

Making Millionaire Model Dairy Producers, Part II

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A view of crossbred cows grazing on a Millionaire Model Dairy Farm

Five dairy producers in Northeast Iowa and Southwest Wisconsin participated in ISU Extension's Millionaire Model Dairy Farm Project, several as long as 1993. These model farms focus on low-cost parlors and facilities, labor efficiency, grazing, crossbred cattle and detailed financial analysis.

The Base Millionaire Model Dairy Plan

The base plan consists of an 80 cow dairy on 80 acres of land. The Dairy TRANS 4.0 program was used to develop a Model Dairy Farm Budget (and annual analysis) for depicting the potential profitability of the Millionaire Model Dairy Farm concept.

A feed plan was developed using 16,000 lbs. of milk per cow with an estimated cow weight of 1,300 lbs. and an average heifer weight of 650 lbs. resulting in daily dry matter intakes of 42.60 lbs and 16.25 lbs. respectively. With a feed wastage rate of 20% and a herd cull rate of 20%, the cow and replacement needed 10.75 tons of dry matter annually.

The model uses 80 acres of a legume/grass mixture for grazing/ haying with a yield of 4 ton of dry matter per acre; 20 acres of purchased corn silage with a yield of 7.5 ton of dry matter; 150 tons of purchased hay; and 292 ton of protein and grain supplements.



Financing the Millionaire Model Plan

The Millionaire Model Farm Plan started from bare bones investment levels. Realize the investment levels started with in 2003 may not be realistic for obtaining a loan after 2009. This was the model's Summary and Loan Request to borrow \$110,000 for:

a) Cows, 80 at \$1,500 or	\$120,000
b) Machinery:	
--Tractor	\$4,300
--Skid Steer	\$3,600
--Manure Spreader	\$3,000
--4 Wheeler	\$1,200
--Rake	\$500
--Haybine	<u>\$2,400</u>
Total Machinery	\$15,000

c) Capital Improvements	<u>\$5,000</u>
(rented farm)	

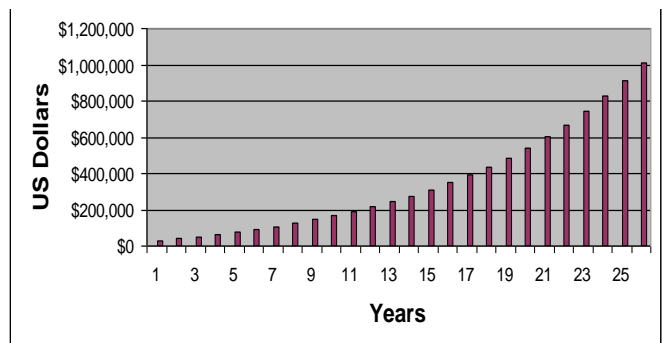
Total Capital Needed \$140,000

d) Capital on Hand	\$30,000
Goal < 80% Borrowed	

Millionaire Model Growth and Performance

The millionaire model budget showed a beginning net worth of \$30,000. The budgeted return on equity was 15% which gives a 5% (or \$1,500) higher return than the 10% return on net worth used in the graph below. The budgeted rate of return on assets was 13%. With interest costs at 8%, and additional 5% (\$5,500) is returned. Adding these two together gives an addition \$7,000 deposit to put towards net worth growth of 10%. The growth depicted below is after family living and farm expenses but before taxes. Growth starts slow but the net worth grows.

Figure 1. Dairy Millionaire Net Worth Growth



Millionaire Model Dairies Financial Performance

These five millionaire model dairy farms were analyzed financially in 2002, 2004, 2007 and 2009. Each of these farms grew bigger than the model over the years and thus their profitability is shown to be much higher than the 80 cow model as well. Four of the five producers achieved millionaire status within 17 years. The 5th, a dairy producer beginning in 2003, had achieved over a \$300,000 net worth in 7 years.

To show the range in profit levels, 2007 data is used for each of the five farms and then compared with the 2009 average data. Over the years, the five model dairy producers made good profits in their operations.

The 2007 net farm income adjusted for inventory averaged \$287,759 with one farm achieving an adjusted net farm income of \$410,673. After an equity charge of 6% for owned capital employed on the farm, the return to labor averaged \$218,629 per farm with the highest farm earning \$301,013 return to labor. These farms were all operated by a husband-wife or father-son management and labor teams.

In 2007, these five model farms averaged \$20.42 per hundredweight for milk sold with a cost of production of \$14.05. For the purpose of comparison, the 2009 average milk price was \$13.81 per hundredweight with a per hundredweight cost of production of \$13.95. It is very interesting to note that the cost of milk production on these model farms with higher in 2007 than it was in 2009 which this author suspects was not true for the majority of dairy farms.

Net farm incomes in 2009, adjusted for inventory, averaged \$112,278 but already paid \$44,433 in labor hired. To compare this to 2007 data, all the labor costs were entered in the unpaid category. This also impacts the labor earnings per hour by approximately \$1.26 for 2009 which only averaged \$14.30 per hour.

After an equity charge in 2009, return to all labor would have averaged \$84,789 per farm, but subtracting out the \$44,433 in paid labor gives a return to unpaid labor of \$40,356. With an opportunity cost of \$40,000 for unpaid labor, these dairies in 2009 essentially broke even with all labor, equity and interest costs paid.

The average return to labor and management was \$41.35 per hour with a range of \$28.31 to \$48.14 per hour for these farms in 2007. Labor efficiency is a key to success for these farms. Each full time equivalent of labor (FTE) is 3,000 hours. With this in mind, the average number of cows per FTE was 77 cows in 2007. Farm #3 was a rented farm with only 70 acres which increased feed purchase expense and decreased labor costs per cow. A very key measure is hundredweights of milk sold per FTE and these farms all sold more than 1 million pounds of milk per

FTE laborer with an average for the farms selling 1.3 million pounds of milk per FTE and farm #3 achieving 1.46 million pounds of milk per FTE in 2007.

On a per cow basis, milk per cow averaged 16,679 on these crossbred herds with a Holstein-Jersey base. The milk per cow efficiencies illustrate a profitable level that is considered poor from conventional standards. The productive crop acres per cow average 1.56; the capital costs (depreciation and interest) averaged \$598 per cow; the labor costs per cow averaged \$389; the fixed costs per cow averaged \$770 per cow; and the capital invested per cow averaged \$7,472.



The net farm income per productive crop acre averaged \$1,510 but in 2009 it was only \$435 per acre. The pounds of milk produced per crop acre averaged 12,323 in 2007 and 12,437 in 2009. These per crop acre efficiencies, in addition to the FTE labor and per cow efficiencies show a highly efficient group of farms. Financially, the rate of return on assets average 23.68% in 2007 but only 3.4% in 2009. In 2007, the operating profit margin averaged 43.21% and only 13.62% in 2009. The asset turnover ratio averaged 58.20% in 2007 but only 39.38% in 2009.

In sum, these farms showed superb profitability with 2007 milk prices but barely broke-even in 2009. They showed great profitability with milk estimated at \$14 per hundredweight. Dairy producers are encouraged to use these numbers for budgeting new or transitioning grazing operations, but remember the costs of the learning curve. Current producers aspiring to higher levels of profit can use these numbers for benchmarking their operations and goals.

Dairy producers looking for budget numbers can consult the data in Tables 1 and 2 along with consulting Part I of this publication. These same farms were analyzed in 2002 and 2004 with the data presented in a paper, "Who Wants to Be a Millionaire" available at:

www.extension.iastate.edu/dubuque/info/dairy+publications.htm

Table 1. Comparison of Individual 2007 Data and Comparison of 2007 and 2009 Averages

Millionaire Models 2007	Farm # 1	Farm # 2	Farm # 3	Farm # 4	Farm # 5	Average	Per Cow	Misc	Average	Per Cow
	Couple	Couple	Rented	C-Seasonal	Fr. & Son	2007	2007	2007	2009	2009
Productive Crop Acres	215	160	70	320	360	225.00	1.65		287.00	1.98
Average Number of Cows	152	121	90	155	165	136.60			144.80	
Total Assets on Farm	\$1,323,200	\$1,188,872	\$338,514	\$1,907,779	\$1,239,046	\$1,199,482	\$8,781		\$1,468,140	\$10,139
Non-farm Income	\$0	\$0	\$0	\$0	\$0	\$0	\$0.00		\$0	\$0.00
Family Living Expenses	\$45,000	\$30,000	\$24,000	\$45,000	\$60,000	\$40,800	\$298.68		\$38,000	\$262.43
Capital Purchases	\$26,500	\$46,775	\$14,800	\$100,845	\$118,000	\$61,384	\$449.37		\$5,875	\$40.57
Ending Cash Flow	\$192,474	\$99,847	\$60,220	\$145,885	\$74,805	\$114,646	Pre-Tax and Interest		\$36,740	
Ending Cash Flow Ratio	46.50%	30.06%	22.45%	34.50%	12.47%	29.20%			8.45%	
Milk Price	\$19.57	\$19.04	\$20.71	\$22.71	\$20.05	\$20.42			\$13.81	
Milk Hundred weight Equiv.	33,231	23,613	16,663	26,187	34,357	26,810	196.27	17,353	31,931	220.52
Milk Hundredweights	27,645	20,636	14,587	22,521	28,733	22,824	167.09	15,013	24,044	166.05
Milk Sales	\$541,013	\$392,840	\$302,092	\$511,540	\$576,011	\$464,699	\$3,402		\$334,875	\$2,313
Cull Cow Sales ~10-17%	\$7,650	\$9,354	\$6,623	\$5,168	\$21,794	\$10,118	\$74.07		\$12,405	\$85.67
Calf Sales	\$5,672	\$7,639	\$4,600	\$5,970	\$31,217	\$11,020	\$80.67		\$5,847	\$40.38
Crop Sales	\$0	\$0	\$0	\$1,800	\$0	\$360	\$2.64		\$40	\$0.28
Other Income	\$52,085	\$22,180	\$2,530	\$43,690	\$41,224	\$32,342	\$236.76		\$57,240	\$395.31
Total Cash Income	\$606,420	\$432,013	\$315,845	\$568,168	\$670,246	\$518,538	\$3,796	/cwt.eq.	\$410,407	\$2,834
Veterinary, Medicine	\$8,472	\$3,066	\$2,850	\$10,900	\$12,332	\$7,524	\$55.08	\$0.28	\$8,422	\$58.16
Dairy Supplies	\$21,100	\$16,301	\$12,176	\$15,686	\$18,815	\$16,816	\$123.10	\$0.63	\$15,356	\$106.05
Breeding Fees	\$650	\$1,000	\$1,388	\$3,878	\$5,030	\$2,389	\$17.49	\$0.09	\$2,099	\$14.49
Feed Purchased	\$189,715	\$140,506	\$130,849	\$98,591	\$183,366	\$148,605	\$1,087.89	\$5.54	\$131,391	\$907.39
Repairs	\$28,598	\$9,145	\$6,429	\$12,035	\$20,725	\$15,386	\$112.64	\$0.57	\$14,294	\$98.71
Seed, Chem, Fert	\$14,473	\$15,667	\$4,350	\$23,417	\$34,178	\$18,417	\$134.82	\$0.69	\$24,067	\$166.21
Fuel, Gas, and Oil	\$12,637	\$24,262	\$7,721	\$13,339	\$10,907	\$13,773	\$100.83	\$0.51	\$11,332	\$78.26
Utilities	\$8,290	\$4,308	\$5,137	\$8,331	\$7,900	\$6,793	\$49.73	\$0.25	\$8,268	\$57.10
Interest Paid	\$0	\$0	\$0	\$0	\$0	\$0	\$0.00	\$0.00		
Labor Hired	\$0	\$0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$44,433	\$306.86
Rent, Lease and Hire	\$0	\$3,309	\$17,485	\$11,185	\$38,295	\$14,055	\$102.89	\$0.52	\$26,870	\$185.57
Property Taxes	\$5,912	\$4,435	\$0	\$7,692	\$2,464	\$4,101	\$30.02	\$0.15	\$5,328	\$36.80
Farm Insurance	\$5,843	\$4,913	\$1,020	\$7,535	\$6,962	\$5,255	\$38.47	\$0.20	\$5,551	\$38.34
Other Cash Expense	\$11,358	\$8,479	\$7,449	\$17,530	\$39,817	\$16,927	\$123.91	\$0.63	\$17,736	\$122.48
Total Cash Expense	\$307,048	\$235,391	\$196,854	\$230,119	\$380,791	\$270,041	\$1,977	\$10.07	\$315,147	\$2,176
Net Cash Income	\$299,372	\$196,622	\$118,991	\$338,049	\$289,455	\$248,498	\$1,819	\$9.27	\$95,261	\$658
Inventory Change	\$33,850	\$65,290	\$44,235	\$72,624	(\$19,693)	\$39,261	\$287.42	\$1.46	\$17,017	\$117.52
Net Farm Income	\$333,222	\$261,912	\$163,226	\$410,673	\$269,762	\$287,759	\$2,107	\$10.73	\$112,278	\$775
<u>Equity @ 6%</u>	\$77,581	\$67,970	\$18,817	\$109,660	\$71,620	\$69,130	\$506	\$2.58	\$71,922	\$497
Return to Labor	\$255,641	\$193,942	\$144,409	\$301,013	\$198,142	\$218,629	\$1,601	\$8.15	\$40,356	\$279
Inventory Adjustments--Feed	\$25,300	(\$1,500)	(\$265)	\$5,345	\$15,575	\$8,891	\$65.09	\$0.33	\$2,711	\$18.72
Supplies and Other	\$0	\$0	\$0	\$0	\$1,325	\$265	\$1.94	\$0.01	\$5,053	\$34.89
Breeding Livestock	\$18,600	\$19,000	\$29,500	\$21,300	\$600	\$17,800	\$130.31	\$0.66	\$30,580	\$211.19
Income Change	\$43,900	\$17,500	\$29,235	\$26,645	\$17,500	\$26,956	\$197.34	\$1.01	\$38,317	\$264.62
Prepaid Expenses	\$2,000	\$65,488	\$20,000	\$46,581	\$7,287	\$28,271	\$206.96	\$1.05	-\$3,201	-\$22.10
Accounts Payable	\$0	\$0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0	\$0.00
Machinery & Equipment	\$14,450	\$23,030	\$11,800	\$70,125	\$4,225	\$24,726	\$181.01	\$0.92	-\$9,283	-\$64.11
Land and Buildings	\$0	\$6,047	(\$2,000)	\$18,500	\$60,500	\$16,609	\$121.59	\$0.62	-\$3,240	-\$22.38
Other Adjustments	\$0	\$0	\$0	\$11,000	\$4,445	\$3,089	\$22.61	\$0.12	\$1,699	\$11.73
Expense Change	(\$16,450)	(\$94,565)	(\$29,800)	(\$146,206)	\$76,457	-\$42,113	-\$308.29	-\$1.57	\$14,024	\$96.85
Capital Purchases Minus Sales Adj.	\$26,500	\$46,775	\$14,800	\$100,227	\$113,650	\$60,390	\$442.10	\$2.25	\$7,275	\$50.24
Depreciation COST	\$50,000	\$50,000	\$20,000	\$50,000	\$30,000	\$40,000	\$292.83	\$1.49	\$0	\$0.00
Depreciation FM Value	\$12,000	\$16,500	\$3,000	\$25,550	\$25,500	\$16,510	\$120.86	\$0.62	\$20,540	\$141.85
Unpaid Labor Cost	\$60,000	\$45,000	\$30,000	\$65,000	\$70,000	\$54,000	\$395.31	\$2.01	\$42,000	\$290.06
Unpaid Labor Hours	6,000	4,500	3,000	6,750	7,000	5,450	40 hrs/cow		2,960	20
Labor Full Time Equivalents	2.00	1.50	1.00	2.25	2.33	1.82	Total Labor		2.54	
Labor Earnings Per Hour	\$42.61	\$43.10	\$48.14	\$44.59	\$28.31	\$41.35			\$14.30	

***Please note:**

1) In 2007 data, paid labor was combined with unpaid labor for both costs and hours listed. In 2009, paid labor was expensed in cash expenses. Thus, Labor Earnings per Hour in 2007 is an earnings rate for all labor, paid and unpaid. In 2009, since unpaid labor is already paid in cash expenses, the labor earnings per hour is only for the unpaid labor.

2) There is no interest expense listed in the cash expenses for the individual farms for reasons of confidentiality. Thus, an equity charge was listed against all the assets, whether owned or borrowed. This means the total cash cost and net farm income is off by the amount of interest paid but the monies for interest are in the equity charge so these costs are included in the total costs of milk production and return to labor.

Table 2. Comparison of Individual 2007 Data and Comparison of 2007 and 2009 Averages
(continuation from Table 1.)

Millionaire Models 2007	Farm # 1	Farm # 2	Farm # 3	Farm # 4	Farm # 5	Average	Per Cow	Misc	Average	Per Cow
	Couple	Couple	Rented	C-Seasonal	Fr. & Son	2007	2007	2007	2009	2009
Gross Income per Cwt. Eq.	\$19.57	\$19.04	\$20.71	\$22.71	\$20.05	\$20.42			\$13.81	
Gross Expense per Cwt. Eq.	\$13.68	\$12.73	\$13.84	\$13.70	\$16.31	\$14.05			\$13.95	
Net Income per cwt.	\$5.89	\$6.31	\$6.87	\$9.01	\$3.74	\$6.36			-\$0.14	
Cash Income--	\$606,420	\$432,013	\$315,845	\$568,168	\$670,246	\$518,538	\$3,796		\$410,407	\$2,834
Adjusted Income	\$43,900	\$17,500	\$29,235	\$26,645	\$18,500	\$27,156	\$199		\$38,317	\$265
Total Income	\$650,320	\$449,513	\$345,080	\$594,813	\$688,746	\$545,694	\$3,995		\$448,724	\$3,099
Cash Costs	\$307,048	\$235,391	\$196,854	\$230,119	\$380,791	\$270,041	\$1,977		\$315,147	\$2,176
Adjusted Costs	\$10,050	(\$47,790)	(\$15,000)	(\$45,979)	\$37,193	-\$12,305	-\$90		\$21,300	\$147
Overhead Costs	\$137,581	\$112,970	\$48,817	\$174,660	\$141,620	\$123,130	\$901		\$113,922	\$787
Total Costs	\$454,679	\$300,571	\$230,671	\$358,800	\$559,604	\$380,865	\$2,788		\$450,368	\$3,110
RETURN OVER COSTS	\$195,641	\$148,942	\$114,409	\$236,013	\$128,142	\$164,629	\$1,205		-\$1,644	-\$11
Adj. Gross Return per FTE Labor.....	\$325,160	\$299,675	\$345,080	\$264,361	\$294,748	\$305,805			\$178,300	
Return to All Labor per FTE Labor.....	\$127,821	\$129,294	\$144,409	\$133,784	\$84,918	\$124,045			\$32,397	
Number of Cows per FTE Labor.....	76	81	90	69	71	77			59	
Cwts. of Milk Sold per FTE Labor.....	13,823	13,757	14,587	10,009	12,314	12,898			9,912	
Pounds of Milk Sold per Cow.....	18,188	17,054	16,208	14,530	17,414	16,679			16,763	
Productive Crop Acres per Cow.....	1.41	1.32	0.78	2.10	2.18	1.56			1.84	
Capital Cost per Cow.....	\$589	\$698	\$242	\$872	\$589	\$598			\$594	
All Labor Costs per Cow.....	\$395	\$372	\$333	\$419	\$424	\$389			\$593	
Fixed Cost per Cow (DIRTI)	\$855	\$851	\$325	\$1,048	\$771	\$770			\$759	
Capital Invested per Cow.....	\$7,869	\$8,436	\$3,135	\$11,110	\$6,808	\$7,472			\$8,848	
Net Farm Income per Crop Acre.....	\$1,550	\$1,637	\$2,332	\$1,283	\$749	\$1,510			\$435	
Lbs. Milk Produced per Crop Acre.....	12,858	12,897	20,838	7,038	7,981	12,323			12,437	
Adj. Gross Cash Income/Crop Acre.....	\$3,025	\$2,809	\$4,930	\$1,859	\$1,910	\$2,907			\$2,107	
Machinery Investment/Crop Acre.....	\$761	\$1,334	\$541	\$908	\$591	\$827			\$848	
Fuel, Gas and Oil Cost/Crop Acre.....	\$59	\$152	\$110	\$42	\$30	\$79			\$51	
Repair Cost per Crop Acre.....	\$133	\$57	\$92	\$38	\$58	\$76			\$59	
Fert/Chem/Seed Cost/Crop Acre.....	\$67	\$98	\$62	\$73	\$95	\$79			\$75	
Livestock over Total Investment	26%	21%	72%	15%	24%	31.72%			30.7%	
Cash Exp./Cash Inc.w/o Labor&Int.....	51%	54%	62%	41%	57%	52.99%			67.7%	
All Labor as Percent of Total Costs.....	13%	15%	13%	18%	13%	14.40%	Model Graziers generated by DAIRY TRANS 4.0 563-583-6496		19.3%	
Fixed Cost as Percent of Total Cost.....	29%	34%	13%	45%	23%	28.80%			24.2%	
**Net Farm Income From Operatio	\$333,222	\$261,912	\$163,226	\$410,673	\$269,762	\$287,759			\$112,278	
**Rate of Return on Assets.....	21.13%	19.15%	42.48%	18.91%	16.74%	23.68%			3.40%	
**Rate of Return on Equity.....	21.13%	19.15%	42.48%	18.91%	16.74%	23.68%			3.45%	
**Operating Profit Margin.....	42.01%	48.25%	38.61%	58.11%	29.05%	43.21%			13.62%	
**Asset Turnover Ratio.....	50%	40%	110%	33%	58%	58.20%	Model Graziers 2008 by Larry F. Tranel Dairy Field Specialist		39.38%	
**Operating Expense Ratio.....	47%	38%	52%	27%	57%	44.20%			72.30%	
**Depreciation Expense Ratio.....	2%	4%	1%	4%	4%	2.88%			3.88%	
**Net Farm Income Ratio.....	51%	58%	47%	69%	39%	52.80%	e- tranel@iastate.edu		23.80%	
Estimated % Interest Paid	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%			5.00%	
Dairy TRANS Profit Status is.....	SUPERB!	SUPERB!	SUPERB!	SUPERB!	SUPERB!	SUPERB!			OK	
Dairy TRANS Performance Rating	130.00%	121.00%	191.00%	115.00%	113.00%	134.00%			56.20%	

Please note: The rates of return to equity and rates of return to assets are equal because in order to keep confidentiality of participants debt levels, interest charges are not included in cash expenses but included as an equity charge of 6% in 2007 and 5% in 2009.



The Millionaire Model Dairy Farm Project was designed by Dr. Larry Tranel, ISU Extension Dairy Specialist, NE/SE Iowa.

Thanks to the Leopold Center at ISU for their support of this project and the dairy producers who have so graciously shared their financial data for others to learn from.

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