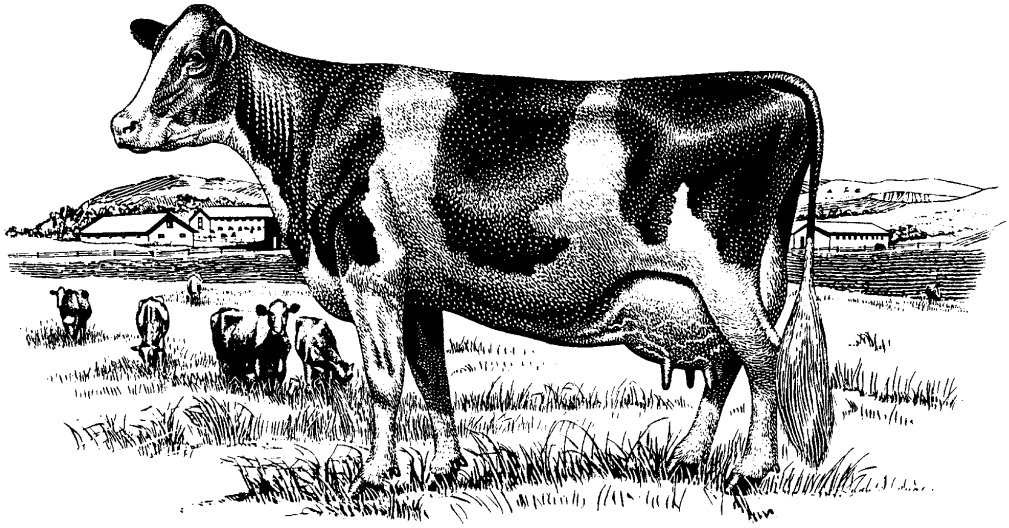
Proceedings of the

2011 Delmarva Dairy Day

Thursday, February 10, 2011
Hartly Fire Hall, Hartly, DE



The University of Delaware

Dairy Research, Teaching, and Extension
UNIVERSITY OF DELAWARE

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2011 February Delmarva Dairy Days
Thursday, Feb 10, 2011
Hartly Fire Hall, Hartly, DE

10 – 10:30	View exhibits and talk to vendors
10:30 – 11:10	Managing Your Milk Margin to Improve Dairy Cash Flow Tim Beck, M.S., Pennsylvania State University
11:10 – 12:00	Matching Genotype to Herd Through Crossbreeding Chad Dechow, Ph.D., Pennsylvania State University
12:00 – 1:00	Lunch with UD ice cream and visit with vendors
1:00 – 1:40	Basics of Managing Herd Reproductive Performance Robert Munson, VMD, University of Pennsylvania
1:40 – 2:10	Selecting for Feed Efficient Cows Chad Dechow, Ph.D., Pennsylvania State University
2:10 – 2:40	Update on DE CAFO Regulations Larry Towle, Delaware Department of Ag

Nutrient management credits will be awarded for those staying for the program and listening to the CAFO regulations presentation.

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RSVP NEEDED FOR LUNCH: Please contact Susan Truehart Garey by phone (302-730-4000) or email (truehart@udel.edu)

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Managing Your Milk Margin to Improve Dairy Cash Flow

Tim Beck
Dairy Business Management Educator
Penn State Cooperative Extension

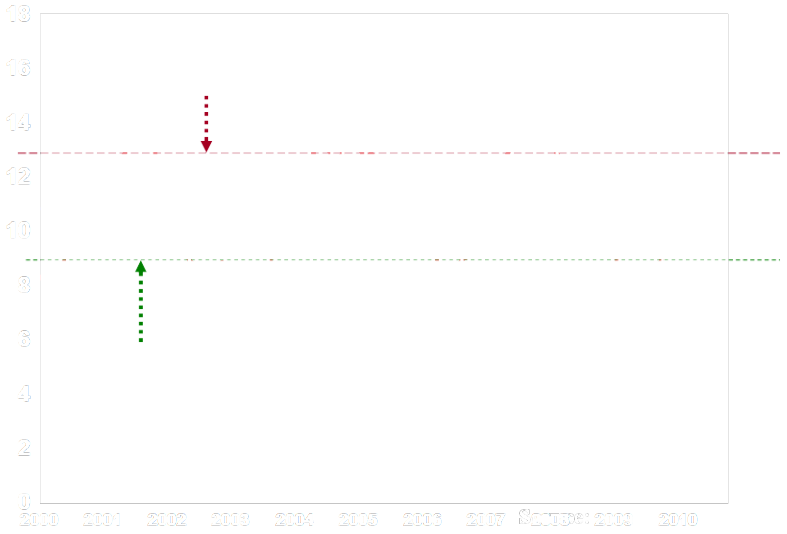
Why Monitor IOFC & Cash Flow?

- 2009 produced large cash deficits for many dairy farms
- IOFC (per cow) and Gross Margin (GM per CWT.)
  - cash available to meet farm cash needs after paying milking cow feed
- To utilize risk management strategies (i.e. LGM) need to know breakeven GM.
- Viable cash flows are required to secure credit and use risk management effectively

Terminology

- Milk Margin (Gross Margin to Guarantee for LGM):
  - The breakeven amount the farm requires after paying for milking cow feed and crop directs (seed, fertilizer, chemical, custom hire)—Dollars per CWT. of Milk
- Livestock Gross Margin (LGM)
  - Insurance provides the opportunity to insure the farm's breakeven Gross Margin (GM)

PA Dairy Milk Margin



Jim Dunn, PSU

RMA

First Step - IOFC

- Measured in dollars per cow per day.
- All-milk price x daily avg. milk prod/100 – daily feed cost
- Example:
  - $19.59/cwt x 80 lbs/100 - $5.90 = $9.77 IOFC/cow/day
  - $11.90/cwt x 80 lbs/100 - $5.25 = $4.27 IOFC/cow/day

10-July-09	FEED PRICE LIST compiled by Virginia Ishler	Disclaimer: These prices were compiled using several sources. They should only be used when actual prices are not readily available.

MMG=mixed mainly grass
MML=mixed mainly legume

	FEED NAME	DM %	$/CWT AS FED	$/CWT DM	$/TON AS FED
FORAGES	Grass hay avg analysis	90.00	6.50	7.22	130.00
	Leg hay avg analysis	90.00	7.85	8.72	157.00
	MMG hay avg analysis	90.00	6.50	7.22	130.00
	MML hay avg analysis	90.00	6.75	7.50	135.00
	Grass sil avg analysis	39.00	2.82	7.22	56.33
	Leg sil avg analysis	45.00	3.93	8.72	78.50
	MMG sil avg analysis	40.00	2.89	7.22	57.78
	MML sil avg analysis	43.00	3.23	7.50	64.50
	Corn sil avg analysis	33.00	1.79	5.42	35.75
	Corn sil UREA	34.00	2.01	5.90	40.15
	Corn sil NH3	34.00	2.06	6.07	41.25
	Dro corn sil STUNT	30.00	1.63	5.42	32.50
	Dro corn sil GRTH	22.00	1.19	5.42	23.83
	SM grn sil avg anal.	32.30	2.42	7.50	48.45
	SM grn sil boot	19.00	1.43	7.50	28.50
	Sor-Sud sil avg	30.00	2.25	7.50	45.00
PASTURES	Grass past SPR	20.00	1.11	5.56	22.22
	Leg past spring	20.00	1.17	5.83	23.33
	MMG past spring	20.00	1.11	5.56	22.22
	MML past spring	20.00	1.17	5.83	23.33

Step 1

- Market Approach
  - How does IOFC look using market prices for home raised forages and feeds?

http://www.das.psu.edu/research-extension/dairy

IOFC Monitoring Project

- *Summary of 25 Farms*

General Observations

2. The highest milk production

4. The lowest feed cost

Does not necessarily result in the highest IOFC.

Region in Pennsylvania	Gross milk price $/cwt	Milk income $/cow	Feed cost $/cow	Income over feed cost $/cow	Average milk $/cwt
Central	18.50	17.67	6.84	10.75	95.5
Central	17.45	13.35	4.40	8.89	76.5
NW	18.28	14.24	5.35	8.69	77.9
Lapin	18.33	13.64	5.06	8.58	74.4
Central	17.49	13.16	4.77	8.39	77.0
Lapin	18.31	13.22	4.91	8.31	72.5
Central	18.52	12.77	4.62	8.16	68.6
Central	18.58	13.47	5.47	8.00	72.5
NW	19.21	13.01	5.01	8.00	67.7
SE	17.39	12.22	4.25	7.98	70.3
Lapin	18.72	12.61	4.82	7.80	70.0
Lapin	17.48	12.57	4.72	7.85	71.9
NW	18.25	12.55	4.54	7.01	67.5
Central	17.34	12.13	4.76	7.37	68.0
NW	18.74	13.21	5.84	7.37	71.0
Lapin	17.33	11.93	4.76	7.20	67.2
Lapin	18.19	10.80	4.36	6.44	59.4
NW	18.17	11.94	5.50	6.44	65.7
Central	17.57	11.26	4.83	6.43	64.1
Lapin	18.52	11.13	4.91	6.22	59.8
Central	17.59	12.35	6.06	6.29	70.2
NW	17.29	11.31	5.24	6.07	65.4
SE	17.26	11.34	5.61	5.73	65.7
NE	17.09	9.33	5.05	4.28	54.6

IOFC for 25 herds listed from highest to lowest IOFC.

= lowest

= highest

What are herds doing to optimize IOFC?

- >22 lbs DM
- 60-70% forage

What are herds doing to optimize IOFC?

- Grouping animals
- Monitoring DMI and dry matters
- Monitoring cows
- Formulating for metabolizable protein
- Addressing cow comfort issues

What are herds doing to optimize IOFC?

- Excellent quality so high forage rations can be fed.
- Monitoring forage inventory and planning cropping changes to prevent future shortfalls
- Using brown mid-rib corn silage over the summer months to provide more digestible forage when dry matter intake would normally decrease

What are herds doing to optimize IOFC?

- Planning forage transitions and blending forages to gradually add them to the ration.
- Checking nutrient composition on new commodity deliveries to be sure they match values used in formulation.
- Keeping forage source and quality as consistent as possible

Breakeven Cash Flow for 2010 Dairy Plans

- *Summary of 34 Different Farms NOT included in the IOFC Monitoring Project*

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Dairy Annual Cash Flow

Dairy Annual Cash Flow	Per Cow	Farm Total	Per CWT.
Milk Price			$ 17.00
Total Cows			100
Cows Milking			85
Milk/Cow/Day	70		
Projected Milk Sales	21,718	$ 369,198	2,171,750
CASH INFLOWS			
Beginning cash balance		$ 100	
Milk sales (gross)	$ 3,691.98	$ 369,198	$ 17.00
Patronage dividends (coop)	$ 20.00	$ 2,000	$ 0.09
Cull cow sales	$ 80.00	$ 8,000	$ 0.37
Bull calf sales	$ 30.00	$ 3,000	$ 0.14
Misc. dairy sales/income	$ -		$ -
Govt dairy payments (MILC)	$ -		$ -
Other govt. payments	$ 25.00	$ 2,500	$ 0.12
Crop sales	$ -		$ -
Custom work income	$ 5.00	$ 500	$ 0.02
Other farm income	$ 12.00	$ 1,200	$ 0.06
TOTAL INFLOW		$ 386,498	**$ 17.79**

CASH OUTFLOWS				
Milking Cow Feed and Crop Expenses				
Seed	$ 35.00	$ 3,500	$	0.16
Fertilizer	$ 45.00	$ 4,500	$	0.21
Chemical	$ 35.00	$ 3,500	$	0.16
Crop Custom Hire	$ 120.00	$ 12,000	$	0.55
Purchased Milking Cow Feed	$ 800	$ 80,000	$	3.68
Total Milking Cow Feed and Crop Expenses	**$ 1,035.00**	$ 103,500	**$**	**4.77**
GROSS MARGIN PER CWT Milk		$ 265,698	**$**	**12.23**
Purchased Dry Cow & Heifer Feed	$ 250	$ 25,000	**$**	**1.15**
Direct Expenses:				
Breeding & Registration	$ 50	$ 5,000	$	0.23
Veterinary & Medicine	$ 120	$ 12,000	$	0.55
bST		$ -	$	-
Supplies	$ 200	$ 20,000	$	0.92
DHIA	$ 28	$ 2,800	$	0.13
Contract Heifer Raising		$ -	$	-
Dairy Custom Hire	$ 65	$ 6,500	$	0.30
Milk Hauling	$ 190	$ 19,000	$	0.87
Milk Marketing	$ 40	$ 4,000	$	0.18
Bedding	$ 80	$ 8,000	$	0.37
Total Direct Expenses	**$ 773**	$ 77,300	**$**	**3.56**

Related Operating Expenses (Overhead):				
Fuel and oil	$ 60.00	$ 6,000	$	0.28
Repairs	$ 120.00	$ 12,000	$	0.55
Hired labor, withholding, ins.	$ 50.00	$ 5,000	$	0.23
Land rent	$ 50.00	$ 5,000	$	0.23
Machinery leases	$ -		$	-
Building leases	$ -		$	-
Real estate taxes	$ 80.00	$ 8,000	$	0.37
Farm insurance	$ 55.00	$ 5,500	$	0.25
Utilities	$ 90.00	$ 9,000	$	0.41
Risk mgt.& advertizing	$ -		$	-
Dues and professional fees	$ 12.00	$ 1,200	$	0.06
Miscellaneous	$ 24.00	$ 2,400	$	0.11
Total Related Operating Expenses	**$ 541.00**	$ 54,100	**$**	**2.49**
Family Living/Owner Draw	$ 450	$ 45,000	**$**	**2.07**
Income Taxes			**$**	-
Minimum ending balance		$ 100	**$**	**0.00**
TOTAL OUTFLOW	**$ 3,049.00**	**$ 304,900**		
Operating Surplus	**$ 815.98**	**$ 81,598**		

Capital Sales	$ 15	$ 1,500	$	0.07
Capital Purchases	$ 25	$ 2,500	$	0.12
New Borrowing	$ 15	$ 1,500	$	0.07
Loan Payments (Principal + Interest)	$ 550	$ 55,000	$	2.53
Cash Surplus or Deficit	**$ 270.98**	**$ 27,098**	**$**	**1.25**
Change in Cash Balance (Ending - Beginning)		**$ 26,998**		
Total Outflow per CWT.			**$**	**16.54**
Gross Margin Needed per Year		**$ 239,400**		
Gross Margin Needed per Month		**$ 19,950**		
Gross Margin per CWT to Guarantee		**$ 11.02**	/CWT.	
Income Over Feed Cost (IOFC) Breakeven		**$ 7.72**	/cow/day	
Total Outflow (Excluding Cap Sales & Pur, New Borrowing)		$ 359,900		
Minus Non-Milk Income		$ 17,200		
Total Outflow Covered by Milk Sales		$ 342,700		
CWT Milk Sold		21,718	CWT.	
GROSS MILK PRICE--FARM BREAKEVEN		**$ 15.78**	/CWT.	
Basis to Use		$ 2.00	/CWT.	
Class III Breakeven Price		**$ 13.78**	/CWT.	
Beginning Annual Operating Balance		$ 2,500		
Annual operating borrowing		$ -		
Annual operating interest payment	% 4.00	$ 8.33		
Annual operating principal payment		$ 2,500		
Endng Annual Operating Balance		$ -		

Summary 2010 Cash Flow Plans

- Milk Margin (Gross Margin to Guarantee for LGM):
  - The breakeven amount the farm requires after paying for milking cow feed and crop directs (seed, fertilizer, chemical, custom hire)--Dollars per CWT. of Milk
  - Example:
    - >$13.00 cwt milk margin is not good based on current markets. Little to no opportunity to replenish cash flow
    - <$ 12.00 cwt milk margin offers many more opportunities to replenish cash flow.

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Farms Grouped by Gross Margin Needed for 2010

- 34 Farms Divided into Groups by GM:
  - 1—GM less than $9.99 (N=10)
  - 2—GM $10.00-$10.99 (N=8)
  - 3—GM $11.00-$11.99 (N=4)
  - 4—GM $12.00-$12.99 (N=7)
  - 5—GM greater than or equal to $13.00 (N=5)

RMA

About the Farms

	1-GM < $9.99	2-GM $10.00-$10.99	3-GM $11.00-$11.99	4-GM $12.00-$12.99	5-GM >= $13.00
Total Number of Cows	95	216	144	116	139
Milk Sold per Milking Cow	24,340	24,402	24,601	25,217	24,487
Average Lbs Milk per Day	66.7	68.1	68.2	69.1	67.1

Cash surplus.....Cash deficit

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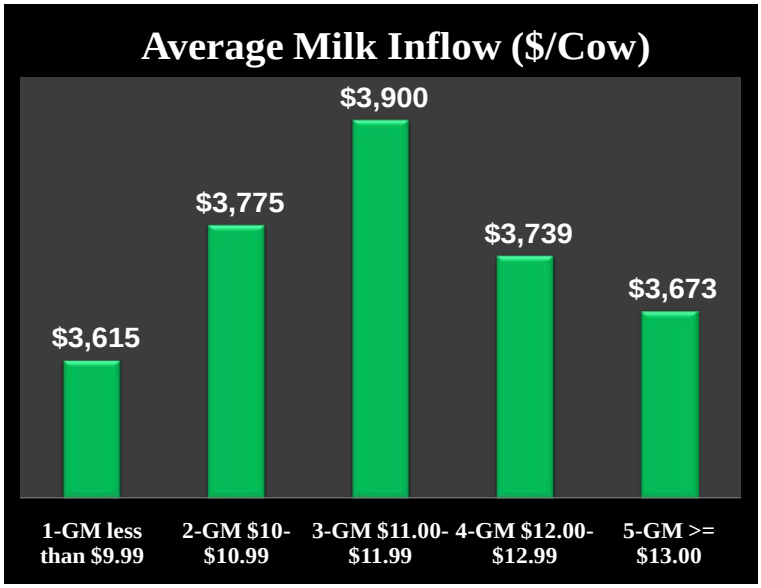
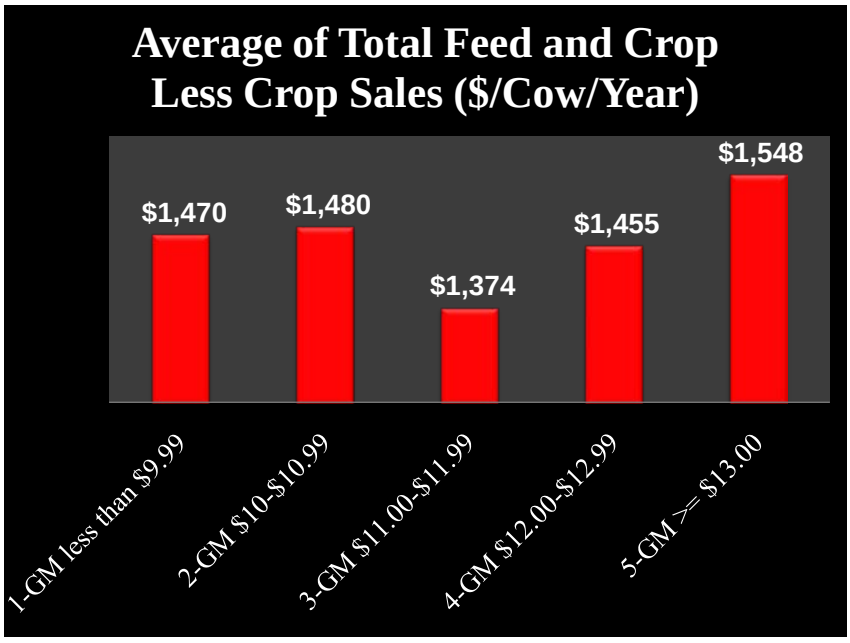
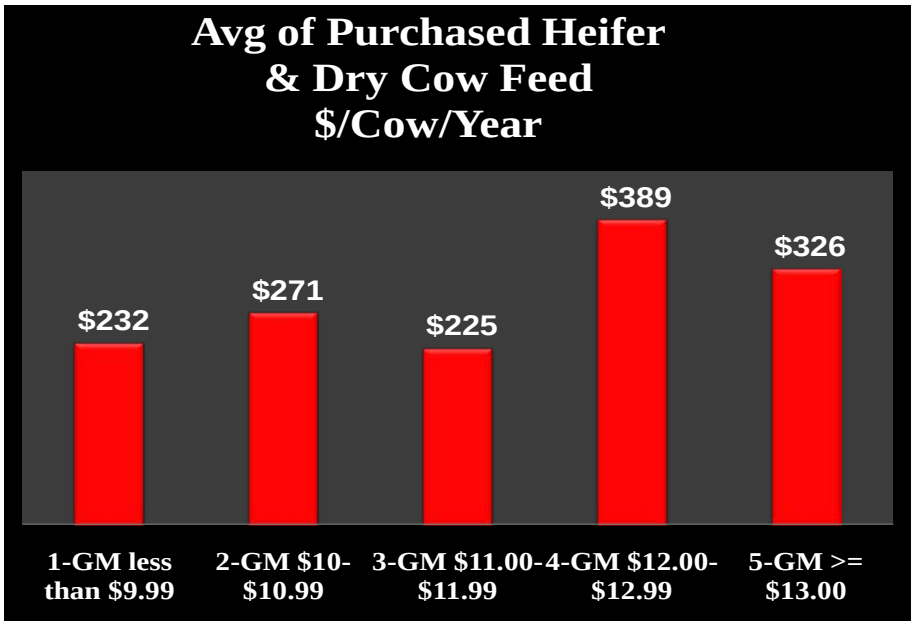
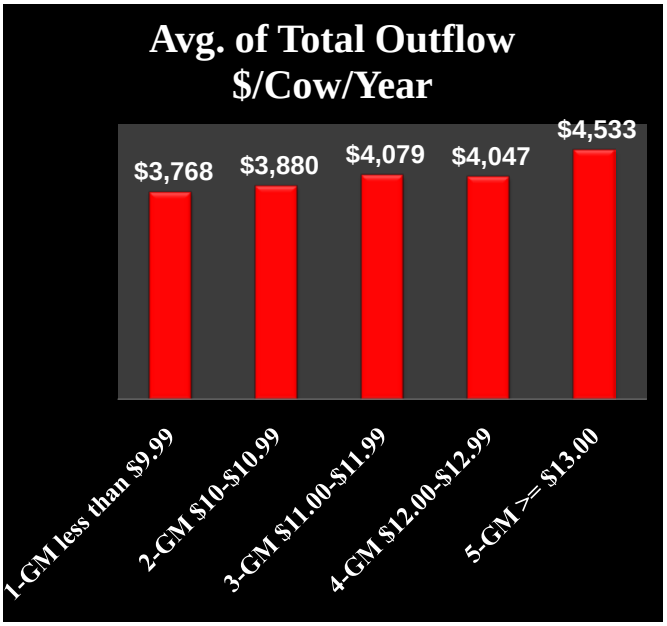


Benchmark - $4000/cow



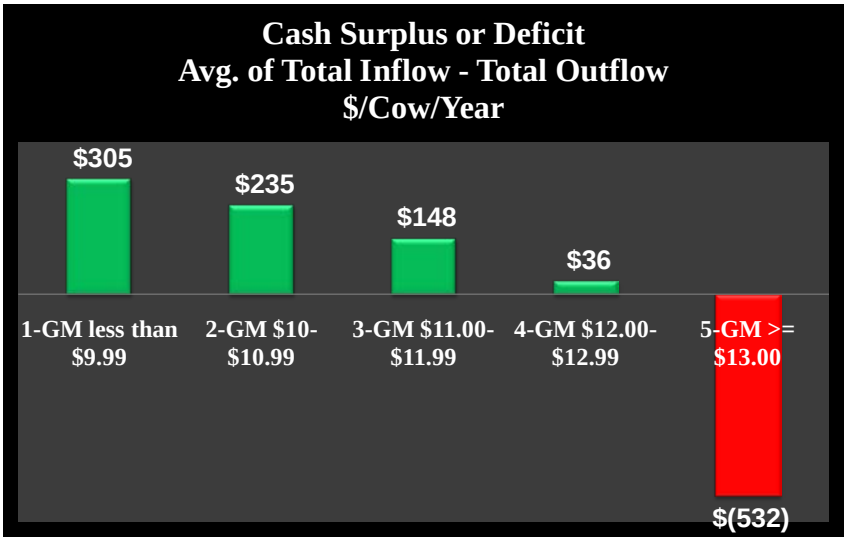


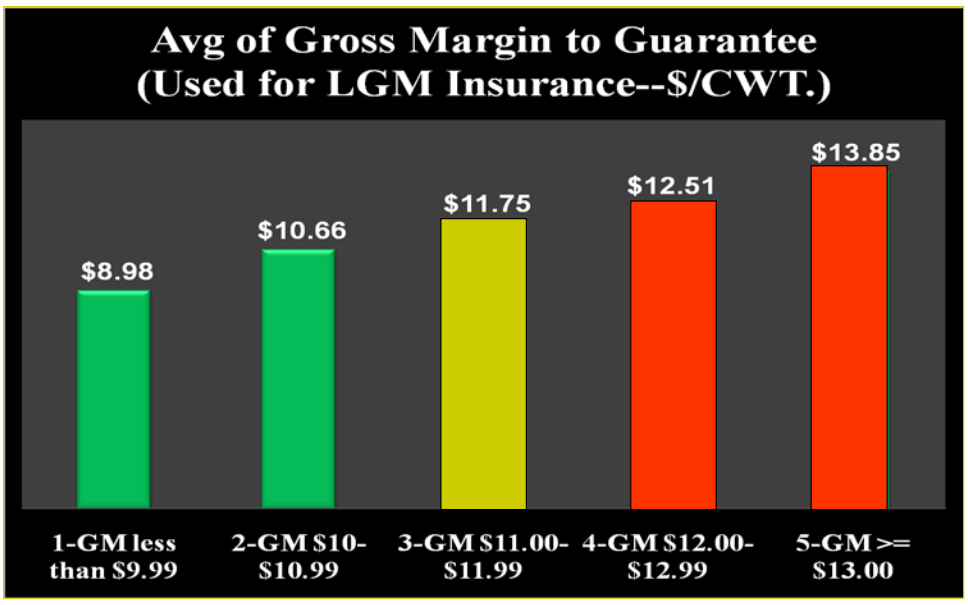


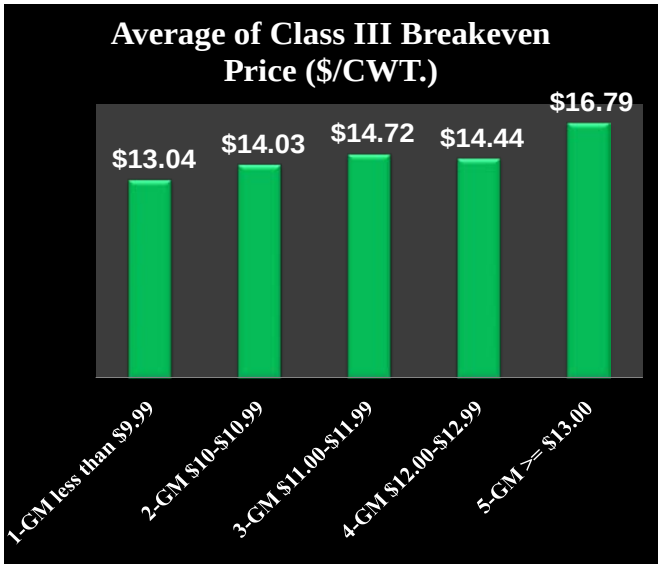
Groups 3, 4, 5 had the highest expenses for:

- Direct
- Overhead
- Owner draw
- Loan payments

Compared to groups 1 and 2.


Cash Surplus or Deficit
Avg. of Total Inflow - Total Outflow
$/Cow/Year
$305
$235
$148
$36
$(532)
1-GM less than $9.99
2-GM $10-$10.99
3-GM $11.00-$11.99
4-GM $12.00-$12.99
5-GM >= $13.00


Avg of Gross Margin to Guarantee
(Used for LGM Insurance--$/CWT.)
$8.98
$10.66
$11.75
$12.51
$13.85
1-GM less than $9.99
2-GM $10-$10.99
3-GM $11.00-$11.99
4-GM $12.00-$12.99
5-GM >= $13.00



Class III price

F- $15.12

M - $15.23

A - $15.60

M - $15.77

J - $15.95

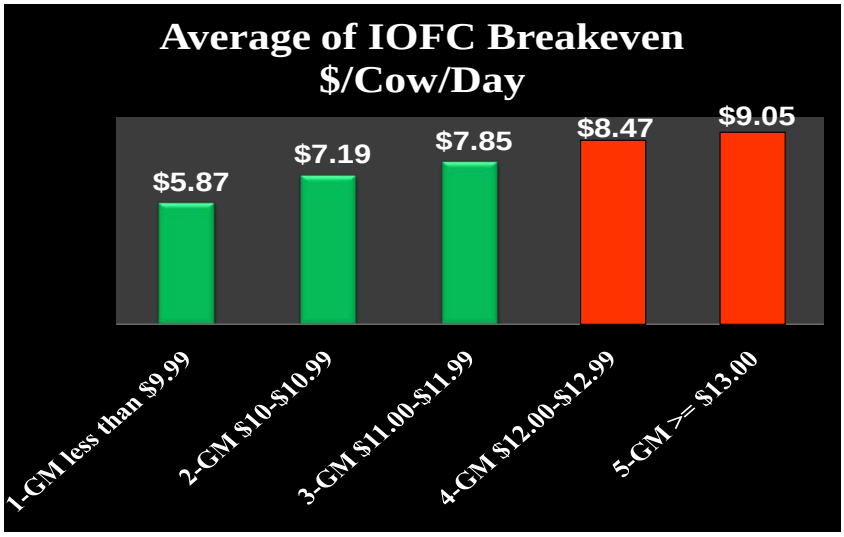
J - $16.28

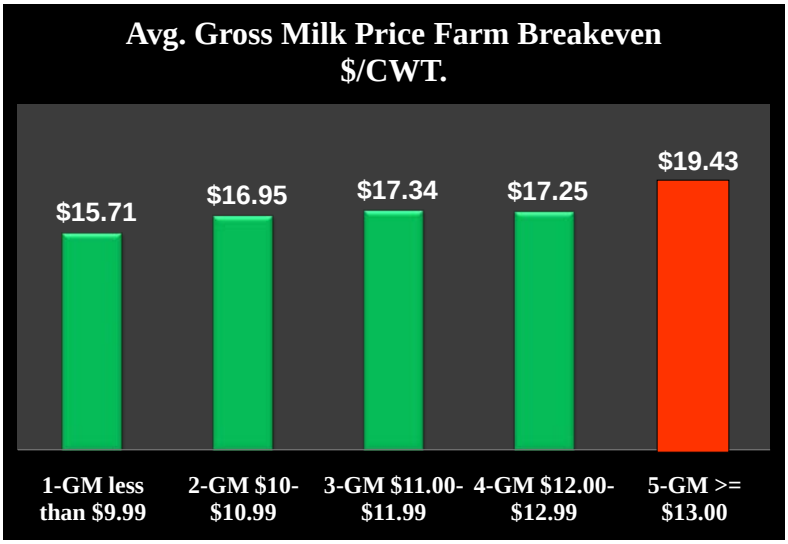
A - $16.25

S – $16.25

O – $16.20

N - $16.11





Five Key Expense Items that Influence Breakeven Milk Price per CWT.

Per CWT.	1-GM less than $9.99	2-GM $10-$10.99	3-GM $11.00-$11.99	4-GM $12.00-$12.99	5-GM >= $13.00	Average
Total Inflow minus Total Outflow	$ 1.90	$ 1.33	$ 0.87	$ 0.10	$ (1.82)	
Gross Margin to Guarantee	$ 8.92	$ 10.66	$ 11.75	$ 12.51	$ 13.65	
Gross Milk Price Farm Breakeven	$ 15.11	$ 16.95	$ 17.34	$ 17.25	$ 19.43	$ 17.21
Difference from Average	$ 2.11	$ 0.27	$ (0.12)	$ (0.03)	$ (2.22)	
Milking Cow Feed & Crop	$ 5.66	$ 5.70	$ 5.36	$ 4.92	$ 5.76	
Crop Custom Hire	$ 0.44	$ 1.35	$ 1.06	$ 0.42	$ 0.51	
Contract Heifer Raising	$ 0.40	$ 0.68	$ 0.36	$ 0.56	$ 1.07	
Hired Labor, Withholding	$ 0.74	$ 1.03	$ 0.72	$ 0.65	$ 2.24	
Loan Payments (P&I)	$ 2.35	$ 2.47	$ 3.22	$ 2.99	$ 3.30	
Total of Five Expense Items	**$ 9.59**	**$ 11.22**	**$ 10.73**	**$ 9.53**	**$ 12.89**	**$ 10.79**
Difference from Average	$ 1.20	$ (0.43)	$ 0.06	$ 1.26	$ (2.10)	
Percent of Farm Breakeven	63%	66%	62%	55%	66%	63%

GM = Gross Margin (Milk Margin)

For More Information:

Spreadsheet Downloads
Paper Worksheets

http://www.das.psu.edu/dairy-alliance/education/profitability/

Summary

- Breakeven Cost per CWT. varies widely
- Producers need to know:
  - What is my breakeven cost per CWT.?
  - Can I use risk management based on my gross margin?
  - How can I change it to reach positive cash flow?

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Dairy Annual Cash Flow

Dairy Annual Cash Flow		A Per Cow	B Farm Total	C Per CWT.	
Milk Price	1				1
Total Cows	2				2
Cows Milking	3				3
Milk/Cow/Day	4		B5 = C1 x C5 ÷ 100	C5 = C3 x A4 x 365	4
Projected Milk Sales	5				5
Total CWT. Sold per Year	6		C6 = C5 ÷ 100		6
CASH INFLOWS					
Beginning cash balance	7	Col B ÷ C2		Col B ÷ C6	7
Milk sales (gross)	8				8
Patronage dividends (coop)	9				9
Cull cow sales	10				10
Bull calf sales	11				11
Misc. dairy sales/income	12				12
Govt dairy payments (MILC)	13				13
Other govt. payments	14				14
Crop sales	15				15
Custom work income	16				16
Other farm income	17				17
TOTAL INFLOW	18				18
		A18 = Sum A8 to A17	B18 = Sum B7 to B17	C18 = Sum C8 to C17	
CASH OUTFLOWS					
Milking Cow Feed and Crop Expenses		Col B ÷ C2		Col B ÷ C6	
Seed	19				19
Fertilizer	20				20
Chemical	21				21
Crop Custom Hire	22				22
Purchased Milking Cow Feed	23				23
Total Milking Cow Feed and Crop Expenses	24				24
		A23 = Sum A19 to A23	B23 = Sum B19 to B23	C23 = Sum C19 to C23	
GROSS MARGIN PER CWT Milk	25				25
			B25 = B8 - B24	C25 = C8 - C24	
Purchased Dry Cow & Heifer Feed	26				26
Direct Expenses:			Col A x C2	Col B ÷ C6	
Breeding & Registration	27				27
Veterinary & Medicine	28				28
bST	29				29
Supplies	30				30
DHIA	31				31
Contract Heifer Raising	32				32
Dairy Custom Hire	33				33
Milk Hauling	34				34
Milk Marketing	35				35
Bedding	36				36
Total Direct Expenses	37				37
		A37 = Sum A27 to A36	B37 = Sum B27 to B36	C37 = Sum C27 to C36	

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Dairy Annual Cash Flow

Dairy Annual Cash Flow		A Per Cow	B Farm Total	C Per CWT.	
Related Operating Expenses (Overhead):		Col B ÷ C2		Col B ÷ C6	
Fuel and oil	38				38
Repairs	39				39
Hired labor, withholding, ins.	40				40
Land rent	41				41
Machinery leases	42				42
Building leases	43				43
Real estate taxes	44				44
Farm insurance	45				45
Utilities	46				46
Risk mgt.& advertizing	47				47
Dues and professional fees	48				48
Miscellaneous	49				49
Total Related Operating Expenses	50				50
		A50 = Sum A38 to A49	B50 = Sum B38 to B49	C50 = Sum C38 to C49	
		Col B ÷ C2		Col B ÷ C6	
Family Living/Owner Draw	51				51
Income Taxes	52				52
Minimum ending balance	53				53
TOTAL OUTFLOW	54				54
			B54 = B24 + B26 + B37 + B50 + B51 + B52		
Operating Surplus	55				55
		A55 = B55 ÷ C2	B55 = B18 - B54	C55 = B55 ÷ C6	
		Col B ÷ C2		Col B ÷ C6	
Capital Sales	56				56
Capital Purchases	57				57
New Borrowing	58				58
Loan Payments (Principal + Interest)	59				59
Cash Surplus or Deficit	60				60
		A60 = B60 ÷ C2	B60 = B55+B56-B57+B58-B59	C60 = B60 ÷ C6	
Change in Cash Balance (Ending - Beginning)	61			C62 = C18 - C60	61
Total Outflow per CWT.	62		B61 = B60 - B7		62
		B63 = B26+B37+B50+B51+B52+B59-B68+B7+B53			
Gross Margin Needed per Year	63				63
Gross Margin Needed per Month	64	B64 = B63 ÷ 12			64
Gross Margin per CWT to Guarantee	65	B65 = B63 ÷ B70		/CWT.	65
Income Over Feed Cost (IOFC) Breakeven	66	B66 = B65 x A4 ÷ 100		/cow/day	66
Total Outflow (Excluding Cap Sales & Pur, New Borr	67	B67=B24+B26+B37+ B50+B51+B52+B59			67
Minus Non-Milk Income	68	B68 = Sum B9 to B17			68
Total Outflow Covered by Milk Sales	69	B69 = B67 - B68			69
CWT Milk Sold	70	B70 = C6		CWT.	70
GROSS MILK PRICE--FARM BREAKEVEN	71	B71 = B69 ÷ B70		/CWT.	71
Basis to Use	72			/CWT.	72
Class III Breakeven Price	73	B73 = B71 - B72		/CWT.	73
	74	If B60>0 then (B60-B77) otherwise 0			74
Beginning Annual Operating Balance	75				75
Annual operating borrowing	76	B74 = (-B60) + B77			76
Annual operating interest payment	77	%		B77 = A77xB75÷100÷12	77
Annual operating principal payment	78	If B75 > B74, then B74, otherwise B75		C79 = B75+B77+B76	78
Endng Annual Operating Balance	79	If C79>0 then B75-B78+B76, otherwise 0			79

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Dairy Annual Cash Flow

Dairy Annual Cash Flow	Per Cow	Farm Total	Per CWT.
Milk Price			$ 17.00
Total Cows			100
Cows Milking			85
Milk/Cow/Day	70		
Projected Milk Sales	21,718	$ 369,198	2,171,750
CASH INFLOWS			
Beginning cash balance		$ 100	
Milk sales (gross)	$ 3,691.98	$ 369,198	$ 17.00
Patronage dividends (coop)	$ 20.00	$ 2,000	$ 0.09
Cull cow sales	$ 80.00	$ 8,000	$ 0.37
Bull calf sales	$ 30.00	$ 3,000	$ 0.14
Misc. dairy sales/income	$ -		$ -
Govt dairy payments (MILC)	$ -		$ -
Other govt. payments	$ 25.00	$ 2,500	$ 0.12
Crop sales	$ -		$ -
Custom work income	$ 5.00	$ 500	$ 0.02
Other farm income	$ 12.00	$ 1,200	$ 0.06
TOTAL INFLOW		$ 386,498	**$ 17.79**
CASH OUTFLOWS			
Milking Cow Feed and Crop Expenses			
Seed	$ 35.00	$ 3,500	$ 0.16
Fertilizer	$ 45.00	$ 4,500	$ 0.21
Chemical	$ 35.00	$ 3,500	$ 0.16
Crop Custom Hire	$ 120.00	$ 12,000	$ 0.55
Purchased Milking Cow Feed	$ 800	$ 80,000	$ 3.68
Total Milking Cow Feed and Crop Expenses	**$ 1,035.00**	$ 103,500	**$ 4.77**
GROSS MARGIN PER CWT Milk		$ 265,698	**$ 12.23**
Purchased Dry Cow & Heifer Feed	$ 250	$ 25,000	**$ 1.15**
Direct Expenses:			
Breeding & Registration	$ 50	$ 5,000	$ 0.23
Veterinary & Medicine	$ 120	$ 12,000	$ 0.55
bST		$ -	$ -
Supplies	$ 200	$ 20,000	$ 0.92
DHIA	$ 28	$ 2,800	$ 0.13
Contract Heifer Raising		$ -	$ -
Dairy Custom Hire	$ 65	$ 6,500	$ 0.30
Milk Hauling	$ 190	$ 19,000	$ 0.87
Milk Marketing	$ 40	$ 4,000	$ 0.18
Bedding	$ 80	$ 8,000	$ 0.37
Total Direct Expenses	**$ 773**	$ 77,300	**$ 3.56**

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Dairy Annual Cash Flow

Related Operating Expenses (Overhead):							
Fuel and oil	$	60.00	$	6,000	$	0.28	
Repairs	$	120.00	$	12,000	$	0.55	
Hired labor, withholding, ins.	$	50.00	$	5,000	$	0.23	
Land rent	$	50.00	$	5,000	$	0.23	
Machinery leases	$	-			$	-	
Building leases	$	-			$	-	
Real estate taxes	$	80.00	$	8,000	$	0.37	
Farm insurance	$	55.00	$	5,500	$	0.25	
Utilities	$	90.00	$	9,000	$	0.41	
Risk mgt.& advertizing	$	-			$	-	
Dues and professional fees	$	12.00	$	1,200	$	0.06	
Miscellaneous	$	24.00	$	2,400	$	0.11	
Total Related Operating Expenses	**$**	**541.00**	$	54,100	**$**	**2.49**	
Family Living/Owner Draw	$	450	$	45,000	**$**	**2.07**	
Income Taxes					**$**	-	
Minimum ending balance			$	100	**$**	**0.00**	
TOTAL OUTFLOW	**$**	**3,049.00**	**$**	**304,900**			
Operating Surplus	**$**	**815.98**	**$**	**81,598**			
Capital Sales	$	15	$	1,500	$	0.07	
Capital Purchases	$	25	$	2,500	$	0.12	
New Borrowing	$	15	$	1,500	$	0.07	
Loan Payments (Principal + Interest)	$	550	$	55,000	$	2.53	
Cash Surplus or Deficit	**$**	**270.98**	**$**	**27,098**	**$**	**1.25**	
Change in Cash Balance (Ending - Beginning)			**$**	**26,998**			
Total Outflow per CWT.					**$**	**16.54**	
Gross Margin Needed per Year			**$**	**239,400**			
Gross Margin Needed per Month			**$**	**19,950**			
Gross Margin per CWT to Guarantee			**$**	**11.02**	/CWT.		
Income Over Feed Cost (IOFC) Breakeven			**$**	**7.72**	/cow/day		
Total Outflow (Excluding Cap Sales & Pur, New Borrowing)			$	359,900			
Minus Non-Milk Income			$	17,200			
Total Outflow Covered by Milk Sales			$	342,700			
CWT Milk Sold				21,718	CWT.		
GROSS MILK PRICE--FARM BREAKEVEN			**$**	**15.78**	/CWT.		
Basis to Use			$	2.00	/CWT.		
Class III Breakeven Price			**$**	**13.78**	/CWT.		
Beginning Annual Operating Balance			$	2,500			
Annual operating borrowing			$	-			
Annual operating interest payment	%	4.00	$	8.33			
Annual operating principal payment			$	2,500			
Endng Annual Operating Balance			$	-			

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Dairy Costs per Cow

2010 Plans

11/1/2010

Dairy Inflow per Cow:

	1-GM less than $9.99	2-GM $10-$10.99	3-GM $11.00-$11.99	4-GM $12.00-$12.99	5-GM >= $13.00
Total Number of Cows	92	216	144	116	139
Number of Cows Milking	81	187	124	100	120
Percent in Milk	88%	86%	88%	85%	86%
Milk Sold per Total Cows	21,979	21,976	21,682	21,577	21,177
Milk Sold per Milking Cow	24,391	24,432	24,881	25,217	24,487
Average Lbs Milk per Day	68	68.1	68.2	69.1	67.1
Average Milk Price Planned	$ 16.91	$ 17.76	$ 17.99	$ 17.34	$ 17.31
Milk Inflow	**$ 3,663.91**	**$ 3,775.11**	**$ 3,900.39**	**$ 3,738.75**	**$ 3,672.85**
Patronage Dividends	$ 21.38	$ 26.41	$ 41.78	$ 34.88	$ 13.59
Cull Cow Sales	$ 97.71	$ 142.52	$ 128.60	$ 119.72	$ 126.68
Bull Calf Sales	$ 17.69	$ 19.60	$ 11.76	$ 11.21	$ 12.52
Misc. Dairy Sales	$ -		$ 61.54	$ 117.65	$ 246.20
Govt Payments (MILC)			$ 2.24	$ -	
Other Govt. Payments	$ 70.33	$ 36.63	$ 38.48	$ 67.09	$ 23.78
Crop Sales	$ 442.81	$ 181.57	$ 225.83	$ 62.92	$ 53.53
Custom Work Income	$ 54.38	$ 1.59	$ 11.43	$ 22.20	$ 167.54
Other Farm Income	$ 222.51	$ 58.70	$ 28.24	$ 143.81	
Non Milk Inflow	$ 442.97	$ 339.97	$ 326.34	$ 332.83	$ 299.31
Total Inflow	**$ 4,126.99**	**$ 4,115.18**	**$ 4,226.72**	**$ 4,082.81**	**$ 4,001.50**
Gross Margin to Guarantee	**$ 8.92**	**$ 10.66**	**$ 11.75**	**$ 12.51**	**$ 13.85**
Class III Breakeven Price	$ 12.70	$ 14.03	$ 14.72	$ 14.44	$ 16.79
IOFC Breakeven	$ 5.87	$ 7.19	$ 7.85	$ 8.47	$ 9.05

GM = Gross Margin to Guarantee

Dairy Outflow per Cow:

	1-GM less than $9.99	2-GM $10-$10.99	3-GM $11.00-$11.99	4-GM $12.00-$12.99	5-GM >= $13.00
Feed and Crop:					
Purchased cow feed	$ 1,157.80	$ 891.34	$ 873.30	$ 861.49	$ 965.59
Seed	$ 93.13	$ 98.04	$ 64.82	$ 77.05	$ 93.63
Fertilizer	$ 73.23	$ 60.26	$ 46.99	$ 83.46	$ 54.93
Chemical	$ 58.74	$ 76.33	$ 59.93	$ 43.89	$ 62.39
Custom Hire	$ 99.52	$ 246.07	$ 232.46	$ 87.47	$ 109.08
Heifer and Dry Cow Feed	**$ 234.05**	**$ 270.57**	**$ 224.79**	**$ 388.87**	**$ 326.36**
Total Milking Cow Feed and Crop Less Crop Sales	$ 1,229.89	$ 1,209.27	$ 1,149.61	$ 1,066.51	$ 1,221.89
Total Feed and Crop Less Crop Sales	**$ 1,442.66**	**$ 1,479.84**	**$ 1,374.39**	**$ 1,455.38**	**$ 1,548.26**

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Dairy Costs per Cow

2010 Plans

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Dairy Expenses:					
Breeding and Registration	$ 52.06	$ 56.49	$ 61.87	$ 74.26	$ 50.57
Vet and Medicine	$ 120.28	$ 113.82	$ 104.71	$ 143.45	$ 101.04
bST	$ 62.63	$ 133.00	$ 35.74	$ 20.97	
Supplies	$ 127.66	$ 125.93	$ 153.16	$ 179.75	$ 132.50
DHIA	$ 23.55	$ 22.83	$ 28.93	$ 25.60	$ 20.94
Contract Heifer Raising	$ 177.50	$ 158.50	$ 75.43	$ 124.45	$ 250.69
Dairy Custom Hire	$ 50.88	$ 66.26	$ 26.52	$ 34.73	$ 35.83
Milk Hauling	$ 147.71	$ 170.84	$ 167.66	$ 147.21	$ 154.59
Milk Marketing	$ 56.24	$ 60.54	$ 54.25	$ 67.27	$ 46.90
Bedding	$ 32.98	$ 61.75	$ 111.45	$ 118.65	$ 71.31
Dairy Expenses:	**$ 570.64**	**$ 727.06**	**$ 699.48**	**$ 767.93**	**$ 649.63**
Overhead (Related Operating) Expenses:					
Fuel and Oil	$ 136.13	$ 61.11	$ 117.12	$ 149.24	$ 100.29
Repairs	$ 135.69	$ 112.70	$ 172.15	$ 165.90	$ 188.76
Hired Labor, Witholding	$ 167.08	$ 274.16	$ 160.98	$ 143.42	$ 486.33
Land rent	$ 216.30	$ 73.94	$ 157.86	$ 48.03	$ 137.46
Machinery Leases	$ 26.69	$ 23.75	$ 23.95	$ 28.49	$ 31.41
Building Leases	$ 291.22	$ 362.78	$ 120.25	$ 187.18	$ 315.79
Real Estate Taxes	$ 75.80	$ 42.13	$ 57.89	$ 61.46	$ 66.10
Farm Insurance	$ 53.76	$ 53.34	$ 46.16	$ 40.03	$ 65.22
Utilities	$ 94.24	$ 107.22	$ 154.16	$ 70.17	$ 129.89
Dues and Professional Fees	$ 8.18	$ 16.72	$ 6.84	$ 17.29	$ 32.63
Miscellaneous	$ 60.22	$ 25.33	$ 47.71	$ 53.72	$ 29.56
Overhead (Related Operating) Expenses:	**$ 771.18**	**$ 786.30**	**$ 934.84**	**$ 813.81**	**$ 1,275.36**
Owner Draw per Cow	$ 259.95	$ 267.22	$ 253.81	$ 340.28	$ 344.69
Loan Payments per Cow	$ 503.38	$ 548.49	$ 703.34	$ 642.50	$ 704.75
Total Outflow per Cow	**$ 3,708.83**	**$ 3,880.09**	**$ 4,078.78**	**$ 4,046.86**	**$ 4,533.40**
Gross Margin to Guarantee	$ 8.98	$ 10.66	$ 11.75	$ 12.51	$ 13.85
Class III Breakeven Price	$ 13.04	$ 14.03	$ 14.72	$ 14.44	$ 16.79
IOFC Breakeven	$ 5.87	$ 7.19	$ 7.85	$ 8.47	$ 9.05
LGM Premium per CWT	$ 0.71	$ 0.73	$ 0.73	$ 0.70	$ 0.70
Total Inflow minus Total Outflow	$ 304.91	$ 235.10	$ 147.94	$ 35.95	$ (531.90)
Basis to Use	$ 2.67	$ 2.92	$ 3.12	$ 2.81	$ 2.64
Gross Milk Price Farm Breakeven	**$ 15.71**	**$ 16.95**	**$ 17.34**	**$ 17.25**	**$ 19.43**

GM = Gross Margin to Guarantee

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Dairy Costs per CWT.

2010 Plans

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Dairy Inflow per CWT:

	1-GM less than $9.99	2-GM $10-$10.99	3-GM $11.00-$11.99	4-GM $12.00-$12.99	5-GM >= $13.00
Total Number of Cows	95	216	144	116	139
Number of Cows Milking	83	187	124	100	120
Percent in Milk	88%	86%	88%	85%	86%
Milk Sold per Total Cows	21,366	21,976	21,682	21,577	21,177
Milk Sold per Milking Cow	24,340	24,432	24,881	25,217	24,487
Average Lbs Milk per Day	66.7	68.1	68.2	69.1	67.1
Average Milk Price Planned	$ 16.94	$ 17.76	$ 17.99	$ 17.34	$ 17.31
Milk Inflow	**$ 16.94**	**$ 17.75**	**$ 17.98**	**$ 17.33**	**$ 17.33**
Patronage Dividends	$ 0.09	$ 0.12	$ 0.19	$ 0.19	$ 0.06
Cull Cow Sales	$ 0.43	$ 0.64	$ 0.59	$ 0.56	$ 0.60
Bull Calf Sales	$ 0.09	$ 0.08	$ 0.05	$ 0.05	$ 0.06
Misc. Dairy Sales	$ 0.03		$ 0.26	$ 0.53	$ 1.19
Govt Payments (MILC)	$ -		$ 0.01		
Other Govt. Payments	$ 0.28	$ 0.17	$ 0.17	$ 0.32	$ 0.11
Crop Sales	$ 2.18	$ 0.84	$ 0.97	$ 0.45	$ 0.23
Custom Work Income	$ 0.10	$ 0.01	$ 0.06	$ 0.10	$ 0.80
Other Farm Income	$ 1.15	$ 0.24	$ 0.14	$ 0.75	
Non Milk Inflow	$ 2.21	$ 1.53	$ 1.45	$ 1.60	$ 1.43
Total Inflow	**$ 19.14**	**$ 19.28**	**$ 19.43**	**$ 18.93**	**$ 18.75**
Gross Margin to Guarantee	**$ 8.98**	**$ 10.66**	**$ 11.75**	**$ 12.51**	**$ 13.85**
Class III Breakeven Price	$ 13.04	$ 14.03	$ 14.22	$ 14.44	$ 16.79
IOFC Breakeven	$ 5.87	$ 7.19	$ 7.85	$ 8.54	$ 9.05

GM = Gross Margin to Guarantee

Dairy Outflow per CWT:

	1-GM less than $9.99	2-GM $10-$10.99	3-GM $11.00-$11.99	4-GM $12.00-$12.99	5-GM >= $13.00
Feed and Crop:					
Purchased cow feed	$ 5.65	$ 3.96	$ 4.05	$ 3.91	$ 4.54
Seed	$ 0.44	$ 0.46	$ 0.30	$ 0.38	$ 0.44
Fertilizer	$ 0.38	$ 0.28	$ 0.22	$ 0.42	$ 0.25
Chemical	$ 0.30	$ 0.34	$ 0.26	$ 0.21	$ 0.32
Custom Hire	$ 0.44	$ 1.35	$ 1.08	$ 0.42	$ 0.51
Heifer and Dry Cow Feed	**$ 1.09**	**$ 1.30**	**$ 1.04**	**$ 1.81**	**$ 1.57**
Milking Cow Feed and Crop Less Crop Sales	$ 4.91	$ 5.70	$ 5.36	$ 4.92	$ 5.76
Total Feed and Crop Less Crop Sales	**$ 6.82**	**$ 7.00**	**$ 6.40**	**$ 6.74**	**$ 7.34**

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Dairy Costs per CWT.

2010 Plans

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Dairy Expenses:					
Breeding and Registration	$ 0.22	$ 0.25	$ 0.29	$ 0.33	$ 0.23
Vet and Medicine	$ 0.56	$ 0.54	$ 0.48	$ 0.66	$ 0.48
bST	$ 0.16	$ 0.47	$ 0.17	$ 0.09	
Supplies	$ 0.70	$ 0.63	$ 0.72	$ 0.87	$ 0.63
DHIA	$ 0.11	$ 0.11	$ 0.14	$ 0.12	$ 0.10
Contract Heifer Raising	$ 0.40	$ 0.68	$ 0.36	$ 0.56	$ 1.07
Dairy Custom Hire	$ 0.23	$ 0.32	$ 0.12	$ 0.16	$ 0.17
Milk Hauling	$ 0.68	$ 0.82	$ 0.77	$ 0.72	$ 0.74
Milk Marketing	$ 0.25	$ 0.24	$ 0.27	$ 0.29	$ 0.21
Bedding	$ 0.14	$ 0.26	$ 0.53	$ 0.51	$ 0.33
	$ 2.62	**$ 3.43**	**$ 3.27**	**$ 3.56**	**$ 3.02**
Overhead (Related Operating) Expenses:					
Fuel and Oil	$ 0.67	$ 0.28	$ 0.53	$ 0.70	$ 0.48
Repairs	$ 0.65	$ 0.53	$ 0.77	$ 0.76	$ 0.90
Hired Labor, Witholding	$ 0.74	$ 1.03	$ 0.72	$ 0.65	$ 2.24
Land rent	$ 1.13	$ 0.35	$ 0.70	$ 0.22	$ 0.60
Machinery Leases	$ 0.12	$ 0.08	$ 0.16	$ 0.12	$ 0.15
Building Leases	$ 1.42	$ 1.63	$ 0.57	$ 0.86	$ 1.35
Real Estate Taxes	$ 0.39	$ 0.15	$ 0.26	$ 0.30	$ 0.32
Farm Insurance	$ 0.25	$ 0.23	$ 0.21	$ 0.19	$ 0.31
Utilities	$ 0.44	$ 0.51	$ 0.69	$ 0.33	$ 0.63
Dues and Professional Fees	$ 0.03	$ 0.07	$ 0.03	$ 0.08	$ 0.15
Miscellaneous	$ 0.31	$ 0.11	$ 0.23	$ 0.26	$ 0.14
	$ 3.58	**$ 3.58**	**$ 4.24**	**$ 3.75**	**$ 5.31**
Owner Draw per CWT.	$ 1.33	$ 1.16	$ 1.18	$ 1.65	$ 1.67
Loan Payments per CWT.	$ 2.34	$ 2.47	$ 3.22	$ 2.99	$ 3.30
Total Outflow per CWT.	**$ 17.68**	**$ 18.07**	**$ 18.56**	**$ 18.83**	**$ 20.57**
Gross Margin to Guarantee	$ 8.98	$ 10.66	$ 11.75	$ 12.51	$ 13.85
Class III Breakeven Price	$ 13.04	$ 14.03	$ 14.22	$ 14.44	$ 16.79
IOFC Breakeven	$ 5.87	$ 7.19	$ 7.85	$ 8.54	$ 9.05
LGM Premium per CWT	$ 0.71	$ 0.73	$ 0.73	$ 0.70	$ 0.70
Total Inflow minus Total Outflow	$ 1.47	$ 1.33	$ 0.87	$ 0.10	$ (1.82)
Basis to Use	$ 2.67	$ 2.92	$ 3.12	$ 2.81	$ 2.64
Gross Milk Price Farm Breakeven	**$ 15.48**	**$ 16.95**	**$ 17.34**	**$ 17.25**	**$ 19.43**

GM = Gross Margin to Guarantee

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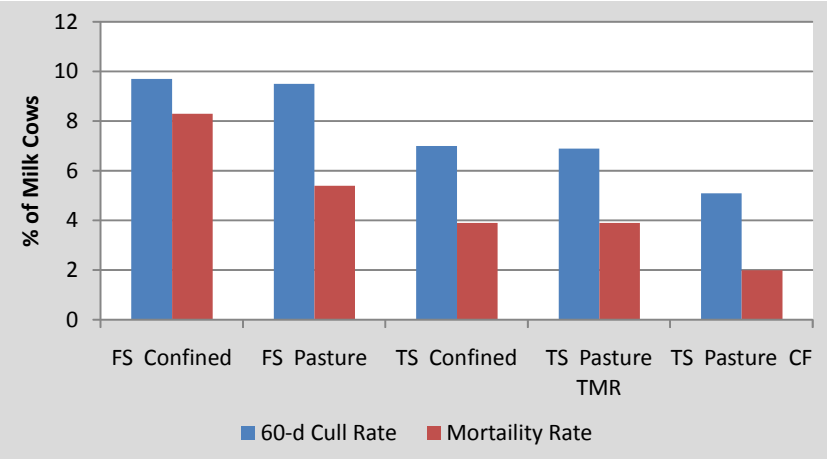
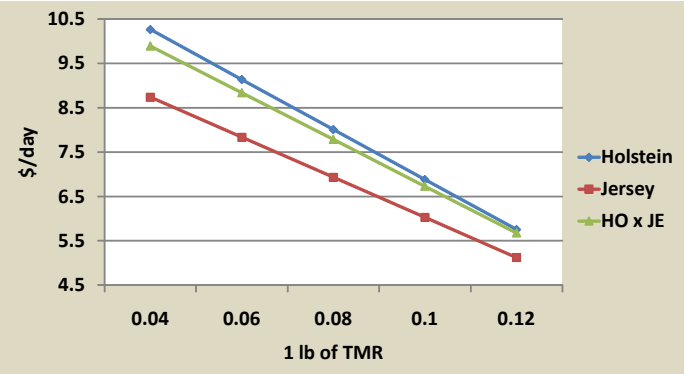
Forward Pricing Alternatives for Feed and Milk								
	Forward Contracting		Options Contracts		Livestock Gross Margin Insurance (LGM)		Futures Contracts	
	Feed	**Milk**	**Feed**	**Milk**	**Feed**	**Milk**	**Feed**	**Milk**
Margin Calls?	No	No	No	No	No	No	Yes	Yes
Investment Needed?	Transaction Costs	Transaction Costs	Premium for the Price Selected	Premium for the Price Selected	Premium for the Coverage Selected	Premium for the Coverage Selected	Transaction Costs and future margin needs	Transaction Costs and future margin needs
Commodity Broker Required?	No	No	Yes	Yes	No	No	Yes	Yes
Price Downside Potential? (feed) **Price Upside Potential? (milk)**	**Downside--No**	**Upside--No**	**Downside--Yes** (allow to expire worthless)	**Upside--Yes** (allow to expire worthless)	**Downside-Yes** Gross margin between milk and feed is set	**Upside-Yes** Increases are captured	**Downside--No**	**Upside--No**
Available from?	Feed Company	Milk Cooperative	Commodity Broker	Milk Cooperative	Risk Management Agency through local agent	Risk Management Agency through local agent	Commodity Broker or Bank	Commodity Broker or Bank
Information Needed?	Class III Breakeven	Class III Breakeven	Class III Breakeven	Class III Breakeven	Gross Margin per month or per CWT.	Gross Margin per month or per CWT.	Class III Breakeven	Class III Breakeven
Protection Provided?	Price is firmly set.	Price is firmly set.	Floor on maximum price (call option)	Floor on minimum price (put option)	Maximum price on feed to maintain the margin	Minimum price on milk to maintain the margin	Floor on maximum price (long hedge)	Floor on minimum price (short hedge)
How much can be priced?	Based on feed company offering the contract	200,000# CME 20-25,000# Co-op (varies by company)	Corn 5000 bu Corn mini 1000 bu SBM 100 T	200,000# CME	Up to 100%	Up to 100%	Corn 5000 bu Corn mini 1000 bu SBM 100 T	200,000# CME
Delivery Obligation?	Yes	Yes	Yes	Yes	Yes, 75%	Yes, 75%	Yes	Yes
Disadvantages	May not be offered by feed or milk company.				Premium due when purchased for all months. Payment at end of contract. 1 sales date/month		Margin calls may be substantial and require advance financing and brokerage deposits.	
Can the contract be terminated?	No	No	No, but the option can expire worthless	No, but the option can expire worthless	No	No	No	No
This chart summarizes information about these pricing tools when used individually. In reality, many producers combine strategies that involve more than one tool used at the same time to offset the disadvantages of a single tool strategy.								

Not All Environments Equal



Income Over Feed Costs



Hype

Breeds and Research Results

- Traditional
  - Jersey
  - Brown Swiss
- Non-traditional European Breeds
  - Normande
  - Montbeliarde
  - Scandinavian Red
    - Swedish Red
    - Norwegian Red
- Others?

Normande

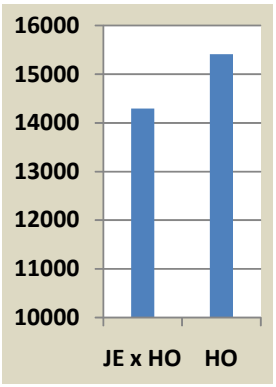
- Normande region of France
  - Primarily grazing
- Heavily conditioned cattle
  - Beef market for cows <5 years
- Known for high quality cheese

Montbeliarde

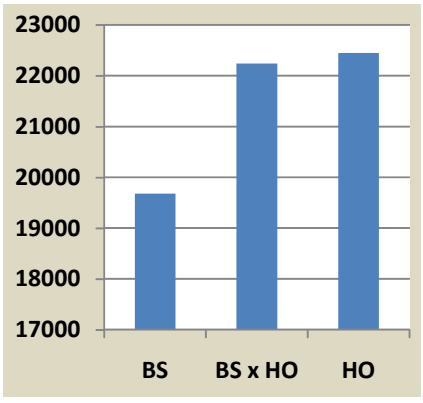
- Alpine breed
- Simmental
  - Bred heavily for dairy
  - Carry condition
  - Large cows

- In France, yields slightly higher than Normande

Milk Yield: Jersey and Brown Swiss



Heins et al., 2008

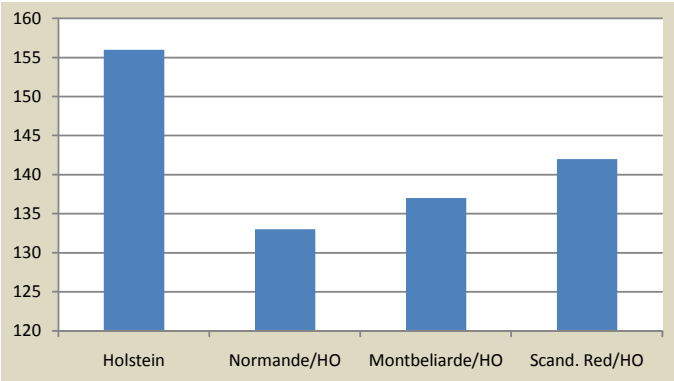


Dechow et al., 2007

Traditional Breeds

- Strengths
  - JE x HO
    - Fat yield close to HO
    - Fertility = pure JE
    - Survival
  - BS x HO
    - Component yields exceed pure HO
    - Improved fertility
    - Survival
    - Cheese properties
- Drawbacks
  - We know their warts
  - JE x HO
    - Deep Udders
    - Size variation
    - Temperament
  - BS x HO
    - Big cows
    - Calf management?

Days Open: European Breeds

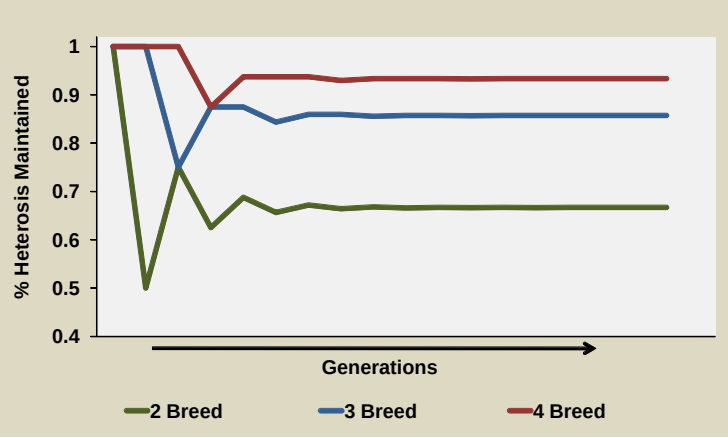


Heins et al., 2007

Heterosis

- Heterosis and Hybrid Vigor are the same thing
- Favorable heterosis has been demonstrated for all crosses
  - Yield & size: 3 – 10%
  - Fitness: >10%
  - Higher for “Alpine” breeds than Northern European?
- Heterosis = reversed inbreeding depression
  - Expect to increase over time

Maintaining Heterosis



Possible Breed Rotations

- Large breeds
  - Holstein
  - Brown Swiss
  - Swedish Red or Jersey
  - Montbéliarde ?
- Small breed
  - Holstein
  - Jersey
  - Swedish Red
  - Normande?

PROCROSS
MONTBELIARDE / HOLSTEIN / SWEDISH RED
SWEDISH RED / HOLSTEIN / MONTBELIARDE

Recommended by the company that pioneered the Swedish Red & Montbeliarde market

Recombination

- Assume it will cancel positive heterosis for YIELD traits
- May actually be FAVORABLE for health traits
  - Longevity in Danish cattle
- Generally neutral for total merit

Crossbreeding & Sire Selection

- The top sire of purebred cows will generally be the top sire of crossbred cows
- Crossbreeding does not diminish need for use of top sires
- Beware of hype
  - They all know how to eat grass!!

Two Bull Comparison

PTA Protein	+40	+25
PTA Daughter Preg Rate	+1	+2
All other traits	0	0

Rotations for Low Input

- Holstein – Jersey – Normande?
- Jersey – Normande – Scandinavian Red?
- Holstein – Jersey – Scandinavian Red?
- Ayrshire
  - Just not enough data
- New Zealand Holstein

Other Breeds?

- Not enough data
- Generally not as competitive as pure breeds in traditional settings
- Need more than hybrid vigor
  - Holstein x Zebu has a lot of heterosis

Take Home Message

- Have a realistic view of what your management system can / cannot provide
- Find the right cow for your management system
  - Crossbreeding is one tool

Improving Reproductive Efficiency in Dairy Herds

Robert Munson
University of Pennsylvania

2/10/2011

Setting up a Repro Program (1st Injection of PGF [Presynch] on 14 day interval)

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COMPLIANCE is the most important aspect of synchronization programs!!

PROGRAM

Fricke et al.2003

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	33-46 DIM	PGF				
	(1st PG shot)					
		PGF				
		GnRH *				
		PGF		**GnRH ***	**AI**	
		GnRH**				
		Open cows +PGF		**GnRH***	**AI**	

PGF= Prostaglandin 25mg $F_{2\alpha}$
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** (32 days after initial AI- BioPryn blood test can be employed).
Open cows - Pregnancy examination or open cows identified by BioPryn test, (cows not pregnant) get PGF. Pregnant cows should be rechecked at the owners' discretion.
AI= Artificial insemination
GNRH* (12-16 hour interval to) AI

Important Points

- Control the days to 1st insemination. The economic returns are much greater than controlling later breedings.
- Follow the program protocol. Compliance
- Cows receive GnRH 32 days after AI.
- Identify <u>open</u> cows! 32 days with blood test. 39 days with palpation.
- Open cows receive PG on day 39, 2 days later GnRH and bred 12-16 hours later.
- Producers cannot run effective programs examining cows for pregnancy (OPEN) once a month. Minimum every 2 weeks.

July 2009

Farm:	0							NRR:	10.0%
Test date:	07/11/2009							Report date:	01/24/2011
Pregnant Cows	113	Reported:	153	Estimated:	1	Preg300:	41		
No 1st breeding:	2	Active:	191	Culled:	103	Prev Lact:	189		

1st Insemination Summary

Lactation	VWP	Mean	Median	Day 80% Bred	Not Bred VWP+20		Insem. Efficiency
All:	75	87	81.0	89	11.4%		84.9%
1st Lact.	73	88	80.0	88	7.5%		91.0%
2nd Lact.	77	88	83.0	91	16.3%		82.3%
3rd & later Lact.	74	85	82.0	89	16.0%		86.8%
Unknown:	0	0	0.0	0	0.0%		0.0%

1st Service

Note: VWP = Voluntary wait period

Conception Rate Summary

Lactation	Overall Services/Conception			% with 4+ servic
All Lactations	3.84	C/R:	26.0	
1st Lactation	3.37	C/R:	29.7	
2nd Lactation	4.20	C/R:	23.8	3
3rd+ Lactations	4.12	C/R:	24.3	38.0%
Lact. # unknown	-	C/R:	-	0.0%

Conception Rate

Pregnancy Rate by Lactation Group

Lactation	Mean Pregnancy Rate All	95%		
All Lactations	15.9%			
1st Lactation	20.2%			
2nd Lactation	16.1%	11.4%	4.7%	27.5%
3rd+ Lactations	18.4%	11.7%	6.7%	30.1%
Lact. # unknown	0.0%	0.0%	0.0%	0.0%

Pregnancy Rate 15.9%

First HDR	Post HDR	Mean HDR	PR Calc
84.9%	49.8%	67.4%	17.54

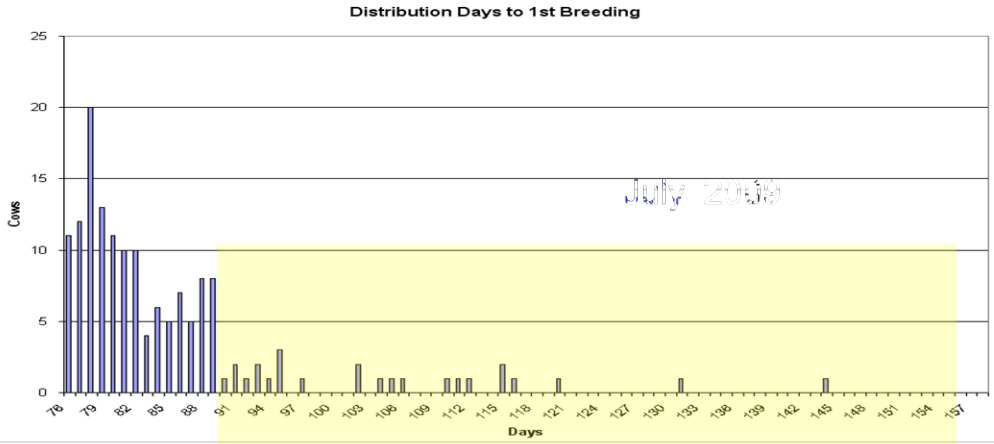
July 2009

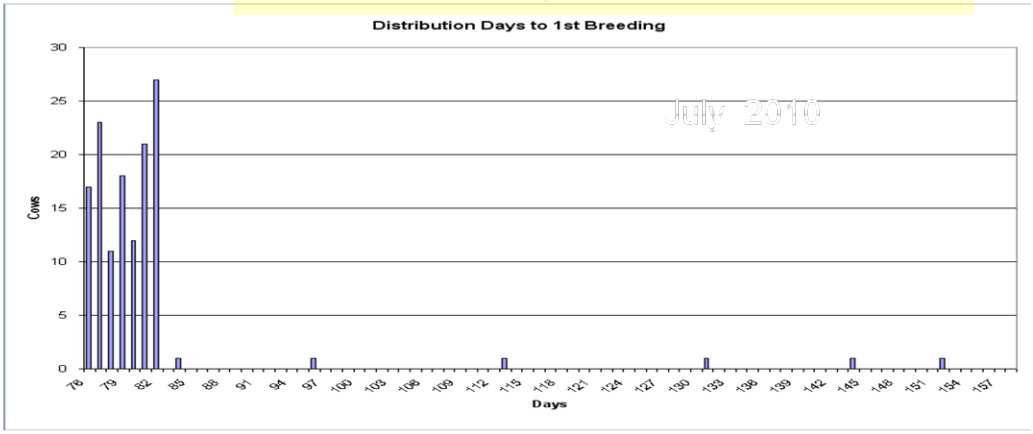
52										
53	**Interval Analysis: Distribution of Days between Breedings - All Lactations**									
54	**Services Sum of 1 - 2, 2 - 3 and 3 - 4**									
55	Interval	< 10	10 - 17	18 - 24	25 - 35	36 - 48	>= 49	N		
56	# Cows:	1	6	36	17	127	63			
57	% Cows:	0.4%	2.4%	14.4%	6.8%	50.8%	25.2%			
58	% < 49:	0.5%	3.2%	19.3%	9.1%	67.9%		18		
59	% 10-48:		3.2%	19.4%	9.1%	68.3%		186		
60	Long:	25.2%	Abnormal:	12.3%	Ratio:	0.28	PostHDR:	14.8		
61	Avg days between:	1-2:	47.2	2-3:	40.2	3-4:	39.8			
62										
63	**Pregnancy Rate effects on Production Efficiency**									
64	Pregnancy Rate Goal:	0.2			Cull cow value:	$500		$/lb Milk value:	$0.11	
65	Replacement Heifer cost:	$1,400			Annual Herd Turnover (%):	30		$/head Calf value:	$100.00	
66	Avg age 1st calving (months):	24			Calves born dead %:	5				
67							Milk Calf		Replacement	
68	Lactation	PR All	MF				ses	Diff DO	Losses	Total
69	All Lactations	15.9%					($62)	-26.2	($63)	($125)
70	1st Lactation	20.2%	16		0.1	0.61	0.00	$3	1.2	$3
71	2nd Lactation	16.1%	197.0	-1.3	0.74	-0.06	($59)	-25.0		
72	3rd+ Lactations	18.4%	178.0	-0.5	0.78	-0.02	($21)	-9.0	($23)	
73	Lact. # unknown	0.0%	0.0	0.0	0.00	0.00	$0	0.0	$0	

Delay to Re-breed

Pregnancy Rate 15.9%

Repro Loss





July 2010

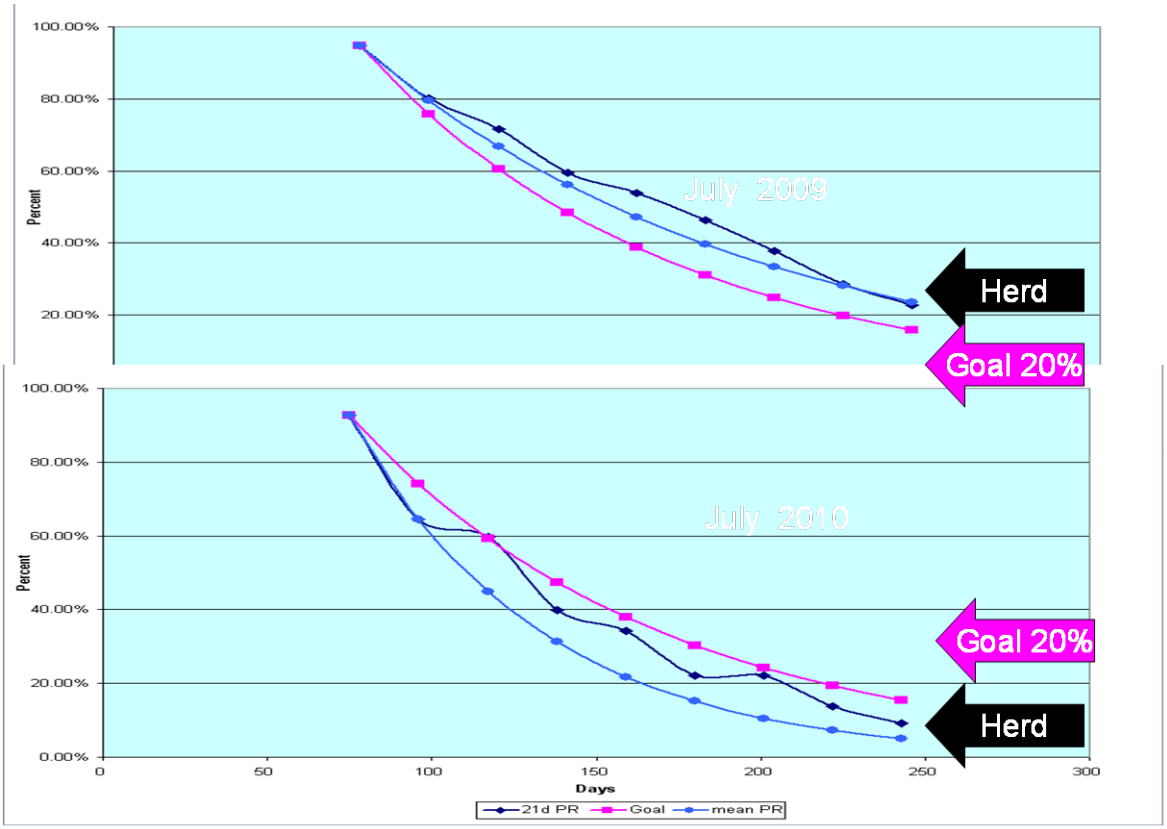
Interval Analysis: Distribution of Days between Breedings - All Lactations Services Sum of 1 - 2, 2 - 3 and 3 - 4									
Interval	< 10	10 - 17	18 - 24	25 - 35	36 - 48	>= 49			
# Cows:	0	2	11	5	96	19			
% Cows:	0.0%	1.5%	8.3%	3.8%	72.2%	14.3%			
% < 49:	0.0%	1.8%	9.6%	4.4%	84.2%				
% 10-48:		1.8%	9.6%	4.4%	84.2%		14		
Long:	14.3%	Abnormal:	6.1%	Ratio:	0.11	PostHDR:	(3.3)		
Avg days between:	1-2:	45.3	2-3:	47.4	3-4:	39.3			
Pregnancy Rate effects on Production Efficiency									
Pregnancy Rate Goal:		0.2			Cull cow value:	$500		$/lb Milk value:	$0.11
Replacement Heifer cost:		$1,400			Annual Herd Turnover (%):	30		$/head Calf value:	$100.00
Avg age 1st calving (months):		24			Calves born dead %:	5			
Lactation	PR All	ME			PY Loss	Milk Calf Losses	Diff DO	Replacement Losses	Total
All Lactations	30.4%				0.09	$91	35.7	$121	$213
1st Lactation	30.6%				0.10	$93	36.3	$123	$216
2nd Lactation	32.6%	13	2.1	0.91	0.11	$103	40.4	$137	$240
3rd+ Lactations	35.2%	124.9	2.4	0.92	0.12	$115	45.1	$153	$268
Lact. # unknown	0.0%	0.0	0.0	0.00	0.00	$0	0.0		

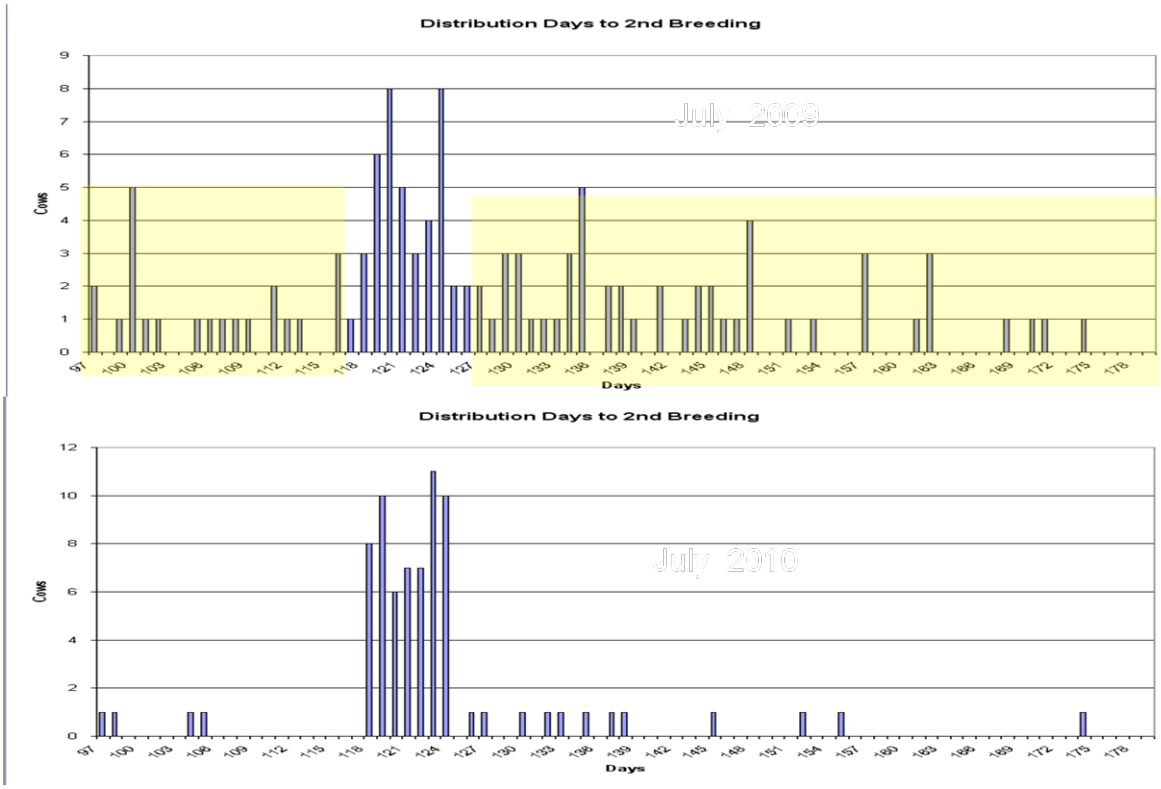
Only 14%

Pregnancy Rate 30.4%

Repro Gain !!!

Time to Pregnancy Curves





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PROGRAM

Fricke et al.2003

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		PGF				
		PGF				
		GnRH *				
		PGF		**GnRH ***	**AI**	
		GnRH**				
		Open cows +PGF		**GnRH***	**AI**	

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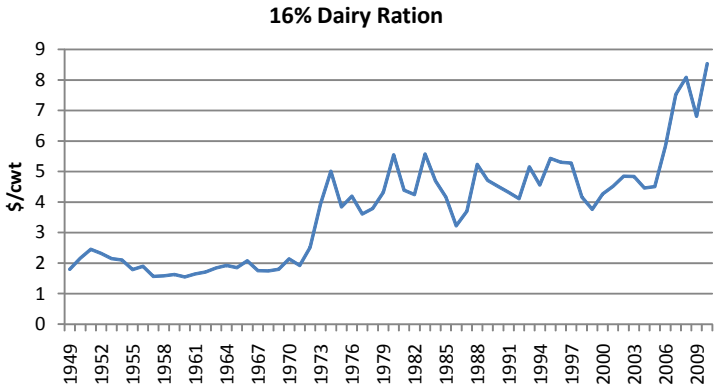
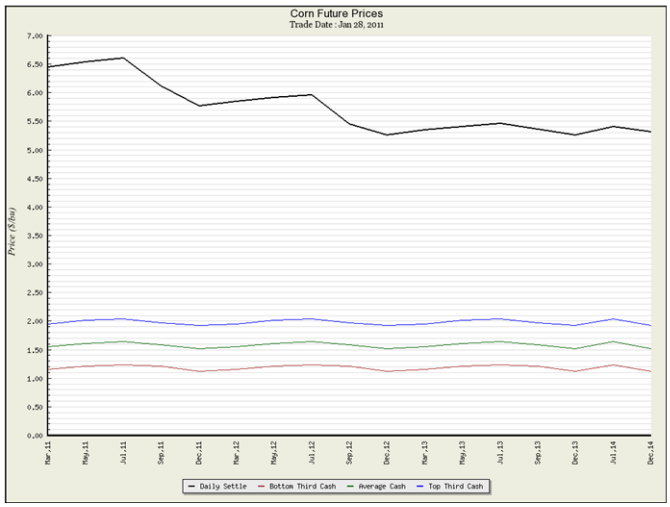
Feed Costs Have Risen



Futures Remain High



IOFC is part of $LNM

Index				
NM$	14.36	1.63	1.94	0.0286
CM$	14.36	1.63	3.35	-0.0138
FM$	14.36	1.63	0.77	0.0636
Feed cost	6.01	0.53	0.7	0.0206
NM$ - Feed	8.35	1.1	1.24	0.008

-1 lb BW = $0.18 / lactation for increased feed
-1 STA of body size composite = 24 lbs of BW

Direct Selection

PRODUCTION TRAITS	
24 pens of pigs. Paylean® was fed.	
Finisher entry weight, lb.	83.8
Market weight, lb.	286.3
Average daily gain, lb./d	2.17
Feed conversion	2.56
Mortality rate, % (480 placed pigs)	.5

- Requires feed intake measurements
  - Individual
  - Daughter groups

Efficiency Measures

- DME = Dry Matter Efficiency
  - Fat Corrected Yield / DMI
- NE_L E = NE_L efficiency
  - Fat Corrected Yield / NE_L intake
- CPE = Crude Protein Efficiency
  - Protein Yield / CP Intake
- Residual feed intake

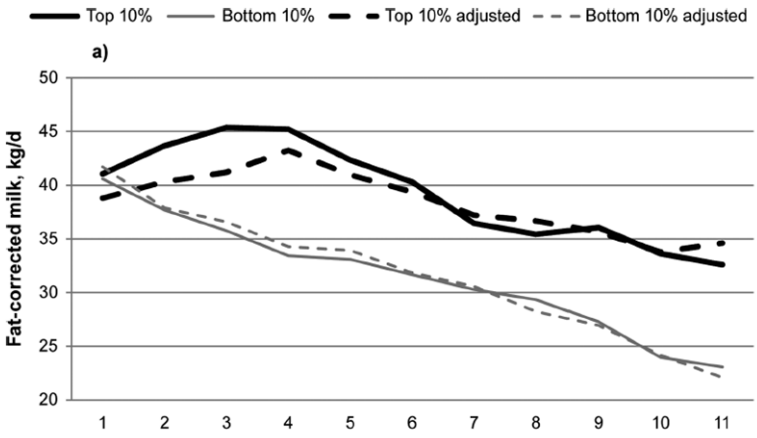
RFI

- Negatively correlated with DME (-0.73)
- Little genetic variation in PSU trial
  - Intake measures imprecise?
  - Better job of accounting for feed use?
- The assumption (hope?) for RFI
  - Reduced maintenance energy
  - More efficient digestion?

Conclusions from Heritability & Genetic Correlations

- Most gain in “efficiency” will come through yield increases
- Opportunities for size moderation
- Body condition
  - Higher = less “feed efficiency”
  - Lower = poorer reproduction and health
- Residual feed intake?
  - Not clear
  - Will be through genomic selection

Efficient Cows



GxE

- Dry matter refusals
  - How much was left in front of the cow
- 6 highest herds for DMR
- 5 lowest herds for DMR

Take home message

- Gross feed efficiency exists
  - High yield
  - Smaller and leaner cows
    - Health and fertility need to be considered
- Big cows
  - Must produce a lot of milk
  - Eat a cheaper diet?
- Income over Feed Costs
  - $LNM

Take home message

- Lack of nutrients limit genetic expression
  - Even more problematic for larger cows
- Future feed intake/efficiency selection?
  - Need direct measurements
    - Develop gene markers

Acknowledgements

- Jared Daubert
- Jennifer Vallimont
- Charlene Barlieb
- Turner Swartz
- Michael Phelps
- Dustin Brown
- Shane Hall
- Jürg Blum
- Dairy producers

The Present
Delaware Concentrated Animal Feeding Operation Regulations

November 11, 2010

Abbreviations:

AWMP Animal Waste Management Plan

BMP Best Management Practice

CAFO Concentrated Animal Feeding Operation

CNMP Comprehensive Nutrient Management Plan (NRCS)

NDPES National Pollution Discharge Elimination System

NMP Nutrient Management Plan

NOI - Notice of Intent

DE CAFO REGS

Nine Elements of a CNMP or AWMP

- Adequate storage capacity for manure, litter and process wastewater
- Proper management of dead animals
- Clean water management
- Preventing animals from contacting Waters of the State
- Proper chemical handling
- Implementing conservation practices to control nutrient loss
- Proper record keeping
- Methods for land application of manure
- Testing manure and soil

Delaware Nutrient Management Program

State Technical Standards (DRAFT)

Amendments: Treatment of Agricultural Waste
Animal Mortality Facility
Critical Area Planting
Composting Facility
Grassed Waterways
Nutrient Management
- Nine Elements of a Nutrient Mngmt Plan or Animal Waste Mngmt
- Animal Waste Plan

Nutrient Management Record Keeping
Nutrient Managemetn Relocation
Production Area Risk Assessment
Storm Water Management
Waste Storage Structure

DE CAFO REGS

If a new “AWMP” or “CNMP” is not available;

“a letter from the certified consultant developing your plan, stating when they expect to have the plan completed, must accompany your NOI.”

If your current plan expires after February 9, 2011 some consultants “may” choose to use the current expiration date of your plan prior to June 2012

Each day brings a new question,
Every question gets an answer!

dda.delaware.gov
Delaware Nutrient Management
800-282-8685
302-698-4535