

A red arrow pointing to the right with the text "PRO-DAIRY" written inside it in white.

PRO-DAIRY

REPLACEMENT PROGRAM, Importance to the Dairy

A horizontal line with a color gradient from dark blue on the left to bright yellow on the right, ending in a large, stylized arrowhead pointing to the right.

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PRO-DAIRY

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Goal of The Replacement Program

The primary goal of all heifer programs is to raise the highest quality heifer who will maximize profits once she enters the lactating herd. A quality heifer is one carrying no limitations into the dairy herd that would hinder her ability to produce under the farm's management system. Profits are maximized by obtaining the quality heifer at the lowest possible cost.

Impact of The Replacement Enterprise

The bottom line of a dairy is impacted by:

- Costs
 - Direct
 - In-direct
- Number of animals being raised
- Quality of the animals

Relationship with the Dairy

- Total cost to raise heifer
- Number of heifers being raised
 - Age of first calving
- Investment in replacement enterprise
- Quality of heifer enterprise
- Number of animals needed by dairy
 - Cull rate

What is the Impact?

- How does the replacement enterprise impact the dairy business performance?
- Setting the base
 - Treat heifer enterprise as a separate business
 - Set budget for dairy to buy heifers
 - Current performance
 - Map changes in performance

Base Scenario

- 300 cow dairy
- Stable herd size
- 36% cull rate, last 5 years
- Budgeted expense per heifer = \$2,200
- Sell calves for \$600
- Cost/day, raising costs (cash), per heifer = \$1.70
- Age of first calving = 27 months
- Capital invest./ heifer = \$700
- % heifers cull rate per year = 7%

Replacement Enterprise - Base

- Number of heifers needed to maintain herd size = 264
- Total cost per day per heifer completing system = \$2.28 (cash cost + depreciation + non-performance expense)
- Total cost of animal = \$1,874 (no beginning value or interest on investment)
- Net enterprise income = -\$17,359
- Total investment in enterprise = \$590,100
- % return on total investment = -2.94%
- Overall dairy business % return = 6.8%

Changes that Can Be Made



- Lower raising costs
- Decrease calving age
- Decrease number needed – dairy cull rate
- Decrease replacement cull rate
- Improve quality of animal
- Do them all

PRO-DAIRY

Summary Table – Replacement Only

Enterprise
Impact Calculator

| | Net Enterprise Income | Total Investment | Return on Investment | Number Raised |
|------------------|--------------------------|---------------------|-------------------------|------------------|
| Base | -\$17,359 | \$590,100 | -2.94% | 264 |
| Cost | -\$7,730 | \$578,068 | -1.34% | 264 |
| Age | \$2,198 | \$476,397 | 0.46% | 225 |
| Dairy Cull% | -\$14,466 | \$491,750 | -2.94% | 220 |
| Heifer Cull% | -\$6,051 | \$550,335 | -1.10% | 254 |
| Premium Paid | -\$14,743 | \$600,328 | -2.46% | 264 |
| Combined | \$22,958 | \$365,799 | 6.28% | 179 |
| Comb w int. inv. | \$18,065 | \$429,819 | 4.20% | 179 |
| Comb sell excess | \$28,032 | \$499,767 | 5.61% | 233 |

Summary Table – Overall Business

Enterprise
Impact Calculator

| | <u>Net Farm Income</u> | <u>Total Investment</u> | <u>Return on Investment</u> | <u>Number Raised</u> |
|------------------|----------------------------|-----------------------------|---------------------------------|--------------------------|
| Base | \$180,930 | \$2,690,100 | 6.80% | 264 |
| Cost | \$190,558 | \$2,678,068 | 7.19% | 264 |
| Age | \$200,487 | \$2,576,397 | 7.86% | 225 |
| Dairy Cull% | \$204,823 | \$2,591,750 | 7.98% | 220 |
| Heifer Cull% | \$192,238 | \$2,650,335 | 7.33% | 254 |
| Premium Paid | \$183,546 | \$2,700,328 | 6.87% | 264 |
| Combined | \$242,278 | \$2,465,799 | 9.91% | 179 |
| Comb w int. inv. | \$237,354 | \$2,529,819 | 9.46% | 179 |
| Comb sell excess | \$249,321 | \$2,529,819 | 9.59% | 233 |

What is The Cost?

- They are free?
- Just purchased feed?
- Just hired labor?
- The sum of:
 - All inputs, cash and non-cash
 - Fixed costs associated with capital investments
 - Opportunity cost of capital
 - Charges for animals not completing replacement program.



Reported Costs to Raise Dairy Replacements

- Michigan 1973 \$617
1980 \$1,085
1986 \$1,177
- Wisconsin 1982 \$1,549
1987 \$1,326
1998 \$1,099
2000 \$1,360
- Washington 1992 \$1,242
- Pennsylvania 1998 \$1,088
1985 \$925 Low
\$1,271 Medium
\$1,597 High
- Idaho 1992 \$1,159
- New York 1990 \$1,265
1993 \$1,150
2003 \$1,429
2007-8 \$1,682

What is The Cost?

- Hard to know what the “Average” is.
- Few farms treat the replacement enterprise as a separate business and know their actual costs.
- Can use various tools to estimate what costs may be for different areas of the system.

The Big Two

- Feed
 - Is enough grown?
 - Proper quality?
 - How much purchased?
 - How much does it cost?
 - Where is the manure going?

The Big Two

- Labor
 - Is it doing a good job?
 - How much is it costing?
 - Does it have the right tools?
 - How efficient/inefficient is the set-up?
 - Size of barns
 - Hand labor
 - Location/design of facilities
 - “Free” barns may cost too much!

The Big Two

- Feed and Labor
 - 60%-70% of the total costs to raise heifers
 - Are they being used efficiently?
 - Is a quality heifer being produced?

Number of Heifers

- How many total heifers are being raised?
- How many are needed to maintain herd size?
- How many are needed to offset heifer cull rate?
- Investment level
 - How much barn space?
 - How much equipment?
 - Dollar value of heifers
 - Net Income is divided by investment to determine profitability

Number of Heifers

- Two - 200 cow dairies
- One has 130 total heifers in system?
- One has 180 total heifers in system?

- Who has less barns, equipment, bunks, etc?

Age of First Calving

- Number of heifers needed
- Production life
- Investment level



Number of Heifers Needed

Number of Heifers Maintained, All Ages, for Various Calving Ages and Replacement Rates
Average Herd Size, Milking and Dry Animals 100
Non-Completion Rate*, Dairy Replacements 8.00%

| Calving Age Months | Cow Replacement Rate, Percentage | | | | | | | | |
|-----------------------|----------------------------------|----|----|----|----|-----|-----|-----|-----|
| | 20 | 23 | 26 | 29 | 33 | 36 | 39 | 42 | 45 |
| 18 | 31 | 36 | 41 | 45 | 52 | 56 | 61 | 66 | 70 |
| 20 | 35 | 40 | 45 | 50 | 57 | 63 | 68 | 73 | 78 |
| 22 | 38 | 44 | 50 | 55 | 63 | 69 | 75 | 80 | 86 |
| 24 | 42 | 48 | 54 | 61 | 69 | 75 | 81 | 88 | 94 |
| 26 | 45 | 52 | 59 | 66 | 75 | 81 | 88 | 95 | 102 |
| 28 | 49 | 56 | 63 | 71 | 80 | 88 | 95 | 102 | 110 |
| 30 | 52 | 60 | 68 | 76 | 86 | 94 | 102 | 110 | 117 |
| 32 | 56 | 64 | 72 | 81 | 92 | 100 | 109 | 117 | 125 |

* Non completion rate represents the percent of heifers that start the replacement system that don't enter the dairy herd.

Quality of the Replacement

- Growth vs. milk
- Calving problems
 - Too heavy (fat)
 - Too light (frame)
- General condition of the animal
 - Mastitis
 - Feet and legs
 - Injury
- Prior treatment(s)

Summary

- Quality heifers should be the first focus.
- Need to look at all costs to raise heifers.
- Impact on the dairy business performance is more than the cost to raise a heifer.
- Number of heifers being raised, number of animals needed by the dairy to maintain herd size, and quality of heifer play significant role.

Costs to Raise Dairy Replacements

- 12 Farms completed in time for meetings
- 5 additional farms being summarized
- Final report will be available on the website with other materials from this program
- Snapshot of how much spent to raise heifers last 3 months of 2007
- Used to estimate total spent in raising the replacement over the 23 months.

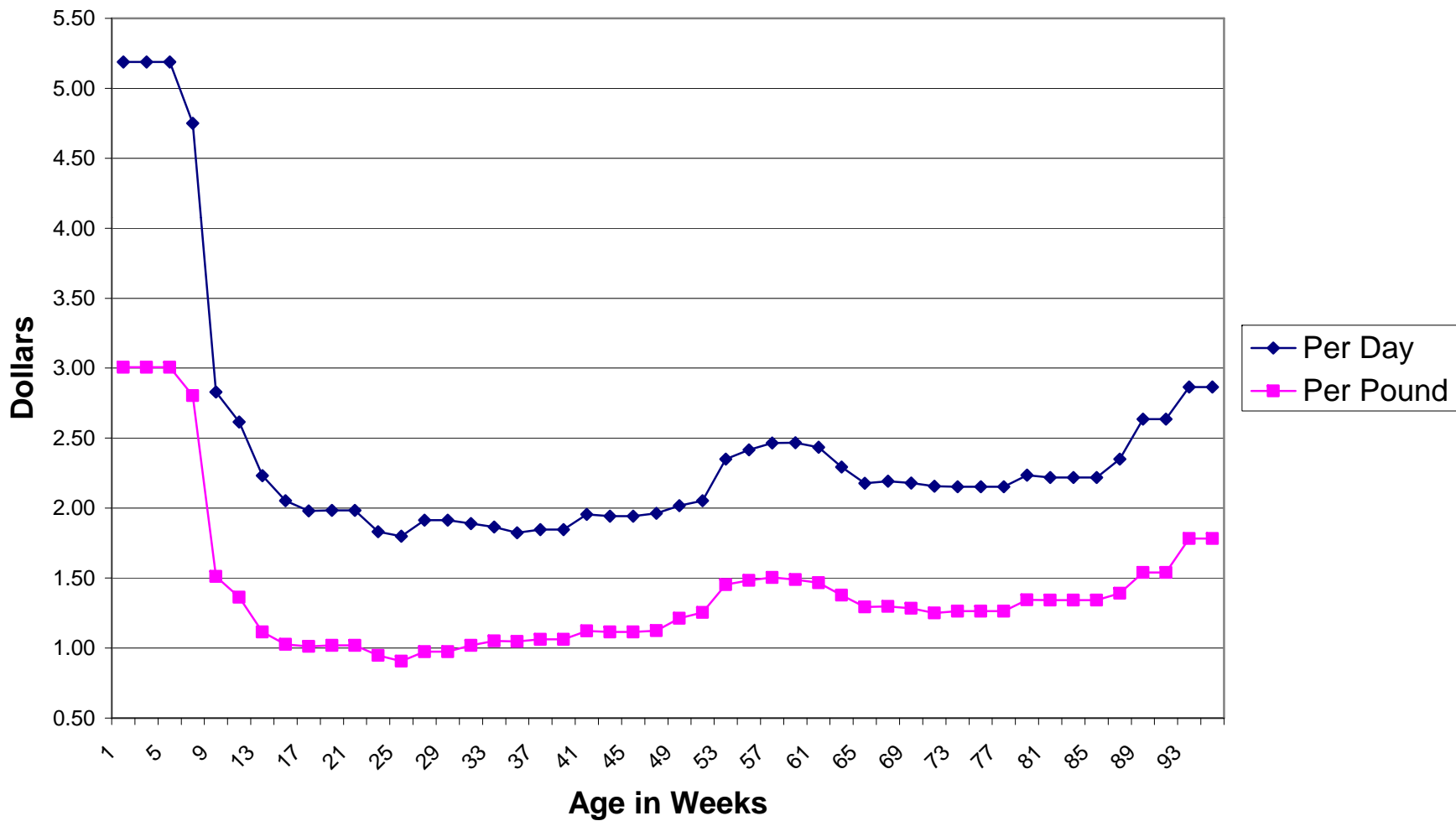
TOTAL COSTS TO RAISE HEIFERS
 12 New York Dairy Farms, December 2007

| Total Cost per Animal Completing | Average | Per Day | Per Pound | Percent |
|--|----------------|---------------|---------------|---------|
| Feed Total —————▶ | \$883 | \$1.28 | \$0.73 | 53% |
| Grown Feed | \$560 | \$0.81 | \$0.46 | |
| Purchased Feed | \$326 | \$0.48 | \$0.27 | |
| Labor —————▶ | \$215 | \$0.31 | \$0.18 | 13% |
| Bedding —————▶ | \$67 | \$0.10 | \$0.06 | 4% |
| Health | \$37 | \$0.05 | \$0.03 | 2% |
| Breeding | \$48 | \$0.07 | \$0.04 | 3% |
| Trucking | \$3 | \$0.00 | \$0.00 | 0% |
| Insurance | \$8 | \$0.01 | \$0.01 | 0% |
| Machinery Operation | \$35 | \$0.05 | \$0.03 | 2% |
| Machinery Ownership | \$21 | \$0.03 | \$0.02 | 1% |
| Building Operation | \$18 | \$0.03 | \$0.01 | 1% |
| Building Ownership —————▶ | \$106 | \$0.15 | \$0.09 | 6% |
| Manure Storage Operation | \$0 | \$0.00 | \$0.00 | 0% |
| Manure Storage Ownership | \$4 | \$0.01 | \$0.00 | 0% |
| Manure Spreading | \$55 | \$0.08 | \$0.05 | 3% |
| Custom Boarding | \$7 | \$0.01 | \$0.01 | 0% |
| Professional Services and Fees | \$4 | \$0.01 | \$0.00 | 0% |
| Non-Performance Expenses | \$36 | \$0.05 | \$0.03 | 2% |
| Interest on Daily Investment —————▶ | \$136 | \$0.20 | \$0.11 | 8% |
| Total | \$1,682 | \$2.43 | \$1.18 | |

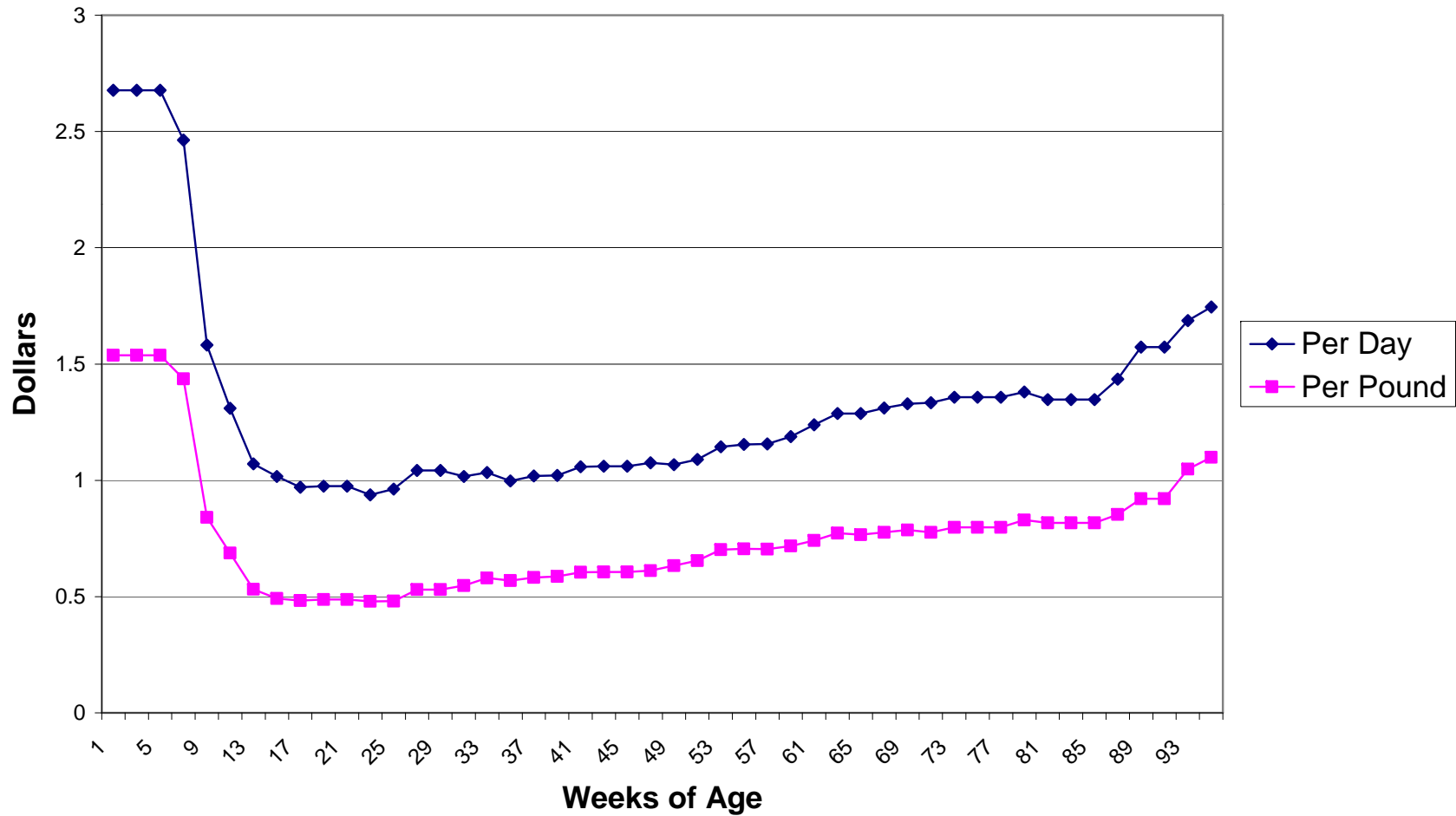
| | | | |
|------------------------------------|----------|----------|----------|
| Number of Heifers | 943 | | |
| Age, Months | 22.8 | 22 | 24 |
| Calving Weight, Pounds | 1,314 | 1,272 | 1,375 |
| Average Daily Gain | 1.77 | 1.64 | 1.88 |
| All Heifers per Labor Hour | 46.7 | 35.4 | 65.13 |
| Pre-Weaned Heifers per Labor Hour | 12.2 | 6.65 | 14.86 |
| Post Weaned Heifers per Labor Hour | 71.1 | 51.2 | 90.5 |
| Total Investment in Animal | \$1,832 | \$1,698 | \$2,072 |
| % Non-Completion Rate | 7.37 | 4.9 | 9.8 |
| Cost per Worker Equivalent | \$36,185 | \$32,572 | \$39,789 |



Average Total Heifer Raising Costs 12 New York Dairy Farms, December 2007



Average Heifer Feed Costs 12 New York Dairy Farms, December 2007



Breakdown of Costs of Raising Heifers by Stage of Growth
12 New York Dairy Farms, December 2007

Per Pound of Gain

| | Stage of Growth | | | |
|-----------------|------------------|----------------|----------------|----------------|
| | Birth to 200 Lbs | 201-700 lbs | 701-850 lbs | 851-Calving |
| Feed | \$1.362 | \$0.538 | \$0.666 | \$0.790 |
| Labor | 0.727 | 0.112 | 0.123 | 0.123 |
| All Other Costs | 0.536 | 0.383 | 0.539 | 0.551 |
| Total | \$2.625 | \$1.033 | \$1.328 | \$1.464 |

By Total Investment

| | Stage of Growth | | | |
|-------------------|------------------|----------------|----------------|----------------|
| | Birth to 200 Lbs | 201-700 lbs | 701-850 lbs | 851-Calving |
| Feed | \$149.8 | \$269.0 | \$99.8 | \$369.8 |
| Labor | 80.0 | 56.2 | 18.4 | 57.6 |
| All Other Costs | 59.0 | 191.6 | 80.9 | 258.7 |
| Total | \$288.7 | \$516.7 | \$199.2 | \$686.1 |
| % of Total Cost | 17% | 31% | 12% | 41% |
| % of Total Growth | 8% | 38% | 12% | 35% |

Questions

