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FINANCIAL PLANNING FOR DAIRIES IN A PERIOD OF SIGNIFICANT MARKET DYNAMICS

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Understanding the factors that influence the financial performance of any enterprise is an important business planning step, and the development of tools to facilitate financial planning is one important role of agricultural Extension and University partners. These tools are especially useful in periods of significant change, financial stress or volatile market dynamics.

In response to the financial stress facing Colorado dairies in 2009, resulting from low milk prices and high feed costs, the following tool was created to aid producers in evaluating their financial position. Hopefully this benchmarking tool and its companion fact sheet can be used to assist in managerial decision making directly by producers or in cooperation with technical assistance partners who interact with dairy enterprises. Given the volatility of milk prices, it becomes more critical for each dairy to make decisions based on a thorough understanding of how adverse conditions affect the performance of their operation, especially when they are external and less controllable for managers. Frequent and updated financial analysis of a dairy operation is key to success and the tool introduced in this fact sheet is intended to assist in this endeavor.

The Benchmarking Tool

The Excel tool introduced here consists of a couple components to assist in planning and comparison. First, there is an enterprise budget producers can complete followed by a series of results sheet with the dairy's financial situation broken down by components related to different managerial functions of the dairy. For example, the tool also determines the breakeven price of milk for future market planning. For financial planning, the debt-carrying capacity is calculated per cow and per cow per day. Drawing from balance sheet and income statement information entered by producers, the tool automatically calculates important financial ratios and compares them to industry standards. This tool is designed to help dairies make decisions based on their current financial position, however it has limitations and should be used in conjunction with other tools and business planning resources.

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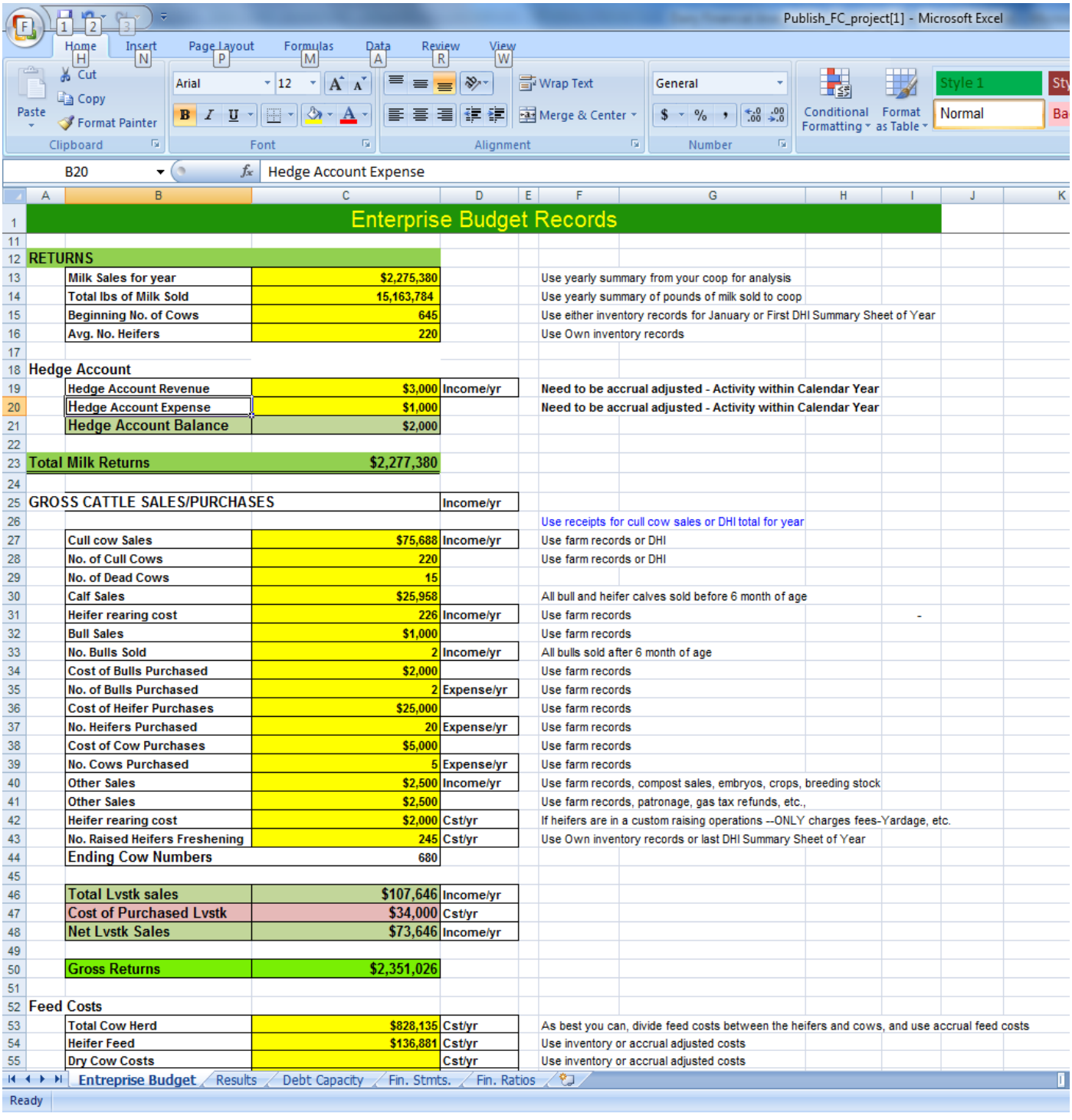
General Instructions

There are a few properties of the Excel tool that are important to introduce in order to navigate this resource effectively. First, in order to access different elements of the tool, the user should click on the tabs at the bottom of the screen. The way this tool is organized is that the user is expected to start with the tabs on the left-hand side (where most data about the enterprise will be entered), and then move right through tabs to view the results from entered data. It is important to note that not all sheets require input, but instead, these sheets will integrate the enterprise's information and develop comparisons to an "average" operation. To be specific, the manager is asked to type their dairy's information in the yellow highlighted cells, but all other cells are locked and should not be changed.



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Home | Insert | Page Layout | Formulas | Data | Review | View

B20: Hedge Account Expense

1	**Enterprise Budget Records**				
11					
12	**RETURNS**				
13	Milk Sales for year	$2,275,380			Use yearly summary from your coop for analysis
14	Total lbs of Milk Sold	15,163,784			Use yearly summary of pounds of milk sold to coop
15	Beginning No. of Cows	645			Use either inventory records for January or First DHI Summary Sheet of Year
16	Avg. No. Heifers	220			Use Own inventory records
17					
18	**Hedge Account**				
19	Hedge Account Revenue	$3,000	Income/yr		**Need to be accrual adjusted - Activity within Calendar Year**
20	Hedge Account Expense	$1,000			**Need to be accrual adjusted - Activity within Calendar Year**
21	Hedge Account Balance	$2,000			
22					
23	**Total Milk Returns**	$2,277,380			
24					
25	**GROSS CATTLE SALES/PURCHASES**		Income/yr		
26					Use receipts for cull cow sales or DHI total for year
27	Cull cow Sales	$75,688	Income/yr		Use farm records or DHI
28	No. of Cull Cows	220			Use farm records or DHI
29	No. of Dead Cows	15			
30	Calf Sales	$25,958			All bull and heifer calves sold before 6 month of age
31	Heifer rearing cost	226	Income/yr		Use farm records
32	Bull Sales	$1,000			Use farm records
33	No. Bulls Sold	2	Income/yr		All bulls sold after 6 month of age
34	Cost of Bulls Purchased	$2,000			Use farm records
35	No. of Bulls Purchased	2	Expense/yr		Use farm records
36	Cost of Heifer Purchases	$25,000			Use farm records
37	No. Heifers Purchased	20	Expense/yr		Use farm records
38	Cost of Cow Purchases	$5,000			Use farm records
39	No. Cows Purchased	5	Expense/yr		Use farm records
40	Other Sales	$2,500	Income/yr		Use farm records, compost sales, embryos, crops, breeding stock
41	Other Sales	$2,500			Use farm records, patronage, gas tax refunds, etc.,
42	Heifer rearing cost	$2,000	Cst/yr		If heifers are in a custom raising operations --ONLY charges fees-Yardage, etc.
43	No. Raised Heifers Freshening	245	Cst/yr		Use Own inventory records or last DHI Summary Sheet of Year
44	Ending Cow Numbers	680			
45					
46	Total Lvstk sales	$107,646	Income/yr		
47	Cost of Purchased Lvstk	$34,000	Cst/yr		
48	Net Lvstk Sales	$73,646	Income/yr		
49					
50	Gross Returns	$2,351,026			
51					
52	**Feed Costs**				
53	Total Cow Herd	$828,135	Cst/yr		As best you can, divide feed costs between the heifers and cows, and use accrual feed costs
54	Heifer Feed	$136,881	Cst/yr		Use inventory or accrual adjusted costs
55	Dry Cow Costs		Cst/yr		Use inventory or accrual adjusted costs

Entreprise Budget | Results | Debt Capacity | Fin. Stmts. | Fin. Ratios

Ready

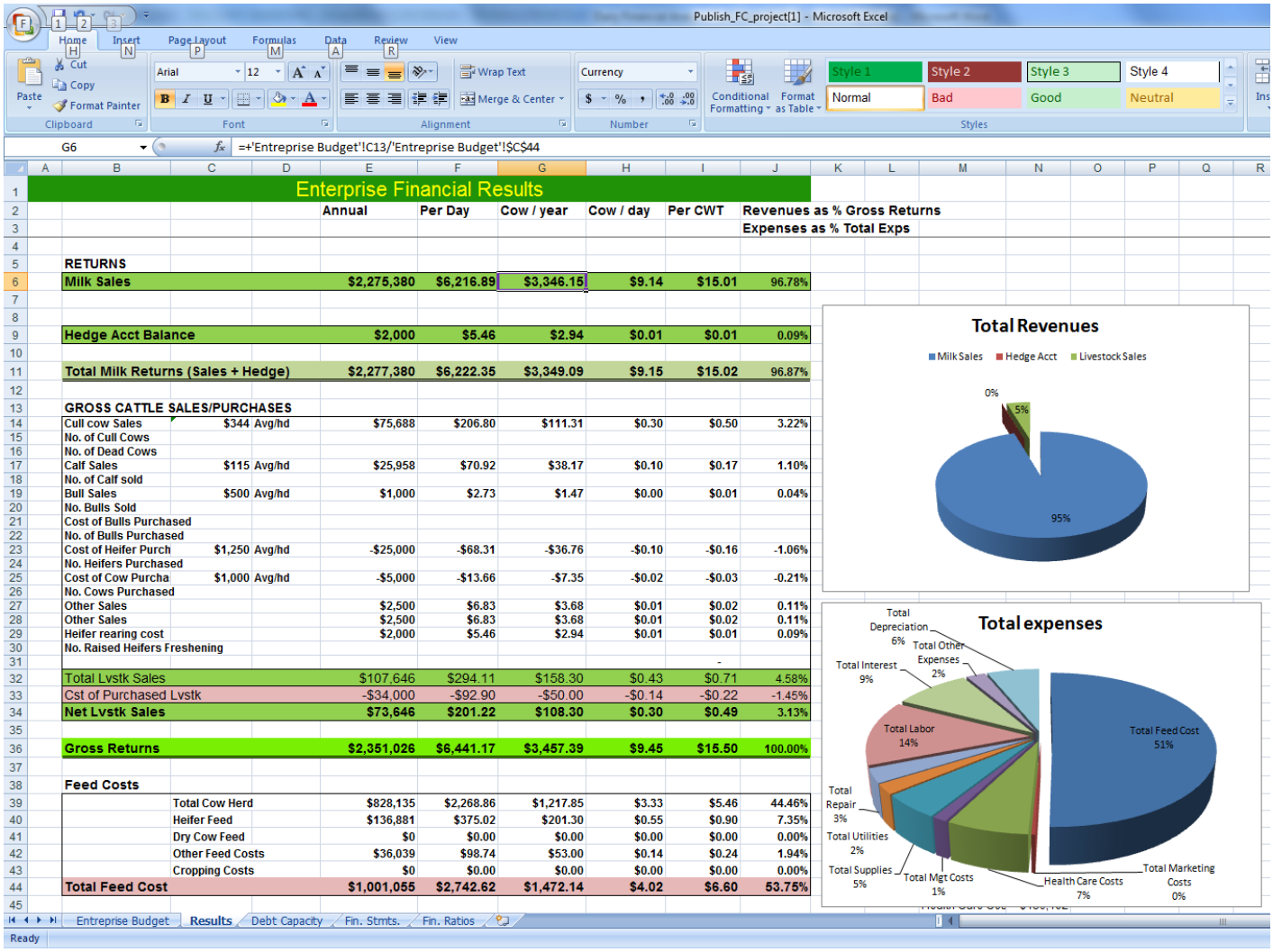
Enterprise Budget

The enterprise budgeting sheet is the first step in the dairy's financial analysis and requires the most input from the producer. The manager is asked to enter their dairy's data in each yellow cell. As is typical for most budgets, the items are grouped by returns and costs which are then broken down into more detailed categories. Items are labeled on the left of the cell, with more detailed instructions of where to find each figure to the right. Every dairy may not collect data on every item listed and missing items may be left blank, such as depreciation or "other" categories. The goal is to provide the most detailed picture of the dairy's revenues and expenses but a lack of data should not discourage producers from making as complete a financial picture as is possible.

Enterprise Budget: Calculations and Results

For the next step in financial planning, the manager can move to the next sheet (by clicking the results tab). This sheet uses the information entered in the Enterprise Budget sheet to provide further analysis of the dairy. Revenues and expenses are estimated on an annual, per cow, per cow per year, per cow per day and per hundredweight basis using the data entered by the manager. Each category of revenues is shown as a percent of gross returns, and similarly, various expenses are shown as a percent of total expenses. This information will be helpful in gaining more detailed understanding of the relationship between the production efficiency and financial position of the dairy.

Note that no data entry is required for this sheet as it is linked to the enterprise budget. For an example of how these calculations are made, let's look at the milk sales per cow per year presented in cell G6 below. The formula bar shows how that estimate is derived: Enterprise Budget cell C13 (milk sales for year) was divided by Enterprise Budget cell C44 (ending cow numbers). To illustrate the results in another way, pie charts are created on the right side of the screen to help the user visualize the product costs of their operation.



			Annual	Per Day	Cow / year	Cow / day	Per CWT	Revenues as % Gross Returns / Expenses as % Total Exps
RETURNS								
Milk Sales			$2,275,380	$6,216.89	$3,346.15	$9.14	$15.01	96.78%
Hedge Acct Balance			$2,000	$5.46	$2.94	$0.01	$0.01	0.09%
Total Milk Returns (Sales + Hedge)			$2,277,380	$6,222.35	$3,349.09	$9.15	$15.02	96.87%
GROSS CATTLE SALES/PURCHASES								
Cull cow Sales	$344	Avg/hd	$75,688	$206.80	$111.31	$0.30	$0.50	3.22%
No. of Cull Cows								
No. of Dead Cows								
Calf Sales	$115	Avg/hd	$25,958	$70.92	$38.17	$0.10	$0.17	1.10%
No. of Calf sold								
Bull Sales	$500	Avg/hd	$1,000	$2.73	$1.47	$0.00	$0.01	0.04%
No. Bulls Sold								
Cost of Bulls Purchased								
No. of Bulls Purchased								
Cost of Heifer Purch	$1,250	Avg/hd	-$25,000	-$68.31	-$36.76	-$0.10	-$0.16	-1.06%
No. Heifers Purchased								
Cost of Cow Purcha	$1,000	Avg/hd	-$5,000	-$13.66	-$7.35	-$0.02	-$0.03	-0.21%
No. Cows Purchased								
Other Sales			$2,500	$6.83	$3.68	$0.01	$0.02	0.11%
Other Sales			$2,500	$6.83	$3.68	$0.01	$0.02	0.11%
Heifer rearing cost			$2,000	$5.46	$2.94	$0.01	$0.01	0.09%
No. Raised Heifers Freshening							-	
Total Lvstk Sales			$107,646	$294.11	$158.30	$0.43	$0.71	4.58%
Cst of Purchased Lvstk			-$34,000	-$92.90	-$50.00	-$0.14	-$0.22	-1.45%
Net Lvstk Sales			$73,646	$201.22	$108.30	$0.30	$0.49	3.13%
Gross Returns			$2,351,026	$6,441.17	$3,457.39	$9.45	$15.50	100.00%
Feed Costs								
	Total Cow Herd		$828,135	$2,268.86	$1,217.85	$3.33	$5.46	44.46%
	Heifer Feed		$136,881	$375.02	$201.30	$0.55	$0.90	7.35%
	Dry Cow Feed		$0	$0.00	$0.00	$0.00	$0.00	0.00%
	Other Feed Costs		$36,039	$98.74	$53.00	$0.14	$0.24	1.94%
	Cropping Costs		$0	$0.00	$0.00	$0.00	$0.00	0.00%
Total Feed Cost			$1,001,055	$2,742.62	$1,472.14	$4.02	$6.60	53.75%

For greater ease of comparison with other dairies, the revenues/expenses/profit per cow along with the break-even price of milk are calculated both WITH and WITHOUT depreciation. The analysis that includes depreciation will give a more accurate assessment of the individual dairy while the analysis excluding depreciation will be more useful as a comparative analysis to the industry.

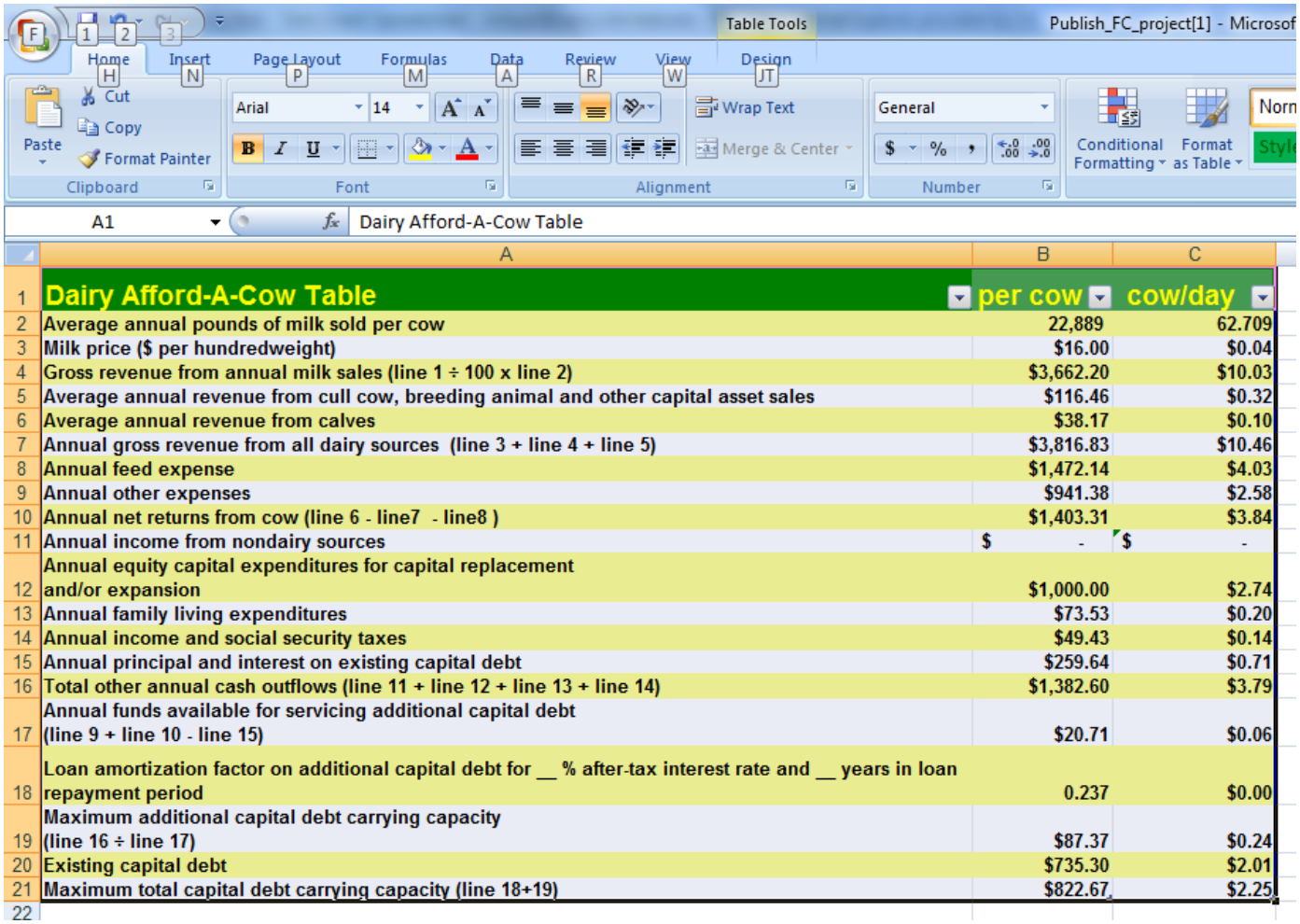
This tool can also be used to forecast how potential changes to an operation would affect its financial position. For example, purchased versus raised feed costs could be adjust to see how this would affect the bottom line.

Debt Capacity

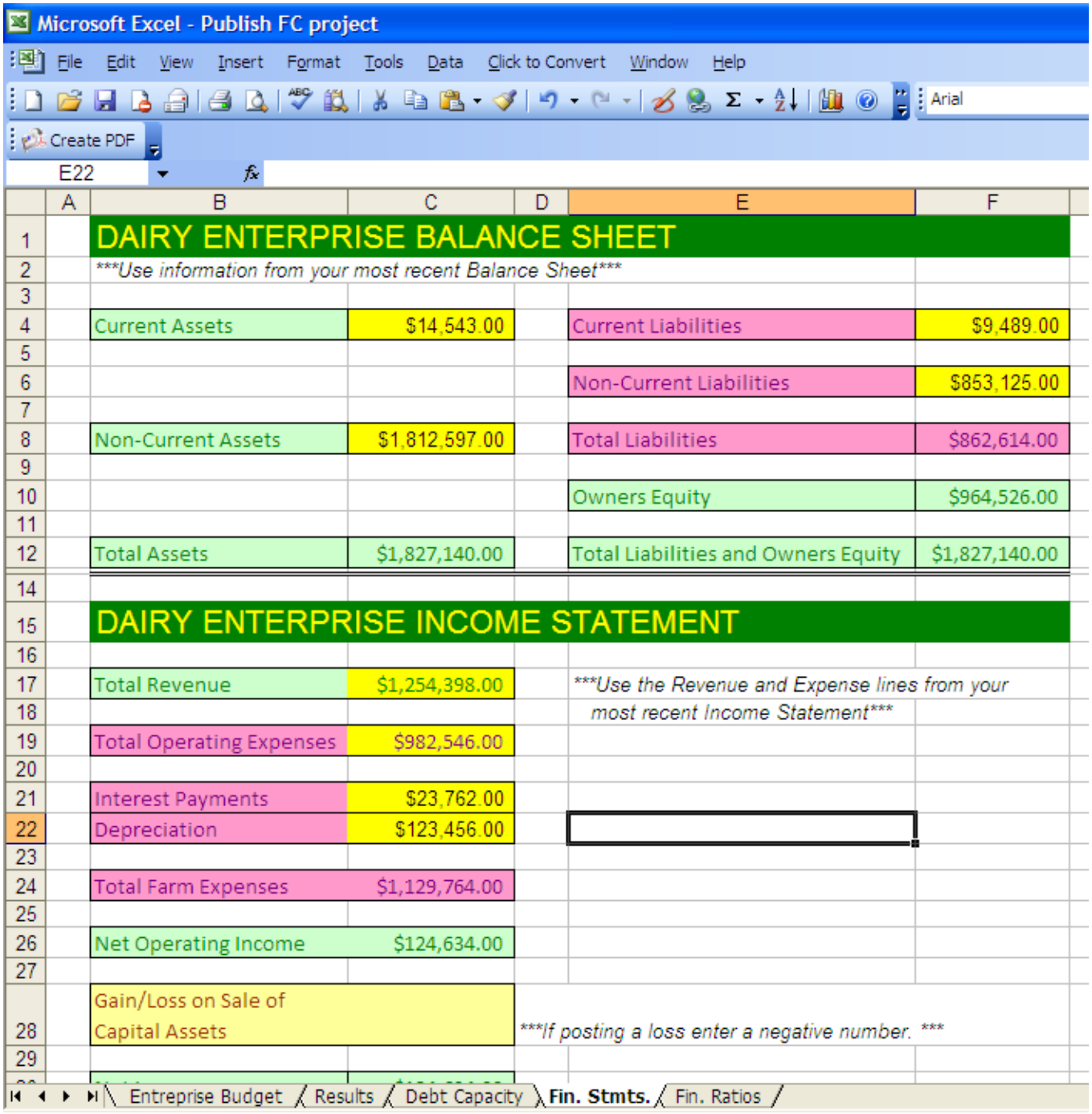
Another important financial planning tool for managers is the capacity to grow, refinance or restructure their current debt obligations. Advancing to the right and clicking the next tab (Debt Capacity), the user will be asked to share their annual income from non-dairy sources, the only input needed on this sheet. All other information from this tool's cells is linked to the original Enterprise Budget. This sheet helps determine the maximum amount a producer can afford to finance for each cow based on current operational costs and returns.

Financial Statements

The next set of figures that are estimated for your operation, using information already provided in the initial sheet, are the financial statements (accessed by clicking the next Excel tab to the right). These statements use updated balance sheet and income statement to calculate financial ratios that serve as indicators of financial health for a dairy (discussed more in the next section of this fact sheet). For those dairies that use different balance sheet classifications, intermediate assets and liabilities should be included in the non-current assets/liabilities cells.

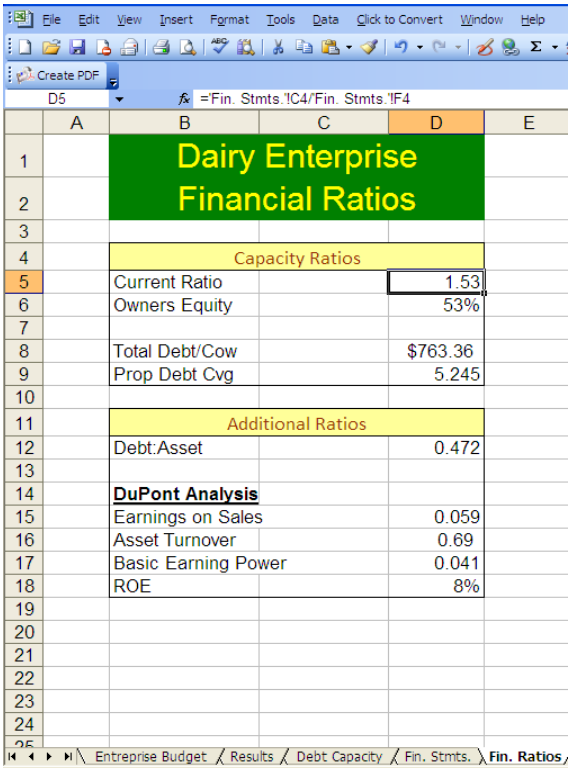


	A	B	C
1	Dairy Afford-A-Cow Table	per cow	cow/day
2	Average annual pounds of milk sold per cow	22,889	62.709
3	Milk price ($ per hundredweight)	$16.00	$0.04
4	Gross revenue from annual milk sales (line 1 ÷ 100 x line 2)	$3,662.20	$10.03
5	Average annual revenue from cull cow, breeding animal and other capital asset sales	$116.46	$0.32
6	Average annual revenue from calves	$38.17	$0.10
7	Annual gross revenue from all dairy sources (line 3 + line 4 + line 5)	$3,816.83	$10.46
8	Annual feed expense	$1,472.14	$4.03
9	Annual other expenses	$941.38	$2.58
10	Annual net returns from cow (line 6 - line7 - line8)	$1,403.31	$3.84
11	Annual income from nondairy sources	$ -	$ -
12	Annual equity capital expenditures for capital replacement and/or expansion	$1,000.00	$2.74
13	Annual family living expenditures	$73.53	$0.20
14	Annual income and social security taxes	$49.43	$0.14
15	Annual principal and interest on existing capital debt	$259.64	$0.71
16	Total other annual cash outflows (line 11 + line 12 + line 13 + line 14)	$1,382.60	$3.79
17	Annual funds available for servicing additional capital debt (line 9 + line 10 - line 15)	$20.71	$0.06
18	Loan amortization factor on additional capital debt for __ % after-tax interest rate and __ years in loan repayment period	0.237	$0.00
19	Maximum additional capital debt carrying capacity (line 16 ÷ line 17)	$87.37	$0.24
20	Existing capital debt	$735.30	$2.01
21	Maximum total capital debt carrying capacity (line 18+19)	$822.67	$2.25
22			



Financial Ratios

Financial ratios make up the final element and sheet within the Benchmarking tool workbook. Using data entered in other areas of the workbook, this sheet automatically calculates financial ratios from for the individual dairy.



Dairy Enterprise Financial Ratios

Capacity Ratios	
Current Ratio	1.53
Owners Equity	53%
Total Debt/Cow	$763.36
Prop Debt Cvg	5.245
Additional Ratios	
Debt:Asset	0.472
DuPont Analysis	
Earnings on Sales	0.059
Asset Turnover	0.69
Basic Earning Power	0.041
ROE	8%

Current ratio measures liquidity = current assets/ current liabilities

Resilient	🟢	greater than 1.5
Caution	🟡	1.0 - 1.5
Riskless	🔴	than 1.0

Owner's Equity = owners equity/total liabilities and owner's equity

Total Debt per Cow – from debt capacity sheet

Property Debt Coverage = net operating income/ interest payments

Debt to assets ratio is a solvency measure that = total liabilities/total assets

Resilient	🟢	less than 0.35
Caution	🟡	0.35 - 0.50
Riskless	🔴	greater than 0.50

DuPont analysis uses earnings on sales, asset turnover, basic earning power to calculate ROE or return on equity which is a measure of profitability. This analysis tool can also be used to forecast the financial impact of proposed operational changes (i.e. will ROE increase more with a 10% increase in revenues or a 10% decrease in expenses?).

Earnings on sales shows financial efficiency as it measures how much is retained for every dollar of sales earned. Earnings on sales = net income/sales

Asset turnover ratio measures asset efficiency. For every dollar in assets, it shows how much revenue a firm generates. Asset turnover ratio = gross revenue/ assets

Resilient	🟢	greater than 0.25
Caution	🟡	0.10 to 0.25
Risk	🔴	less than 0.10

Basic earning power measures operational efficiency. Basic earning power = net income/assets

Return on equity is the return on equity capital invested in the firm. Return on equity = basic earning power * (total liabilities an owner's equity / owner equity)

Resilient	🟢	greater than 15 percent
Caution	🟡	5 to 15 percent
Risk	🔴	less than 5 percent

Currently CSU is collecting data from Colorado dairies. This data can be used as a benchmark when comparing a specific dairy operation to others in the state. The benchmarking (comparison to other dairies) has limitations due to a currently small number of benchmark dairies. When this becomes available, the tool will be updated.

This tool is evolving as more data is collected. We welcome questions, comments or suggestions that will aid in the continued development of this tool. Contact the Colorado State University Department of Agricultural and Resource Economics, Colorado State University, Fort Collins.

Contact person is Norm Dalsted PhD at 970-491-5627 or norman.dalsted@colostate.edu.

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