

Economic Comparison of Conventional vs. Intensive Heifer Rearing Systems



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Objectives

- To evaluate the economic costs and opportunities of conventional vs. intensive heifer rearing systems
 - What are the additional costs?
 - What are the expected returns?
 - Does this approach make sound financial sense?

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Historically, Calves Have Been Limit Fed Milk

- Management has limited milk or milk replacer to 8 - 10% of body weight
 - Often, 1 gal/ d of a 20:20 milk replacer
- Objectives of this approach:
 - To promote early intake of starter
 - To allow earlier weaning
 - To save on milk feeding costs...
therefore, *lower rearing costs*, right (?)

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Problems with the Historical Approach to Rearing Calves

- Inadequate nutrition early in life leads to higher morbidity and mortality
 - Calves usually consume very small amounts of starter (< 0.25 lb) during 1-2 weeks of age
 - Often see diarrhea at 7-10 days of age and pneumonia at 2-4 weeks of age
 - Semi-starvation → poor immune function
 - Problems are amplified during cold stress
- Slow growth rates
 - Less efficient - must feed for more total days, less dilution of maintenance energy costs

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Commonly Stated “Goals”

	24 hrs – 60 days	61 – 120 days	121 – 180 days	> 6 months	Overall
Mortality	< 5%	< 2%	< 1%	< 1%	< 8%
Morbidity (diarrhea)	< 25%	< 2%	< 1%		
Morbidity (pneumonia)	< 10%	< 15%	< 2%		< 20%
Growth rate	Double birth weight	2.2 lbs/d	2 lbs/ d		

(Adapted from Dairy Calf and Heifer Association, Gold Standards, http://calfandheifer.org/gold_standards/index.php, accessed on May 22, 2012)

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Heifer Health Info

	24 hrs – 60 days		Post-weaned heifers	
	“Goal”	Actual (NAHMS 2007*)	“Goal”	Actual (NAHMS 2007)
Mortality	< 5%	7.8%	< 3%	2%
Morbidity (diarrhea)	< 25%	18%	< 2%	1.6%
Morbidity (pneumonia)	< 10%	11.4%	< 15%	6%
Growth rate	Double birth weight	177 lbs (median)	1.7-2 lbs/d	1.6 lbs/d

Note:

- The **actual** data represent info collected in 2007 from across the U.S.
- Within this data set are herds doing a great job, herds doing a terrible job, and herds that are everywhere in between

*Heifer Calf Health and Management Practices on U.S. Dairy Operations, 2007
http://www.aphis.usda.gov/animal_health/naahms/dairy/downloads/dairy07/Dairy07_ir_CalfHealth.pdf, accessed on May 22, 2012

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Heifer Health Info

	24 hrs – 60 days		Post-weaned heifers	
	“Goal”	Actual (NAHMS 2011*)	“Goal”	Actual (NAHMS 2011)
Mortality	< 5%	4.2%	< 3%	1.6%
Morbidity (diarrhea)	< 25%	25.3%	< 2%	0.8%
Morbidity (pneumonia)	< 10%	18.1%	< 15%	11.2%

Note:

- The **actual** data were collected in 2011 from heifer raisers across the U.S.
- Within these data are operations doing a great job, herds doing a terrible job, and herds everywhere in between.

* Dairy Heifer Raiser, 2011 – An overview of operations that specialize in raising dairy heifers
http://www.aphis.usda.gov/animal_health/naahms/dairy/downloads/dairyheifer11/HeiferRaiser.pdf, accessed September 29, 2014

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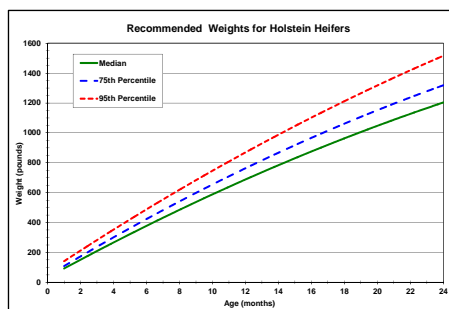
Other Commonly Promoted “Goals” for Holstein Heifers

- Reach puberty at 9 – 10 months
- Start breeding at 13 – 14 months
 - 850 lbs (~ 55% of mature body weight)
 - 50-51” withers height (~ 85% of mature height)
- Calve at ~ 24 months
- Weigh ~1300 to 1450 just prior to calving
 - (1,150 to 1,300 pounds after calving)
 - ADG of ~1.7 lbs/d of rearing

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How are U.S. Heifers Performing?

Weight (pounds)			
Age (days)	25th Percentile	Median	75th Percentile
1-7	91	97	105
7-13	91	101	115
14-20	97	105	115
21-27	97	115	126
28-34	115	126	138
35-41	120	138	151
42-48	126	151	164
49-55	135	151	177
56-62	157	177	204
63-69	171	191	220
70-76	171	191	212
77-83	184	204	236
84-90	204	236	260



(NAHMS 2007¹)

(Penn State 2004²)

¹ Heifer Calf Health and Management Practices on U.S. Dairy Operations, 2007
http://www.aphis.usda.gov/animal_health/naahms/dairy/downloads/dairy07/Dairy07_ir_CalfHealth.pdf,
 accessed Sep 29, 2014

² Monitoring Heifer Growth -- <http://extension.psu.edu/animals/dairy/nutrition/heifers/monitoring-heifer-growth>
 (growth-monitor-heifer-holsteins.xls), accessed Oct 10, 2014

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Higher “Opportunity Costs” with Conventional Approach

- Average age-at-first calving: 25 to 26 months (25.2*)
- As compared to more intensively reared heifers with age-at-first calving of 22 to 23 months...
 - ~ 3 month period of extra feeding
 - ~ 3 months delay in a positive cash flow (milk)
 - 12 to 15% larger inventory of heifers to meet same supply needs

*Heifer Calf Health and Management Practices on U.S. Dairy Operations, 2007
http://www.aphis.usda.gov/animal_health/naahms/dairy/downloads/dairy07/Dairy07_ir_CalfHealth.pdf,
 accessed on May 22, 2012

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Model Design

- The spreadsheet-based model compares a conventional rearing program to an intensive program
- Intensive program rations are higher in metabolizable protein without excessive energy up until springers
 - More nutrient-dense milk replacer, starter, grower rations
 - Same ration in close-up pen
 - More total feed/day/heifer due to larger animals eating more
 - Intensive program results in:
 - Lower morbidity & mortality
 - Lower AGEFB and AGEFR
 - Higher future milk production
- Final “cost” is based on value at calving (cost/ heifer that actually calves)

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The Model is Divided into **STAGES** Based on Major Management Needs (Feeding/ Housing/ Breeding)

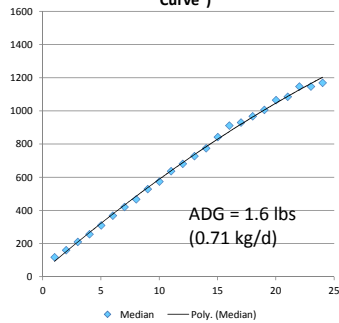
Program	Stage I hutch calves	Stage II	Stage III	Stage IV prebreeding	Stage V postbreeding	Stage VI Close-up
Conventional	Birth - 2 months	2 - 4 months	4 - 10 months	10.0 - 18.5 months	18.5 - 24.2 months	24.2 - 26.2 months
Intensive	Birth - 2 months	2 - 4 months	4 - 10 months	10.0 - 15.5 months	15.5 - 21.3 months	21.3 - 23.3 months

- Differences after 10 months are primarily due to different age at first service
 - Based on different rates of growth prior to breeding (i.e., when they reach breeding size)

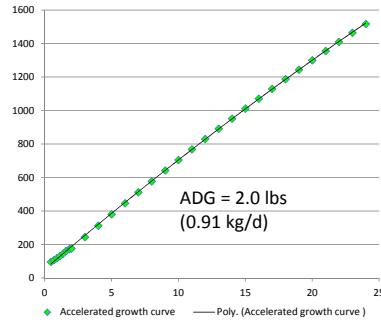
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Growth Curves Equations

Conventional Growth Curve
(Adapted from Penn State Median Curve¹)



Intensive Growth Curve
(from Corbett data set², Utah)



DMI predictions based on NRC³:

$$\text{NRC DMI} = (\text{BW}^{0.75}) * ((-0.0466 * \text{NE}_m^2) + (0.2435 * \text{NE}_m) + (-0.1128)) / \text{NE}_m$$

¹ Group Growth Monitor – Holstein Calves, 2004, <http://www.das.psu.edu/research-extension/dairy/nutrition/xls>, accessed on May 22, 2012

² Personal communication, Dr. Bob Corbett, unpublished data from Utah, 2011

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³ Nutrient Requirements of Dairy Cattle: Seventh Revised Edition, 2001: The National Academies Press; p. 6.

Growth Stages and Period-Specific Mortality Risks

Program	Stage I Birth – 2 mos	Stage II 2 – 4 mos	Stage III 4 – 10 mos	Stage IV 10 mos - breeding	Stage V Post breeding	Stage VI Close-up (final 2 mos)	Overall Mortality Risk
Conventional	7.0%	2.5%	1.0%	0.5%	0.3%	0.3%	12%
Intensive	3.0%	1.8%	0.5%	0.5%	0.3%	0.3%	6%

• Mortality data adapted from NAHMS, 2007¹

• For intensive system, reductions in mortality were based on Corbett data² and clinical experience

¹ Heifer Calf Health and Management Practices on U.S. Dairy Operations, 2007

http://www.aphis.usda.gov/animal_health/naahms/dairy/downloads/dairy07/Dairy07_ir_CalfHealth.pdf, accessed on May 22, 2012

² Personal communication, Dr. Bob Corbett, unpublished data from Utah, 2011

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Growth Stages and Period-Specific Morbidity Risk and Cost Estimates

Program	Stage I Birth – 2 mos		Stage II 2 – 4 mos	Stage III 4 – 10 mos	Stage IV 10 mos - breeding	Stage V Postbreeding	Stage VI Close-up
	Diarrhea	Respiratory	Respiratory	Any Treatment	Any Treatment	Any Treatment	Any Treatment
Conventional	40%	35%	15%	3.5%	1.8%	0.9%	0.8%
	\$13.27		\$2.94	\$1.07	\$0.97	\$0.61	\$0.60
Intensive	20%	18%	5%	2.6%	1.3%	0.7%	0.6%
	\$6.63		\$0.88	\$0.80	\$0.73	\$0.46	\$0.45

• Morbidity data for conventional calves adapted and modified from NAHMS, 2007¹

• Morbidity costs were estimated using standard tx protocols and reported medication costs

• For intensive system, reductions in morbidity were based on Corbett data² and clinical experience

¹ Heifer Calf Health and Management Practices on U.S. Dairy Operations, 2007

http://www.aphis.usda.gov/animal_health/naahms/dairy/downloads/dairy07/Dairy07_ir_CalfHealth.pdf, accessed on May 22, 2012

² Personal communication, Dr. Bob Corbett, unpublished data from Utah, 2011

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Quick reminder before looking at specific values...

• All costs, whether by growth stage, or in total, are adjusted to a “per surviving heifer” basis

– i.e., with higher mortality rates, the remaining heifers must “carry” more expense

– Hypothetical example (not considering initial calf value):

• 10 calves enter hutches

• 9 calves survive and move to next stage (actual cost = \$297/ calf)

• 1 calf dies the day before movement (total cost = \$293)

• Net cost/ surviving calf = $(9 * \$297) + (1 * \$293) / 9 = \$329$

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Starting Assumptions

- Newborn heifer value \$400
- Birth weight 88 lbs
- Breeding weight 850 lbs (51" WH)
- Labor/ hr \$14
- Interest 6%
- AI cost/ service \$15
- Milk price \$18/ cwt

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Feed and Milk Replacer Inputs

	Conventional	Intensive
Milk replacer (50 lbs)	\$ 52	\$ 66
Lbs powder added/ gallon	1.0 (12%)	1.25 (15%)
Calf Starter/ton AF	\$ 349	\$ 413
Grower grain/ ton AF	\$ 319	\$ 354
Grower hay cost/ ton AF	\$ 225	\$ 225
Pre-breed TMR cost/ lb DM	\$ 0.11	\$ 0.12
Breeding TMR cost/ lb DM	\$ 0.09	\$ 0.10
Post-breeding TMR cost/ lb DM	\$ 0.08	\$ 0.09
Close-up TMR cost/ lb DM	\$ 0.13	\$ 0.13

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Milk Feeding Assumptions for Stage I: 24 hrs to 2 months ("hutch" calves)

- Conventional :
 - 20/20 milk replacer
 - Cost: \$52/50 lbs
 - Feeding rate: 1.0 lb/ gal
- Intensive:
 - 28/20 milk replacer
 - Cost: \$66/50 lbs
 - Feeding rate: 1.25 lb/ gal

Stage	# of Days	Conventional: Amt/ d (gal)	Intensive: Amt/ d (gal)
1	7	1	1.25
2	35	1	1.75
3	7	1	0.875
Total	49 d	49 gal (49 lbs) (49 lbs)	76 gal (95 lbs) (95 lbs)
Avg gal/d		1	1.55
Total cost		\$51	\$126

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Grain Feeding Assumptions for Stage I: Birth to 2 months ("hutch" calves)

- Conventional
 - 18% CP starter (AF)
 - Cost: \$349/ ton AF
- Intensive
 - 22% CP starter (AF)
 - Cost: \$413/ ton AF

Stage	# of Days	Conventional: Amt/ d (lbs)	# of Days	Intensive: Amt/ d (lbs)
1	7	0.13	7	0.1
2	42	2.44	35	0.8
3	14	4.44	21	3.8
Total Feed	63	165	63	109
Total Cost		\$29		\$23

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Growth Stage I: Birth to 2 months (“hutch” calves)

	Conventional	Intensive
Colostrum:	\$21	\$21
Milk:	\$51	\$126
Starter:	\$29	\$23
Total Feed Costs:	\$109	\$177
Labor:	\$90	\$87
Vet Med/ Health:	\$18	\$10
Interest:	\$33	\$35
Dead Calf Lost Invest.	\$36	\$14
Other Costs:	\$52	\$52
Total Cost:	\$374	\$415
Cost/ Day:	\$5.93	\$6.59
Entering Weight (lbs):	88	88
Exit Weight (lbs):	155	192

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Growth Stage II: 2 to 4 months

	Conventional	Intensive
Grain:	\$51	\$65
Hay:	\$9	\$11
Total Feed Costs:	\$62	\$77
Labor:	\$30	\$29
Vet Med/ Health:	\$3	\$1
Interest:	\$12	\$12
Dead Calf Lost Invest.	\$13	\$8
Other Costs:	\$15	\$15
Total Cost:	\$168	\$180
Cost/ Day:	\$2.87	\$3.07
Entering Weight (lbs):	155	192
Exit Weight (lbs):	266	320

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Growth Stage III: 4 to 10 months

	Conventional	Intensive
Feed (TMR) Costs:	\$238	\$290
Labor:	\$65	\$65
Vet Med/ Health:	\$5	\$5
Interest:	\$30	\$27
Dead Calf Lost Invest.	\$5	\$2
Other Costs:	\$53	\$53
Total Cost:	\$500	\$558
Cost/ Day:	\$2.74	\$3.06
Entering Weight (lbs):	266	320
Exit Weight (lbs):	588	705

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Growth Stage IV*:

	Conventional 10 to 18.5 mo.	Intensive 10 to 15.5 mo.
Feed (TMR) Costs:	\$417	\$302
Labor:	\$72	\$46
Vet Med/ Health:	\$4	\$3
Interest:	\$23	\$17
Dead Calf Lost Invest.	\$3	\$2
Breeding Costs:	\$27	\$27
Other Costs:	\$93	\$59
Total Cost:	\$786	\$560
Cost/ Day:	\$3.05	\$3.42
Entering Weight (lbs):	588	705
Exit Weight (lbs):	984	1033

*Duration of this stage depends on age at first service (a function of growth rate) and reproductive efficiency

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Reproductive Management Costs

Conventional										Service cost/ insemination	\$ 15	Average breeding cost/ hd		\$ 26					
Conventional										IR	68%	CR	55%	% Female	47%	Open Heifer/ lb	\$1.20	Breeding costs	\$ 23,508
										Cost/ surviving heifer		\$ 26.56							
Cycle #	CR	# @ Risk	# Bred	# Preg	# Open	# Remaining	DOPN	# Heifers	# Bulls										
1	58%	896	609	355	254	541	3730	167	188										
2	57%	541	368	210	157	330	6626	99	111										
3	55%	330	225	124	101	207	6488	58	66										
4	52%	207	141	73	68	134	5345	34	39										
5	47%	134	91	43	49	91	4030	20	23										
6	47%	91	62	29	33	62	3359	14	15										
7	47%	62	42	20	23	43	2708	9	11										
8	47%	43	29	14	15	29	2131	6	7										
										55%	2305	1567	867	29	40	407	459		
										Repro Cull Costs:		\$ 1,777							
										Returns		\$ 1,384							
										Net cost for culls/ heifer placed		\$ 12.73							
										Net cost for culls/ heifer finished		\$ 12.89							

Intensive										Service cost/ insemination	\$ 15	Average breeding cost/ hd		\$ 26					
Intensive										IR	68%	CR	55%	% Female	47%	Open Heifer/ lb	\$1.20	Breeding costs	\$ 24,872
										Cost/ surviving heifer		\$ 26.54							
Cycle #	CR	# @ Risk	# Bred	# Preg	# Open	# Remaining	DOPN	# Heifers	# Bulls										
1	58%	948	645	376	269	572	3946	177	199										
2	57%	572	389	223	167	350	7010	105	118										
3	55%	350	238	131	107	219	6865	61	69										
4	52%	219	149	77	72	142	5655	36	41										
5	47%	142	97	45	51	97	4263	21	24										
6	47%	97	66	31	35	66	3554	14	16										
7	47%	66	45	21	24	45	2865	10	11										
8	47%	45	31	14	16	31	2255	7	8										
										55%	2438	1658	917	31	40	431	486		
										Repro Cull Costs:		\$ 1,762							
										Returns		\$ 1,533							
										Net cost for culls/ heifer placed		\$ 7.42							
										Net cost for culls/ heifer finished		\$ 7.51							

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Growth Stage V: Post-breeding to Close-up

	Conventional	Intensive
	18.6 to 24.3 mo.	15.6 to 21.3 mo.
Feed (TMR) Costs:	\$307	\$352
Labor:	\$37	\$37
Vet Med/ Health:	\$5	\$5
Interest:	\$4	\$4
Dead Calf Lost Invest.	\$2	\$2
Repro Culls:	\$13	\$8
Other Costs:	\$31	\$31
Total Cost:	\$498	\$548
Cost/ Day:	\$2.87	\$3.16
Entering Weight (lbs):	984	1033
Exit Weight (lbs):	1,210	1362

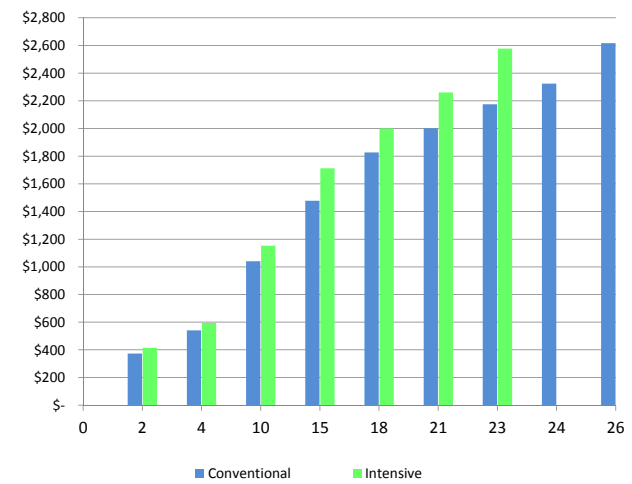
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Growth Stage VI: (Springers)

	Conventional	Intensive
	24.3 to 26.3 mo.	21.3 to 23.3 mo.
Feed (TMR) Costs:	\$194	\$214
Labor:	\$26	\$26
Vet Med/ Health:	\$14	\$14
Interest:	\$0	\$0
Dead Calf Lost Invest.	\$1	\$1
Other Costs:	\$22	\$22
Total Cost:	\$292	\$316
Cost/ Day:	\$4.81	\$5.19
Entering Weight (lbs):	1,210	1362
Exit Weight (lbs):	1,282	1473

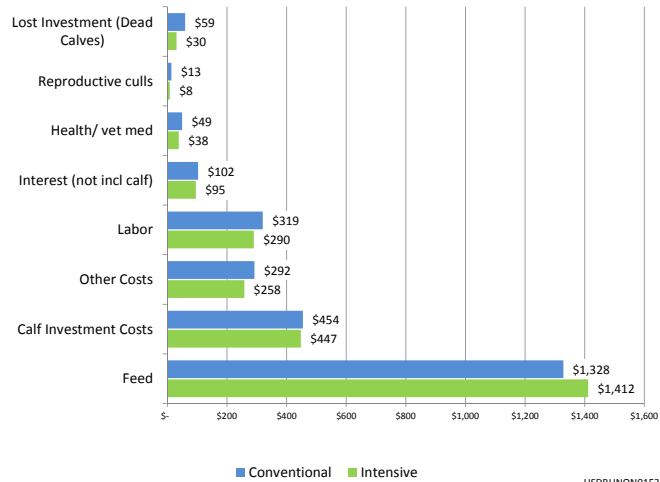
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Cumulative Cost Throughout the Rearing Period



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Total Costs by Category



Intensive Rearing Has Also Resulted in More Milk in First and Second Lactation*

	1st Lactation	2nd Lactation
Extra milk predicted for first lactation (lbs)	1700	1000
Interest rate	6%	
Marginal milk/ lb DM	2.3	
Milk price:	\$0.18	
Feed cost/ lb TMR (DM)	\$0.135	
Marginal milk net value/ lb	\$0.12	
Net value of extra marginal milk	\$206	\$121
Net present value of extra marginal milk	\$195	\$108
Culling risk - Lact = 1	28%	32%
Estimated average value of extra milk/ heifer	\$167	\$70
Total extra value of extra milk/ heifer		\$237

*Soberon F, Raffrenato E, Everett RW, Van Amburgh ME. 2012. Preweaning milk replacer intake and effects on long-term productivity of dairy calves. J Dairy Sci; 95(2):783-93.

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A Higher Average Daily Gain is Associated with More First Lactation Milk*

-106 kg + 1,551.4 kg × ADG (kg/d; P = 0.01)

	1st Lactation
Additional ADG of modeled intensive program (lbs/d)	0.6
Extra milk predicted for first lactation (lbs)	908
Interest rate	6%
Marginal milk/ lb DM	2.3
Milk price:	\$0.18
Feed cost/ lb TMR (DM)	\$0.135
Marginal milk net value/ lb	\$0.12
Net value of extra marginal milk	\$109
Net present value of extra marginal milk	\$103
Culling risk - Lact = 1	28%
Estimated average value of extra milk/ heifer	\$89

*Soberon, F. and M. E. Van Amburgh. 2013. J of Animal Sci 91(2):706-712.

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Net Results

(Initial Calf Value of \$400 and only considering extra milk in 1st lactation)

Outputs:	Convent. System:	Intensive System:
Calf Invest. Cost at Calving	\$454	\$447
Age at First Service	15.7	12.6
Average Age at First Calving	26.2	23.1
Average Daily Gain (lb/d)	1.50	1.97
Total Rearing Cost/ Heifer (incl. interest + initial value + repro culls)	\$2,617	\$2,577
Avg Cost/ Day	\$3.29	\$3.67
Additional Milk in 1st Lact: Soberon 2012 (or 2013)		1700 (or 908)
Add. Milk Value (1st Lact)		\$167 (or \$89)
Net Cost/ heifer	\$2,617	\$2,410 (\$2,488)
Additional profit for Intensive		\$207 (or \$129)

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Net Results

(Initial Calf Value of \$0 and only considering extra milk in 1st lactation)

Outputs:

	Convent. System:	Intensive System:
Calf Invest. Cost at Calving	\$0	\$0
Age at First Service	15.7	12.6
Average Age at First Calving	26.2	23.1
Average Daily Gain (lb/d)	1.50	1.97
Total Rearing Cost/ Heifer (incl. interest + initial value + repro culls)	\$2,101	\$2,097
Avg Cost/ Day	\$2.64	\$2.99
Additional Milk in 1st Lact: Soberon 2012 (or 2013) Add. Milk Value (1st Lact)		1700 (or 908) \$167 (or \$89)
Net Cost/ heifer	\$2,101	\$1,929 (\$2,008)
Additional profit for Intensive		\$207 (or \$129)

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Intensive Rearing Can Reduce Total Heifer Inventory

Projected Heifer Needs: 1000 Cow Dairy (milking + dry) with Varying Culling Risks

Culling Risk	30%	33%	36%	39%
Total Replacements Needed/ Yr	300	330	360	390

Conventional

Number needed placed/ month	28	31	34	37
Total avg heifer inventory	669	735	806	877

Intensive

Number needed placed/ month	27	29	32	35
Total avg heifer inventory	588	645	704	768

- With an intensive system and accelerated growth/ management:
 - Fewer heifers need to be placed in hutches each month
 - Lower total heifer inventory needed
 - Alternatively, extra heifers could be raised

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Intensive Programs Should be More “Efficient”

- More lbs of lean gain and frame, less fat
- Fewer total lbs of feed (milk solids, grain, hay, TMR) consumed from birth to calving:
 - Conventional: 12,353 lbs
 - Intensive: 11,643 lbs
- Cost/ lb of gain (assuming \$400 calf value and no consideration of extra milk in first lactation):
 - Conventional: \$2.19
 - Intensive: \$1.86

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Predicted Advantage or Cost () for Intensive Rearing Relative to Conventional

		Heifer Calf Price			
		\$100	\$200	\$350	\$500
Weight at 1st Service	775	(\$12)	(\$3)	\$10	\$23
	825	\$4	\$13	\$26	\$40
	875	\$22	\$31	\$45	\$58

(Note: this does **NOT** include the profit from the additional milk in the first lactation)

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Summary of Results

Based on the current assumptions used in this model:

		Advantage
Feed costs	(\$84)	Conventional
Labor costs	\$30	Intensive
Health/ vet med	\$11	Intensive
Interest cost	\$8	Intensive
Reproductive culls	\$5	Intensive
Other costs	\$34	Intensive
Lost investment (dead calves)	\$29	Intensive
Calf investment cost	\$7	Intensive
Net Result - Savings:	\$40	Intensive

Add in value of additional milk in 1st lactation of \$167 (or \$89) and the average advantage for **Intensive Rearing ~ \$207 (or \$129)**

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For Consideration...A Few “What Ifs”

- What if I compare the two approaches as previously indicated, but...
 - We start breeding at 850 lbs and a wet heifer = \$0
 - We omit the final two months (heifers returned to home farm)
 - Conventional = \$2.51/d (age at calving = 26.2 mos)
\$1845
 - Intensive = \$2.84/d (age at calving = 23.3 mos)
\$1821

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For Consideration...A Few “What Ifs”

- What if I feed waste milk and grow calves conventionally for remainder of time...
 - Waste milk = \$0.45/ gallon and calf value = \$0
 - Weight at first service = 850 lbs
 - Predicted cost = \$2065/ live heifer that calves
 - Average feed cost ~\$1297

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For Consideration...A Few “What Ifs”

- What if I feed waste milk and grow calves conventionally for remainder of time...
 - Waste milk = \$0.45/ gallon and calf value = \$400
 - Weight at first service = 850 lbs
 - Predicted cost = \$2581/ live heifer that calves
 - Average feed cost ~\$1297

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For Consideration...A Few “What Ifs”

- What if I feed waste milk and grow calves intensively for remainder of time...
 - Waste milk = \$0.45/ gallon and calf value = \$400
 - Weight at first service = 850 lbs
- Predicted cost = \$2492/ live heifer that calves
 - Does NOT include value of extra future milk
 - Average feed cost ~\$1337

(Note – this scenario assumes that we feed enough waste milk to maintain growth equal to feeding 28/20 in an intensive manner and there is no difference in morbidity/ mortality)

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Net Results

(Initial Calf Value of \$400 and only considering extra milk in 1st lactation)

Outputs:	Convent. System:	Intensive System:
Calf Invest. Cost at Calving	\$454	\$447
Age at First Service	15.7	12.6
Average Age at First Calving	26.2	23.1
Average Daily Gain (lb/d)	1.50	1.97
Total Rearing Cost/ Heifer (incl. interest + initial value + repro culls)	\$2,617	\$2,577
Avg Cost/ Day	\$3.29	\$3.67
Additional Milk in 1st Lact: Soberon 2012 (or 2013) Add. Milk Value (1st Lact)		1700 (or 908) \$167 (or \$89)
Net Cost/ heifer	\$2,617	\$2,410 (\$2,488)
Additional profit for Intensive		\$207 (or \$129)

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Disclaimer

- I have tried to represent the costs and benefits as closely as possible
- Approaches to rearing can vary tremendously for labor, feed, housing, etc – this model attempts to look at a “representative” operation that is bottle feeding calves in individual hutches
- More hard data for actual inputs (DMI, health and vet med costs, bedding/ housing, labor, etc) for each system would improve the accuracy and reliability of the estimates
- Of course, individual results may vary!

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Thanks For Your Attention!



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