDING**

Bedding expense is the cost of the bedding used for the group. This cost is determined by the number of times the group is bedded, the amount of bedding used each time, and the purchase price, or market value of the bedding.

### **HEALTH**

Health expense is the cost of all health related expenses that can be attributed to the group. These expenses can include vaccinations, worming programs, and pregnancy checks. This expense does not include health expenses that are attributed to one animal, such as an infected foot. The expenses included are those that apply to all animals, or commonly are incurred.

### **BREEDING**

Breeding expense is the cost of getting the animal pregnant. This number consists of the breeding costs associated with artificial insemination along with the costs of a bull. The artificial insemination costs consists of the average semen cost



and service fee weighted by the conception rate. The cost of the bull is determined by the original cost of the bull along with the amount per day that it cost to maintain the bull on the farm.

### LABOR

Labor expense is the cost of the labor that is used during the year in the heifer enterprise. The cost is based on the number of hours per day spent on the different groups of heifers and the hourly wage rate, including all benefits. For unpaid family labor and owner labor, a wage rate based on a New York study of agricultural wage rates is used.

### SHIPPING

Shipping expense is the cost of picking up and/or delivering animals. This cost is based on the number of trips made, the miles round trip, and a round trip charge per mile.

### MACHINERY OPERATION

Machinery operation expense is the cost of the equipment associated with the feeding, bedding, and manure removal for the heifers. The costs includes the cost of fuel, oil, and repairs. The cost per day is the same for all groups if total figures are used. The cost per day is different if data on costs for individual pieces of equipment were obtained.

### MACHINERY OVERHEAD

Machinery overhead expense is the fixed costs associated with the equipment used in the heifer enterprise. These costs are the depreciation and the insurance on the equipment. The cost per day is the same for all groups.

### BUILDING OPERATION

Building operation expense is the repair costs of maintaining buildings, fences, etc. The cost per day is the same across all groups.

### BUILDING OVERHEAD

The building overhead expense is the fixed costs associated with the buildings used by the heifer enterprise. These costs include depreciation, taxes, and insurance. The cost per day is the same across all groups.

### DEATH LOSS

Death loss expense is the cost of the time and money that was invested in an animal that died on the farm. This number is

based on the number of days the animal was on the farm, and the cost per day for the groups on the farm. The expense is assigned to the animals in the group in which the death occurs.

### INTEREST ON INVESTMENT

Interest on investment expense is the interest cost for the operating capital that is invested in the animals over time. It is based on an annual rate of return (.05), the beginning value of the animal, and the average investment in the animal for the time it spends in each group.

## **RANGE OF SERVICES PROVIDED FOR BOARDED ANIMALS**

The important areas where services varied and how the services varied is reported in Table 4. The other items of expense calculated did not have such variation in services provided. All the custom growers provided equivalent amounts of these necessary services. There appeared to be a direct relationship between the amount of services provided and the rate per day per animal charged. There were some farms that charged a higher rate and provided fewer services, however, and other farms that charged a lower rate and provided more services.

Table 4. RANGE OF SERVICES PROVIDED  
15 New York Custom Grower Farms, 1990

<u>Area</u>	<u>Range of Service</u>
Feed	Provide forages only Provide forages and grains, no additives Provide all feeds
Health	Provide no health care except detection Provide single animal health care Provide partial herd health care Provide all health care
Breeding	Provide no service Provide bull Provide heat detection Provide one service per animal, no semen Provide all services per animal, no semen Provide all services and semen
Trucking	Provide no trucking Provide trucking at an additional charge Provide trucking, no additional charge

## CALCULATION OF EXPENSES

In order for the custom grower to determine an accurate price to charge for boarding heifers, variable costs need to be determined and some estimate of the fixed costs provided.

The important costs to estimate for boarding heifers are the variable items: feed, bedding, health, breeding, trucking, and labor costs. These are the costs associated with the number of animals boarded. Some fixed costs would occur whether or not there was a heifer enterprise. The average cost and the inter-quartile range of values for all expenses to raise heifers estimated in the custom grower personal interview are provided in Table 2.

Fixed costs, such as building and machinery overhead, do not need to be considered in a cash flow analysis if the buildings and equipment are already owned. These costs do not change because of the enterprise -- they are sunk costs. If equipment and buildings are not already owned, these expenses would have to be part of the calculations, especially if they are leased or rented.

To estimate the variable expenses to raise heifers, the amount of services and supplies to be provided also needs to be determined. Estimate the amount either per day per animal, for the period the animal is on the farm (Table 5). For feed costs, this would be the amount of forages, grain, and feed additives consumed by the heifer per day along with ration balancing and nutrient testing costs over a year. Bedding costs would be the market value of the bedding used for all the animals during the year. Health costs would be all the vaccinations, vet checks, and other treatments given the heifer. Breeding costs include the semen used and breeding service. The cost of the bull is not determined because the selling price of the bull often covers the purchase price and the rate per day to maintain it. Labor expense counts the hours or days required to care for the heifer enterprise. Trucking expense considers transporting the animal to and from the farm. The amounts for these expenses are fairly easy to determine. The procedures to determine costs per heifer per day for these items are shown in Table 5. For equipment and machinery operation, the fuel, oil, and repair costs are difficult to estimate on individual farms. For these expenses, an estimate of the total amount is easier to obtain.

The calculations in Table 5 will provide the variable expenses that need to be estimated for raising dairy replacements. On average, they represent 86 percent of the total costs. For the other expenses shown in Table 3, an estimate from other sources will generally be acceptable. Using the values in Table 3 is one such source.

Table 5.

CALCULATION OF VARIABLE EXPENSES  
IN RAISING DAIRY REPLACEMENTS

Feed Costs

$$\begin{array}{r} \text{Amount of feed per day} \\ \text{per animal} \end{array} \times \text{cost/ton} + 2000 = \text{cost per day} \\ \text{per animal}$$

Bedding Costs

$$\begin{array}{r} \text{Tons bedding used} \\ \text{during year} \end{array} \times \text{cost/ton} + (365 \times \text{average number} \\ \text{of heifers on farm} \\ \text{during year}) = \text{cost per day} \\ \text{per animal}$$

Health Costs

$$\begin{array}{r} \text{Value of all services} \\ \text{given one animal} \end{array} \div \begin{array}{r} \text{number of days animal} \\ \text{is on farm} \end{array} = \text{cost per day} \\ \text{per animal}$$

Breeding Costs

$$\begin{array}{r} \text{Cost of semen and} \\ \text{breeding service} \end{array} \div \begin{array}{r} \text{number of days animal} \\ \text{is on farm} \end{array} = \text{cost per day} \\ \text{per animal}$$

Hired Labor Costs<sup>1</sup>

$$\begin{array}{r} \text{Number of hours} \\ \text{per day} \end{array} \times \text{hourly wage} \\ \text{rate} + \text{average number of} \\ \text{animals on farm} = \text{cost per day} \\ \text{per animal}$$

Trucking Costs

$$\begin{array}{r} \text{Total trucking} \\ \text{costs for year} \end{array} \div \begin{array}{r} \text{number of animals} \\ \text{transported} \end{array} \div \begin{array}{r} \text{average number of} \\ \text{days transported} \\ \text{animals are on} \\ \text{farm} \end{array} = \text{cost per day} \\ \text{per animal}$$

<sup>1</sup> Hired labor can include labor hired just for heifer enterprise, existing hired labor that is not being used for other enterprises, or owner/family labor that is not paid.

If buildings and equipment are already owned, an estimate of costs associated with ownership can be used (Table 3). If they are not already owned and are going to be purchased, leased, or rented, an estimate needs to be calculated. To do this, the yearly cost of ownership must be estimated. This includes cash payments, taxes, and insurance costs. Dividing the yearly cost by number of days (365) and the average number of heifers on the farm during the year will provide the cost per day per animal. This does not determine the ownership costs, such as interest on investment and depreciation, which are not cash costs.

For a farmer interested in boarding dairy replacements, a method has been described for estimating cash outlays for boarding animals. The same method can be used for the farmer interested in purchasing animals, raising them, and then selling them as dairy replacements. The interest charge will be larger

because of the investment in the animals. The other additional factor that needs to be taken into account is the increased risk caused by owning the animals. This requires more capital to start up and there is less certainty of what the price will be when the animal is sold. While the risk is greater, there is the possibility of greater returns if animals are purchased at a relatively low price and sold at a higher price.

## **AREAS AFFECTING CUSTOM GROWER MANAGEMENT**

For the dairyman considering whether or not to board animals with a custom grower, many factors need to be evaluated. The first is the direct cost of boarding the animal. The direct cost is the amount that the custom raiser charges to board animals. The range that was reported in the custom grower interview survey was from \$1.00 to \$1.50 per day per animal. Alternatively, the charge may also be a rate per animal per month. Another alternative is a charge per pound of growth. The rate per day per animal offers the least amount of incentive to the custom grower because the rate is the same no matter what is fed. Paying by the pound will encourage the custom grower to balance rations and feed for growth. A problem with paying by the pound, however, is growth versus fat. The dairy heifer needs growth in height and body capacity, not fat. This is a major difference between feeding beef and dairy replacements. Fat is gained through energy, growth is gained through protein. Energy is cheaper to obtain than protein so growth through fat is one concern if the rate is based on each pound of gain.

For the farmer who is considering whether or not to sell his calves and then repurchase them before calving, there are two alternatives. One alternative is to sell all the animals and then shop around to purchase replacements from different sources. The second alternative is to sell the calves to a custom grower and have an option to buy back those same animals at a set price. This allows the farmer to control the genetics of his replacements but allows the option of not buying back the animal. This option locks in a price for the custom grower and provides an incentive to improve the growth of the animals and maintain health.

The second area of concern for the dairymen who considers boarding animals is the services offered for the rate that is charged. As shown in Table 4, there is a wide range of services offered for the different rates charged. The services offered can increase the cost of boarding an animal. If the owner is responsible for the breeding, shipping, feed additives, or ration balancing, this will be an added expense for raising the heifer that does not appear in the rate that is paid to the custom boarder. The owner of the animal needs to add in these factors in determining his total cost when boarding out his animals. The

average cost per day and middle range for the different areas of cost are shown in Table 3.

For the dairy farmer interested in purchasing his dairy replacements, the services offered to these animals will play a role in determining which animals are purchased. The health treatments and the breeding method used are the two most important areas of service. Whether or not the pedigree is known for each animal, will also be important.

## **CONTRACTS AND AGREEMENTS**

The third area of concern is the contract or agreement made between participants. As became evident in the cost interviews, 75 percent of the custom growers did not have a written contract for the boarding of animals. A contract is important because it defines the terms of the relationship between two parties and protects both. It is important for both the owner and the custom grower to try to consider as many issues in advance as possible when drawing up an agreement or contract. These areas should be considered for both the contract for boarding of heifers and the contract to sell the heifers with an option to buy them back. The items considered here may not be complete for individual circumstances but include some of the more important items. A lawyer should draw up the contract in order to insure that it is acceptable to both parties and in a legal and binding form. On the basis of the contracts being used, from talking with dairy farmers and custom growers, and from reviewing studies at Michigan State University<sup>1</sup> and Washington State University<sup>2</sup>, the following areas are important components to include in a contract.

### **LENGTH OF CONTRACT**

The length of time for the contract needs to be specified, along with provisions for renewal. This will protect the grower from having a large number of animals taken from the farm without notice and protect the dairy farmer from having a large number of animals returned without notice. The provisions for renewal should be established so that procedures are clearly specified.

<sup>1</sup> Brown, Hi, John Speicher, and Sherrill B. Nott. "Contract Raising of Dairy Replacements," Agricultural Economics Staff Paper No. 86-107, Michigan State University, 1986.

<sup>2</sup> Willet, Gayle S. "The Economics of Home Grown Versus Custom-Raised Dairy Replacement Heifers," Farm Business Management Reports EB 1537, Washington State University, 1989.

The term of the contract can be for the amount of time the animal is on the farm or for a specified time limit and a specified number of animals (i.e., 100 heifers for a year). The specified number of heifers and time limit allows a rotation of animals as they grow larger and are sent back to the owner. A range can also be specified to cover fluctuations in animal numbers. The length of time determined, such as one year, should mean that there will be the required number of animals on the farm for this time. If flexibility is intended, it should be understood by all concerned.

### CANCELLATION OF CONTRACT

A means of terminating the contract by one party or by mutual agreement needs to be provided. The termination should allow enough time for the dairy farmer and custom grower to find alternatives for both feeding the animals and finding a new source of income. Some minimum period of notice, such as 60 days, needs to be included.

### ARBITRATION

Disagreements can occur as a result of misunderstandings concerning some details. A means to legally and fairly solve these disputes needs to be provided for in the contract. A mutually agreed upon third party to arbitrate disputes is one approach.

### RATE AND METHOD OF PAYMENT

The rate to be paid and the timing of payments needs to be stated in writing. The most common rate paid to custom growers was \$1.25 per day per animal. The bill was calculated on a monthly basis. Other time spans could be used. Other ways of charging are by the month, by the total time the animal is on the farm, and by the pound of gain added. The day of billing, grace period on the bill, and method of calculation also need to be established. How animals will be handled for billing purposes when they arrive and when they leave needs to be agreed upon. Provisions concerning the collection of late payments need to be established.

### SUPPLIES PROVIDED

The amounts of forages, grain, feed additives, bedding, medicine, semen, etc., to be supplied by the custom grower and by the owner along with the times of supply, should be written down in the contract. For the things being supplied by the custom grower, it needs to be determined what is covered by the rate charged and what is an extra. A grower providing all basic feed for the daily rate, but charging extra for special grain the owner wants fed, is an example of this type of arrangement.

### SERVICES PROVIDED

The number of services, such as feeding, breeding, veterinarian care, and trucking, which will be provided for by the custom grower and/or the owner needs to be established in the contract. For the services provided by the custom grower, it needs to be determined which ones are covered by the rate charge and which ones will be provided at an additional charge. An example of a situation covered by this provision is having normal herd vaccinations covered by the custom grower but any additional veterinarian care, including pregnancy checks, to be paid by the owner.

### DECISIONS ON PRACTICES

Agreements are also necessary concerning such issues as how the animal is bred, treated for diseases, transported to and from the farm, and the circumstances when culling is required. Using a predetermined weight and age is one method that is used in deciding when animals come to and leave the farm. For example, routine vet care, such as treating hoof rot, may be left to the custom growers judgment, while any major vet care or culling is decided by the owner.

### IDENTIFICATION AND RECORDS

How the animal is going to be identified on the custom grower's farm and what records are maintained concerning breeding and health care need to be included in the contract. The identification process is especially important on the large custom grower farms where animals from different farms are housed together. Common methods of identification include different color, numbered ear tags, leg bands, and ear tattoos. The records provided to the custom grower, concerning each animal when it arrives, and the records kept, while on the farm, can help improve the management of the animal. Any special circumstances that involve one animal, the vaccinations given, and breeding information need to be recorded in order for the owner to know the history of the animal.



### LIABILITY

Who shall bear losses and how such losses are shared for natural and accidental death of animals needs to be specified in the contract. Issues concerning insurance should be established in advance. A custom grower refunding the amount paid to date for an animal that dies because of an illness is an example of a situation covered by these provisions.

### ASSIGNMENT OF INTERESTS

The ability of either party to assign rights concerning the contract to another party in case of unusual circumstances needs to be considered in developing a contract. This will insure that the contract continues, if desired, even if the original signing parties can no longer participate in the duties of the contract.

### SUMMARY COMMENTS

The most important point is that a definite understanding and trust be established between a dairyman and a custom grower. The reason for an agreement is to be sure that understanding has been established. The contract is really only a means to that end. In most cases, there should never be a need to take legal action because understanding was established in advance.

Other Agricultural Economics Extension Publications

No. 91-15	Dairy Farm Business Summary Mohawk Region 1990	Eddy L. LaDue Mark E. Anibal Jacqueline M. Mierek
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