

# Real Herds Real Heifers: The Cost of Raising Today's Dairy Heifer

Developed & Presented by:  
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University of Wisconsin-Extension

**Dairy  
Team**



**UW  
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# Heifers...An Investment in the Future Dairy Herd

- Providing high quality replacements for improving genetic progress
- Heifer raising second makes up 20-25% of total cost of milk production



# Intuitive Cost of Production Analysis (ICPA)

- An analysis system that calculates producer-specific costs and labor efficiencies associated with raising dairy replacements
- Evaluates cost and labor efficiencies
- Provides an economic and labor efficiency benchmark for dairy herd replacements



## Calculating the Costs...

- UW-Extension research
  - 1998-ICPA project
  - \$2.78 per calf per day from birth until moved to group housing
  - \$1.61 per heifer per day in group housing
- Due to inflation and economic dynamics in the dairy industry, these numbers are now obsolete.

# Cost Comparisons

<i>Price of:</i>	<b>1998</b>	<b>2007</b>
<b>Fertilizer:</b>		
28%	\$0.21	\$0.63
Urea	\$0.20	\$0.55
Ammonia	\$0.12	\$0.45
<b>Corn:</b>	\$1.85	\$4.03
<b>Milk:</b>	\$14.90	\$20.10
<b>Fuel:</b>		
Gas	\$1.11	\$2.99
Diesel	\$1.10	\$3.37

# 2007 ICPA Project

- 49 Wisconsin operations
  - Tiestall operations
  - Freestall operations
  - Custom calf and/or heifer grower operations
- 21 different counties
- Two enterprises
  - Calf
  - Heifer





# Heifer Enterprise

- Heifer-an animal raised in group housing to time of freshening, or in the case of the custom heifer grower, the time the heifer is returned to the producer
- 44 operations surveyed
  - 14 tiestall operations
  - 20 freestall operations
  - 10 custom heifer growers
- Feeding, management, housing and labor data collected

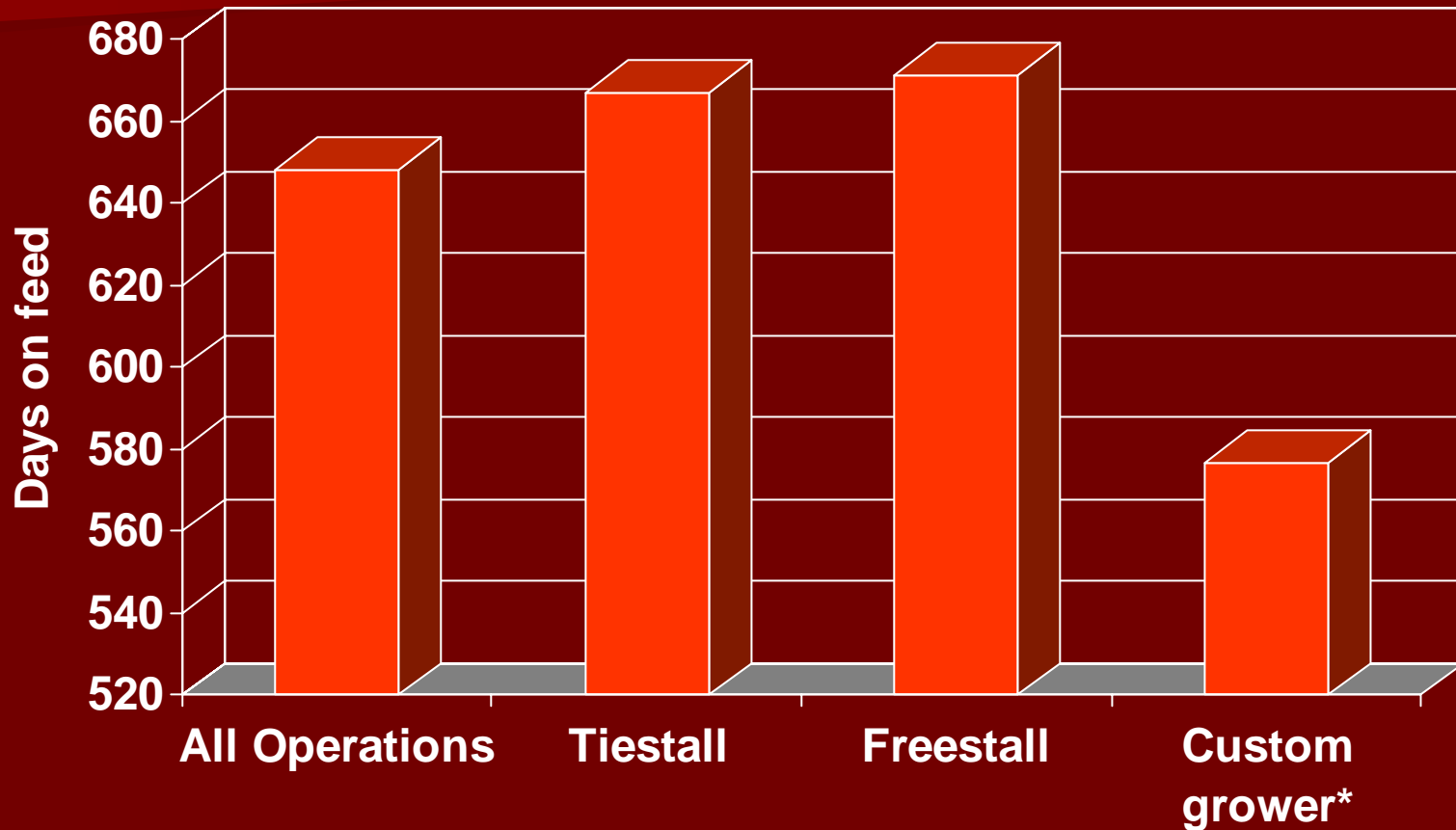


# About the operations...

	Number of heifers housed		
	Minimum	Maximum	Average
Tiestall	22	154	61
Freestall	58	482	242
Custom grower	140	910	505

# Days on Feed

(heifer housed in group setting until time she freshens\*)



\*In the case of the custom grower, when the heifer is returned to the dairy producer

# Key Assumptions...



<u>Item</u>	<u>Defined Inputs</u>
<b>Feed Costs:</b>	
<b>Legume Silage</b>	<b>\$100 per ton DM</b>
<b>Corn Silage</b>	<b>\$85 per ton DM</b>
<b>Corn</b>	<b>\$116 per ton DM</b>
<b>Weigh-backs</b>	<b>\$100 per ton DM</b>
<b>Soybean Meal</b>	<b>\$200 per ton DM</b>
<b>Labor</b>	<b>\$12.00 per hour</b>
<b>Management</b>	<b>\$20.00 per hour</b>
<b>Interest rate</b>	<b>8.0%</b>

# Replacement Value of Heifer Facilities

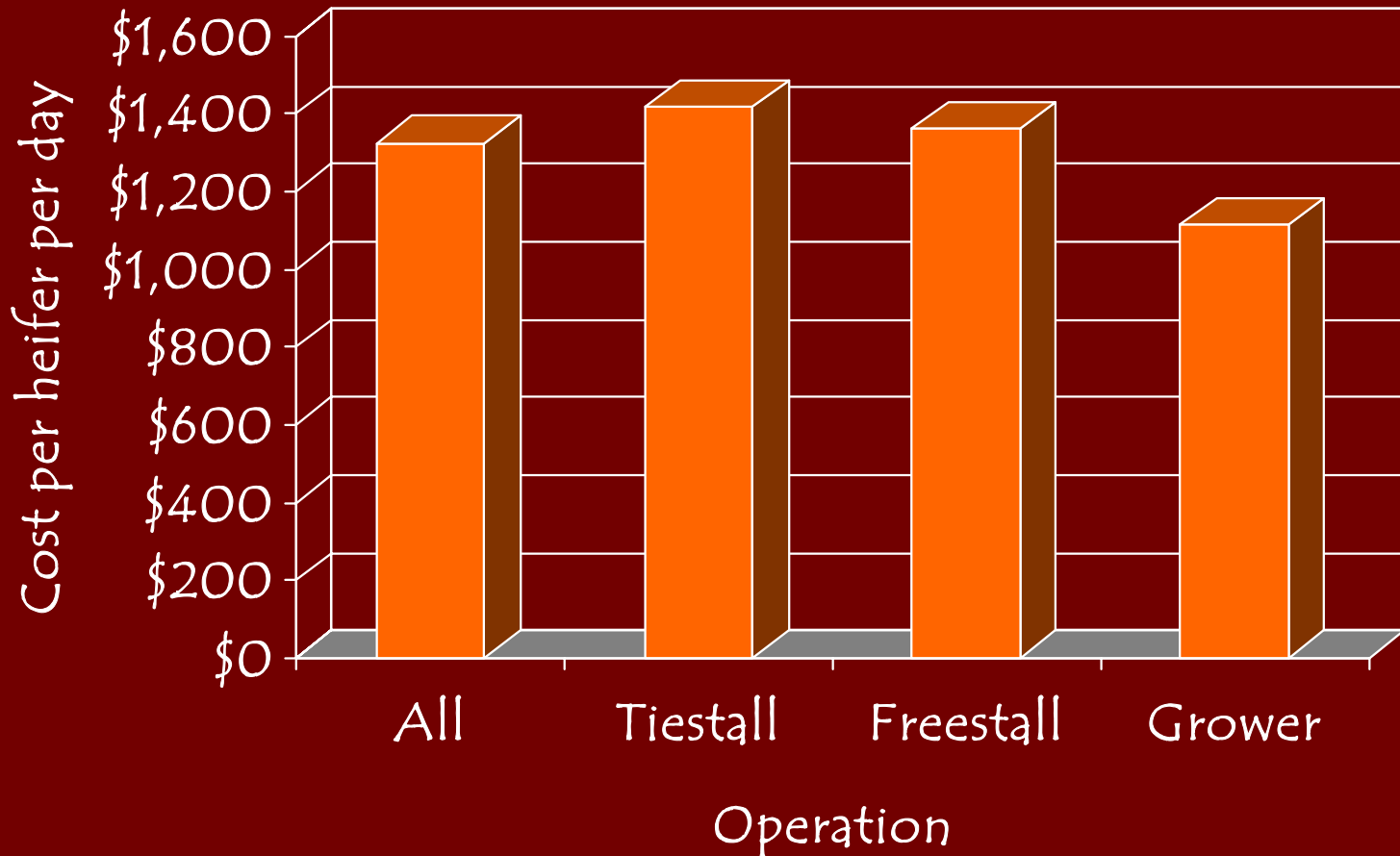
<u>Item</u>	<u>Replacement Value</u>
Bedded Pack Barn	\$15 per square foot
Freestall Barn	\$20 per square foot
Mound System or Dirt Lot	\$0.09 per square foot
Concrete Lot	\$3 per square foot

# Cost of Raising a Heifer in Wisconsin\*

	<b>Average</b>	<b>Lowest Operation</b>	<b>Highest Operation</b>
<b>Total Cost</b>	\$1322.71	\$850.89	\$1900.05
<b>Daily Cost</b>	\$2.04	\$1.23	\$2.38
<b>Days on Feed</b>	690.1	648.3	797.0
<b>Calving Age (months)</b>	24.5	23.9	25.0

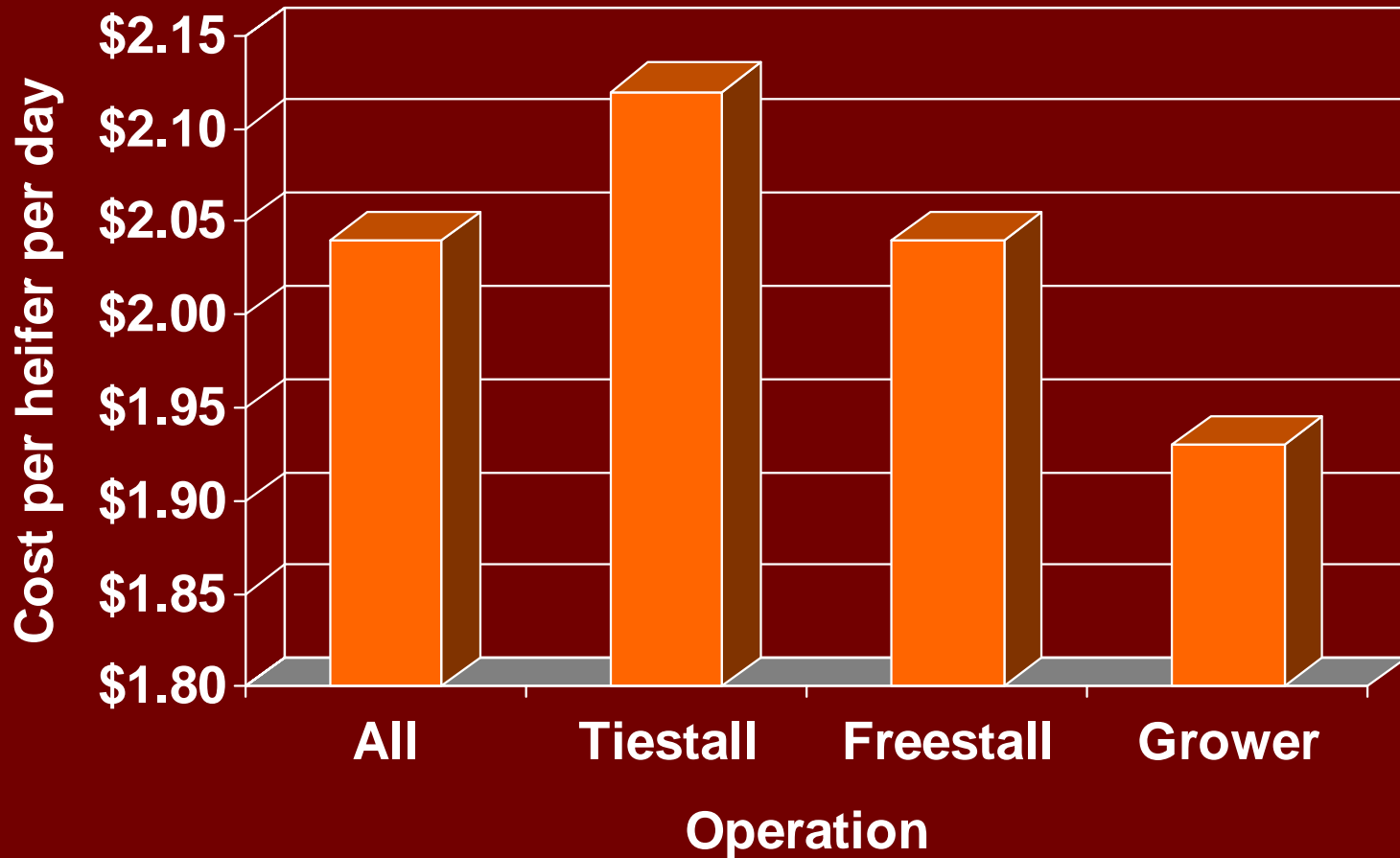
**\*Does not include \$500 calf value**

# Total Heifer Raising Costs\*



\*Does not include \$500 calf value

# Daily Heifer Raising Costs\*



\*Does not include \$500 calf value

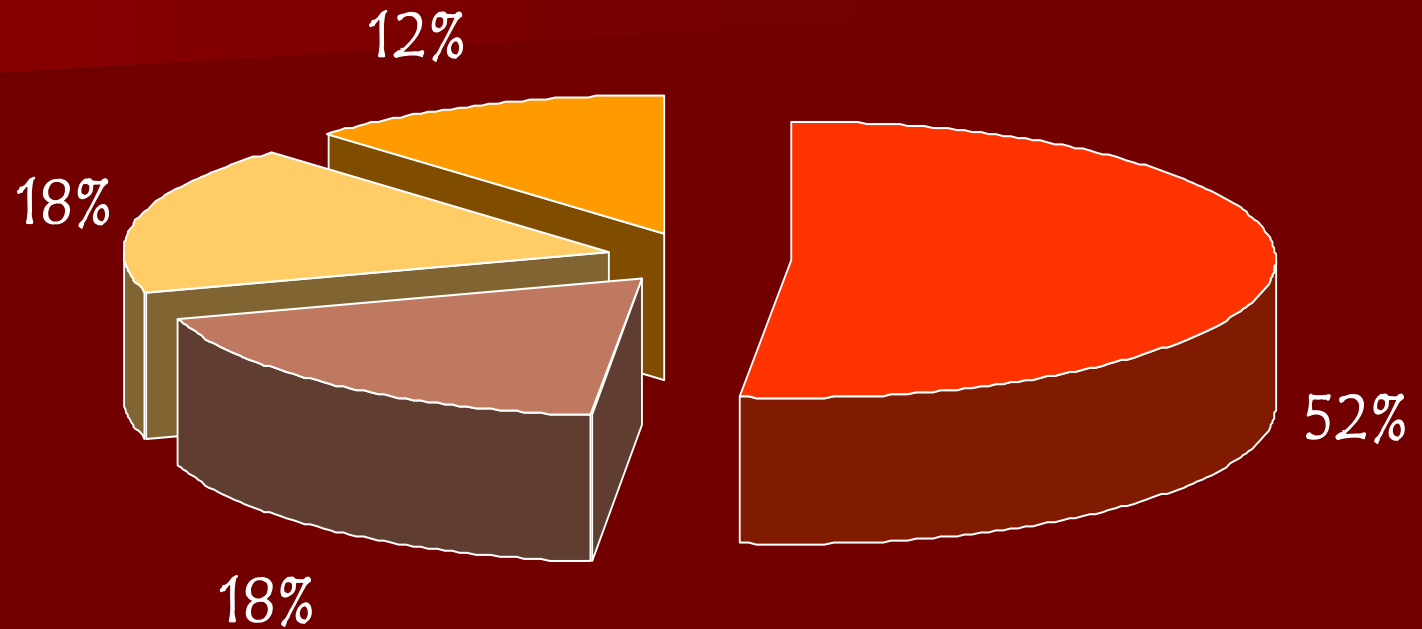


# Management Areas



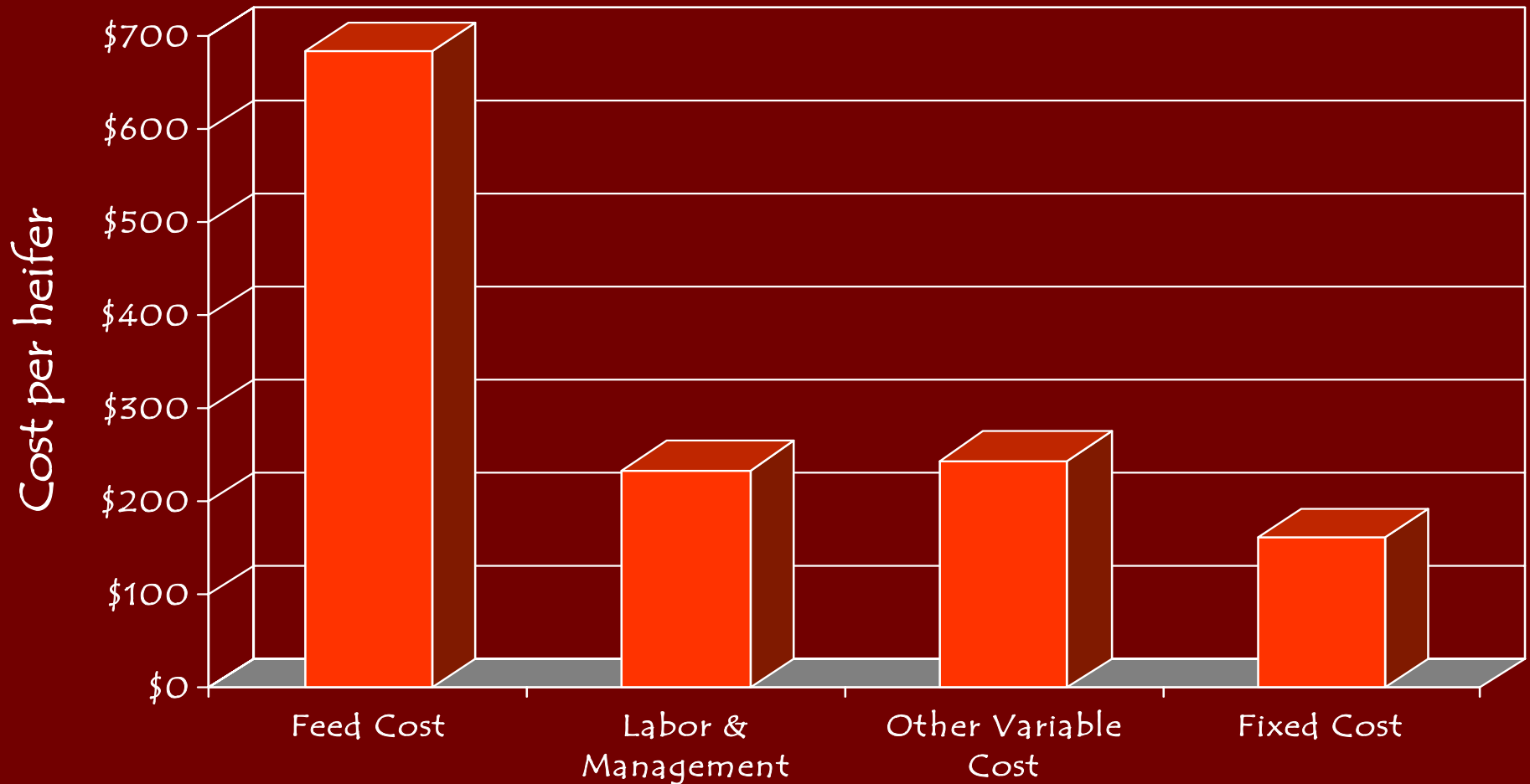
- Feed Costs
- Labor and Management
- Other Variable Costs
  - Bedding
  - Breeding
  - Veterinary
  - Death loss
  - Interest
- Fixed Costs
  - Buildings
  - Equipment

# Cost centers

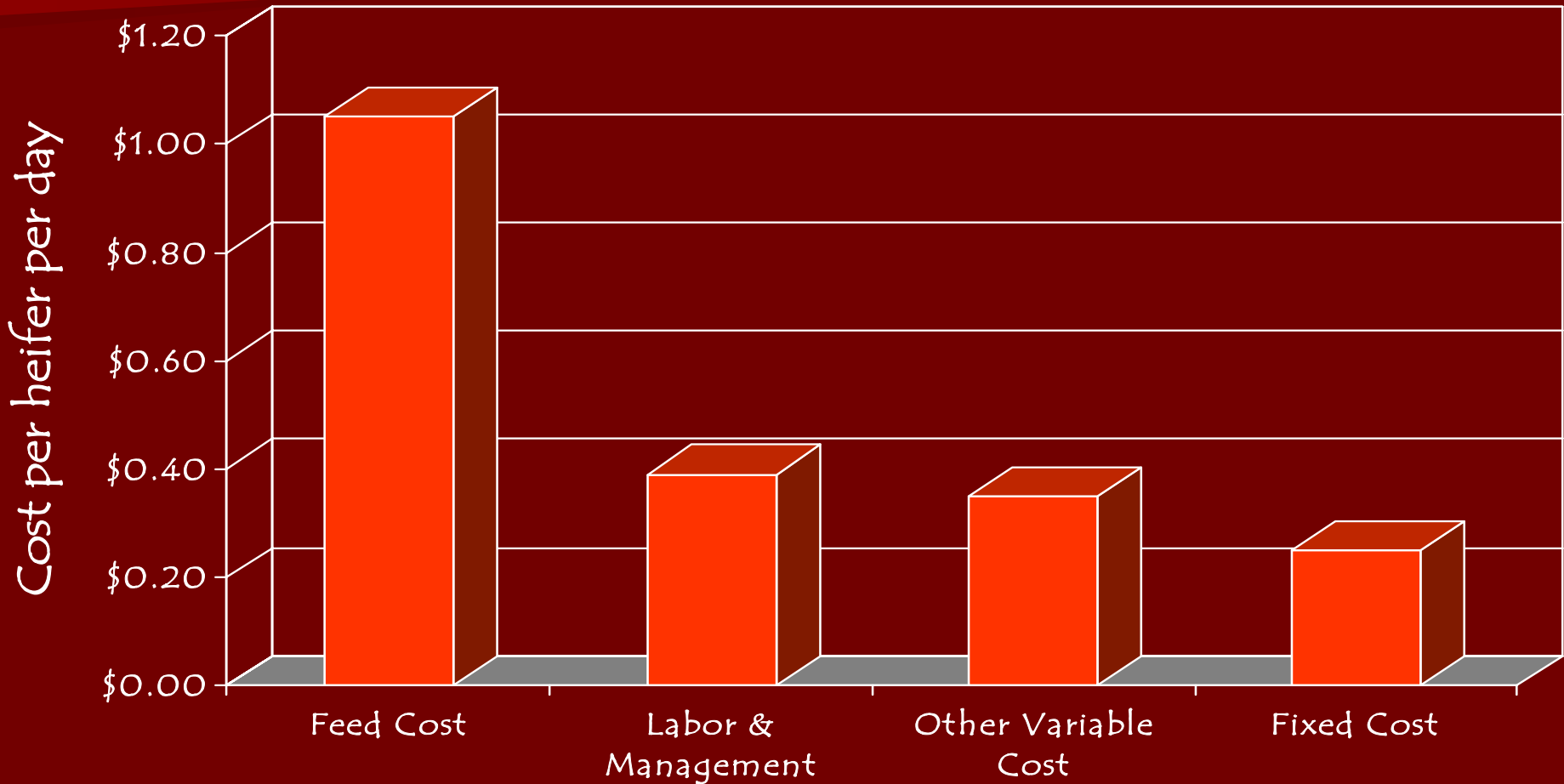


- Feed Cost
- Labor & Management
- Other Variable Costs
- Fixed Costs

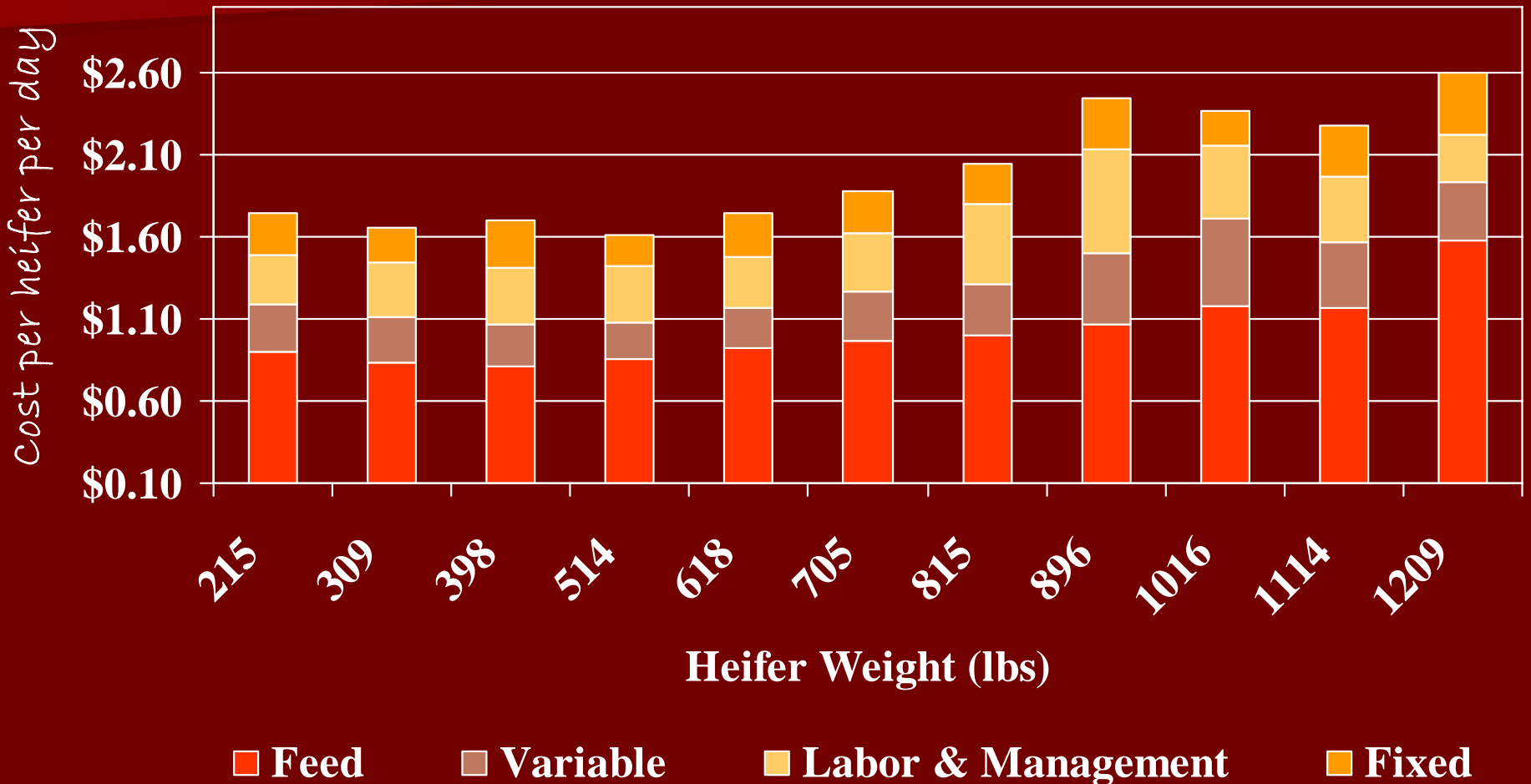
# Total Heifer Raising Costs



# Daily Heifer Raising Costs

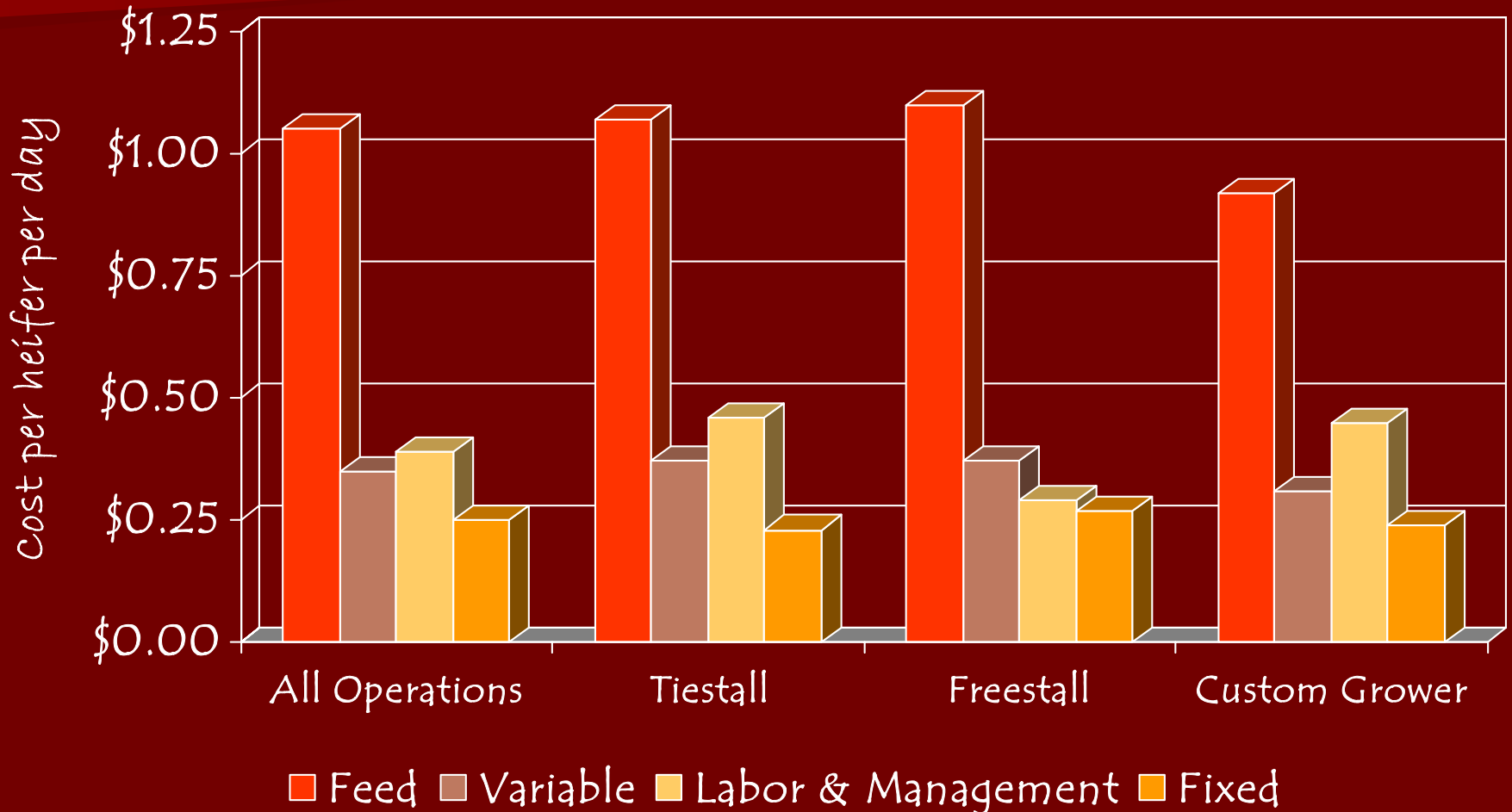


# Heifer Raising Costs by Weight\*



\*Does not include \$500 calf value

# Daily Heifer Raising Costs by Operation\*



\*Does not include \$500 calf value

# Cost Per Day To Raise A Heifer

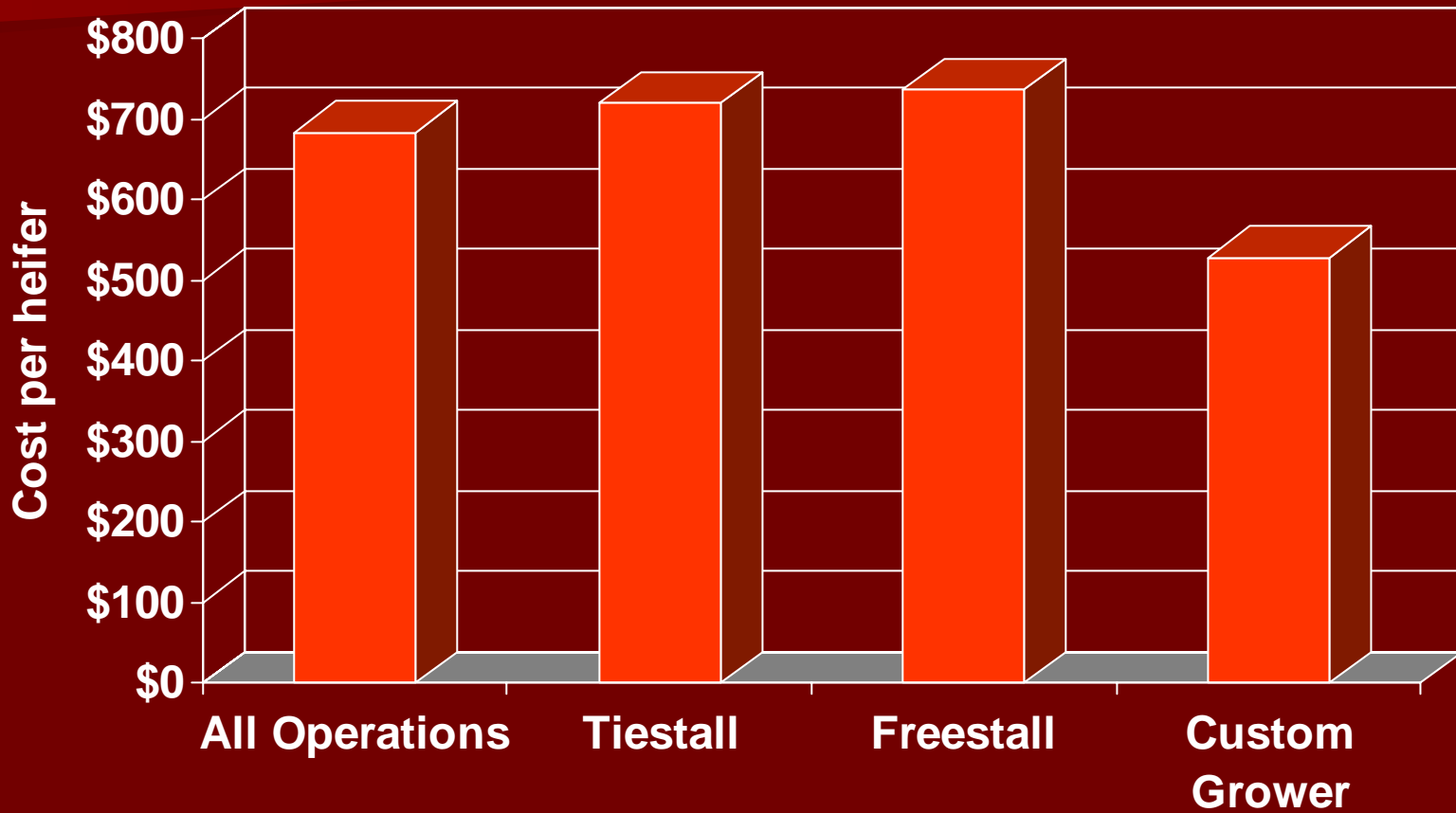
## Heifer Cost per Day\*

	Tiestall	Freestall	Grower	All
<b>Feed Costs</b>	<b>\$1.07</b>	<b>\$1.10</b>	<b>\$0.92</b>	<b>\$1.05</b>
<b>Labor &amp; Management</b>	<b>\$0.46</b>	<b>\$0.29</b>	<b>\$0.45</b>	<b>\$0.39</b>
<b>Other Variable Costs</b>	<b>\$0.36</b>	<b>\$0.38</b>	<b>\$0.32</b>	<b>\$0.36</b>
<b>Fixed Costs</b>	<b>\$0.23</b>	<b>\$0.27</b>	<b>\$0.24</b>	<b>\$0.25</b>
<b>Total Cost</b>	<b>\$2.12</b>	<b>\$2.04</b>	<b>\$1.93</b>	<b>\$2.05</b>

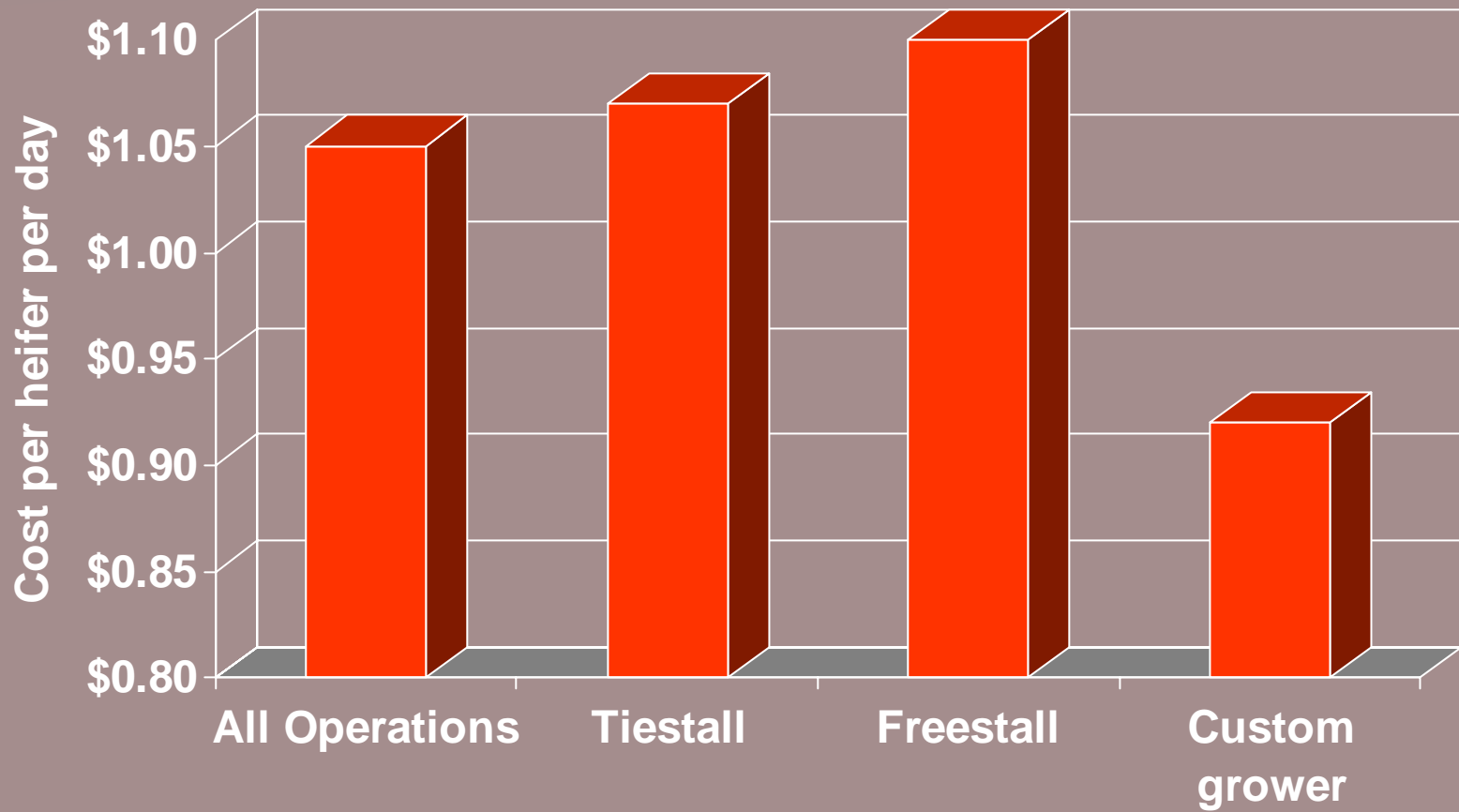
\*Does not include \$500 calf value



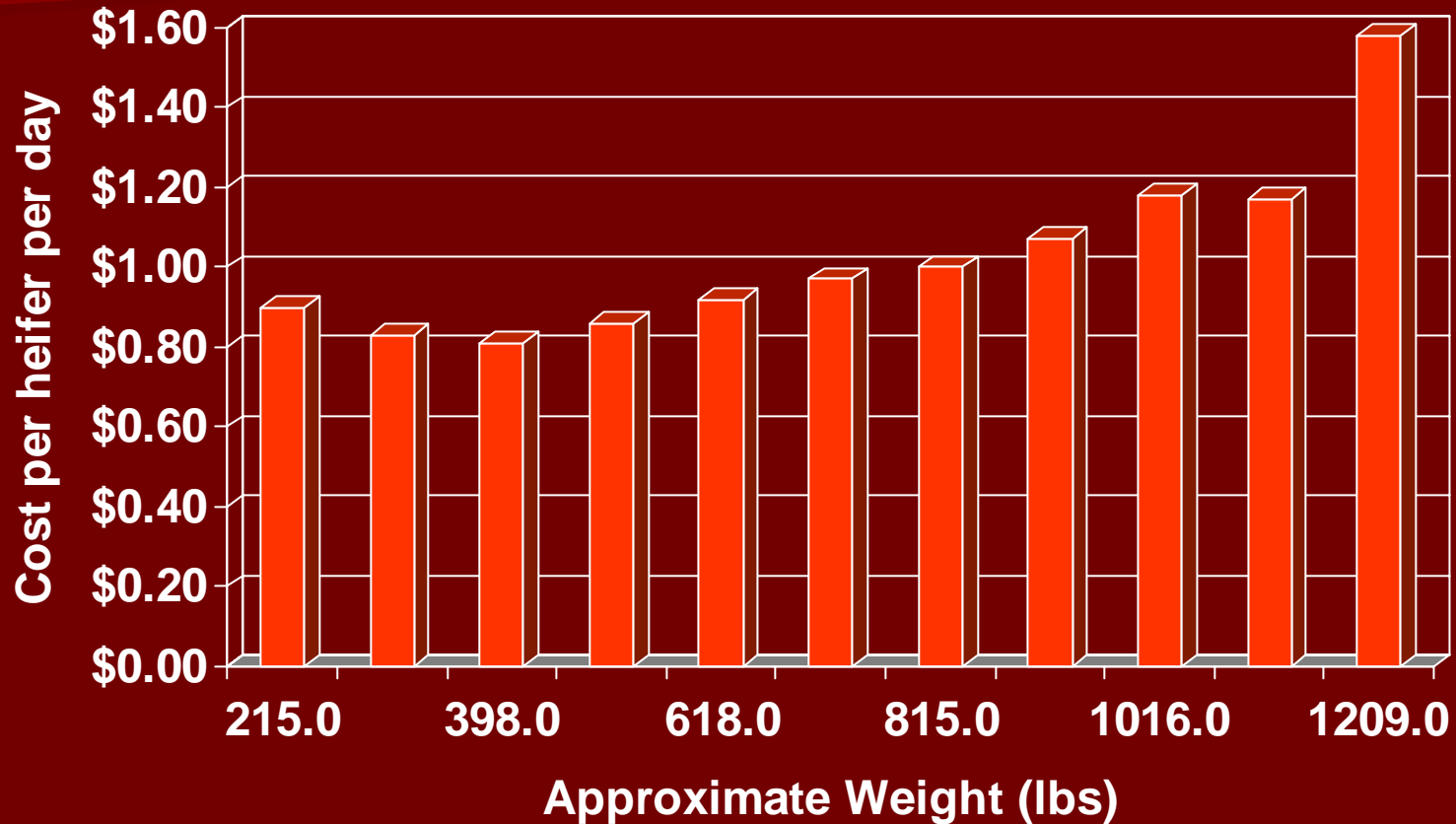
# Feed Costs



# Daily Feed Costs



# Effect of Weight on Feed Costs



# Labor & Management

- Paid and unpaid labor and management considered
- Established values:
  - Labor \$12 per hour
  - Management \$20 per hour
- Labor
  - Daily
  - Weekly
  - Monthly
- Management
  - Weekly
  - Monthly
  - Yearly`

# Labor Cost & Efficiencies Associated with Raising a Heifer

Item	Unit	Average
Labor & Management	\$ per heifer	\$244
Labor & Management	Minutes per heifer per day	—
	Hours per heifer	9
Labor Efficiency	Heifers per person per hour	50
	Heifers per person per day*	402

\*Eight-hour work day

# Determine Your Labor Efficiency

	Example: 100 cow/100 heifer operation	Hours per day	Your farm
<b>Labor requirements</b>			
Daily	3.0 hours x 1 day	=3.0 hours	
Weekly	1.0 hours per week/7 days per week	=1.4 hours	
Monthly	2.0 hours per month/30 days per month	=0.07 hour	
<b>Management Requirements</b>			
Weekly	1.0 hour per week/7 days per week	=0.14 hour	
Monthly	1.0 hour per month/30 days per month	=0.03 hour	
Yearly	2 hours per year/365 days per year	=0.1 hour	
<b>Time to haul heifer manure</b>	5 hours per year/365 days per year	=0.1 hour	
<b>Total</b>		<b>=3.4 hours per day or 1,241 hours per year</b>	

# The Cost Benefit of Efficiency

- Farmer 1:
  - 47.3 Heifers/Hour = 1.3 Minutes/Heifer
  - \$12 an hour for labor
  - It costs \$0.25 heifer/hour
  - 378.6 heifers/day @ \$0.25/heifers/hour=\$94.65/day
- Farmer 2:
  - 69.7 Heifers/Hour = .86 Minutes/Heifer
  - \$12 an hour for labor
  - It costs \$0.17 heifer/hour
  - 557.6 heifers/day @ \$0.17/heifer/hour=\$94.79/day
- **Cost Difference= \$0.08/heifer/hour and 179 heifers per day!**



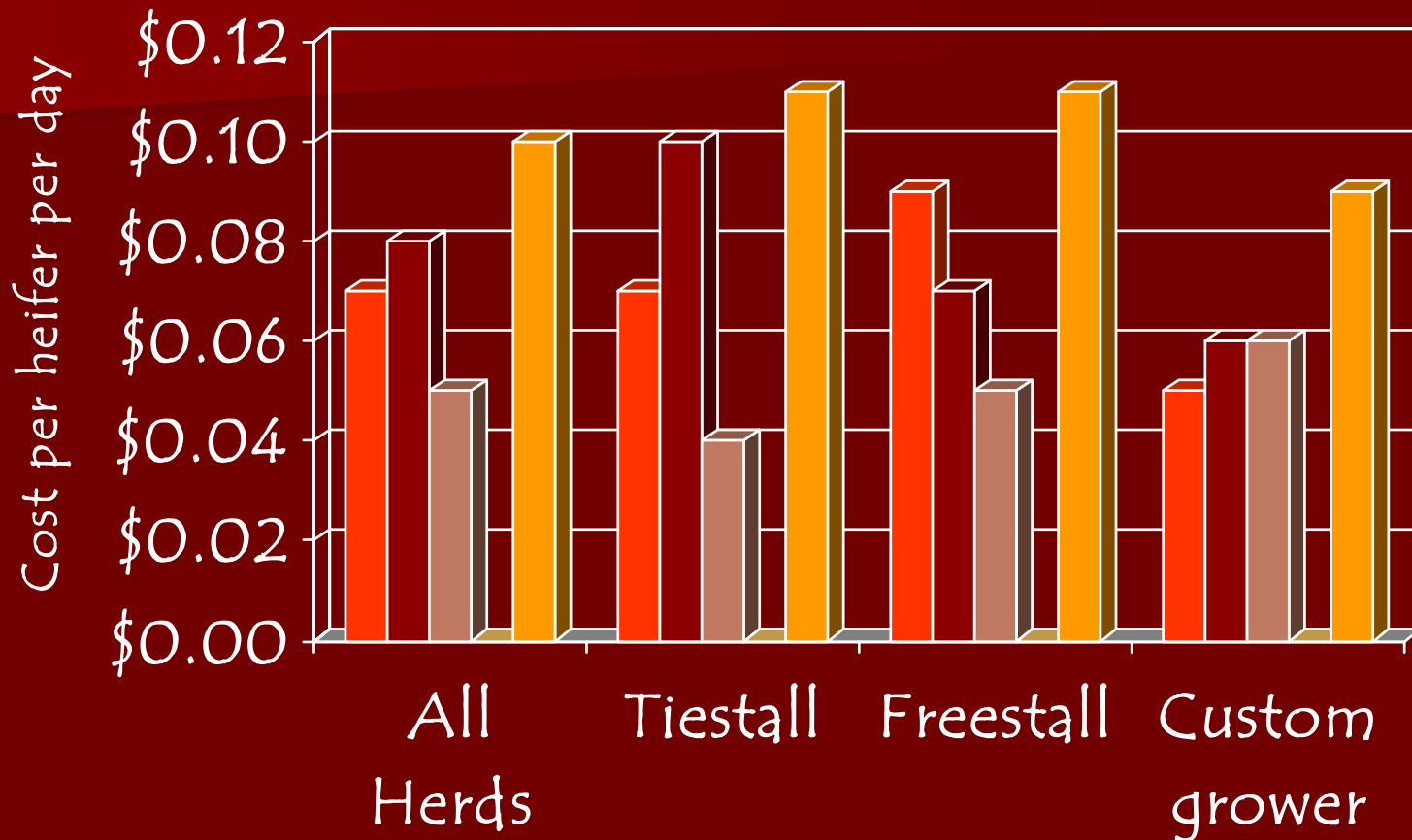
# Labor Saving Ideas for Heifers

- Hand drawn or powered equipment and feed carts
- Convenient feed storage
- Manure scrapers
- Animal handling system
- Headlocks
- Drive-by feeding
- Equipment storage room
- Medication tool belt
- Pen or hutch arrangement



*Source: Compiled by P.C. Hoffman, University of Wisconsin,  
2002 - "Raising Dairy Replacements".*

# Other Variable Costs



Bedding

Breeding\*

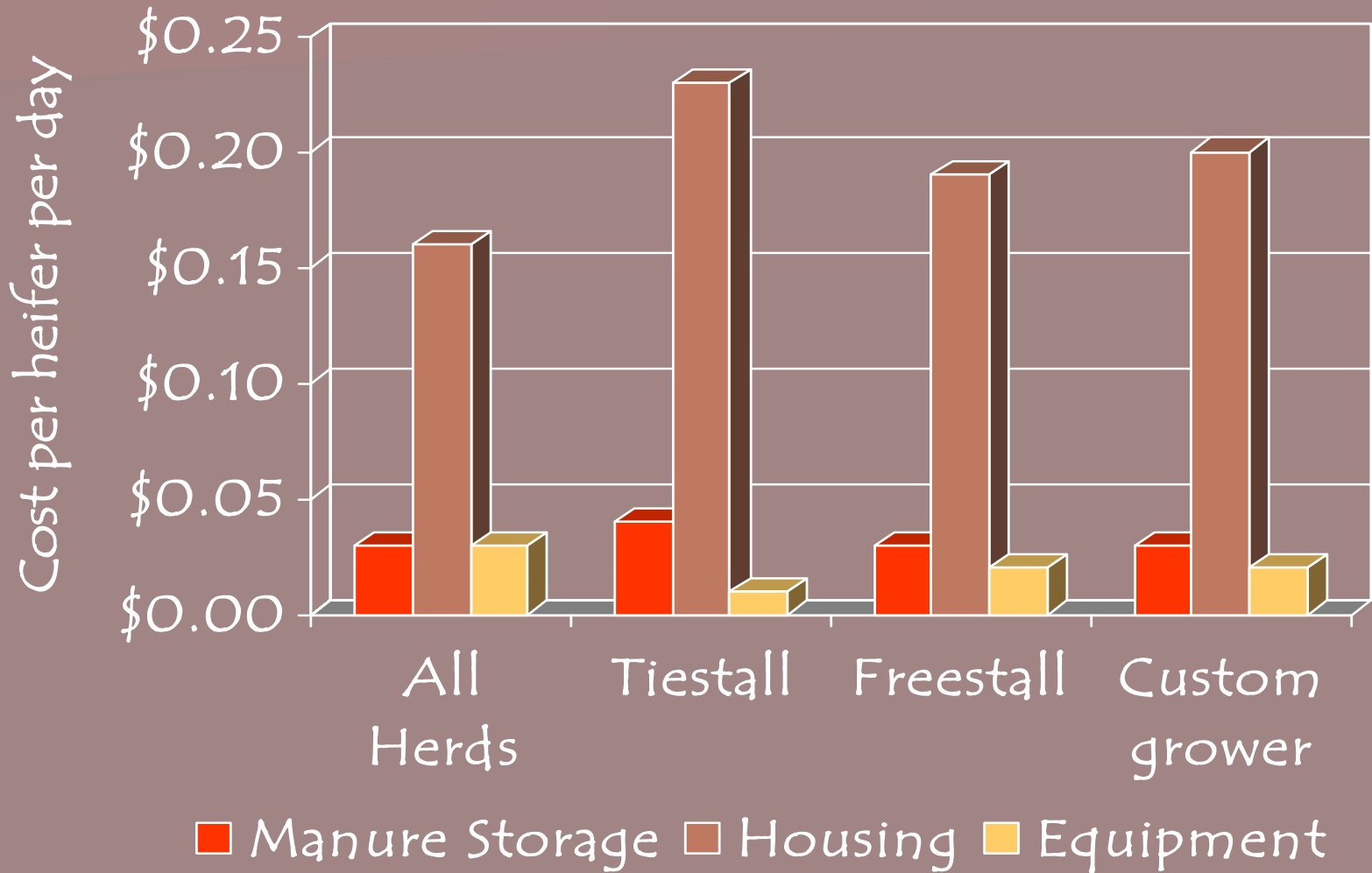
Veterinary

Death Loss

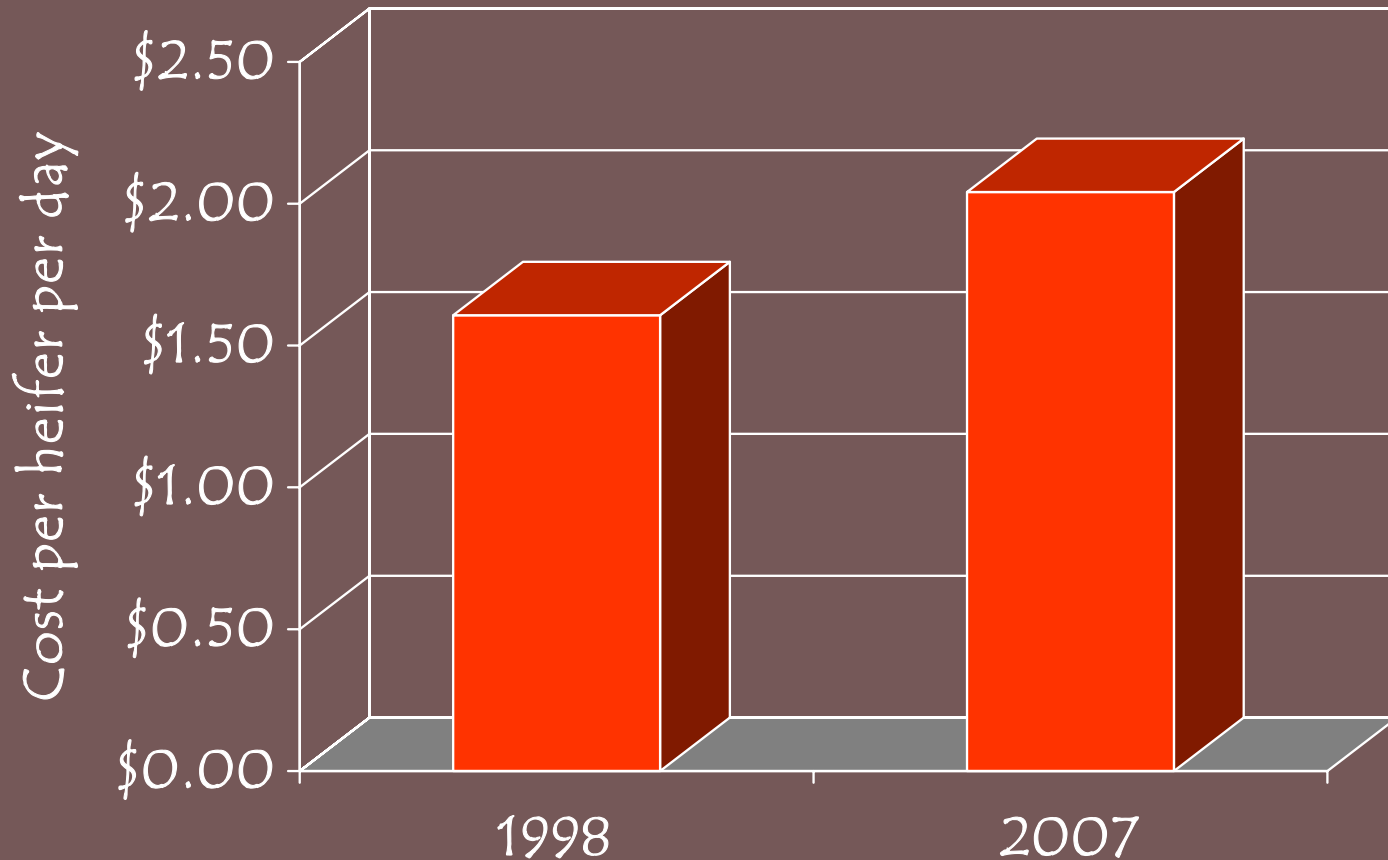
Interest

\*Five custom growers reported no breeding expenses

# Fixed Costs



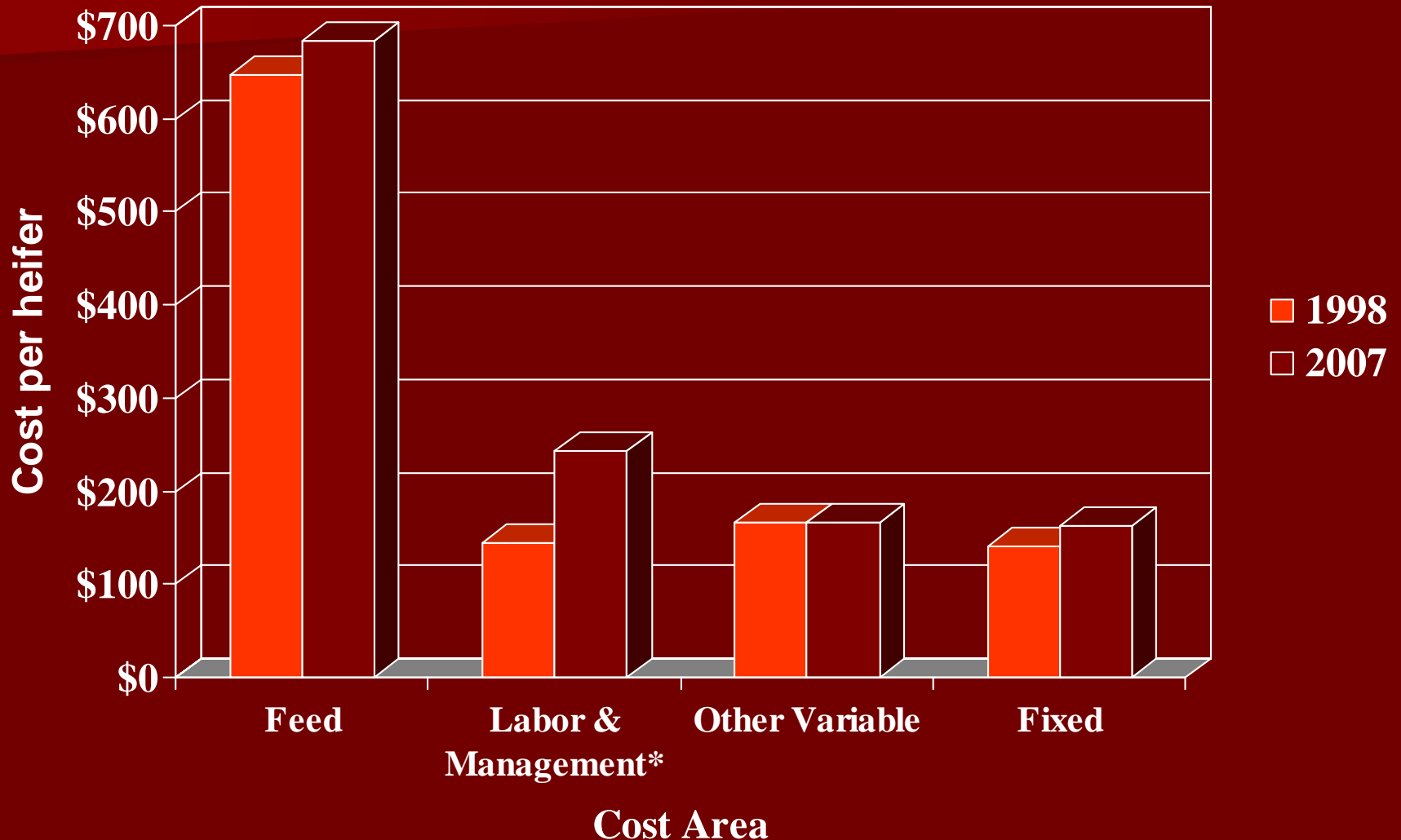
# Comparison of Daily Heifer Raising Costs\*



\*Does not include \$500 calf value

# Comparison of Heifer Raising Costs

1998 versus 2007



\*Labor & Management Costs were \$7 and \$12 per hour, respectively in 1998 and \$12 and \$20 per hour, respectively in 2007.

# Changes in Costs Associated with Raising Heifers

		Cost per heifer		
		1998	2007	% Change
Variable	Feed	\$647.15	\$683.66	5.6
	Bedding	\$29.07	\$49.07	68.8
	Veterinary	\$37.66	\$32.68	-13.2
	Breeding	\$26.07	\$48.48	85.9
	Electrical & Fuel	\$34.74	\$33.66	-3.1
	Interest	\$32.92	\$66.93	103.3
	Death Loss	\$6.33	\$2.57	-59.4
	Labor (Paid & Unpaid) <sup>1</sup>	\$128.40	\$216.40	68.5
	Management (Paid & Unpaid) <sup>1</sup>	\$15.96	\$27.53	72.5
Fixed	Manure Storage	\$22.44	\$19.72	-12.1
	Housing	\$93.09	\$129.32	38.9
	Equipment	\$24.79	\$12.70	-48.8
<b>Total Cost<sup>2</sup></b>		<b>\$1,099.12</b>	<b>\$1,322.70</b>	<b>20.3</b>

<sup>1</sup>Labor & Management Costs were \$7 and \$12 per hour, respectively in 1998 and \$12 and \$20 per hour, respectively in 2007.

<sup>2</sup>Does not include the value of the calf (\$100 in 1998 and \$500 in 2007).

# Changes in Management

	1998	2007	% Change
<b>Calving Age (months)</b>	<b>24.6</b>	<b>23.9</b>	<b>-3.0</b>
<b>Days on Feed</b>	<b>683.0</b>	<b>648.3</b>	<b>-5.1</b>

# Changes in Labor Cost & Efficiency

		1998	2007	% Change
<b>Labor &amp; Management<sup>1</sup></b>	<b>\$ per heifer</b>	<b>\$144.36</b>	<b>\$243.93</b>	<b>69.0</b>
	<b>Hours per heifer</b>	<b>9</b>	<b>9</b>	<b>-0.4</b>
<b>Labor Efficiency</b>	<b>Heifer per person per hour</b>	<b>54</b>	<b>50</b>	<b>-6.6</b>
	<b>Heifer per person per day</b>	<b>429</b>	<b>402</b>	<b>-6.4</b>

<sup>1</sup>Labor & Management Costs were \$7 and \$12 per hour, respectively in 1998 and \$12 and \$20 per hour, respectively in 2007.



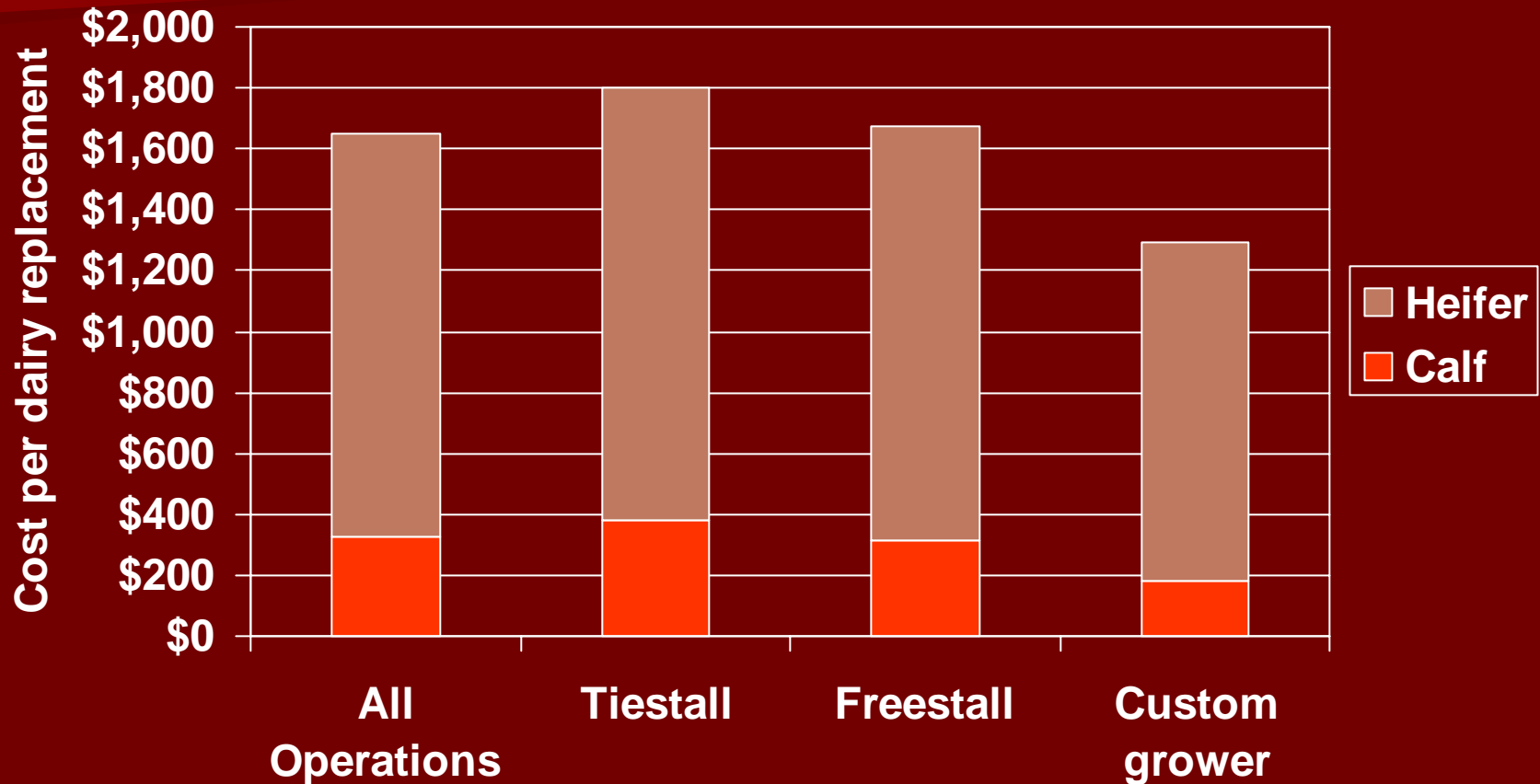
# Cost from Birth to Freshening



# Cost of Raising a Heifer in Wisconsin

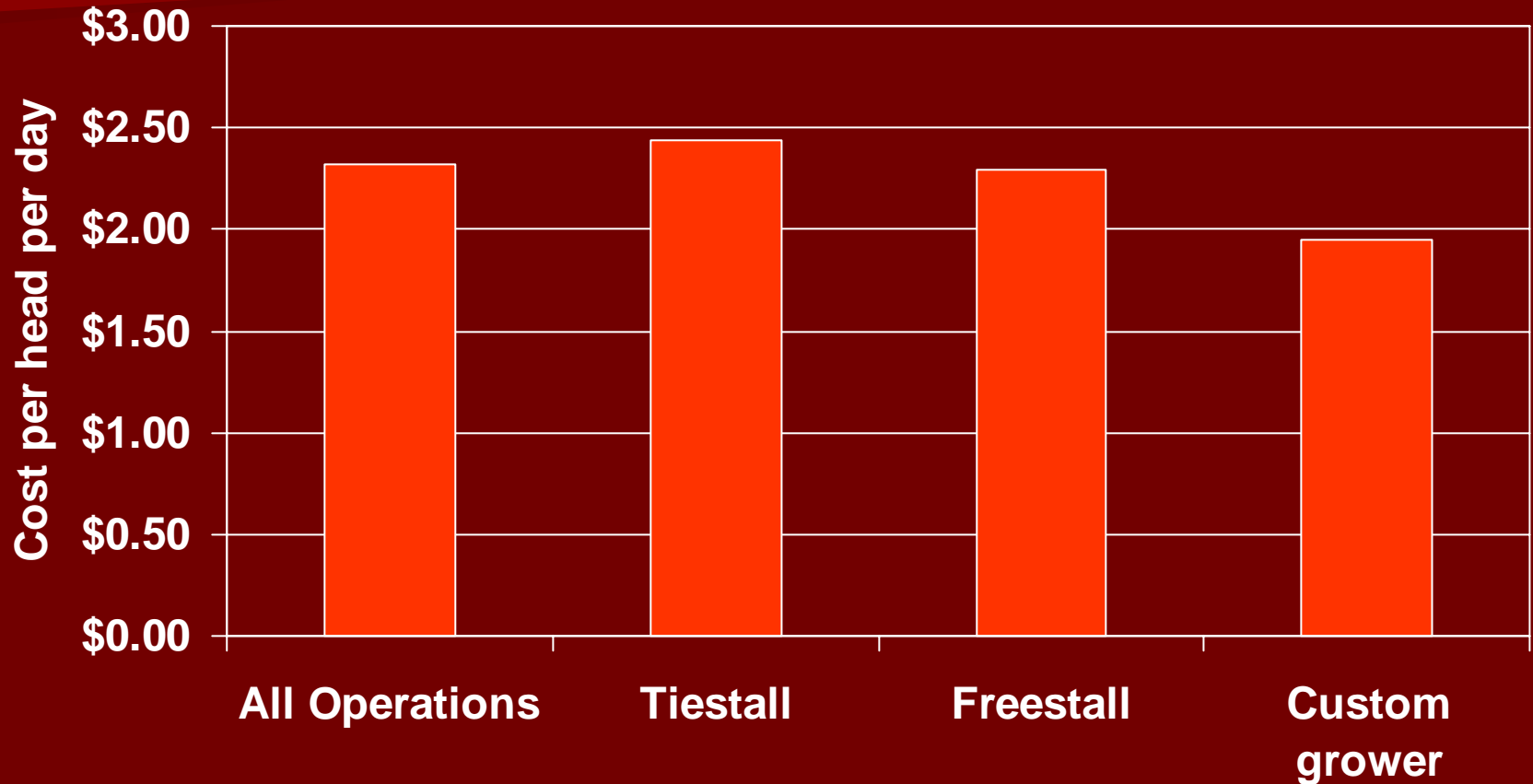
	<b>Average</b>	<b>Lowest Operation</b>	<b>Highest Operation</b>
<b>Total Cost</b>	\$2148.79	\$1595.10	\$2935.13
<b>Daily Cost</b>	\$3.02	\$2.21	\$3.41
<b>Days on Feed</b>	721	710	860
<b>Calving Age (months)</b>	24.5	23.9	25.0

# Total Cost to Raise A Dairy Replacement from Birth to Freshening\*



\*Does not include \$500 calf value

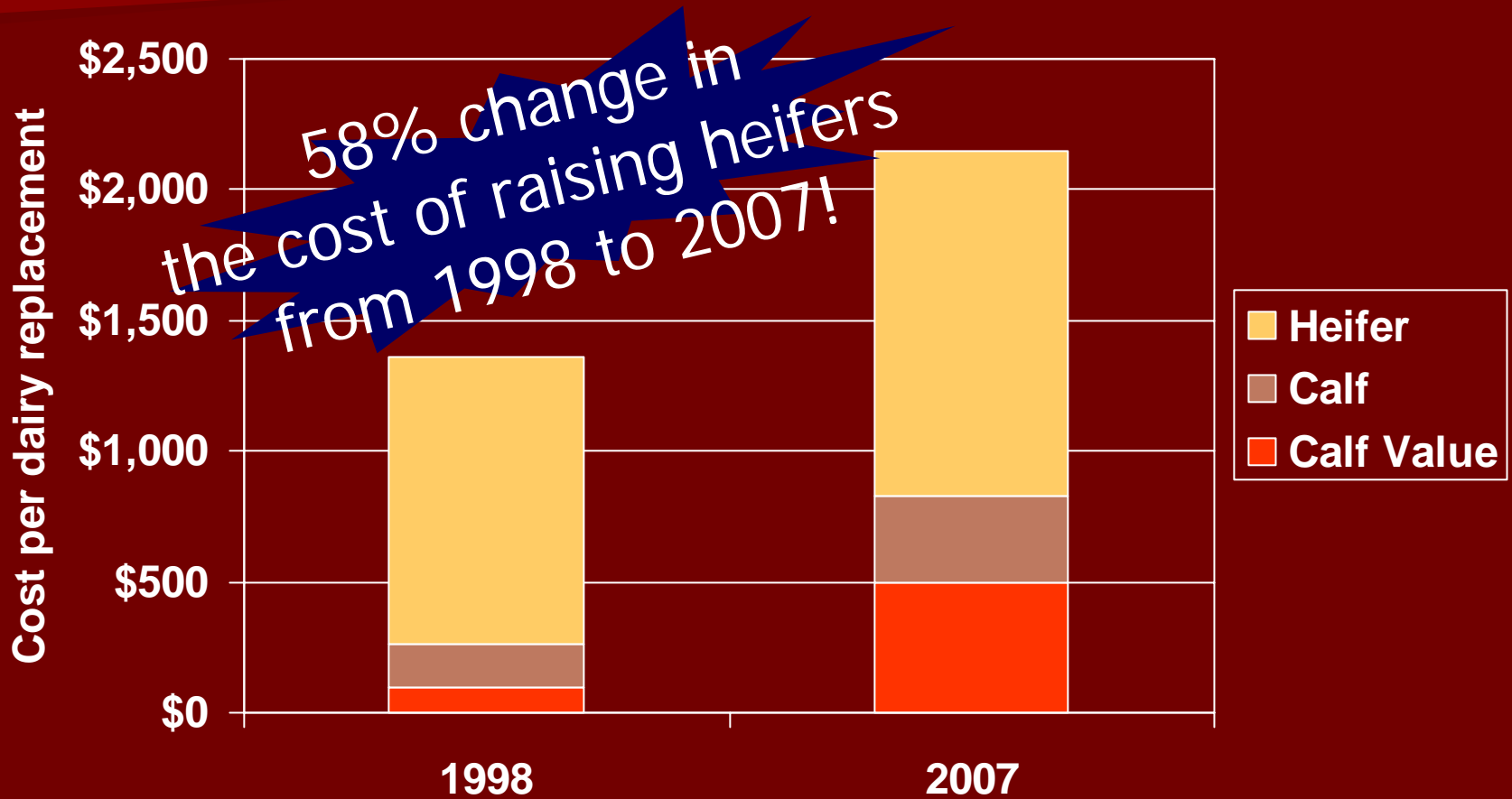
# Daily Cost to Raise A Dairy Replacement from Birth to Freshening\*



\*Does not include \$500 calf value

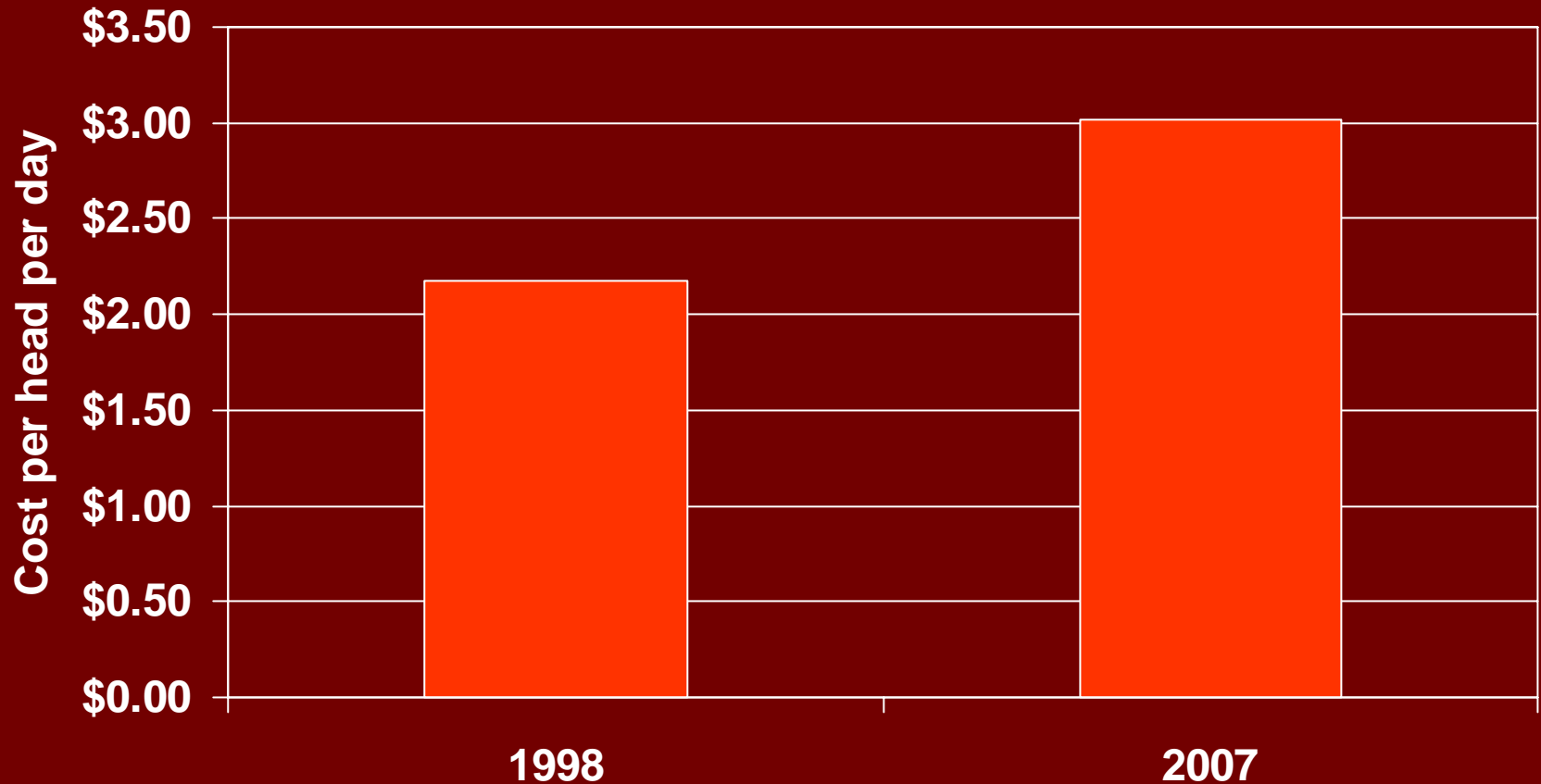
# Total Cost to Raise A Dairy Replacement from Birth to Freshening

1998 versus 2007



# Daily Cost to Raise A Dairy Replacement from Birth to Freshening

1998 versus 2007



# Management Changes

	1998	2007	% Change
Weaning Age (weeks)	7.4	7.0	-4.8
Days on Feed (Calf)	59.7	61.4	2.8
Days on Feed (Heifer)	683.3	648.3	-5.1
Total Days on Feed	743.0	709.7	-4.5
Calving Age	24.6	23.9	-3.0



# The Cost of Raising Dairy Replacements

- We must take into account each year what our costs are for raising our replacement heifers. If we don't, normal inflation will take over!!
- Pay close attention to volatile areas (ex: milk replacer costs)



# Opportunities to Cut Costs?



- Labor?
- Feed?
- Facilities?
- Variable Costs?

# Goals of Raising Heifers

## ■ Nutrition:

### – Rate of Gain

- Birth to weaning: 1.3-1.8 lbs per day
- Breeding to calving: 1.9-2.1 lbs per day

### – Body Condition Score:

- Birth to Breeding: 2.00 to 2.75
- Breeding to Calving: 2.75 to 3.50

# Goals in Raising Heifers

Age/Weight at 1 <sup>st</sup> heat	5-6 months at 500-600 lbs
Age/Weight at 1 <sup>st</sup> breeding	13-15 months at 750-800 lbs
Service Rate	80% of heifers serviced within 21 days of target breeding age/weight
Projected age at 1 <sup>st</sup> calving	22-24 months
Projected weight at 1 <sup>st</sup> calving	85% of mature body size

# Management & Economics Influences Costs

## ■ Management Concerns

- Herd morbidity and mortality rates
- Age at first calving
- Herd replacement rates

## ■ Economic Concerns

- Ownership Costs
- Operating Costs



# Minimize Morbidity & Mortality

- Good dry cow vaccination program
- Colostrum management program
- Sanitation
- Proper nutrition and care of newborn
- Preventative measures
- Good health practices

# Number of Replacements Needed to Maintain Current Herd Size

Herd Size	Cull Rate per Year			
	25%	30%	35%	40%
70	18	21	25	28
90	23	27	32	36
100	25	30	35	40
125	31	38	44	50
150	38	45	53	60
200	50	60	70	80
300	75	90	105	120

Source: Management of Dairy Heifers, Penn State University Cooperative Extension

# Age at First Calving Affects Costs

	Age at First Calving (months)				
	22	24	26	28	30
Cull rate (%)	Number of dairy replacements needed for a 100-cow dairy with 10% heifer cull rate				
26	53	58	63	67	72
30	61	66	72	78	83
34	69	76	82	88	94
38	77	84	92	99	106
42	86	93	101	109	117

Source: Penn State University, [www.extension.org/pages/Heifer\\_Economics](http://www.extension.org/pages/Heifer_Economics)



# Other impacts affecting the bottom line...

- Number of dairy replacements required to maintain herd size
- Quality of heifers raised and how they will perform as milk cows
- Investment tied up in items as buildings and number of animals due to management areas such as delayed age of first calving





# Economic Concerns

## ■ Ownership Costs

– Buildings

– Equipment

– Property

– Machinery

– Depreciation

– Interest

– Repairs

– Taxes

– Insurance

# Change can make a difference

- Lower the cost by 10% through better management
  - Lower the cost through better forages, nutrition, labor efficiency or other management areas while maintaining or improving heifer quality
- Reduce age at first calving
  - Goal 22-24 months
- Lower the dairy herd cull rate-requiring fewer heifers to maintain herd size
- Lower the heifer culling rate
  - Cut costs attached to raising animals that never enter the milking herd

# Other Areas of Improvement

- Feed a lower cost source of liquid feed to young calves
- Feed high quality and palatable concentrates to younger animals
- Analyze forages and run ration formulations for all major groups
- Monitor group size and age/weight variation within groups
- Use proven feed additive to improve growth and feed efficiency
- Keep weight gains steady
  - 1.8 pounds per day before 9 months of age
  - 2.0+ pounds per day after 9 months of age

# Advantages of Custom Heifer Raising

## ■ For the producer:

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

## ■ For the grower:

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

# Disadvantages of Custom Heifer Raising

## ■ For the producer:

- Lose outlet for low quality feeds
- Lose management control
- Producer/grower conflicts
- Possibly poorer quality replacements
- Fixed cost of non-use replacement facilities


## ■ For the grower:

- Increased repair requirements of facilities
- Producer/grower conflicts
- Increased farm presence



# What do we do with these numbers?

- The purpose of this information is to serve as BENCHMARK data for dairy producers and custom calf and heifer growers.
- We are not telling you what it should cost you, or what you should be charging... this data allows you to compare yourself to other Wisconsin operations!

A group of black and white dairy cows are grazing in a lush green field. The cows are the central focus, with their heads and backs visible. The background is a soft-focus green field under a bright sky. A semi-transparent grey box is overlaid on the image, containing the text in a yellow, handwritten-style font.

The ultimate goal  
is to raise  
a quality dairy heifer

# Thank You...



**For more information please contact:**

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