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Cooperative Extension

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***Managing***  
***Dairy Farm***  
***Finances***

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# MANAGING DAIRY FARM FINANCES

by Larry Tranel and Gary Frank<sup>1</sup>

## INTRODUCTION

Due to tight profit margins facing many dairy farmers today, both farmers and creditors need to pay increasing attention to the course of direction of dairy farm finances. It is much easier to deal with the symptoms of financial strain than to deal with the reality of financial difficulty. In addition, farmers are probably going to see increasing complications in obtaining necessary credit to keep their farm operating. Much of this difficulty will be due to competition for funds from other sectors of the economy and the risk which lenders need to take with farmers who many times do not have the desire and/or the skill necessary to effectively analyze their farm business. The competition and risk factors mean farmers may pay premium prices for use of credit.

It can be said that farmers possess a wide variety of skills. Frankly, though, the reason they are farming is usually not because they enjoy keeping the production and financial records that are so vital to today's effective farm manager. Farm record analysis is seemingly a new skill which past generations did not need to focus as much attention as farmers do today. It is hoped that farmers become more open to farm record analysis and to the advent of computerized records as a tool to assist financial record-keeping. Hand-written records are very tedious, cumbersome and time consuming while computerized records can help alleviate some of the burden.

Thus, it is realized that those involved in the agricultural sector and especially farmers, need to focus more on effectively analyzing dairy farm finances. The intent of this paper, then, is to assist both farmers and lenders in measuring the financial performance of the dairy farm business.

## USES AND TYPES OF ACCOUNTING SYSTEMS

Records provide the farm manager with data, information and knowledge. They are frequently used as a service tool, first of all. The types of services provided are: income taxes, estate planning, business arrangement reconciliation, and obtaining and managing credit. Secondly, farm records can also be used to provide data for financial analysis and other diagnostic instruments. Thirdly, records can be used as an indicator of progress. The fourth use of records is a forward planning device.

There are cash and accrual accounting systems. Accrual accounting involves recording incomes and expenses when they occur. Cash basis accounting is easier because the income and expenses are recorded when the cash moves. This method is acceptable by the IRS for farm income tax returns and 97 percent of farmers are cash basis record keepers. Cash accounting is dangerous as a basis for business analysis and will produce misleading results because the matching of costs to revenue is not performed. Since cash records produce a misleading farm business analysis, a third method of accounting was developed. It is referred to as the hybrid method. This method adjusts the cash records, by using the net worth statement (inventory and other adjustments), to accrual records. This adjustment is necessary to do an accurate (farm) business analysis.

## THE BULK TANK OF DAIRY FARM FINANCES

Dairy farm managers seemingly have four main objectives in their quest for maintaining a viable dairy farm business. First, farmers seek **profitability**, meaning the ability of the dairy farmer to cover all costs over time and accumulate wealth. Second, farmers seek to **reduce risk**, regarding the desire of the dairy farmer to avoid losses of wealth over time. Third, farmers seek **liquidity**, meaning the ability to avoid negative cash flow by paying all financial obligations as they come due. And fourth, farmers seek varying degrees of **psychological income**, realizing that at times there may be other objectives (family life, etc.) in the dairy farm business which prompts managers to accept rates of return to various resources less than their potential return in an alternative use. It is important that these four objectives and any other major goals of the farm family be realized as we attempt to analyze the farm business.

To perform financial analysis, one must first have **data** such as income and expenses, tax records, debt and asset values, production records, etc. This data is then used for financial measures such as profitability, intensity of resource use, etc. and, as such, becomes useful **information**. The useful information is then utilized in making decisions and only then does it become **knowledge**. It is this knowledge that makes financial analysis useful. The key is this knowledge only becomes as accurate as the initial data entered. Thus, the need for good data from our record-keeping system is of utmost importance.

The Farm Financial Standards Task Force<sup>2</sup> has standardized farm financial statements. There are three constructed financial statements at the basis of measuring farm business performance. These are the

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<sup>2</sup>Portions of this paper are based on the draft copy of the "Recommendations of the Farm Financial Standards Task Force - Financial Guidelines for Agricultural Producers", May, 1991.

balance sheet<sup>3</sup>, the net farm income statement<sup>4</sup>, and the cash flow statement<sup>5</sup>. Once these statements are properly constructed, they can be used to help calculate the profitability, solvency, financial efficiency, and repayment capacity of the farm business. In addition, they can also be used to trouble-shoot various production, income and expense performances of the farm business.

### The "Sweet 16" of Financial Ratios

The Farm Financial Standards Task Force, in addition to standardizing financial statements, has also recommended sixteen financial ratios to analyze profitability, liquidity, solvency, efficiency and debt repayment. These ratios should be calculated and inventories taken on the same date each year. In order to coincide with tax records, January 1st is recommended.

#### Profitability

A business must be profitable in order to survive over time. The following measures determine the extent of that profitability. Measures including labor entail any unpaid operator and family labor and management.

Net Farm Income	=	Cash Farm Income
From Operations	-	Cash Farm Expenses
(NFIFO)	=	Net Cash Farm Income
	+	Prepaid Expense Adjustment
	-	Accounts Payable Adjustment
	+	Feed Inventory Adjustment
	+	Livestock Inventory Adjustment
	-	<u>Depreciation</u>
<b>GOAL = Opportunity Cost of Labor and Capital</b>		

Rate of Return on Assets = $\frac{\text{NFIFO} + \text{Int. Paid} - \text{Unpaid Labor}}{\text{Average total farm assets}}$	
<b>GOAL = Interest Rate on Debt</b>	

Rate of Return on Equity = $\frac{\text{NFIFO} - \text{Unpaid Labor}}{\text{Average total farm equity}}$	
<b>GOAL = Opportunity Cost of Capital</b>	

Operating Profit Margin Ratio = $\frac{\text{NFIFO} + \text{Interest Paid} - \text{Unpaid Labor}}{\text{Gross Revenue}}$	
<b>GOAL = Greater Than 25%</b>	

<sup>3</sup>See Appendix A.

<sup>4</sup>See Appendix B.

<sup>5</sup>See Appendix C.

These ratios should be calculated before income tax to avoid distortion from the result of various tax provisions. The rate of return on farm assets and farm equity can be calculated using either the cost or market value approach. The cost approach is more worthwhile when comparing accounting periods (years) on an individual farm while the fair market value approach may be more useful when comparing one farm to another. The recommended approach to value unpaid operator and family labor and management is to use withdrawals for family living.

The importance of analyzing profitability is because cash flow analysis can be misleading. A profitable farm may have troubles cash flowing the operation while an unprofitable farm can go on for years and still cash flow. Present profit analysis may offset future cash flow problems. The operating profit margin ratio measures profit per unit of output. Two ways to increase profitability are to increase profit per unit of output or to increase volume of output while maintaining profit per unit. The asset turnover ratio measures the latter and is included as a measure of financial efficiency.

### Liquidity

Liquidity measures the ability of the business to meet the short run financial obligations as they come due without disrupting the normal operation of business.

$$\text{Current Ratio} = \frac{\text{Total current farm assets}}{\text{Total current farm liabilities}}$$

**GOAL = 1.5 to 2**

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

**GOAL = Family Living and Term Debt Principal**

The current ratio is an important measure in that if it is too low, selling all current assets may not cover all liabilities in the short run. In this case, the difference would have to be made up with savings, sales of capital assets or borrowing money. On the other hand, if too high (check to make sure the current portion of non-current debts were included as a current liability), one may be sacrificing income and may consider investing in higher yielding instruments or paying down additional debt. The standard goals of both the current ratio and the working capital depend on the amount of risk one is willing to undertake.

### Solvency

Solvency measures the amount of borrowed capital, leasing commitments, and other obligations used by the business relative to the amount of owner's equity investment in the business. The net farm income must meet the family living expenses and principal payments in the long run.

$$\text{Debt/Asset Ratio} = \frac{\text{Total farm liabilities}}{\text{Total farm assets}}$$

**GOAL = Less than 40%**

$$\text{Equity/Asset Ratio} = \frac{\text{Total farm equity}}{\text{Total farm assets}}$$

**GOAL = Greater than 60%**

$$\text{Debt/Equity Ratio} = \frac{\text{Total farm liabilities}}{\text{Total farm equity}}$$

**GOAL = Less than 67%**

Solvency ratios can be calculated using cost value or fair market value of assets. If the market value approach is used, liabilities should include deferred taxes resulting from the sale of assets. Not considering these deferred taxes could show a higher level of comfort than would really exist.

High profit and strong cash flow farms can manage higher debt loads. An operation with fifty percent equity and \$200,000 worth of debt at 10 percent interest needs a five percent return on assets just to pay the annual interest. If the assets have increased in value since being purchased, the debt to asset value on a

cost basis will be higher than a fair market value basis. Cost basis eliminates inflation, giving a better measure of equity changes due to reinvested earnings.

### Financial Efficiency

Financial efficiency measures the intensity a business uses its assets to generate gross revenues and the effectiveness of production, pricing, financing, and marketing.

$$\text{Asset Turnover Ratio} = \frac{\text{Adjusted gross revenue}}{\text{Average total farm assets}}$$

**GOAL = Greater Than 35%**

The asset turnover ratio measures capital efficiency or profit based on volume of output relative to capital. When multiplied by the operating profit margin ratio, the result equals the return on total farm assets. The other four ratios are operational ratios whose sum must equal 1.00.

$$\text{Depreciation Expense Ratio} = \frac{\text{Depreciation expense}}{\text{Gross revenue}}$$

**GOAL = Less Than 15%**

$$\text{Interest Expense Ratio} = \frac{\text{Interest expense}}{\text{Gross revenue}}$$

**GOAL = Less Than 10%**

$$\text{Net Farm Income Ratio} = \frac{\text{Net Farm Income (NFIFO)}}{\text{Gross revenue}}$$

**GOAL = Greater Than 25%**

### Repayment Capacity

Repayment capacity is used to measure a borrower's ability to repay term debt and capital leases. It is not a measure of financial performance. They are the only measures that include non-farm income. As a minimum, the lender requires that working capital plus net farm income and depreciation be greater than or equal to family living plus capital purchases and term principal payments. Otherwise, a loan may need restructuring.

$$\begin{aligned} \text{Repayment Capacity} &= \text{NFI} \\ &+ \text{total non-farm income} \\ &+ \text{Depreciation} \\ &+ \text{Interest on term debt} \\ &+ \text{Interest on leases} \\ &- \text{Total income taxes} \\ &- \text{Family living expense} \\ &= \text{Capital Debt} \\ &\text{Repayment Capacity} \end{aligned}$$

$$\text{Term Debt Coverage Ratio} = \frac{\text{Capital Debt Repayment Capacity}}{\text{Annual scheduled principal and interest payments on term debts}}$$

**GOAL = 1.25 - 1.50**

\*See Appendix E.

Term Debt Repayment Margin = Capital Debt Repay Capacity  
- Payments on prior period operating debt  
- Payments on current portion of term debt  
- Payments on current portion of capital leases  
- Payments on personal debt

**GOAL = Positive**

The financial measures presented here are indicators of well being. The ratios a business should maintain depend largely on individual preferences with respect to profitability, risks and liquidity.

### FURTHER EVALUATION OF THE PERFORMANCE OF THE DAIRY FARM BUSINESS

There are other key measures for use by farmers and lenders in evaluating the performance of the dairy farm business. These indicators are very useful for comparison to the norm and also trouble-shooting related problems. In order to compare your dairy farm to the norm and also trouble-shoot potential problems in the operation, a dairy farm manager should annually compare his/her production, marketing and purchasing decisions with a norm. The following performance measures may provide a more detailed look at the dairy farm business.

#### GROSS CASH INCOME PER CROP ACRE

Gross Income = \$ \_\_\_\_\_/Acre  
Crop Acres

**GOAL = Greater than \$700/Acre**

#### POTENTIAL EXPLANATIONS:

1. Large Inventory Increase
2. Cropping Plan
3. Non-Productive Soil
4. Time Management
5. Disaster
6. Limited Operating Capital
7. Unprofitable Livestock Enterprises
8. Other \_\_\_\_\_

#### OTHER DAIRY INCOME

Cull Cow and Calf Income = \$ \_\_\_\_\_/Cow  
Number of Cows

**GOAL = Greater than \$300/Cow**

#### IMPROVEMENT OPPORTUNITIES:

1. Reduce Death Losses
2. Cull Conditioned Cows
3. Sell Healthy Bull Calves

4. Other \_\_\_\_\_

#### CASH FARM EXPENSE AS A PERCENT OF CASH INCOME

$$\frac{\text{Cash Expense}}{\text{Cash Income}} = \text{_____} \%$$

**GOAL = Less than 70% (including interest paid)**  
**GOAL = Less than 55% (excluding interest paid)**

#### IMPROVEMENT OPPORTUNITIES

1. Evaluation of Purchases
2. Improve Crop Yields
3. Increase Livestock Productivity
4. Acres/Cow (Lower Purchased Feed)
5. Labor As A Cash Expense
6. Other \_\_\_\_\_

#### MILK INCOME PER COW

$$\frac{\text{Milk Income}}{\text{Number of Cows}} = \$ \text{_____} / \text{Cow}$$

**GOAL = Greater than \$2100/Cow**

#### Potential Opportunity Areas:

1. Production (Less than 17,500 Lbs/Cow)
  - a. Ration
  - b. Genetics
  - c. Management
  - d. Disease
  - e. Herd Replacements
2. Other \_\_\_\_\_

#### POUNDS OF MILK PER COW

$$\frac{\text{Lbs. of Milk Sold}}{\text{Number of Cows}} = \text{_____} \text{ Lbs./Cow}$$

**GOAL = Greater than 17,500 Lbs./Cow**

#### IMPROVEMENT OPPORTUNITIES

1. Improve Nutrition Program
2. Proper Milking/SCC Management
3. Genetics
4. Disease
5. Other \_\_\_\_\_

## PERCENT LIVING CALVES WEANED OR MARKETED

$$\frac{\text{Living Calves}}{\text{No. of Calvings}} = \text{_____}\%$$

**GOAL = Greater than 95%**

### IMPROVEMENT OPPORTUNITIES

1. Feeding Management
2. Facilities/Sanitation
3. Other\_\_\_\_\_

Consult Appendix D or F for more detail on these measures.

## BENCHMARKS

It is as important to understand how to use benchmarks as it is to have the benchmarks. Benchmarks are used to monitor the relationship of 1) income generation; 2) investment/debt control and 3) operating cost control. Benchmarks can be used to summarize many important, underlying details of farm business financial strengths and weaknesses and financial performance. It is advised to not use a single benchmark to make important decisions as no one benchmark will guarantee success or failure. However, the two most important, and universally reliable benchmarks, are rate of return on assets and rate of return on equity. These can be used to compare a dairy farm business with another, assuming the same asset valuation type is used, and can also compare a dairy farm's performance with other sectors of the economy.

## DAIRY TRANS 2.0

DAIRY TRANS is a computer generated spreadsheet that uses income tax and balance sheet records and calculates a beginning and ending net worth statement, net farm income statement and an annual cash flow. In addition, **DAIRY TRANS calculates dairy income and expenses on a per cow and per hundredweight of milk produced basis and establishes a goal where appropriate.** Production factors (crop acres, labor, capital) based on intensity of resource use are also measured. The sixteen ratios recommended by the Farm Financial Standards Task Force are calculated along many other measures to help analyze finances per acre, per cow and per full time labor equivalent. A sample analysis is attached to the back of this paper and more information on the DAIRY TRANS program can be found in Appendix D.

### Milk Production Costs Per Cow<sup>7</sup>

Using milk production cost data from like farms in comparison is useful as long as the "benchmarks" one is comparing to are profitable ones to strive for. The milk production cost data which follows on the next page is average data from greater than 600 traditional dairy farms in Wisconsin. It is important to realize that in the year 2000, the average dairy farm *did not* recover all the costs of production. Thus, gleaming benchmarks from this data, although averages of a large number of farms, still may be unprofitable benchmarks to use.

This milk production cost data is available from the Center of Dairy Profitability at the University of Wisconsin-Madison or on-line at [www.cdp.wisc.edu](http://www.cdp.wisc.edu).

### Milk Production Costs Per Hundredweight Equivalent<sup>8</sup>

The above website also has available a simplified worksheet to determine milk production costs per hundredweight equivalent. A copy also follows the milk production costs per cow. This worksheet allows a producer manually to determine their milk production costs.

Producers are encouraged to utilize many of the tools listed here or other suitable accounting and dairy analysis tools to determine basic milk production costs in addition to be able to using the information to analyze and ultimately better manage their dairy farm finances.

<sup>7</sup> The Milk Production Cost data obtained through the Center for Dairy Profitability at UW-Madison in their study of 605 dairy farm in Wisconsin. The data was compiled under the leadership of Dr. Gary Frank, July 27, 2001.

<sup>8</sup> Cost of Producing Milk per Hundredweight Equivalent, Dr. Gary Frank, Center for Dairy Profitability, UW-Madison.



**Wisconsin Milk Production Costs per Cow**
**2000<sup>9</sup>**

cdp.wisc.edu website

Range in Herd Sizes	<= 50 Cows	51-75 Cows	76-100 Cows	101-150 Cows	151-250 Cows	> 250 Cows
Number of Farms	135	196	93	71	39	47
Total Number of Cows	5,603	12,328	8,211	8,605	7,348	21,944
Average Cows per Farm	41.5	62.9	88.3	121.2	188.4	466.9
Milk Sold per Cow (lbs.)	18,425	19,773	20,544	20,373	19,989	21,796
Price Received per 100 lb	\$11.57	\$11.63	\$11.65	\$11.69	\$12.22	\$12.73
Crop Acres per Cow	4.5	4.2	4.3	3.7	2.6	2.1
Cost of Resale Lvst Sold	0.00	47.99	0.45	4.08	1.90	0.03
Auto Expenses	38.17	29.49	25.69	16.83	12.63	6.10
Chemicals	49.52	51.50	62.16	35.74	39.12	31.46
Custom Heifer Raising	0.00	0.93	13.99	23.92	78.42	60.61
Custom Hire	69.40	68.64	114.03	93.83	124.60	126.32
Feed Purchased	429.96	430.73	476.92	500.81	554.58	659.16
Fert & Lime	92.73	89.64	84.70	94.09	52.83	32.84
Milk Hauling	27.74	29.83	29.98	29.49	23.22	46.40
Gas & Oil	82.97	78.75	79.97	69.43	62.21	65.45
Insurance	55.69	49.24	46.26	43.56	33.47	26.09
Milk Market & Hedging	32.59	34.67	33.21	34.60	34.97	36.15
Equip Leased	16.35	13.81	13.88	32.61	30.40	40.42
Rent-Farm & Pasture	97.06	119.01	150.48	151.22	149.52	119.31
Repairs	180.95	178.36	196.21	185.61	162.77	137.87
Seed & Plants Purchased	76.19	74.07	72.29	63.82	53.06	38.72
Supplies	127.70	115.61	107.96	97.82	96.34	90.59
Taxes	72.29	55.39	53.27	52.20	29.73	27.21
Utilities	78.64	71.42	69.33	65.78	57.59	50.00
Vet & Medicine	86.93	82.65	91.96	87.00	100.44	106.16
Breeding Fees	40.63	39.41	37.97	33.89	35.83	27.58
Other Expenses	68.14	72.87	104.48	117.08	136.04	169.67
Accts Payable Adjustment	4.77	2.62	9.65	12.13	1.95	12.76
Prepd Expenses Adjust	(2.46)	23.80	22.00	18.24	22.20	35.80
Depr on Purch Livestock	41.92	56.72	71.02	51.28	135.73	155.83
<b>Basic Costs</b>	<b>1,767.90</b>	<b>1,817.14</b>	<b>1,967.87</b>	<b>1,915.04</b>	<b>2,029.89</b>	<b>2,102.52</b>
Mortgage Interest	82.49	73.18	77.24	91.61	82.44	103.38
Other Interest	116.91	121.78	126.05	96.01	135.09	140.55
Labor Hired (Dependents)	101.93	120.76	88.83	81.82	76.29	41.49
Labor Hired(Non-dep)	28.65	80.23	141.37	169.68	200.46	341.33
SST & Emp Bens (Dep)	84.26	79.40	51.71	36.48	20.10	7.36
SST & Bens (N0n-dep)	10.89	20.90	29.59	33.86	44.92	68.42
Dpr-Mach, equip,build	331.56	334.38	335.65	277.01	264.60	250.54
Total Allocated Costs	2,524.60	2,647.77	2,818.30	2,701.51	2,853.80	3,055.58
Total Farm Incomes	2,909.63	3,066.01	3,261.64	3,095.12	3,090.23	3,187.78
<b>NFIFO*</b>	<b>385.03</b>	<b>418.24</b>	<b>443.34</b>	<b>393.61</b>	<b>236.43</b>	<b>132.19</b>

\*Net Farm Income from Operations

<sup>9</sup> The Milk Production Cost data obtained through the Center for Dairy Profitability at UW-Madison in their study of 605 dairy farm in Wisconsin. The data was compiled under the leadership of Dr. Gary Frank, July 27, 2001.

**Table 2. Wisconsin Grazing Dairy Profitability Analysis<sup>10</sup>**

<b>Number of Graziers</b>	7	7	7	21	> 600 Typical WI Dairy Farms
<b>\$ NFIFO</b>	Top (6)	Middle (6)	Bottom (7)	Average of 19	FFAMIS
1998	\$92,980	\$67,583	\$37,296	\$67,045	\$86,572
1999	\$101,474	\$47,559	\$37,296	\$62,110	\$69,859
<b>\$ NFIFO/Cow</b>					
1998	\$1,777	\$956	\$668	\$1,059	\$834
1999	\$1,528	\$765	\$441	\$874	\$782
<b>Cash Income/Cow</b>					
1998	\$3,502	\$2,765	\$2,471	\$2,844	
1999	\$3,274	\$2,432	\$2,504	\$2,723	
<b>Cash Expense/Cow</b>					
1998	\$1,777	\$1,821	\$1,738		\$2,946
1999	\$1,612	\$1,565	\$1,761		\$2,977
<b>Investment/Cow</b>					
1998	\$7,097	\$5,486	\$5,305	\$5,837	\$7,291
1999	\$6,501	\$4,576	\$5,086	\$5,378	
<b>Debt/Cow</b>					
1998	\$445	\$2,517	\$2,673	\$2,037	\$2,849
1999	\$900	\$1,987	\$2,631	\$1,964	
<b>Number of Cows</b>					
1998	52.3	70.7	66.4	63.3	99.5
1999	66.4	62.1	84.6	71.1	96.8
<b>Milk Sold/Cow</b>					
1998	19,399	16,321	14,010	16,231	20,198
1999	18,600	13,125	14,763	15,481	20,210
<b>Milk Price Ave.</b>					
1998	\$15.96	\$15.52	\$15.70	\$15.72	\$15.49
1999	\$14.99	\$16.40	\$14.35	\$15.25	\$14.76

Most studies confirm that Management Intensive Rotational Grazing is an economically viable alternative for many Wisconsin farm families.

**SUMMARY**

The intent of this paper, as stated earlier, is to assist those involved with managing and analyzing dairy farm finances with useful tools in measuring financial and, to a lesser degree, production performance. Which tools and measures a farm manager or lender will adopt will depend largely on their goals with respect to profitability, liquidity, solvency and financial efficiency.

<sup>10</sup> Wisconsin Grazing Dairy Profitability Analysis, Preliminary Fifth Year Summary, Tom Kriegl, University of Wisconsin-Center for Dairy Profitability, January 22, 2001.

**APPENDIX A: THE BALANCE SHEET<sup>11</sup>**

Completing the Balance Sheet (also called the Net Worth Statement) is the first and perhaps the most difficult step in the analysis process--and the most important. Without it, little can be determined about your farm's financial performance.

There are five categories of ledgers in the accounting process. They are assets, liabilities, equity, revenue and expenses. The assets, liabilities and equity are present on the balance sheet. Every business needs to do an itemized balance sheet at the beginning and end of each accounting period. The total value of the assets must equal the liabilities plus the equity.

**ASSETS (What You Own)**  
**Current Assets**

- 1) Cash or assets which can readily be turned into cash within 12 months.
- 2) Examples: Cash in Checking or Savings Account, Seed and other Supplies on hand, Accounts Receivable, Crops in Storage, Livestock Held for Sale (steers, pigs).

**LIABILITIES (What You Owe)**  
**Current Liabilities**

- 1) Obligations which must be paid within 12 months.
- 2) Examples: Principal payments due in 12 months, Accounts Payable, Taxes Due.

**Non-Current Assets**

- 1) Intermediate Assets (1 to 10 year life) Examples: Machinery and Equipment, Vehicles, Breeding Livestock.
- 2) Long Term Assets (>10 year life) Land, Buildings and Improvement, Residence and Rental Property.

**Non-Current Liabilities**

- 1) Intermediate Liab. Examples: **Principal** on Intermediate Loans.
- 2) Long Term Liabilities Examples: Remaining **Principal** due on Long Term Loans.

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**TOTAL ASSETS = \$100,000**

**TOTAL LIABILITIES = \$40,000**

**ASSETS - LIABILITIES = OWNER'S EQUITY (NET WORTH)**

**\$60,000 = OWNER'S EQUITY**

In order to complete the balance sheet, one must obtain information from various sources. Namely, the herd records to obtain animal numbers; an inventory listing for feed and supplies on hand; a depreciation schedule for listing of machinery, livestock and buildings; savings and checking account statements; credit and loan records; and both the cost and fair market value of assets.

The Farm Financial Standards Task Force has made four recommendations relating to the balance sheet in the hopes of evolving agricultural financial statements towards generally accepted accounting principles (GAAP). First, a separate balance sheet should be constructed for business and personal applications. A combined balance sheet is acceptable if personal assets and liabilities are clearly identified on separate line items.

Second, assets and liabilities should be segregated into current and non-current assets. However, the three category balance sheet is acceptable if the user feels the additional information is useful and a definition of each category is clearly disclosed on the balance sheet.

Third, the balance sheet must contain both cost and fair market value of assets. This can be accomplished in two formats: a) having the market values on the face of the balance sheet with footnotes and supporting schedules disclosing cost and accumulated depreciation, and b) a double column with cost and fair market value of capital assets side by side.

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<sup>11</sup>This appendix was adapted from handout materials "The Farm Net Worth Statement" by Joe Stellato, Shawano County UW-Extension Agriculture Agent.

Fourth, the balance should include a section on owner's equity. That section should contain at least two components: an earnings (retained) and/or contributed capital component and a valuation/revaluation equity component.

This fourth requirement will divide the equity in the business between that earned through profits and/or paid in capital and that obtained through the change in the value of the business's investment (in farm assets). Example: the price of dairy cows increases \$100 each. The increased equity should be recorded as valuation equity. The valuation equity component represents the difference between the book value (cost or other basis not charged as an expense) and the market value. A contingent liability (income taxes, dispersal expenses, lawsuits, co-signatory on notes, environmental cleanup, etc.) of a sale should be netted against this component of equity.

In conclusion, the balance sheet is the distance between the farm business and bankruptcy measured in dollars.

**A sample net worth statement can be found in the Dairy Trans Analysis attached to the back of this publication.**

## APPENDIX B: THE NET FARM INCOME STATEMENT

The net farm income statement (also called the profit or loss, operating or earnings statement) is a summary of the income and expenses for the accounting period. More simply, gross revenue minus expenses equals net farm income. Thus, it shows how one has financially progressed during the year. The beginning balance sheet shows where you started; the ending balance sheet shows where you finished; and the income statement shows how you got there.

The net farm income statement consists of three parts: 1) the cash operating statement, 2) adjustments to cash income, and 3) adjustments to cash expenses. This income statement, then, is on an accrual-adjusted basis. The adjustments are necessary to do an accurate (farm) business analysis.

In order to complete an income statement, one simply needs a beginning and ending balance sheet and accurate income tax records.

### 1) Cash Farm Operating Statement

For this portion of the income statement, the information can come directly from tax records. The **income** figures are found on the top of Schedule F, on Form 4797, and on Schedule D. These last two schedules deal with capital gains/losses. When the capital gains income is pulled out, the total receipts from sales are to be used--not just the portion that is taxable.

The **expense** figures come from the bottom of Schedule F. The depreciation expense (a non-cash expense) should not be included in the cash operating section of the income statement as it comes out later in the adjustment for capital items section. Thus, the operating income, capital income and ordinary expense numbers provide the information to complete this first section. The bottom line is that total cash operating income, less cash operating expenses, equals the net cash farm operating income.

### 2) Adjustments to Cash Income

The adjustments to cash income to obtain gross farm income fall into two categories. The first is the change in the value of the physical inventory of the current assets from the beginning to the end of the accounting period. This includes the change in inventory held for feed, the inventory held for sale, any accounts receivable, and any livestock held for sale.

The second adjustment is the non-cash income from the change in the inventory of some non-current assets. Raised breeding livestock is a good example. The reason for including them here as non-cash income and not as a capital expense adjustment is that the sale of breeding stock (IRS Form 4797) is included as cash income.

There are three methods for adjusting gross income for the change in quantity of breeding stock. Only the quantity of breeding stock times the selected price should be included in gross revenues. Then, any change in the price of the breeding stock be disclosed in the statement of owner's equity. The prices used by the three methods are quantity-based fair market value, base value, and base value with full recognition of revenue.

Base value is a stipulated value, roughly approximating the cost of raising the animal. Changes in the quantity times the base value are included in gross income. When these animals are sold the gain or loss is recognized as a gain or loss on asset disposal. When using base value with full revenue recognition, the gain or loss on the disposal is recognized as gross income. It is recommended to use base value with full revenue recognition because the income from the sale of breeding stock is listed as cash income, which is part of gross revenue.

It is also recommended to clearly disclose on the financial statement the method of valuation used.

In order to calculate non-cash farm income, multiply the number of livestock in each class at the beginning and end of the accounting year times the respective base values. Then, subtract this figure from the ending value. This equals non-cash income. Do not change the base value of the various livestock units during an accounting period when calculating non-cash income. If an adjustment to the unit base value is necessary, make the adjustment between accounting periods and adjust valuation equity accordingly. These two adjustments (for inventory and non-cash income) are made to cash income to arrive at gross farm revenue.

The gross farm income is obtained by the following formula:

$$\begin{array}{l} \text{Cash Farm Income} \\ + \text{Inventory Change (feed, supplies on hand)} \\ + \text{Non-cash Change (livestock)} \\ \hline = \text{Gross Farm Income} \end{array}$$

### 3) Adjustments to Cash Expenses

The gross farm expenses are obtained by the following formula:

$$\begin{array}{l} \text{Cash Farm Expenses} \\ - \text{Change in Prepaid Expenses} \\ + \text{Change in Accounts Payable} \\ + \text{Depreciation or Capital Consumption} \\ \hline = \text{Gross Farm Expense} \end{array}$$

#### Prepaid Expenses

Most farmers are cash basis taxpayers. This allows them to pay for a production expense in one year and use it in another year while entering the cost as a deduction in the year the "cash" moved. That expense (input) did not produce any product (output) in that tax year. Therefore, to obtain a correct farm business analysis, adjust cash expenses for changes in prepaid expenses.

The correct adjustment is to subtract the change that occurred (ending minus beginning balance sheet values) because an increase in prepaid expenses means that more inputs were recorded as a "cash" expense than were actually used in the production of the output. This adjustment, then, allows the calculation of the actual expenses (inputs) required to produce the output.

#### Accounts Payable

Accounts payable are charge cards that businesses extend to customers, usually without a formal agreement. Inputs required in the production process that are obtained (and not otherwise paid for) through this informal borrowing are not considered tax deductible and do not show up as an expense in a cash accounting system. However, those items were used in the production process and must be accounted for in an analysis of the business's profitability.

The accounts payable adjustment to cash expenses is similar to the prepaid expense adjustment. However, accounts payable are on the liability side of the balance sheet. Therefore, the change in accounts payable from the end to the beginning of the accounting period is added to the cash expenses required to produce the output. Reasoning: if the sum of accounts payable increases from the beginning to the end of the accounting period, more inputs were used in the production process than were recorded as cash expenses. To correct cash farm expenses for this, the change in accounts payable is added to the production costs. These ending and beginning values are found on the balance sheet.

#### Depreciation or Capital Consumption

The decrease in the value of assets used in production is a cost of production. This occurs due to use and obsolescence. The easiest method to use is to take the actual tax depreciation taken. It is accurate in the long run but will cause some short run problems attributable to accelerated depreciation methods and Section 179 Expensing. A second method uses "market value" in that Beginning Inventory and Purchases minus Ending Inventory Plus Sales equals Capital Consumption. This method yields the true economic cost.

A sample net farm income statement can be found in the Dairy Trans analysis attached to the back of this paper.

**APPENDIX C:****THE CASH FLOW STATEMENT**

There are three cash flow areas: operations, investment and financing. The maintenance of the cash flow statement allows the calculation, in combination with the net worth and income statements, of some important ratios. The key concept to remember is that a cash flow statement can indicate the financial feasibility of an operation, but in no way is it, as with tax records, to be used as an indicator of profitability.

The cash flow statement takes into account all sources and uses of cash, both farm and non-farm. A sample Cash flow statement can be found in the Dairy Trans analysis attached to the back of this paper.

<u>Cash Inflows</u>		<u>Cash Outflows</u>	
	Beginning Balance		Cash Farm Expenses
+	Cash Farm Income	+	Capital Purchases
+	Non Farm Income	+	Family Living Draw
+	Capital Asset Sales	+	Income Taxes Paid
+	New Monies Borrowed	+	Principal Payments
		+	Ending Balance
<b>Cash Inflows - Cash Outflows = 0</b>			
CASH FLOW RATIO			
<b>GOAL = <math>\frac{\text{Cash Inflows}}{\text{Cash Outflows}}</math> = Greater than 1.1</b>			

The use of **DAIRY TRANS 2.0**, a stand-alone computer spreadsheet, requires a minimal amount of information which every dairyman should readily have at their disposal. **DAIRY TRANS** can help analyze both past business performance and/or a consideration of a change in the present operation in an easy-to-understand manner.

The first portion of **DAIRY TRANS** is the beginning and ending balance sheet. For analyzing a farm business from year to year, constructing the balance sheet on a cost (tax) basis will probably be the most informative. Consult Appendix A for more information on filling out the balance sheet.

Under the ending balance sheet on the left hand side are some inventory adjustments. In descending order, the abbreviations stand for Accounts Payable, Prepaid Expenses, Feed Inventory, Breeding Livestock Inventory, Depreciation, and Capital Purchases and Sales. These are to be calculated at both the beginning and the end of the year being analyzed. If unsure or do not want to include this, simply estimate as best possible or enter zeros. The more one includes, though, the more accurate the analysis will be.

All the numbers in brackets [ ] are those which were inputted on the form. The rest are automatically calculated. Thus, for each of the incomes and expenses, **DAIRY TRANS** will calculate the expense per cow and also convert the income or expense to hundredweight of milk equivalents. How many times does one get asked what it costs to produce a hundredweight of milk? By using **DAIRY TRANS**, one can easily generate that knowledge.

The last column on the right side of the **DAIRY TRANS** states the minimum or maximum goal standard for the particular item. The **DAIRY TRANS** analysis includes calculations of the balance sheet (net worth statement), financial statement, and the cash flow statement. By inputting the requested numbers, the line stating a positive ending cash balance means the operation will cash flow. Thus, one can use it for last year's analysis or this year's or next year's projections.

The sixteen financial ratios recommended by the Farm Financial Standards Task Force are calculated along with more than 20 other measures which detail intensity of resource use and other operating efficiencies.

The following pages are the **DAIRY TRANS** input form and the **DAIRY TRANS** analysis that is generated. For more information about the program inquire information from:

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## APPENDIX E:

## MANAGING DEBTS AND RESTRUCTURING OR REFINANCING LOANS<sup>12</sup>

Measures of Repayment Capacity are used solely to measure the ability of a farmer to pay back a loan and it is in no way intended to measure a business's performance. Some farmers may possess little or no working capital and/or a negative capital debt repayment capacity and thus may need to restructure a debt.

Will restructuring change the ability to generate earnings? Will the total debt position change?

There are two ways in which restructuring improves financial position. First, it increases liquidity which means that it gives us more working capital (current assets - current liabilities). Second, it matches principal payments with the ability to pay.

The question which needs to be asked, though, is if restructuring is a viable alternative. This depends. Is the business profitable? Is the debt good or bad? Will the farm and other earnings cover living expenses? If it is determined that restructuring is a viable alternative, the ideal is to restructure so that working capital equals two times the projected living expenses plus principal payments.

If the restructuring is due to the loan being an unprofitable problem loan, then the economic reality of the situation needs to be taken into account. From the point of view of a lender, loss is a certainty with a problem loan where the debt may or may not exceed the secured assets. The lender has the choice of either foreclosing on the loan or to restructure the loan through a principal write-down, an interest rate reduction or a combination of the two. The basic decision criterion for selecting the corrective action is if the losses from restructuring are less than the losses from foreclosure, the lender will choose restructuring. Otherwise, the lender will choose foreclosure.

To make this decision, though, the lender needs to gather information. First, one needs to assess a value of the net proceeds from foreclosure taking into account the net cash receipts (rents and net market value of assets), the net cash expenses (legal fees and administrative costs) and the opportunity cost of capital (cost of loanable funds and discounted cash flows). Second, one needs to assess the value of net proceeds from a restructured loan with respect to the loan payments from the borrower and again, the opportunity cost of capital.

In summary, the steps of a loan restructuring decision on the part of the lender:

- 1) Determine the present value of proceeds under foreclosure.
- 2) Determine what annual payment on restructured loan results in a present value equal to the present value of proceeds under foreclosure.
- 3) Compare the break-even payment to the payment the borrower is able to make.
- 4) Consider the options for restructuring relative to principal and interest.
- 5) Select the option most compatible with your objectives and philosophies.

Plan, Rather than Hope, for Profit by Managing Dairy Farm Finances.

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<sup>12</sup>This material adapted from the handout materials on "Managing Your Debts" and "Restructuring Problem Loans" by Bruce L. Jones, Department of Agricultural Economics, University of Wisconsin-Madison.