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**Working Paper**

## Knowing the Numbers Is the Key

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**CORNELL**  
**AGRICULTURAL ECONOMICS**  
**STAFF PAPER**

**Knowing the Numbers is the Key**

*Eddy L. LaDue*

Staff Paper No. 92-08

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# Knowing the Numbers is the Key

Eddy L. LaDue<sup>1</sup>

Thank You, Don. I am really happy to be here. No other organization in the Northeast, and maybe the United States, could put together a group like this. I am honored to get a chance to talk to this unique group.

Lowell Smith asked me to spend a few minutes discussing with you the record systems that farmers need, or will need, in the near future. I really do not have a crystal ball, but we can think about what is going on that will influence the future. I was lamenting my lack of a crystal ball at the dinner table a few nights ago. My daughter, who is always kidding me about my bald spot says "oh, you have a crystal ball dad". "What do you want to know"? "Here, I will stand behind you and read it for you". I want you to know, what I have to say is not what she read from my "crystal ball"! We can, however, see the future well enough to be sure that knowing the numbers will be a key to successful farm management and finance in the future. Our task is to design and offer information systems that will provide the numbers that will be needed.

## Basic Principles

As we think about the needed record system, we must always keep at the forefront of our mind two basic principles or ideas: the purposes of such a system, and change.

**Purpose.** The purpose is to provide accurate answers to questions about the business that are important to the owners and decision makers of that business. The purpose is not to develop pretty printouts, or to generate thick file folders of data. The information system does not have to keep the accountant or bookkeeper happy. But it does need to answer the important questions posed by the farm manager, farm owner, lender, and the IRS. Each of these people has a need to know some things about the business. However, their needs are somewhat different. Gross taxable income is important to the IRS, but it is of little real use to either the farmer or the lender. The loan to collateral value is important to the lender, but is not important to the farmer except to the degree that it keeps the lender happy. Feed expense per cow is important to the farm manager, but not important to the lender as long as the loan is repaid. The IRS could care less about either collateral or per cow expenses. The point is, the record system should provide the data the manager needs for management, and the data the manager needs to provide to the lender or IRS.

**Change.** The second basic idea is change. You cannot expect the same record system will be appropriate forever. As farming changes, the information system must also change. As we think ahead, we must look at the things that are changing and think about what those changes mean for record systems. There are a number of changes that can be expected to influence the information systems of the future.

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<sup>1</sup> Professor of Agricultural Finance, Department of Agricultural Economics, Cornell University. This paper was presented at the Springfield Farm Credit Banks 1992 Financial Services Conference held at Ithaca, New York on August 19-20, 1992. I would like to thank John Brake for a very helpful review of an earlier draft.

## Changes Influencing the Future

**Bi-modal Agriculture.** I am sure that you have all heard that we are moving towards a bi-modal agriculture. That is, the number of small farms is increasing, and the number of large farms is increasing, but the number of mid-sized farms is declining. Now, there are many reasons why the number of small farms is increasing. We do not have time to go into them. But, profit is only one of the motives of the owners of small farms, and it may not be the most important one. Further, their financial viability is usually not dependent on income from the farm. We need to think about whether these small farms need different record systems than do commercial farmers.

**Increasing Size.** Second, businesses are getting larger. One result of the increased size is that it is impossible for the manager to keep all the information about the business in his or her head. There are just too many things going on to have it all recorded mentally. Also, without records, much would never get to the manager's head for keeping. Because the labor force is generally larger, the manager does not see everything that happens. Much is done by someone else. Many things are done automatically (automatic feeders, automatic takeoffs), so that exactly what happened (amount of feed fed, or milk produced) may not be known without records. To manage all aspects of their business, farmers need information for each of the functions of management.

Increased size also means that businesses will be using more debt capital. With that change comes the need for better financial management on the part of the farm operator. Larger size and more debt increases the lender risk. Thus, the lender will need, and the regulator will insist on, comprehensive financial data on the business.

**Technology.** The third basic factor influencing the information systems of farmers is technology. Technology effects information systems by changing the character of the farm business, but also directly impacts the information system itself. In addition to making farms larger, technology also makes them more complex. Complexity adds to the difficulty of keeping everything in the top of the manager's head, and makes accurate information more important. For example, integrated pest management requires better records on sprays used, pest populations, and damage, than does a routine weekly spray with everything you have.

Technology in information systems has resulted in many people referring to this as the information age. The possibilities for developing systems are limitless. Automatic real time recording, computer transmission and sharing of data, detailed analyses in a flash, and Fax delivery of the results are only a few of the possibilities. We should be able to, and can, develop almost any kind of system a farmer wants.

**Declining Profit Margins.** The final factor influencing information systems that I would like to talk about is declining profit margins. Declining profit margins mean that every part of the business must be under tight control. The farmer needs to keep his or her finger on the pulse of the business at all times. The record system is an integral part of this control which makes possible more efficient operation of the business and must also meet the test of efficiency itself.

## Information Systems for the Future

So, what do some of these changes mean for information systems of the future?

***Different Systems for Small Farms.*** The small, part-time businesses likely need different information systems than commercial farms, just like they need different financing procedures. Small farm systems need to be more efficient or frugal and may focus on different areas. Since the objectives of these farmers are different, the important questions will be different. For example, the information system might put more focus on return over variable costs and less on return to labor, management or total assets.

***Profit Oriented Production Records.*** Appropriate production information will vary by farm type, but should at least include yield and major cost item data. They should be profit, rather than maximum production oriented. Keeping track of milk per cow is not enough. It has been a good proxy for profitability in the past. However, for those herds over 20,000 pounds per cow, return over variable costs, or some such measure, may be needed in the future.

Production records should be aimed at marketing the product. For example, in today's market pounds of butterfat per cow is a pretty useless number. Testing for solids likely makes sense, but testing for butterfat does not. Unless you say that high butterfat percentage cows are less efficient because they are using expensive energy producing fat.

***Marketing Records.*** Less effort has been expended in developing appropriate marketing information for the farm. We have been very successful in using production records to increase production. We should try to develop more marketing records to improve marketing. The potential, of course, varies considerably by farm type. Data should be maintained that monitors the market and that monitors the historical performance of the business in marketing its products. For many crops, marketing is more important to success than is production. Too much focus is placed on finding a guru who can tell you which day the market will hit its high.

***More Comprehensive and Accurate Financial Records.*** To manage the business of tomorrow, farmers will need more comprehensive and accurate financial records. **Filing income taxes** should not be the only, or even the main, reason for keeping records on the business. Records should be maintained to **manage** the business. Tax records are to management information systems as the need to eat is to modern agriculture. Cave man needed to eat so he started cultivating some plants. Over time, with considerable effort, modern agriculture resulted. Farmers need to file income taxes, so they started keeping some records. Over time, with considerably more effort, I hope this results in good management information systems for farmers. In many respects we are still in the cave man days in terms of information system use. Farm operators need production records for production management, marketing data for marketing decisions, and financial information for financial decisions.

The days of the **upside-down balance sheet** are numbered. The balance sheet, prepared by the lender from data provided by the farmer who sits on the other side of the desk during preparation, is not enough for either the borrower or the lender. Likewise, the **balance sheet and copy of the tax return** is inadequate.

As some of you know, I am a member of the national Farm Financial Standards Task Force. That group looked at what a **complete set of farm financial statements** should include, and concluded that, in addition to annual market value balance sheets, a complete set should include an accrual based income statement, a statement of cash flows and a reconciliation of the statements in the form of a statement of owner equity. You have used accrual based income statements for years. Reconciliation of the income statement and balance sheets, and the annual statement of cash flows, are not new, but have not been a part of a normal set of statements. Both the statement of cash flows and the reconciliation increase the accuracy and reliability of the records. The statement of cash flows also contributes considerably to understanding the financial occurrences in the business.

Another major change suggested by the Task Force is the inclusion of *deferred taxes* on the market value balance sheet. Farmers have tended to look at net worth as their investment in the business. If a farmer looks at the balance sheet and sees a net worth of \$500,000, he says to himself "I have \$500,000 of my money in this business". In fact, a big part is Uncle Sam's investment. Research to date indicates that sale of the farm could result in taxes of 20 percent of the asset value or 30 percent of the equity on an average farm. So, of that \$500,000, \$150,000 or more may belong to the IRS. Farmers need to know how big Uncle Sam's bite will be in order to make investment decisions. Lenders should also be aware of deferred taxes as they provide management advice and assess maximum loan levels. Loans to businesses where the farmer has near zero equity are high risk loans.<sup>2</sup> Fortunately for lenders, farmers still have a fairly high level of "equity illusion". That is they act as if the entire net worth, including the taxes they will have to pay, is theirs.

You may ask, is agriculture going to go all the way to **book value accrual**, possibly third party prepared, **statements**. The answer is no. The Task Force did not recommend that. I think it would be a grave mistake if we did. Farmers and lenders are much better served by a market value, accrual based system. Investment and financing decisions should not be based on book value. Book value is sunk cost and we all know that you do not use sunk cost as a basis for management decisions. Except for a few accountant evangelists who have found agriculture, and can not believe anyone would have the audacity to not follow GAAP (Generally Accepted Accounting Principles) and FASB (Financial Accounting Standards Board) to the letter, the only people pushing book value accounting for farmers are a few of the regulators. They do so in an effort to make their job easier, and have everyone in the world march to the same drummer, rather than any knowledge that they would have a better fix on risk. In fact, there is some movement by the accounting profession and regulators towards market value accounting. For example, FASB has recently proposed that banks use market value accounting for some of their assets.<sup>3</sup>

***More Efficient Record Systems.*** Low profit margins mean that the information system itself must be **cost effective**, **time effective**, and focus on the important issues. The system must provide information that is clearly worth more

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<sup>2</sup> It is important to recognize that inclusion of deferred taxes will lower net worth on most farms. Standards developed when deferred taxes were not included are inappropriate for assessment of the solvency of farm businesses which include deferred taxes in the liabilities. Historical standards used by lenders and regulators must be modified.

<sup>3</sup> For a useful discussion of this issue, see Sherrill Shaffer, "Marking Banks to Market", Business Review, Federal Reserve Bank of Philadelphia, July/August 1992.

than it costs. "Clearly" means clearly to the farmer. Lenders could do farmers a great favor by making it clear that a good financial record keeping system is important. Say, by refusing loans to farms without such records!

By time effective, I mean that the system must conduct a comprehensive analysis and then provide the most important numbers in an easily digestible format. The farmer should not have to work too hard to see the most important messages that the record has to offer.

The real problem caused by all the information age technology is data overload, or "*computer dump fever*". We all have this tendency to calculate everything possible and then dump it out of the computer. The farmer needs some prioritizing and some sorting. Now, I know what some of you are thinking: "**You**, a Cornell Professor, are telling **us** not to print out every number we can calculate?" Yes, we are guilty. But, we all need to work on prioritizing and sorting.

As a part of this sorting process, the farmer and his advisors need to identify the most important ratios or numbers for his or her farm. We need to help them determine what is really important to their farm. The Farm Financial Standards Task Force identified 16 financial ratios, sometimes referred to as the "*sweet 16*". As an example of this sorting process, Dave Kohl and I decided that the sweet 16 could be reduced to the "*fabulous 5*". My fabulous 5 is not specific to any particular farm and is really lender oriented, but is a list that I think should be given consideration. It includes one ratio from each of the five financial analysis categories.

To illustrate my fabulous 5, I will provide numerical examples for Dream Team Farms. This farm is, of course, named after another fabulous 5, or really fabulous 12, but only 5 could play at one time.

### Liquidity

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

$$\text{Dream Team Farms} = \frac{\$50,000}{50,000} = 1.0$$

The current ratio is likely the most overrated ratio that is used. But, it is the best measure of balance sheet liquidity. It is designed to indicate whether the business will be able to meet its financial obligations during the coming year without disruption of the business, to the degree this can be determined by the balance sheet.

### Solvency

$$\text{Equity/asset ratio} = \frac{\text{Total farm equity}}{\text{Total farm assets}}$$

$$\text{Dream Team Farms} = \frac{\$ 500,000}{1,000,000} = .5$$

We have historically called this percent equity. This indicates the investment of the farmer relative to his or her lenders. Equity is the farmer investment. The rest is lender investment. Equity is the lender's cushion in case of severe cash flow problems.



### Profitability

$$\text{Return on farm assets} = \frac{\text{Net farm income plus interest} - \text{minus unpaid family labor and management}}{\text{Average total farm assets}}$$

$$\text{Dream Team Farms} = \frac{\$27,000}{900,000} = 3\%$$

This indicates the income earned by everyone's investment in the business. It is the basic measure of the operating profitability of the business.

### Repayment Capacity

$$\text{Term debt (and capital lease) coverage ratio} = \frac{\text{Net farm and nonfarm income plus depreciation and interest} - \text{minus taxes and family living}}{\text{Principal and interest on term debt plus lease payments}}$$

$$\text{Dream Team Farms} = \frac{\$125,000}{100,000} = 1.25$$

From a financial perspective, this is clearly the most important of the five. It indicates whether the business is generating enough money to provide family living and make the scheduled debt payments.

### Financial Efficiency

$$\text{Asset turnover ratio} = \frac{\text{Gross revenue}}{\text{Average total farm assets}}$$

$$\text{Dream Team Farms} = \frac{\$720,000}{900,000} = .8$$

This measures the efficiency with which the investment in the business generates income. It provides an assessment of past investment decisions and the current investment mix. Excessive investment in machinery or other nonproductive investments will reduce the value.

With these five numbers you can tell a lot about a business. The Dream Team Farms generates a lot of gross income but ends up keeping a relatively small amount. They manage to generate more than enough to repay a considerable amount of debt in spite of marginal liquidity. Now, I am sure that Don has been assessing these ratios and determined that Dream Team Farms must have considerable nonfarm income to get these ratios. And that is true! Tracking these variables over time can give the farmer and his lender a good picture of the financial performance of the business.

Each type of farm, and maybe each farm, should identify, or have identified for it, a manageable set of variables that are tracked over time. Each analysis or report should have three, four, or five key numbers on which the manager focuses. If problems or opportunities appear, more detail behind each of these should be

available in the information system. But, he or she should not have to dig through an entire set of records to get the basic picture of the business.

In summary, good management of modern farm businesses will require a comprehensive information system. Different systems will likely be needed for the small, part-time farmer and the commercial farmer. The commercial farm system must allow the farmer to easily keep his or her finger on the pulse of the business at all times. It must be comprehensive to provide the detailed data needed for complex decisions. But, a small set of key numbers from each record should be identified and made readily accessible for basic management control and assessment. Farm Credit, particularly the Springfield district, has been a leader in the development, dissemination and support of information systems. I am sure that leadership position will be maintained. You will have to continue to run to keep up with modern agriculture, but that is what keeps the job interesting. Right? Thank You.

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