

## **Appendix I**

### **Whole Farm Analysis Procedures and Measures**

The whole-farm reports include summary financial statements and measures for all farms included in this report. Rounding of individual items may have caused minor discrepancies between those items and the printed totals which are calculated before rounding.

#### **Financial Summary**

This table summarizes key measures reported in several of the following tables.

##### ***Income Statement***

This section summarizes key totals from the Income Statement table. *Average Net Farm Income* is the mean or average farm earnings of the group calculated on an accrual adjusted basis. *Median Net Farm Income* is the farm earnings of the median or middle farm in the group. If it is lower than the average, the average earnings are skewed because some farms had much higher earnings than the rest of the group. If it is higher than the average, the average earnings are skewed because some farms had much lower earnings than the rest of the group.

##### ***Profitability***

See the Profitability Measures section below for an explanation of these measures.

##### ***Liquidity and Repayment***

See the Financial Standards Measures and Liquidity Measures sections below for an explanation of these measures.

##### ***Solvency***

This section summarizes key measures from the Balance Sheet reports.

##### ***Nonfarm Information***

This section summarizes non-farm earnings for all farms and family living withdrawals for those sole proprietors who kept accurate family living records. More detail is included on the Household and Personal Expenses and Nonfarm Summary pages.

##### ***Crop Acres***

This section summarizes acres used for cropping the Crop Production and Marketing Table.

#### **Financial Standards Measures**

This table contains the Farm Financial Standards Council's 21 financial measures for evaluating a farm's financial position and performance.

## **Liquidity**

*Current Ratio* is calculated by dividing the total current farm assets by the total current farm liabilities.

*Working Capital* is calculated by subtracting current farm liabilities from current farm assets.

*Working Capital to Gross Income* is *Working Capital* divided by *Gross Revenues (accrual)*.

## **Solvency**

*Farm Debt to Asset Ratio* is calculated by dividing the total farm liabilities by the total farm assets. It measures the proportion of farm assets financed by debt capital.

*Farm Equity to Asset Ratio* is calculated by dividing farm equity or net worth by the total farm assets. It measures the proportion of the farm assets financed by the owner's equity as opposed to debt. This is the opposite of the debt to asset ratio. These two measures always add up to 100% because they describe how total farm assets are financed.

*Farm Debt to Equity Ratio* measures farm debt relative to farm equity. It is calculated by dividing the total farm liabilities by the total farm net worth. The debt to equity ratio measures the amount of borrowed capital being employed for every dollar of equity capital.

## **Profitability**

*Rate of Return on Farm Assets* can be thought of as the average interest rate being earned on all investments in the farm or ranch business. If assets are valued at market value, the rate of return on assets can be looked at as the "opportunity cost" of farming versus alternate investments. If assets are valued at cost value, the rate of return on assets more closely represents the actual return on the average dollar invested in the farm. The rate of return on farm assets is calculated as follows:  $\text{Rate of Return on Assets} = \text{Return on Farm Assets} \div \text{Average Farm Investment}$ , where:  $\text{Return on Farm Assets} = \text{Net Farm Income} + \text{Farm Interest} - \text{Value of Operator's Labor \& Management}$ , and  $\text{Average Farm Investment} = (\text{Beginning Total Farm Assets} + \text{Ending Total Farm Assets}) \div 2$ .

*Rate of Return on Farm Equity* represents the interest rate being earned on farm net worth. If assets are valued at market value, this return can be compared to returns available if the assets were liquidated and invested in alternate investments. If assets are valued at cost value, this more closely represents the actual return on the funds that have been invested or retained in the business. The rate of return on farm equity is calculated as follows:  $\text{Rate of Return on Equity} = \text{Return on Farm Equity} \div \text{Average Farm Net Worth}$ , where:  $\text{Return on Farm Equity} = \text{Net Farm Income} - \text{Value of Operator's Labor \& Management}$ , and  $\text{Average Farm Net Worth} = (\text{Beginning Farm Net Worth} + \text{Ending Farm Net Worth}) \div 2$ .

*Operating Profit Margin* is a measure of the operating efficiency of the business. It is calculated as follows:  $\text{Operating Profit Margin} = \text{Return to Farm Assets} \div \text{Value of Farm Production}$ . If expenses are held in line relative to the value of output produced, the farm will have a healthy

operating profit margin. A low net profit margin may be caused by low prices, high operating expenses, or inefficient production.

*Net Farm Income* represents the returns to unpaid labor, management, and equity capital invested in the business.

EBITDA is Earnings Before Interest, Taxes, Depreciation and Amortization. It is Net Farm Income from Operations from the income statement plus interest expense and depreciation expense. This measure is common in commercial financial analysis but is not commonly used in agriculture.

### ***Repayment Capacity***

*Capital Debt Repayment Capacity* is *Net Farm Income From Operations* plus *Depreciation, Personal Income*, and *Interest on Term Debt* minus *Family Living/Owner Withdrawals, Payments on Personal Debt* and *Income Taxes Paid*. This represents total earnings available for debt repayment and cash capital replacement.

*Capital Debt Repayment Margin* is *Capital Debt Repayment Capacity* minus *Scheduled Term Debt Payments*. This is the amount by which earnings available for debt repayment exceeded payments due.

*Replacement Margin* is *Capital Debt Repayment Margin* minus *Cash Replacement Allowance*. This is the amount by which earnings available for debt repayment and replacement exceed payments due and cash replacement needs.

*Term Debt Coverage Ratio* measures whether the business generated enough income to cover term debt payments. It is calculated by dividing the funds generated by the business for debt repayment (net cash farm income + nonfarm income + interest expense – family living expense – income taxes) by total term debt payments (annual scheduled principal and interest payments on intermediate and long term debt). A ratio less than 1.0 indicates that the business did not generate sufficient cash to meet scheduled payments in the past year. A ratio greater than 1.0 indicates the business generated enough cash to pay all term debt payments.

*Replacement Coverage Ratio* measures whether the business generated enough income to cover scheduled term debt payments plus estimated cash capital replacement needs. A ratio less than 1.0 indicates that the business did not generate sufficient income to meet replacement needs. A ratio greater than 1.0 indicates the business generated enough income to pay all term debt payments and cover an allowance for capital replacement.

### ***Efficiency***

*Asset turnover Rate* is a measure of efficiency in using capital. It is calculated as follows:  $\text{Asset Turnover Rate} = \text{Value of Farm Production} \div \text{Total Farm Assets}$ .

The last four ratios reflect the distribution of gross income to cover operating expenses and generate farm income. The sum of the operating expense ratio, the depreciation expense ratio, and the interest expense ratio equals the percent of gross income used to pay business expenses.

The amount remaining is net farm income. The gross farm income used to calculate these ratios is the accrual gross farm income.

*Operating Expense Ratio* is calculated as  $(\text{Total Farm Operating Expense} - \text{Farm Interest Expense}) \div \text{Gross Farm Income}$ . This ratio indicates the percent of the gross farm income that was used to pay operating expenses. Total farm operating expense is the accrual total operating expense.

*Depreciation Expense Ratio* is calculated as  $\text{Depreciation} \div \text{Gross Farm Income}$ . This ratio indicates the percent of the gross farm income that was used to cover depreciation and other capital adjustments.

*Interest Expense Ratio* is calculated as  $\text{Farm Interest Expenses} \div \text{Gross Farm Income}$ . This ratio indicates the percent of the gross farm income used for farm interest expenses. This is the same ratio as the accrual interest as a percent of income from the Liquidity table.

*Net Farm Income Ratio* is calculated as  $\text{Net Farm Income} \div \text{Gross Farm Income}$ . This ratio indicates the percent of the gross farm income that remained after all expenses.

## **Farm Income Statement**

The farm Income Statement is a summary of income, expenses, and resultant profit or loss from farming operations during the calendar year. The first section lists cash farm income from all sources. The second section lists *cash* expenses. "Interest" includes only interest actually paid. No opportunity charges on farm equity capital or unpaid labor are included. The difference between *Gross Cash Farm Income* and *Total Cash Expense* is the *Net Cash Farm Income*. This is net farm income on a *cash* basis.

The third and fourth sections deal with noncash changes in the farm business. The *Inventory Changes* and *Depreciation* sections are used to convert the cash income statement (Net Cash Farm Income) derived from the first two sections into an accrual income statement. The resulting "Net Farm Income" represents the return to the operator's and family's unpaid labor, management, and equity capital (net worth). In other words, it represents the return to all of the resources which are owned by the farm family and, hence, not purchased or paid a wage. However, it does not include any asset appreciation, debt forgiveness or asset repossessions.

## **Profitability Measures**

Profitability is measured using assets valued first at cost and then at market. The reports include five measures of profit followed by the values used to calculate the measures.

*Net Farm Income* is repeated from the Farm Income Statement report. When assets are valued at market, it includes the change in market valuation of capital for the year.

*Rate of Return on Assets* is the *Return to Farm Assets* divided by *Average Farm Assets*.

*Rate of Return on Equity* is the *Return to Farm Equity* divided by *Average Farm Equity*.

*Operating Profit Margin* is the *Return to Farm Assets* divided by *Value of Farm Production*.

*Asset Turnover Rate* is the *Value of Farm Production* divided by *Average Farm Assets*.

*Farm Interest Expense* is the accrued interest cost so it will be different from the cash interest paid shown in the Farm Income Statement.

*Value of Operator's Labor and Management* is its opportunity cost. It is assigned by farm within suggested guidelines.

*Return on Farm Assets* is calculated by adding *Farm Interest Expense* and *Net Farm Income* and then subtracting the *Value of Operator's Labor and Management*.

*Average Farm Assets* is the average of beginning and ending total farm assets for all farms, not just those included in the Balance Sheet report.

*Return to Farm Equity* is calculated by subtracting the *Value of Operator's Labor and Management* from *Net Farm Income*.

*Average Farm Equity* is the average of beginning and ending farm net worth.

*Value of Farm Production* is gross farm income minus feeder livestock and feed purchased and adjusted for inventory changes in crops, market livestock and breeding livestock.

## **Liquidity and Repayment Capacity Measures**

*Current Ratio* is total *Current Assets* divided by total *Current Liabilities*.

*Working Capital* is total *Current Assets* minus total *Current Liabilities*.

*Working Capital to Gross Income* is *Working Capital* divided by *Gross Revenues (accrual)*.

*Current Assets* are taken from the ending balance sheet and include all assets that will be sold or used up in production within one business year.

*Current Liabilities* are taken from the ending balance sheet and include all loans and other debt due to be repaid within one business year. Principal due within a twelve months on intermediate and long term loans is included.

*Gross Revenues (accrual)* is gross cash farm income from the income statement adjusted for inventory changes in crops and feed, market livestock, accounts receivable, hedging accounts, breeding livestock and other income related inventories.

*Net Farm Income from Operations* is from the Income Statement.

*Depreciation* is the total depreciation from the Income Statement. It is added as a source of repayment because it is a non-cash expense that was subtracted to arrive at *Net Farm Income From Operations*.

*Personal Income* is the average for all farms, not including *Gifts and Inheritances*.

*Family Living/Owner Withdrawals* is the amount of owner withdrawals for family living, partnership withdrawals, and corporate dividends. Reported withdrawals are adjusted to include any discrepancy with actual cash disappearance.

*Payments on personal debt* is the total principal payments made during the year on all non-farm loans.

*Income Taxes Paid* are total federal, state, and social security taxes paid during the year on farm and personal earnings.

*Interest on Term Debt* is the amount of interest paid on intermediate and long term loans during the year. Interest is added as a source of repayment because it was previously subtracted to arrive at *Net Farm Income from Operations*.

*Capital Debt Repayment Capacity* is *Net Farm Income From Operations* plus *Depreciation, Personal Income*, and *Interest on Term Debt* minus *Family Living/Owner Withdrawals, Payments on Personal Debt* and *Income Taxes Paid*. This represents total earnings available for debt repayment and cash capital replacement.

*Scheduled Term Debt Payments* is the scheduled amount of principal and interest payments due on farm intermediate and long term loans from the beginning balance sheet.

*Capital Debt Repayment Margin* is *Capital Debt Repayment Capacity* minus *Scheduled Term Debt Payments*. This is the amount by which earnings available for debt repayment exceeded payments due.

*Cash Replacement Allowance* is the estimated amount of cash needed to cover the portion of capital replacement needs that normally come from cash flow. It is estimated for each operator based on their financial structure.

*Replacement Margin* is *Capital Debt Repayment Margin* minus *Cash Replacement Allowance*. This is the amount by which earnings available for debt repayment and replacement exceed payments due and cash replacement needs.

*Term Debt Coverage Ratio* is *Capital Debt Repayment Capacity* divided by *Scheduled Term Debt Payments*. This represents how many times scheduled payments are covered by repayment capacity.

*Replacement Coverage Ratio* is *Capital Debt Repayment Capacity* divided by the total of *Scheduled Term Debt Payments* and the *Cash Replacement Allowance*. This represents how many times scheduled payments and cash replacement needs are covered by repayment capacity.

## **Balance Sheets at Cost and Market Values**

These tables include all farm and personal assets and liabilities reported by these farms on their beginning and ending balance sheets. Government crop loans are treated consistently as loans on these tables, meaning that the full asset value is included as an asset and total accrued interest and outstanding principal balances are included as liabilities. Capital assets are valued at original purchase price minus economic depreciation on the Cost Value table.

## **Statement of Cash Flows**

This table reports the sources from which cash was available or obtained and where that cash was used or remains at the end of the year.

## **Crop Production and Marketing Summary**

This table contains three sections. The first section reports average acreage by tenure and general use. The next two sections show average price received from cash sales and average yields for major crops.

## **Household and Personal Expenses**

For those farms that kept records, the household and personal expenses are summarized in this table. Since not all farms keep these records, the number of farms may be different for each group. Averages are determined by the number of farms keeping these records.

## **Operator and Labor Information**

This table has four sections. The first reports the averages for the number of operators per farm, the operator's age, and the number of years farming. The second section reports various measures and results per operator compared to per farm in other reports.

The third section reports the amount of labor used and the returns to that labor. *Total Unpaid Labor Hours* and *Total Hired Labor Hours* are based on farmers' estimates of labor use. No labor records are kept for unpaid labor. *Value of Farm Production/Hour* is the Value of Farm Production divided by Total Labor Hours per Farm. *Net Farm Income/Unpaid Hour* is Net Farm Income divided by Total Unpaid Labor Hours.

The fourth section reports the number of partnerships and withdrawals in each grouping.



## Appendix II

### Crop Enterprise Analysis Procedures and Measures

The Crop Enterprise Analysis tables show the profitability of each crop enterprise produced by four or more farms.

*Gross Return* is the average Yield multiplied by the Value Per Unit plus any other production or income related to the crop. Value Per Unit for cash crops is the average sales price for crops sold or an average sale price during the harvest season. For feed crops, it is the estimated average cost for the year. LDP repayments and other commodity-specific income are added to estimate the total value received for crop production.

*Direct Expenses* include expenses that are directly related to the production of the specific crop. Most direct expenses are directly assigned to production of the crop and simply divided by acres. Some, such as Fuel and Oil and Repairs, which are difficult to assign directly to specific fields or crops, are determined by allocating the total annual expense across all enterprises using allocation factors entered for each crop.

*Overhead Expenses* are also determined by allocating the total annual expense across all enterprises using allocation factors entered for each crop.

*Net Return per Acre* is the Gross Return per Acre minus Total Direct and Overhead Expenses.

*Net return with government payments* is Net Return Over Lbr & Mgt plus Government Payments. Government Payments includes only direct payments and counter-cyclical payments. Payments that are directly attached to production of the crop, such as LDP and disaster payments are included in Gross Return. Because direct government payments have been decoupled from actual production, these payments are generally allocated to all crops excluding vegetables and pasture. This is done for each farm by allocating the direct payments from the whole farm to these crops.

*Net Return over Labor and Management* is calculated by allocating the farmer's charge for unpaid labor and management across all enterprises and subtracting it from Net Return With Government Payments.

*Cost of Production* is calculated by dividing the total expense for each category by the yield per acre. *Total Expense Less Government and Other Income* is total expense minus government payments, income from secondary products, and other income, divided by yield per acre.

*Machinery Cost Per Acre* is the sum of fuel and oil, repairs, custom hire expense, machinery lease payments, machinery depreciation, and interest on intermediate debt divided by acres.

*Estimated Labor Hours Per Acre* is calculated by allocating the farmer's estimate of total operator and hired labor hours for the year across all enterprises.

note - Rounding of individual items for the report may have caused minor discrepancies with the calculated totals. If fewer than 4 farms have a certain crop enterprise, that information is not reported.



## Appendix III

### Livestock Enterprise Analysis Procedures and Measures

The Livestock Enterprise Analysis tables show the profitability of each livestock enterprise produced by four or more farms.

*Gross Margin* includes product and livestock sales, cull sales, the value of offspring transferred out of the enterprise, the value of inventory change from beginning to end of year, and any other income assigned to the enterprise. Livestock purchases and the value of animals transferred in from other enterprises are subtracted.

*Direct Expenses* include expenses that are directly related to the specific livestock enterprise. Feed and most other direct expenses are directly assigned based on farm records. Some, such as Fuel and Oil and Repairs, which are difficult to assign directly to enterprises, are determined by allocating the total annual expense across all enterprises using a percentage factor entered for each enterprise.

*Overhead Expenses* are also determined by allocating the total annual expense across all enterprises by entering a percentage factor for each enterprise.

*Net Return* is the Gross Return minus Total Direct and Overhead Expenses.

*Net Return over Labor and Management* is calculated by allocating the farmer's charge for unpaid labor and management across all enterprises and subtracting it from Net Return.

*Estimated Labor Hours* is calculated by allocating the farmer's estimate of total operator and hired labor hours for the year across all enterprises.

*Cost of Production* is calculated by dividing the total expense for each category by Total Production. For grow/finish enterprises, the Purchases and Transfers In are included in direct expense. Cull sales, other offspring sales, and any other miscellaneous income are subtracted and replacement purchases and transfers in are added to arrive at the cost *With other revenue adjustments*. *With Labor and Management* is the cost with other revenue adjustments plus the producer's charge for operator's labor and management. This is the breakeven price for the primary product to provide a return for operator labor and management.

The last section of each livestock table contains both economic and technical efficiency measures. *Lbs. feed per lb. of gain* is the pounds of total feed divided by total production. For grains, these pounds per bushel are used: corn, 56; oats, 32; barley, 48; grain sorghum, 56; wheat, 60; and millet, 48. For these forages, the units are converted to pounds and then adjusted by these factors: alfalfa haylage, 0.5; corn silage, 0.33; oatlage, 0.5; sorghum silage, 0.33; and small grain silage, 0.33.

The calving and weaning percentages are calculated as the number of calves which are calved and weaned, respectively, divided by the number of cows which are supposed to bear young.

Rounding of individual items for the report may have caused minor discrepancies with the calculated totals. If fewer than 5 farms have a certain crop enterprise, that information is not reported.