

# 2014 Idaho Livestock Costs and Returns Estimate



EBB-D3-14

## Jersey Dairy Enterprise Annual 120-Cow Budget

Small Jersey herd                      19,400 pounds milk per cow  
Free stall housing                      Total mixed rations

*Kathleen M. Painter and Richard J. Norell*

# University of Idaho Extension

*Agricultural Economics & Rural Sociology*

## Background and Assumptions

Economic costs are used in the University of Idaho costs and returns estimates. All resources are valued based on market price or opportunity cost. This budget represents the average costs and returns per cow associated with a 120-cow Jersey herd. The herd is milked two times daily in a double 4 herringbone parlor with automatic detachers.

The rolling 365-day 4.7% fat-corrected milk for the year is assumed to be 19,404 pounds. Components for Jersey milk are typically 4.7% butterfat, 3.5% protein, and 9.5% other solids. Using 2014 component values from the USDA Agricultural Marketing Service of \$2.38 per lb for butterfat, \$3.79 per lb for protein, and \$0.47 per lb other solids, Jersey milk averaged \$28.91 per hundredweight (cwt), compared to \$22.45/cwt for Class 3 milk in 2014.

Free stall housing is provided for the milking cows. Loose housing is provided for dry cows. All pens have lock-type stanchions for herd management. The owner contributes to the daily labor requirement. The \$3,726 per cow facility investment is based on the best estimate of current cost and the average value of each component over its useful life.

## Dairy Overview

### Herd Information

The herd consists of 120 cows total with 87 percent of cows in milk (104 milking + 16 dry). The herd replacement rate is 33% annually (27% cull loss and 6% mortality) with ready-to-calve heifers used as replacement (\$1,780 per head). The herd has a 6% mortality rate on mature cows and an average 12.5-month calving interval. Calves have a 5% mortality rate at birth.

### Labor

Milking labor is hired with the owner milking on the hired labor's day off (see Table 1). A total of 7 hours per day are required for milking, set up, and cleaning, based on the assumption that a double 4 herringbone parlor can milk about 35 cows per hour, and 87% of the herd is milking at any one time. Thus, 6 hours per day are needed to milk 104 cows per day, plus one hour per day for set up and cleaning. Feeding labor consists of 1.5 hour/day, performed by the owner except for one day per week when the hired labor feeds. Two rations are prepped two times per day (1 milking ration and 1 dry cow ration). Cow management labor is performed by the owner 6 days out of the week (1.5 hours/day), with hired help performing these tasks one day per week. Cow management tasks include moving cows, managing bedding and breeding, herd health activities, and maintenance of the milking machinery. Herd management is provided by the herd owner (1.5 hours/day). Manure handling, performed with 1.5 hours of hired labor per day, consists of scraping the free stall barn twice daily, and hauling manure to storage or applying it to farmland. The feed alley for the dry cow pen is scraped once per day.

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### Feed

A total mixed ration (TMR) is prepared twice daily for the lactating cows and once daily for the dry cows. The milking herd TMR includes alfalfa hay, corn silage, a dairy concentrate purchased from their feed supplier while the dry cows are forage (hay, straw, and rye grass pellets) and a close up concentrate mix. The average TMR for lactating cows consists of 12.83 lb of alfalfa, 31.85 lb of silage, and 29.37 lb of dairy concentrates (Table 2). The average TMR for non-lactating cows consists of 3.30 lb of alfalfa, 27.83 lb of silage, 2.57 lb of close-up concentrates, and 16.16 lb of feeder hay. Cost per day averages \$5.71 for lactating cows and \$3.10 for dry cows.

**Table 1. Daily (hr/herd) and Annual (hr/head) Labor**

	Daily (hr/herd)		Annual labor (hr/cow)		
	Hired	Owner	Hired	Owner	Total
Milking	6.0	1.0	10.4	1.7	12.2
Feeding	0.2	1.3	0.3	2.3	2.6
Cow management	0.2	1.3	0.3	2.3	2.6
Herd management	0.0	1.5	0.0	2.6	2.6
Manure handling	1.5	0.0	2.6	0.0	2.6
Total	7.9	5.1	13.7	8.9	22.6

**Table 2. Daily Feed Ration Quantities (lb/cow) and Cost by Pen (\$/day)**

Pen	Price (\$/cwt)	Cow Ration Quantity (lb/day as fed)					Cost per head by pen
		Alfalfa hay	Corn silage	Dairy concentrate	Close-up concentrate	Dry cow hay and straw	
		\$11.75	\$2.25	\$11.88	\$23.13	\$9.26	
Lactating		12.83	31.85	29.37	0.00	0.00	\$5.71
Dry		3.30	27.83	0.00	2.57	16.16	\$3.10

**Table1: 120-Head Jersey Dairy Enterprise Annual Cow Budget**

**EBB-D3-14**

	Weight Each	Unit	Total Number of Head or Units	Price or Cost/Unit	Total Value	Value or Cost/Head	Your Value
<b>1. Gross Receipts</b>							
Milk	194.00	cwt	120	28.91	673,024.80	5608.54	_____
Bull Calves	1.00	head	55	100.00	5499.60	45.83	_____
Heifer Calves	1.00	head	55	234.00	12,869.06	107.24	_____
Cull cows	1.00	head	32	819.00	26,240.76	218.67	_____
Total Receipts					\$717,634.22	\$5980.29	_____
<b>2. Operating Costs</b>							
Alfalfa hay		cwt	4974.60	11.75	58,451.55	487.10	_____
Corn silage		cwt	13,469.76	2.25	30,306.96	252.56	_____
Dairy concentrate		cwt	10,573.20	11.88	125,609.62	1046.75	_____
Close-up concentrate		cwt	185.04	23.13	4279.98	35.67	_____
Dry cow hay & straw		cwt	1163.52	9.26	10,774.20	89.78	_____
Milk hauling		head	120.00	57.00	6840.00	57.00	_____
Supplies		head	120.00	121.50	14,580.00	121.50	_____
Utilities		head	120.00	43.00	5160.00	43.00	_____
Legal & accounting		head	120.00	6.78	813.60	6.78	_____
Bedding		head	120.00	66.00	7920.00	66.00	_____
Professional service		head	120.00	10.47	1256.40	10.47	_____
Replacement heifers		head	40.00	1944.00	77,752.22	647.94	_____
Custom manure management		head	32.70	27.50	899.25	7.49	_____
State & association charges		head	120.00	37.72	4526.40	37.72	_____
Miscellaneous		head	120.00	19.79	2374.80	19.79	_____
Insurance		head	120.00	27.00	3240.00	27.00	_____
Interest on operating capital		head	120.00	94.00	11,280.00	94.00	_____
Marketing		head	120.00	46.00	5520.00	46.00	_____
Veterinary Medicine	\$		18,776.40	1.00	18,776.40	156.47	_____
Machinery (fuel, lubrication, repair)	\$		10,874.16	1.00	10,874.16	90.62	_____
Vehicles (fuel, repair)	\$		4954.50	1.00	4954.50	41.29	_____
Equipment (repair)	\$		5557.80	1.00	5557.80	46.32	_____
Housing and Improvements (repair)	\$		5053.50	1.00	5053.50	42.11	_____
Hired Labor		hour	2844.00	11.21	31,876.56	265.64	_____
Owner Labor		hour	1836.00	23.47	43,090.92	359.09	_____
Interest on Operating Capital	\$		0.00	0.06	0.00	0.00	_____
Total Operating Costs					\$491,768.81	\$4098.07	_____
<b>3. Income Above Operating Costs</b>					\$225,865.41	\$1882.21	_____
<b>4. Ownership Costs</b>							
Capital Recovery:							
Purchased Livestock	\$		0.00	1.00	0.00	0.00	_____
Housing and Improvements	\$		26,692.64	1.00	26,692.64	222.44	_____
Machinery	\$		9989.07	1.00	9989.07	83.24	_____
Equipment	\$		15,307.66	1.00	15,307.66	127.56	_____
Vehicles	\$		3405.27	1.00	3405.27	28.38	_____
Interest on Retained Livestock	\$		159,060.00	0.06	9145.95	76.22	_____
Taxes and Insurance	\$		2326.86	1.00	2326.86	19.39	_____
Overhead	\$		8880.00	1.00	8880.00	74.00	_____
Total Ownership Costs					\$75,747.45	\$631.23	_____
<b>5. Total Costs</b>					\$567,516.26	\$4729.30	_____
<b>6. Returns to Risk and Management</b>					\$150,117.97	\$1250.98	_____



**Table 4: Investment Summary.**

**EBB-D3-14**

	Purchase Price	Salvage/Cull Value	Livestock Share	Useful Life	Annual Taxes and Insurance	Annual Capital Recovery <sup>1</sup>
<b>Buildings, Improvements and Equipment</b>						
Land for dairy	\$61,000.00	\$61,000.00	80	100	\$292.80	\$2684.00
D-4 herringbone	\$52,000.00	\$7300.00	100	20	\$177.90	\$4141.97
Dry cow shed	\$15,400.00	\$3100.00	100	15	\$55.50	\$1395.89
Maternity pens	\$7800.00	\$1550.00	100	15	\$28.05	\$707.91
Free stall/pens	\$124,400.00	\$18,700.00	100	15	\$429.30	\$11,558.93
Waste lagoon	\$10,500.00	\$0.00	100	15	\$31.50	\$1046.07
Silage bunker	\$29,000.00	\$3600.00	100	15	\$97.80	\$2728.49
Hay storage	\$21,000.00	\$3100.00	65	20	\$46.99	\$1084.43
Commodity shed	\$13,500.00	\$0.00	100	15	\$40.50	\$1344.95
Parlor equipment	\$21,000.00	\$3100.00	100	10	\$72.30	\$2545.25
Milking equipment	\$21,600.00	\$3200.00	100	10	\$74.40	\$2617.09
Vertical mixer 500T	\$45,000.00	\$9000.00	100	10	\$162.00	\$5271.04
Stock trailer	\$10,500.00	\$4400.00	100	10	\$44.70	\$1051.27
Bulk tank	\$26,000.00	\$4500.00	100	8	\$91.50	\$3823.01
<b>Total</b>	<b>\$458,700.00</b>				<b>\$1645.24</b>	<b>\$42,000.30</b>
<b>Purchased Livestock</b>						
<b>Total</b>	<b>\$0.00</b>					<b>\$0.00</b>
<b>Retained Livestock</b>						
Cows	\$233,280.00	\$84,840.00	100			\$9145.95 <sup>2</sup>
<b>Total</b>	<b>\$233,280.00</b>					<b>\$9145.95<sup>2</sup></b>
<b>Machinery and Vehicles</b>						
Tractor - 55hp, older	\$20,000.00	\$10,000.00	80	13	\$72.00	\$1341.80
Tractor - 105hp	\$75,000.00	\$15,000.00	80	25	\$216.00	\$4262.06
ATV	\$7100.00	\$1000.00	80	10	\$19.44	\$691.42
Tractor - 80hp	\$52,000.00	\$10,400.00	100	25	\$187.20	\$3693.79
Farm pickup	\$22,600.00	\$5100.00	90	6	\$186.97	\$3405.27
<b>Total</b>	<b>\$176,700.00</b>				<b>\$681.62</b>	<b>\$13,394.34</b>

<sup>1</sup> Annual capital recovery is the method of calculating depreciation and interest recommended by the National Task Force on Commodity Costs and Returns Measurement Methods.

<sup>2</sup> Interest on average investment.

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