

## **Appendix I**

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

The whole-farm reports (except for the balance sheets) include the same number of farms, which were all of the farms whose records were judged to be of sufficient quality.

Rounding of individual items may have caused minor discrepancies between those items and the printed totals which are calculated before rounding.

#### ***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 non-cash changes in the farm business. The *Inventory Changes* and *Depreciation and Other Capital Adjustments* 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.

#### ***Inventory Changes***

This is the detailed statement of inventory changes which is summarized in the Farm Income Statement. It includes beginning and ending inventories and the calculated changes.

#### ***Depreciation and Other Capital Adjustments***

This is the detailed statement of depreciation and other capital adjustments which is summarized in the Farm Income Statement. It includes beginning and ending inventories (valued at cost), sales, purchases, and depreciation.

The accounting method used for calculating depreciation was changed in 2000. Previously tax depreciation was used. The new method is designed to estimate actual economic depreciation more closely. This method depreciates machinery and equipment at 10 to 12% of beginning cost basis plus boot purchases less basis of sales items. For buildings and other improvements, the percentage was 5 to 8%; for breeding livestock, the percentage varied between 20 to 25%.

## ***Profitability Measures***

Profitability is measured using assets valued first at cost and then at market. The reports include six 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.

*Labor and Management Earnings* equals *Net Farm Income* minus an opportunity interest cost of 6% on average farm net worth.

*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*.

*Interest on Farm Net Worth* is the *Average Farm Net Worth* multiplied by a 6% opportunity interest cost charge.

*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 to each farm within suggested guidelines.

(Number of Unpaid Operator Hours x \$9) + (5% of Value of Farm Production)

*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 Measures***

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

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

*Family Living and Taxes* is the apparent total family expenses and income and social security taxes paid averaged for all farms, not just those included in the Household and Personal Expenses Report.

*Real Estate Principal Payments* are taken from the farmer's data.

*Cash Available for Intermediate Debt Service* (cash basis) is *Total Net Income* minus *Family Living and Taxes* and *Real Estate Principal Payments*. *Available for Intermediate Debt Service* (accrual basis) is *Net Accrual Operating Income* plus *Net Nonfarm Income* and minus *Family Living and Taxes* and *Real Estate Principal Payments*.

*Average Intermediate Debt* is the average of beginning and ending intermediate farm liabilities.

*Years to Turn Over Intermediate Debt* is *Average Intermediate Debt* divided by *Cash Available for Intermediate Debt Service*. If either the cash-based or accrual-based *Cash Available for Intermediate Debt* is a negative number, debt repayment is not possible because of negative cash flow and *Years to Turn Over Intermediate Debt* cannot be calculated.

*Expense as a Percent of Income* (cash basis) is *Total Cash Expense* divided by *Gross Cash Farm Income*. *Expense as a Percent of Income* (accrual basis) is *Total Accrual Farm Expense* divided by *Total Accrual Farm Income*.

*Interest as a Percent of Income* (cash basis) is *Interest* divided by *Gross Cash Farm Income*. *Interest as a Percent of Income* (accrual basis) is *Interest* minus beginning accrued interest plus ending accrued interest divided by *Total Accrual Farm Income*.

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

These tables include only sole proprietors; partnerships and corporations are excluded because some assets and debts are held outside of the farm business, causing potential misinterpretations of the average financial condition.

## **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.

## Financial Standards Measures

This table contains the Farm Financial Standards Council's 16 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.

### *Solvency*

*Farm Debt to Asset Ratio* is calculated by dividing the total farm liabilities by the total farm assets. It is similar to the total percent in debt ratio listed earlier. The difference is that nonfarm assets and liabilities are included in the total percent in debt but not in the farm debt to asset ratio.

*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.

### ***Repayment Capacity***

*Term Debt Coverage Ratio* measures whether the business generated enough cash 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 100 percent indicates that the business did not generate sufficient cash to meet scheduled payments in the past year. A ratio greater than 100 indicates the business generated enough cash to pay all term debt payments.

*Capital Replacement Margin* is the amount of money remaining after all operating expenses, taxes, family living costs, and scheduled debt payments have been made. It is the cash generated by the farm business that is available for financing capital replacement such as machinery and equipment. RankEm Central calculates the capital replacement margin by first adding interest due on intermediate and long term loans to the amount available for principal payments. It then subtracts scheduled principal and interest payments from this total.

### ***Efficiency***

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

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  $\text{Depreciation} \div \text{Gross Farm Income}$ . 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.

## **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.

## **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 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 Per Acre.

*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.

*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 including labor and management minus government payments, income from secondary products, and other income, divided by yield per acre.

*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.

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 Return* 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 allocation factors entered for each farm.

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

*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. *With other revenue adjustments* includes the labor and management charge and the cost of replacement stock. Cull sales, other offspring sales, and any other miscellaneous income are subtracted from total expense to arrive at the portion of costs that must be covered by production of the primary product to break-even.

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.

