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NO COWS ARE SACRED, BUT ALL COWS HAVE A SACRED TIME

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March 3, 2020

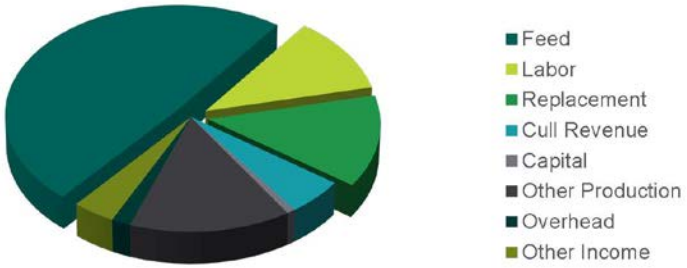
HISTORICAL MARGINS

NFI, $/cwt ECM (by accounting year)

- Net Farm Income Average: $0.84; Range ($6.34) - $8.39
- Farm and year accounted for 71% of variation in profit

SOME GOOD, SOME BAD YEARS; 2015 - 2018 WERE NOT PROFITABLE

COST OF PRODUCTION



Definition: The milk price necessary to cover all costs associated with the production of milk. It maintains the dollars of net worth of the business. Cost of production includes all operating costs, interest and management level depreciation minus non milk revenue. Cost of production does not include principal payments or capital purchases. The cost of production will be divided by the energy corrected milk production for that period to determine the cost of production/cwt.

SUCCESSFUL MANAGEMENT → OPPORTUNITY

- **Successful dairy management can create opportunities to manage heifer inventory more effectively**
- **Strong reproduction, calving and calf health programs can create excess heifer inventory**
- **How do we manage this inventory as efficiently as possible to ensure that retained replacements represent a wise investment in the herds future?**

OPTIMAL INVENTORY MANAGEMENT

- **Replacements coming in**
  - Number
  - Quality
  - Development cost

» **Herd Removals**
- Number
- Timing
- Cull value
- Type
  - Voluntary
  - Involuntary
  - Size of heifer inventory

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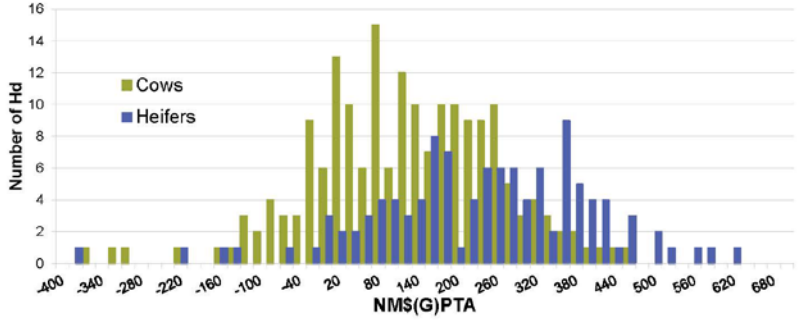
GENETIC PROGRESS AND HEIFER RETENTION

- **On average, heifers should have greater genetic merit than cows in traits under selection, but not all heifers are better than the cows already in the herd**



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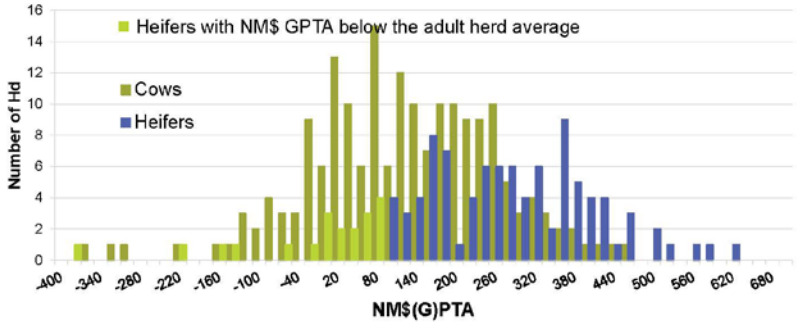
ATTENTION TO QUALITY

- **On average, heifers should have greater genetic merit than cows in traits under selection, but not all heifers are better than the cows already in the herd**



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OPTIMAL INVENTORY MANAGEMENT

Replacements

Culling models typically assume the genetic merit of all heifers is the same, but that's not the case. We need to focus on both heifer quantity and quality.

Removing an adult dairy animal is an important decision. We need to make sure that she is removed at the right time and replaced with a heifer that truly does represent a greater profit opportunity.

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HEIFER RAISING COST RECOVERY

Assumptions:

- **Average profit per mature cow is $500/year or $2.00/cwt of milk**
- **Average cull cow is worth $650**
  - (net of death loss)
- **Average offspring is valued at $100**
  - (bull at $75, heifer at $35, 8% DOA)

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HEIFER RAISING COST RECOVERY

A cow must produce over 44,000 pounds before she has covered her raising costs and her ongoing cost of production and is adding to the profitability of the operation.

On average, this cow is in her 2nd lactation.

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QUANTIFYING ECONOMICS OF TURNOVER DECISIONS

- **Historically replacement cost and cull revenue have been looked at as two independent factors when evaluating cost of production**
- **Problem: THERE ARE NO SACRED COWS**
  - Eventually every cow will be removed from the herd and needs to be replaced
  - To many assume that a low cull rate is good and a high cull rate is bad
  - High cull values seduce people to believe turnover is not expensive
  - To many base cull rate on available heifer inventory
- **Goal: Remove the right cow at the right time to minimize the negative impact that turnover has on the cost of production while maximizing the return on investment**
- **How do you quickly evaluate the cost of turnover in your herd?**

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NET HERD TURNOVER COST

$$\frac{((\text{\# of Animals Removed} \times \text{Balance Sheet Value}) - \text{Cull Cow Income})}{\text{cwt. of Energy Corrected Milk}}$$

Total Number of Animals Removed- this includes mortalities, involuntary and voluntary culls and dairy sales from the adult herd

Balance Sheet Value- this reflects the value of the adult animals in the herd and approximates the cost associated with raising heifers

Cull Cow Income- this is the salvage value received from culls and dairy sales; mortalities receive $0

Herd Milk Production- level of energy corrected milk production sold in cwt during period being evaluated

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NET HERD TURNOVER COST

1000 cow herd scenario → 80 lb ECM average

Utilizing All Replacement Heifers		
43%	Turnover Rate	
8%	Death Loss	
$650	Average Cull Cow Income	
430	Total Number of Removals	
80	Dead Cows	
350	Cull Cows	
$227,500	Cull Cow Income	
$1,700	Balance Sheet Value	
$731,000	Herd Turnover Expense	
$503,500	Net Herd Turnover Cost	
$1.96	Net Herd Turnover Cost / cwt.	

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NET HERD TURNOVER COST

1000 cow herd scenario → 80 lb tank average

Utlizing All Replacement Heifers		Reduced Death Loss & Improved Cull Value
43%	Turnover Rate	43%
8%	Death Loss	6%
$650	Average Cull Cow Income	$700
430	Total Number of Removals	430
80	Dead Cows	60
350	Cull Cows	370
$227,500	Cull Cow Income	$259,000
$1,700	Balance Sheet Value	$1,700
$731,000	Herd Turnover Expense	$731,000
$503,500	Net Herd Turnover Cost	$472,000
$1.96	Net Herd Turnover Cost / cwt.	$1.84

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NET HERD TURNOVER COST

1000 cow herd scenario → improved tank average

Retain All Replacement Heifers		Reduced Turnover Rate & 1.5# Milk Production Increase
43%	Turnover Rate	34%
6%	Death Loss	6%
$700	Average Cull Cow Income	$700
430	Total Number of Removals	340
60	Dead Cows	60
370	Cull Cows	280
$259,000	Cull Cow Income	$196,000
$1,700	Balance Sheet Value	$1,700
$731,000	Herd Turnover Expense	$578,000
$472,000	Net Herd Turnover Cost	$382,000
$1.84	Net Herd Turnover Cost / cwt.	$1.46

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NET HERD TURNOVER COST

1000 cow herd scenario → Culling cows to late

Reduced Turnover Rate & 1.5# Milk Production Increase		Reduced Turnover Rate No Improvement in Management
34%	Turnover Rate	34%
6%	Death Loss	9%
$700	Average Cull Cow Income	$600
340	Total Number of Removals	340
60	Dead Cows	90
280	Cull Cows	250
$196,000	Cull Cow Income	$150,000
$1,700	Balance Sheet Value	$1,700
$578,000	Herd Turnover Expense	$578,000
$382,000	Net Herd Turnover Cost	$428,000
$1.46	Net Herd Turnover Cost / cwt.	$1.70

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RELATIONSHIPS BETWEEN NET HERD TURNOVER COSTS AND OTHER MEASURES

VARIABLE	CORRELATION w/ NHTC
Profitability (NFI, $/cwt ECM/day)	-0.33
ECM/cow/day, lb/day	-0.45
Cull + death rate, %	0.42
SCC x 1000	0.35

DIFFERENCE IN PROFIT BETWEEN HIGHEST 1/3 AND LOWEST 1/3 (BASED ON NHTC, $/cwt ECM)	$2.04/cwt (~$61 K/year*)

* Top third produced 315,189 cwt/year (86.0 lb/d); bottom third produced 285,098 cwt/year (76.0 lb/d)

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NET HERD TURNOVER COST

- Goals
  - Holstein Herd <$1.35/cwt energy corrected milk
  - Jersey Herd <$1.85/cwt energy corrected milk

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MANAGING TURNOVER RATE

- **Managing adult turnover is an art**
  - All cows will leave the herd at some point
  - Need to avoid getting rid of the cow to early or to late
  - Maximizing the value of the cow at the time she is removed
- **Minimizing involuntary culls**
  - Cow whisperer
  - Cow comfort

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MANAGING TURNOVER RATE

- **Transition care**
  - <2.5% of fresh heifers leave within 60 days of calving
  - <4.5% of fresh cows leave within 60 days of calving
- **Selling marginal cows prior to dry off vs post fresh**
  - Cost of care for a dry cow between feed, labor and animal health can exceed $350/cow
  - Extended dry period cows

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MANAGING TURNOVER RATE

- **Targeted herd distribution**
  - < 35% of adult herd is 1st lactation animals
  - > 40% of the adult herd is 3rd lactation animals

- **Total milk production/day of life**

1st lactation	24,000 lbs milk	24.4 lbs/day of life
2nd lactation	27,600 lbs milk	38.8 lbs/day of life
3rd lactation	30,800 lbs milk	47.5 lbs/day of life
4th lactation	30,800 lbs milk	53.7 lbs/day of life

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NET HERD TURNOVER COST

- **In summary understanding your herds NHTC allows you to**
  - Make informed management decisions
    - + Make voluntary culling decisions at the appropriate time
    - + Match replacement heifer needs with desired turnover rate
  - Control your cost of production
  - Maximize your profit margin

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WHAT IS YOUR NET HERD TURNOVER COST?

Number of Cows Culled	_____	
Number of Cows Died	_____	
Total Cull Cow Revenue Received	_____	b
Pounds of Milk Sold	_____	
Average Butterfat Test	_____	
Average Protein Test	_____	
Calculating Energy Corrected Milk		
(pounds milk X % butterfat X 12.82)	_____	
+ (pounds milk X % protein X 7.13)	_____	
+ (pounds milk X .323)	_____	
= Total pounds energy corrected milk	_____	c
Cows Culled + Cows Died X $1700/hd	_____	a
Net Herd Turnover Cost (a – b)/c	_____	

Goal: Holsteins <$1.35 Jerseys <$1.85

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What was My Net Herd Turnover Cost for 2019?

Number of Cows Culled	_____	
Number of Cows Died	_____	
Total Cull Cow Revenue Received Pounds of Milk Sold	_____	b
Average Butterfat Test	_____	
Average Protein Test	_____	
	_____	
Calculating Energy Corrected Milk (pounds milk X % butterfat X 12.82)		
	_____	
+ (pounds milk X % protein X 7.13)	_____	
+ (pounds milk X .323)	_____	
= Total pounds energy corrected milk	_____	c
Cows Culled + Cows Died X $1700/hd	_____	a

Net Herd Turnover Cost (a – b)/c _____

Goal: Holsteins <$1.35 Jerseys <$1.85