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CRITERIA FOR AND EVALUATION OF SELECTED ON-FARM ACCOUNTING SOFTWARE

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ABSTRACT

Agricultural accounting software for microcomputers is now available and while few farmers are using these accounting programs in their businesses, many are inquiring as to their availability and quality. Farmers need a means by which to evaluate available farm accounting programs and to determine whether these programs meet their needs.

The objectives of this study were 1) to develop criteria which farmers, agribusiness, and extension personnel may use in evaluating farm accounting software, and 2) to evaluate selected farm accounting software utilizing the criteria established.

Criteria were developed for evaluating farm accounting software. Five currently popular commercially available software programs were selected to be evaluated using the criteria developed. A representative dairy operation was selected and its financial activities for a calendar year entered into each of the five programs.

Based upon the evaluation results, a number of conclusions were formulated. It was determined that objective criteria by which to evaluate farm computer software can be developed. In addition, for agricultural accounting software to be valuable as a management tool, it must meet the criteria that make it a "user-friendly" program. Farmers must also use caution when evaluating programs and keep the criteria in mind, since programs can vary greatly with regards to capabilities. It was concluded that not all of the programs adequately meet the needs of agricultural recordkeeping and, therefore, there is potential for improvement within this industry.

Farm managers must recognize that while on-farm computer systems provide many benefits, they will also require extra time in order to achieve their full potential as management aids. In addition, while the majority of farms now utilize a cash basis accounting system, there is potential for double-entry accounting. However, adaption to double-entry accounting may require some additional effort from the farm manager to be effective unless software developers can recognize the special needs of agricultural tax reporting.

Of the five programs reviewed the Agdisk Farm Accounting Package, Farmplan's Bookkeeper, and Redwing's General Ledger are double-entry systems that need to recognize the cash basis income tax reporting system of most farm managers. Agdisk and Farmplan packages also need to adapt their programs to better suit the farmer's recording techniques.

Harvest's Farm Ledger Pro and the Secretary of Agriculture's Transaction programs are single-entry programs that are more compatible with farm recordkeeping methods. However, both programs should recognize the need for more "user-friendly" procedures that make utilizing the program less of a chore to the farmer.

A final conclusion of this study is the need for the adaptation of cash basis recordkeeping that allows modified accrual reporting. This would allow farm managers to maintain records for tax purposes that are also effective for management use.

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The five companies each loaned us their accounting programs for the evaluation. In addition, the personnel of each company were extremely helpful whenever we encountered a question or a problem. The five companies so recognized are:

1. Harris Technical Systems, Lincoln, Nebraska
2. Farmlan Computer Systems, Inc., Sunnyvale, California
3. Harvest Computer Systems, Inc., Alexandria, Indiana
4. Red Wing Business Systems, Red Wing, Minnesota
5. FBS Systems, Aledo, Illinois

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INTRODUCTION

With development of the microprocessor, computing capabilities have become available to farmers. A rapid growth and promotion of agriculturally-oriented software has ensued. The use of on-farm computers has become a common topic within the agricultural community. The computer software's feasibility as a management tool has been studied by farmers, management consultants, and software developers.

The economy's effect on the farm business within the past decade has emphasized the importance of accurate information. The farm manager's ability to gather and transform available data into information which can be used as a basis for managing the farm is becoming increasingly important. Obtaining this information includes transforming daily transactions into useful summaries and ratios that the farm manager can analyze and use for comparisons. Financial information, in particular, is one of the most important types of information for the farmer. In a recent book on agricultural use of computers, Sonka states (p.15):

"Financial management and business decision-making play an increasingly important role in the survival of the farm firm. In this...(business management) revolution the importance of information and the effectiveness of the system which provides information to the farm operator are greatly intensified."

Farm accounting records are increasingly essential and the manner in which those records are organized and analyzed is a major consideration for the effective farm manager. Farm managers need an accounting program which allows them to record on a cash basis all activities of the farm business and, if desired, adjust to an accrual basis. Business activities should be simultaneously recorded to appropriate enterprises and/or separated by partners share. It should generate financial statements and reports that summarize data into the necessary format to aid in making business decisions.

A computer is capable of manipulating large quantities of data accurately and quickly. To make effective decisions and sound projections, a farm manager must have immediate access to current data. A computer can produce management reports immediately after input of data. Farm managers can achieve additional managerial benefits from data already required for income tax reporting through additional calculations and comparisons. Calculations are accurate when made by computers, thus, farm managers can avoid the tedious calculations necessary when reports are prepared manually.

In a survey of farmers with computers, farmers responded that farm recordkeeping for both financial and physical records was where microcomputers could benefit them the most (Aldrich and Knoblauch). Similarly, a survey conducted by Farm Computer News reported that "the first thing farmers want to use a computer for is farm recordkeeping and accounting." (Successful Farming Computer News).

Due to the competitive nature of the microcomputer industry, computer prices have fallen, making it easier for farm managers to economically

justify the purchase of on-farm computer technology. In a joint survey conducted by Arthur Andersen and Co. and the University of Illinois in 1982, the respondents reported that "one of every six farmers will acquire a computer within the next five years." (Arthur Anderson, p.22).

With the computer's capabilities for storing and retrieving data and performing calculations, plus the requirement of records for income tax reporting, a logical progression was the development of farm accounting software packages. In 1981, farmers surveyed indicated that they had to write most of their programs themselves in order to achieve what they needed. Software packages from commercial sources just were not available (Aldrich and Knoblauch). A definite need exists for programs that combine the many facets of accounting into a farm management package that is clearly understood and easy to manipulate. Farm managers today need a computer record system for the efficiency and control it can offer; they should not have to be concerned with also writing the programs.

Software developers have become aware of this need and have undertaken developing programs for farm managers. Magazines and computing newsletters (Adirondack Farmers Microcomputer Users Group Newsletter, Friendly Farm Computer Newsletter) have been published specifically designed for agricultural computer users, along with guides for selection of both hardware and software. Reflecting on the pricing of computer software, Browne states (p.10):

"The variety of choices available in farm computer software has rapidly reached the mind-boggling stage. In just a few years, the selection has grown from a few simple programs on cassette tapes to scores of sophisticated, information-packed management systems on floppy disks."

Agpros Micro Systems has compiled a reference document containing over 230 available finance-oriented software programs, 60 of which are specifically for accounting. This compilation is in response to a need to discover what programs are available and where they can be located.

There are other sources in the search for available programs and the reaction they have received from the agricultural community. Computer consultants are relatively new agribusiness personnel who have increased in number and importance along with the growth of computers in agriculture. They typically have strong agricultural and/or computer interests and offer for sale commercial software and hardware to the farm manager, as well as consulting advice on selection of and implementation of software and hardware. They are providing an important link between computers and agriculture as there has been a need for computer specialists who understand the unique needs of agriculture. Consultants are able to advise farmers with respect to which programs have been well received by other farmers, which would be best suited to their particular needs, and which offer the best continuing support from the company. These consultants are in contact with farmers implementing programs and, as a result, have up-to-date reports on farmer perceptions of the quality of available programs.

Trade shows, such as New York's Empire Farm Days, are another key

source of information concerning how software packages are being received. The areas emphasized are a reflection of the current interests of the farm manager. The number of displays for computer applications are increasing rapidly each year.

As previously mentioned, literature is also a key area for determining which programs to consider. Software reviews by popular computer magazines signify quality programs that have sparked interest in the public sector. Advertisements are also indicative of strong marketing efforts by companies that feel they have a worthwhile, effective program.

Computer-user groups have begun to publish newsletters that summarize their activities and include helpful articles where subscribers share their experiences. This is another good source for discovering the popular and not-so-popular programs, based on actual use by farmers.

Being a new field, agricultural software development for on-farm computers is nonregulated and lacks standard, well-tested programs. It is a caveat situation, where the ultimate user can only hope that they have a sound, reliable program that has all its "bugs" out. Farmers need a method to review and analyze accounting software packages so they can determine which of these packages are best suited to their needs and identify companies that will likely survive in the long run. One of the most important aspects of a good software package is the "after purchase support" given by the company. As with any purchase, it is important that the farmer can depend on that company to stand behind its product, assist in its use, and that the software can grow with the farm manager as his/her capabilities in using it grow.

Literature Review

The major source of literature pertaining to on-farm accounting software packages is presently magazine publications and newsletters written by and for farm computer users. University researchers have contributed with surveys and reports on the use of computers for farm management as well as software developed.

In 1982, Arthur Andersen and Company, a public accounting and professional services organization, together with the Department of Agricultural Economics at the University of Illinois at Urbana-Champaign, published a report entitled "The Management Difference: Future Information Needs of Commercial Farmers and Ranchers". Among the conclusions, this study predicted that by 1987 small business computers will be purchased by one out of every six farm business managers. They went on to identify a major impeding factor to this growth as poor or non-existent assistance with the new technology. The authors see financial statements as becoming a standard requirement for effective farm management. They also predict that a major change will occur in the accounting methods and procedures currently in use, specifically, a shift away from single-entry and manual recordkeeping. One area they do not expect much change in is that of family members handling the bookkeeping for the farm business.

Steven T. Sonka's book entitled Computers in Farming, "Selection and Use", presents concepts targeted towards students of agriculture, farmers

and ranchers, agricultural advisors, and computer consultants. Sonka stresses the importance of information and its use for effective farm management. He cites the potentials for usage of computers in agriculture and, therefore, feels a need for effective procedures to follow when contemplating the need for a computerized system. Processes are reviewed for studying the possibilities of a computer, selecting relevant software and compatible hardware, and productive use of the system once it is in operation.

In December of 1979, Sherrill B. Nott developed and tested a farm accounting system that could go directly from the checkbook to Schedule F on the federal tax return (Nott, 1979). This was strictly a cash system and covered only simple farm income tax aspects. Actual data were collected from three sample dairy farms of varying size (27, 66, and 116 cows). He analyzed the labor needed, hardware costs and capacity, and stressed that a complete managerial accounting system was not being provided. The conclusion was that the cash system developed could justify 1/4 to 1/3 of the annual costs of the microcomputer with a farm capacity of 75 or more cows. Major changes have occurred since the Nott study four years ago. A main factor is the development of software packages designed specifically for the farm manager and which provide a complete managerial accounting system as opposed to the basic system developed in the afore-mentioned study. The feasibility of these more complex systems needs to be re-evaluated. In addition, while Nott's evaluation considered time and cost factors of implementing the system, it did not include the possible benefits of the output received other than for income tax reporting. Hardware and software packages today are much faster in operating and can offer much more complete and valuable information. As mentioned earlier, costs are also decreasing due to the maturity of the computer industry.

A major topic of the computerized accounting literature is the selection of an accounting program. Various articles detailing selection criteria and points to consider when selecting an accounting program have been written. Brown described the difference between single-entry and double-entry accounting and factors the farmer should consider when choosing between single and double entry. Brown pointed out that single-entry is the common method and that most farmers are familiar with it. He also indicated that the biggest advantages of double-entry are its accuracy and the financial statements that it is capable of providing. He concludes that these benefits of double-entry are not necessarily worth the extra time and expertise required to implement it by the farmer. A computer can, however, facilitate combining the best points of both methods in one program. Brown's concluding point is that the farmer should not be as concerned with which method he/she chooses as with the manner in which the system meets his/her information needs. Brown also states that defining needs should be the first priority of the farm manager before shopping for software.

In Agricultural Computing Software Sheet, the author states that the main reason farmers want a computerized system for is farm accounting. They then identify 13 features of farm software that farmers should look at closely. Under the "Type of System", the authors echo the views of Brown, that double-entry is more accurate and flexible but also more involved than single-entry. In choosing between cash or accrual, the latter is preferred

for managerial purposes, although the cash method is currently being used the most. A Chart of Accounts is stated as being another major factor in implementing a system. Other features as examined include Enterprising, Entry and Output, Disk Storage, Reporting Flexibility and Cash Flow, Tax Preparation, Landlord Settlement, Multiple Year Capabilities, and other features including Checkwriting and Payroll. A major closing point made by the authors is that the farm manager should include his/her current bookkeeper, accountant, and the bookkeeper who will run the new system when comparing and choosing a system.

In Successful Farming Computer News, the authors concluded that there are three major requirements of a complete farm accounting system; a Net Worth statement, Farm Earnings statement, and a Cash Flow statement. In addition, they stated a good farm accounting package should include enterprise accounts, personal accounts, and enterprise analysis capabilities. The author also lists 15 basic questions pertaining to the vendor and general system features. Also included are a list of required information, which outlines the type of information farmers need to prepare taxes. Desired Information is also included, which outlines additional information that would be needed for management analysis. Each of these lists are given to offer farmers a checklist to use when examining accounting software.

A checklist of criteria given as a guide for vendors and programmers as well as farmers is contained in Agricultural Computing 1983. The report is divided into five areas: General Features, Reports Printed, Overall Farm Analysis, Crop Enterprise Analysis, and Livestock Enterprise Analysis; detailing the most important aspects of each. A program that contains these criteria is classified as meeting the needs of farm recordkeeping and is, therefore, an excellent package, as viewed by the author. Each of these articles emphasize the fact that farmers need some ground rules to follow when trying to determine whether the system, given its stated objectives, will satisfy their information needs.

Another valuable source of information is users themselves. There are many newsletters developed by and/or for agricultural computer users. Articles discuss selection of software and hardware, and documents user's experiences with various programs. Computer Fairs are a new environment for the exchange of information and have become increasingly frequent across the nation. Activities vary from dealer displays to guest speakers, as well as the transfer of ideas between those involved with agricultural computing.

A final source of information for establishing criteria has been reviews of agricultural accounting software packages, presented in Agricultural Computing and Successful Farming, Farm Computer News. These reviews have outlined major areas to consider when rating the programs in a move towards standardizing the evaluation of programs on an individual basis. "Farm Computer News" rates programs on a basis of 100 possible points and then scores the programs after evaluating them for installation time, appropriateness and adaptability, ease of operation and program design, program errors, speed and efficiency of operation, overall usefulness to the farmer, and documentation and manuals. In Agricultural Computing, programs are rated as being Poor, Fair, Good or Excellent in seven major categories. Those categories include agricultural usefulness, documentation, error

handling, ease of use, ease of modification, "what if" capability, and support. In addition, each evaluation is accompanied by an in-depth narrative of the authors' impressions of the program.

Objectives

In an effort to improve upon these and related software reviews, this study analyzes the program with greater rigor and presents the evaluation in greater detail. There are two main objectives for this research:

1. To establish criteria which farmers may use in evaluating accounting software programs for farm use.
2. To evaluate selected accounting software packages utilizing the criteria established.

The fulfillment of these objectives will provide farm manager criteria and evaluation of selected packages to use when choosing a farm accounting software package to meet their specific needs.

Methodology

Evaluation criteria are established first as a foundation for the study of individual programs. These criteria are based upon the needs of an effective farm recordkeeping system utilizing information from the literature, discussions with farm managers, computer consultants, farm management specialists, and professional judgement.

Criteria are chosen with regard to the needs of an average family-sized operation doing business as a sole proprietorship. These criteria are established with only farm accounting packages in mind, although the ability to integrate with other packages is an optional feature considered. Accounting criteria are developed with requirements for taxation, credit applications, and business management decision-making in mind. "User-friendliness" is also analyzed in terms of how easy the program is to use by the first-time user.

Accounting software programs are chosen based upon their availability and exposure in New York State, interest of farmers, and evaluation by others. The programs chosen are all commercially available, either from dealers or from the company directly.

Actual data for one complete calendar year, January 1 - December 31, is obtained for a family dairy operation with 130 cows and 350 crop acres. All financial activities for the year are taken from their records to be inputted into each of the representative programs. This farm has many characteristics representative of larger and smaller farms that could effectively utilize agricultural software. It should be noted that the size of a farm business is not always a true indication of the number of transactions it generates. Also, differences due to the type of farm (cash crop versus dairy) are minimal once the appropriate categories are established. Therefore, the major difference in operation of accounting programs occurs when establishing the code of accounts. Thus, although the farm chosen is a dairy farm, the results of this study are also applicable

to other farms. This farm is representative of a wide variety of operations with the exception being major retail farm businesses.

Each representative program was evaluated on the basis of the established criteria. A chart of accounts was first developed, following the procedures of the specific accounting program. Expenses, income, assets, liabilities, and vendors to be affected by the daily transactions as well as applicable enterprises were identified in developing the chart of accounts. The next step was to input all data for the representative farm. Data were summarized monthly to be consistent with a farm manager's expected usage. Special cases were implemented, such as removing prior transactions, making noncash adjustments, and recording payables or receivables. Errors were entered deliberately to verify the program's error checking routines.

Program routines were studied in terms of their ease of use. Manuals and documentation were also considered for clarity, descriptiveness, help in the case of problems, and completeness. Each company was contacted at various times during the use of the program and their availability, response, and willingness to be of assistance were taken into consideration. Printed reports were also reviewed in terms of clarity and usefulness.

The conclusions formulated from this study offer guidance to the farm manager who is considering purchasing an on-farm accounting software package. Criteria are established for evaluating potential programs and five representative programs are reviewed. The strengths and weaknesses of each program are highlighted and the type of farm each program is best suited to is proposed. However, the programs are not ranked against each other.

Systems Chosen

At the inception of this study the plan was to evaluate approximately four commercial and four university developed on-farm accounting software packages. The goal was that these programs be relevant to Northeastern farmers, and it was a requirement that the programs be available in this area, have some degree of exposure, and have aspects that make it of interest to the types of farms found in the Northeast. The next step was to determine which programs met these requirements, as evidenced by professional opinions of individuals directly related to agriculture in this area.

Through interaction with each of the above mentioned sources, five programs were chosen. The major factors affecting the decisions were: availability, current popularity of the program, users' reactions, interest in programs just entering the market, evidence of the company's dedication to agriculture as indicated by produce quality, support, and marketing techniques.

A major adjustment to the initial objective was a decision to eliminate university programs. It became evident that, in comparison to commercial programs, university programs were not as widely available, nor did they have the exposure of commercial programs. Product support and continual editing for improvements is an important criteria for a quality

program. Most universities are not able to offer this on a long term basis. In addition, they did not have the resources for effective documentation and incentive and funding are not available for effective marketing. Therefore, the five programs analyzed are commercial software packages.

These programs, presented in alphabetical order, chosen for evaluation are: Agdisk Farm Accounting Package (Harris Technical Systems, Lincoln, Nebraska); Farmplan General Ledger (Farmplan Computer Systems, Inc., Sunnyvale, California); Harvest Farm Ledger Pro (Harvest Computer Systems, Inc., Alexandria, Indiana); Redwing General Ledger (Red Wing Business Systems, Red Wing, Minnesota); and Secretary of Agriculture Transaction (FBS Systems, Aledo, Illinois).

EVALUATION CRITERIA

This chapter contains criteria for evaluating on-farm accounting software packages. The first section stresses the importance to the farm manager of defining what is important to his/her operation with regard to recordkeeping needs. Then the criteria is presented in the following order: Fundamental Characteristics, Features, and Outputs.

Define Needs

One of the first steps in choosing a system is to examine the farm operation itself. The farm manager needs to determine his/her unique needs before trying to decide which system would be most suitable. What information is most important to the farm manager? This self-analysis should be an honest appraisal of the system of recordkeeping as well as the managerial benefits gained from it. If the system is not adequate, it should be determined to what extent it needs to be improved; what information has been neglected that the farm manager really should try to obtain. Included are the outputs that can or should be generated from the information that is available. Here the farm manager should take into consideration records needed for tax reporting including data his/her accountant requires, the records needed by credit institutions, and the records and analysis for business analysis and decision-making.

Other pertinent factors to consider are the current size of and future plans for the farm operation, whether they include expansion, staying at the present level or a contraction. Whether the form of business organization is a sole proprietorship, partnership or corporation is an important factor. Do younger family members plan to join the operation and management of the farm in the near future and, if so, what are their plans or expectations? The people who will be using the system, including the inputters and those who will use the output, should be included in the decision. Their expertise and willingness to learn and grow with the system will be necessary for successful implementation and use of the system selected.

An important decision for the farm manager is what areas of the farm records to computerize. Depending on the form of records and where the weak spots are, the manager may want to consider a computerized system for farm accounting but continue to maintain manual crop records. If this occurs, the farm manager should choose a system that is compatible with

other programs so they can integrate with each other if a farmer decides at a later date to computerize additional records. This process could enable the farm to grow with the computer, as the individuals working with it gain expertise at a comfortable pace.

A major topic when choosing an accounting program is the type of accounting system to choose. The question should be raised as to what happens to an amount once it is entered into the system; what accounts does it affect, and what type of output can it produce? Also, what level of knowledge is required of the person who enters the data? A complex system designed for an accountant may not be suitable or useful to the farm manager with little or not accounting background.

Cash versus accrual accounting deals with what and when financial transactions are recorded. With a cash system, transactions are recorded only when money changes hands regardless of when ownership of the asset changed. An example would be a farmer purchasing hay from a neighbor and moving the hay the day after the sale but not paying until a week later. The entry would be recorded when the hay is paid for. A cash system is advantageous for income tax management (the seller of the hay may ask not to be paid until after year-end). However, from a managerial standpoint, accrual systems are much more effective. This method records an activity when ownership of the asset changes and later when the the asset is used (when hay is fed) regardless of when the money was paid. By recording on an accrual method, the farm manager is able to calculate the actual income resulting from this year's business activities. As an example, if payments come in after January 1st that are for crops sold last year, they are recorded as income in last year's records. Expenses prepaid this year for next year's fertilizer do not affect this year's records, but are expensed next year when it is used (it will be in the inventory balance for this year instead). This method allows the farm manager to get a more accurate picture of farm profitability. Keep in mind that this is for managerial purposes, taxes can still be recorded on a cash basis.

Single versus double entry is a choice involving how an entry is recorded and is perhaps a more difficult concept than cash versus accrual. Single entry is the most common method for farm recordkeeping. It is easier to work with and simpler to understand since it does not involve debits or credits. Each transaction is entered just once, and usually it is only concerned with cash receipts and expenses. Throughout the year no balances are maintained in asset or liability accounts. That is, the system does not keep a balance of inventory values, how much others owe the farmer, or how much the farmer owes others. At year-end, these balances can be adjusted, reflecting the increases or decreases to these accounts. This type of system can only generate a cash income statement and the only provision for checking for errors is to compare it to the bank statement.

Double entry accounting systems are much more accurate than single entry, but at the same time they are also much more complex. Each transaction affects at least two accounts and the accounts must balance. That is, each time an expense is recorded, the appropriate asset account (i.e., cash, inventory) must be decreased. Each entry records the activity's effect on the appropriate asset, liability, and owner's equity accounts as it occurs. This system allows the user to obtain an Income Statement or

Balance Sheet that accurately reflects the operation at any time throughout the year. Double entry is not as popular as single entry systems for farm businesses mainly because of its complexity. To farmers who pay taxes on a cash basis and who do not necessarily need an up-to-date record of who they owe and who owes them, the benefits of this system may not outweigh the difficulties of implementation. It is important to recognize, however, that this system can generate accrual statements and, as mentioned earlier, accrual offers many managerial benefits.

One of the distinguishing features and possibly biggest advantages of computers is their ability to combine the best aspects of the aforementioned systems. It can offer double entry accounting, cash or accrual, yet the inputting remains simple and does not require an accounting background. The computer can manipulate large amounts of data quickly and without error (assuming the original input and the program are correct). Many accounts can be handled accurately with the same amount of inputs necessary for a simple manual system. Up-to-date reports can be obtained on short notice, as opposed to a manual system that may require many hours of hand-calculations before the same reports could be presented. A computer can maintain the simplicity and ease of use, yet generate the more complex output than was practical with a manual system.

It is important to distinguish between single input and single entry. With single input, the user can enter an amount once and that single input can produce a single or double entry transaction, or a hybrid of the two systems.

Another advantage is that computer programs designated as single entry can also allow separate records of assets and liabilities. It is possible to prepare reports that the farm manager did not have access to before, simply due to the time and difficulty involved in completing them. Therefore, the computer can improve the manager's efficiency.

The concepts of double versus single entry systems are valuable, but with the development of computers that overcome many of their disadvantages, it is important now to analyze the programs themselves. The farm manager must look at what the program offers. A designation as single or double entry is no longer enough, the user should determine how much information the program will accept and how valuable the output it generates is to the user. How it meets the needs of the farm manager will help in the decision of which accounting system and program to choose.

Introduction to Evaluation Criteria Selected

The following section presents and describes a detailed list of the potential attributes of accounting software packages. It includes characteristics necessary for a good program, as well as added features that may enhance the value of the program. These capabilities were chosen based upon the needs of current farm recordkeeping: for management, the preparation of taxes, and obtaining credit.

While there are certain basic characteristics that should be available in all programs, the necessity of additional features varies. This underscores the importance of selecting a program based upon individual

requirements. A small dairy operation requires different capabilities than a large cash crop operation. Farm managers must remember to review potential programs with anticipated future needs in mind as well as current ones.

The categories that follow were chosen based upon these varying needs. There are three main groupings: Fundamental Characteristics, Features, and Outputs. Each group is broken up into main topics, which are further divided into detailed features. Fundamental Characteristics relate to basic attributes present in most programs. Features and Outputs offer more flexibility with regards to attributes that may or may not be necessary to farm managers, based upon their particular situation. Table 1 shows the three major groups, broken down by their respective main topics.

Table 1. Major Groups and Major Topics in Each Group of Evaluation Criteria for Farm Accounting Software

Fundamental Characteristics
General Capabilities
Type of Accounting System
Features
Inputs
Coding of Accounts
Error Procedures
Loan Register
Enterprises
Month-End/Year-End
Tax Reporting
Outputs
Income Statement
Balance Sheet
Other Reports

It should be noted that this study is limited to the features present in a basic accounting software package. Special programs are available for depreciation, inventory records, and amortization packages, to name a few. These capabilities are normally not a requirement for a typical farm's recordkeeping and, therefore, are usually offered as separate packages. Large operations or farms with special interests in these areas may consider them, but for the purposes of this study only the basic accounting package are considered.

When comparing a program to these criteria it should be noted that categories may not be weighted equally. Once again, the value given to each category varies, depending upon the needs of the individual farm. As an example, a large cash crop operation probably places more value on enterprise capabilities than a small dairy farm with dairy products as its only source of cash income.

Fundamental Characteristics

The fundamental characteristics are features present in all programs. They include general capabilities such as instructions available to the user and the steps involved when handling the discs, and the type of accounting system incorporated into the program. How well these characteristics suit the user's needs will have an important effect on how successfully the user is able to utilize the program.

General Capabilities

General capabilities is a category of basic functions of the program and how easy it is to work with. Subcategories have been delineated including: user-aids, disc handling, manuals, product support, and other aspects (Table 2).

Table 2. Criteria for Evaluating the General Capabilities of Farm Accounting Software

<ul style="list-style-type: none"> User-aids <ul style="list-style-type: none"> Self-starting Menu driven Questions are short, clear, concise Help feature if requested Escape on each menu Notifies user if running internally Disc Handling <ul style="list-style-type: none"> Number of discs used Instructions easy to follow Stresses back-ups Warns if disc may be erased Notifies if wrong disc Manual <ul style="list-style-type: none"> Layman's terms, easy to understand Explains basics of each function Works through examples Index of specific problems and solutions Product Support <ul style="list-style-type: none"> Updates, corrections Service quality Number to call for questions Other Aspects <ul style="list-style-type: none"> Time savers Operating time <ul style="list-style-type: none"> - Set-up - Inputting - Closing - Outputs Interaction capabilities
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User-aids encompasses features of the program that benefit the user by making it easy to use and understand. A program that is self-starting does not require a special disc from other sources in order for it to work when

the computer is turned on. The program discs are already "initialized", "formatted", and "boot" on their own. To understand these expressions, consider a program that is not self-starting. To start the program, the user would first have to insert a master-type disc that comes standard with the computer hardware. Then the user could "boot" up the program, which means to begin operating it. New discs would need to be "initialized", a term used to indicate that the disc is being prepared so that it can accept and store data. A program disc that can begin operating without a master disc to "boot" it is less complicated for the user. It is also helpful if the program includes within its standard functions the ability to initialize discs. If the user was already in the process of running a program and then realized he/she needed a new disc for storing data, it would be advantageous if the program could initialize a new disc. If not, the user must stop running the program, insert a master disc, initialize the new disc, and then get back into the program at the point where he/she entered. This type of procedure requires excessive disc handling, which of course increases the potential for errors and lost time.

The level of complexity of the questions and answers has a major effect on how quickly the user feels comfortable with the program and can then achieve the program's full potential. Questions that the user is to respond to should be concise and well-defined and should only require yes/no answers or coded answers where the user need only respond by inputting a predetermined letter or number. A help feature can be an important tool that also affects the user's capabilities with the program. This would mean that, contained within the program, is an option for the user to receive additional instructions concerning the program's features. One further user-aid is communication by the program that notifies the user as to what process it is currently running. If a program must run internally for any length of time, it is very useful to have a small message such as "posting activities, please wait". A blank or frozen screen can be very intimidating to a new user. Messages of its internal processes will help the user to become more at ease with the program and to recognize whether it is malfunctioning or is running normally.

Disc handling is an important factor to consider when reviewing a program. This includes the internal handling by the program as well as the external, physical handling by the user. The fewer the discs used, the less complex the program is likely to be. One disc indicates a very simple program, but also a loss of the more complex features that may be necessary for the farm manager. The benefits (more capabilities) must outweigh the costs (more disc-handling) to make the program worthwhile. Instructions should be easy to follow. This includes the beginning steps of initializing and formatting discs - setting the disc up so that it can store data. A user's first impressions of a program can be very important; thus, these steps should be simple and straightforward. Most programs require switching discs. A good program explains these steps so the user can follow easily. There should be warnings if the user is in danger of erasing data and a signal if the user has inserted the wrong disc. The program should stress the importance of back-ups and detail the steps involved, minimizing the possibility of the user losing data.

The manual that accompanies the program should be well written and in easy layman's terms. A good program can become worthless to the user if

there is no manual or the manual is poorly written and, therefore, does not adequately assist the user. The manual should thoroughly explain each of the program functions as well as the steps the user must take in implementing the program (disc-handling, establishing accounting records). It should work through examples for the user to follow and have a section that details specific, common problems the user may come across, and how to solve them.

Similar to the value of the manual is the value of the company's product support. A well written program can be ineffective without someone to stand behind it. The company should offer updates that amend errors in the program. If the company wants to survive, it must keep its program up-to-date with current needs that affect the farm manager. The program should be able to adapt to changing tax requirements, financial statement needs, or the current information needs of the farm manager. The user must consider this support to ensure the investment will be valuable for a number of years and will change as the farm changes. A company with good support should offer a telephone number that the user can call anytime with questions about the program. The quality of this service is an important factor in how the user perceives the company, and a satisfied clientele improves the company's chance of survival.

Other aspects to consider when reviewing a program's general capabilities include time savers and program interaction capabilities. Time savers are an added capability that can simplify inputting and require less time at the computer. This includes how fast the program can finish its processes, as well as how quickly screens change. A date that flows from the last entry can be worthwhile, and check or deposit numbers that change incrementally with each entry can also save inputting time and effort (both must allow the user to change the value if desired, however). Writing checks is a feature that interests many farm managers. It would mean that the program should offer the option of printing a check after the user has inputted the information. This saves time because with one input the user has written the check and recorded the information. It also decreases the change of errors that can occur by having to record information more than once. This is already a common feature on many programs, so preprinted checks for computer printers are readily available.

A final, major topic to consider when reviewing any program is the time required for the computer to perform its operations. This includes the amount of time to set up the program, the time needed to input daily activities, time the program needs to close-out a period, and the time it takes to print outputs. Simpler programs usually take less time, especially with closing periods. However, programs that need more time to run often offer much more complete accounting processes and reports. The user has to determine which has greater priority.

For this study, 12 months of data were inputted into each of the sample programs and the time to complete each month was recorded. An average month of data included approximately five deposits (milk check, veal calves and cull cows, as well as miscellaneous income), and 55 checks. Since the first two to three months were necessarily slower due to unfamiliarity with the program, the time spent on them was not included in the final averages.

A user interested in obtaining other programs for the farm should also consider the program's ability to integrate with other programs such as herd health or crop records. This would allow the user to transfer data from one program to another. The user can grow at his/her own speed, and can add to the programs when ready.

Type of Accounting System

The next category for evaluation is the type of accounting system that the program offers (Table 3). Earlier in this report, an in-depth analysis was made of single versus double entry accounting and cash versus accrual basis. The farm manager must first decide which methods are best for his/her operation and then evaluate the programs that offer the methods that suit his/her needs. Other aspects that coincide with the type of accounting system are user-defined features of the program. The chart of accounts is a fundamental key for a good accounting system. This chart is a list of all the categories of farm assets, liabilities, net worth, expenses, and income (i.e., livestock, machinery, repairs and maintenance, etc.). Each category of account is given a code of numbers or letters, for example, machinery and equipment may be code 500, repairs and maintenance code 750. This enables the user to input a smaller digit when recording transactions. At the end of a period, everything for code 750 is totaled and, thus, gives the amount spent that period for repairs and maintenance. Each accounting software package has some type of chart of accounts. Some are predetermined, some allow the user to define them. The farm manager should decide whether the business is complex enough to require an extensive and personalized chart of accounts, or whether a program's predetermined accounts are suitable for the operation.

Table 3. Type of Accounting System of Farm Computer Accounting Programs

Type of Entry
Single
Double
Basis
Cash
Accrual
User-Defined or Pre-established
Chart of accounts
Time periods
Reports
Business arrangements
Acceptable for tax filing

Time periods may also be user-defined. This would allow the user to obtain reports monthly, quarterly, semi-yearly, or yearly. Some operations may even require reports weekly or daily. Once again, the farm operation's needs should be the deciding factor.

Reports desired and business arrangements vary from farm to farm.

While the basic financial statements (Income Statement, Balance Sheet) may be suitable for some, other farms may require additional, more detailed user-designed reports. The farm may also require statements separated by partner for partnerships or by enterprise. Many programs allow these options; the user need only determine whether they would be beneficial to his/her operation.

A final consideration when reviewing the type of accounting system is whether it is acceptable for the farm's tax requirements. As mentioned earlier, a partnership needs income and expense per partner, whereas a sole proprietorship does not. If capital sales represent a major portion of income, the system should allow the user to separate income as capital or ordinary. A smaller farm or a farm with no livestock may not be as concerned with this capability.

Features of Farm Computer Accounting Systems

This section provides evaluation criteria for the main features that should be included in programs. While they may not be present in each program, there are capabilities that vary in importance based upon the farmer's recordkeeping needs. The added presence of certain features may make the difference between a mediocre and an excellent program. Each of the major topics (Table 1) is discussed in a subsection.

Inputs

The capabilities and procedures involved in inputting data should be of prime concern to the user (Table 4), for this is how much of the user's time is spent. The methods involved and the data required should be analyzed to determine whether they meet the needs of the farm and of the user.

Income and expense entry formats should be capable of accepting data relevant to the farm manager's needs. The main items are: the date; who the transaction is paid to or received from; the check, deposit or transaction number; the dollar amount; the account for that amount; a description of the transaction; the quantity (i.e., number of head, bushels); and the enterprise to apply the transaction to. Most available programs include all of these items, with the possible exception of quantities and/or enterprising. Failure to include either is a major detriment since records that indicate the quantity of bushels sold or purchased or the number of head are invaluable to the farm manager concerned with monitoring the operation's progress, and the separation of farm records by the various activities (crops, dairy) allows the farm manager to review each. Enterprising allocates income and expenses to their specific source and, thus, gives a profit picture for each of the business activities. This allows the manager to separate the profitable activities from the less profitable ones. The manager can then analyze the weak spots and correct them. If a program has the options of entering quantities or designating enterprises, the farm manager should further study the entry procedures. Quantities may only include certain units which could require the user to convert when inputting (i.e., user has tons, input requires pounds). Enterprises may be pre-established or may allow only a limited number to be established. The user must decide whether he/she needs the freedom of

designating specific enterprises. The user should keep in mind that what is sufficient today may not be in the future, especially if growth or expansion of the farm is expected.

Table 4. Inputs for Farm Computer Accounting Programs

Initial Entry

Date
 Paid to/received from
 Transaction Number
 Dollar amount
 Coding
 Description
 Quantity
 Enterprise

Multiple Checking Accounts

Records Cash Transactions

Intrafarm Transfers and Expenses

Enters Void Checks

Debits/Credits

Require accounting knowledge
 Easy to differentiate income/expense entries

Split Entry/Single or Double Input

More than one account
 Gross/net
 Automatic reconciliation

Large farming operations may have checking accounts for each of the primary areas of the business, including separate accounts for family draws. They would, therefore, need a program that allows the user to keep balances in more than one account and to apply income or expenses to the various accounts as designated. Cash transactions are also common to many farms and programs should allow the user to record activities that occurred outside of the checkbook. This could also include intrafarm transfers that do not involve actual cash. For instance, if the manager is concerned with accurate recording of the exchanges between the dairy enterprise and crops used for feed, he/she would utilize this intrafarm transfer capability. A final feature that aids in reconciling the checkbook is the ability to record void checks. This enables the farm manager to keep an accurate count of all checks and, therefore, know whether checks are missing or were voided.

When evaluating a potential program, the user should critique the use of debit/credit functions and terminology. Each program is written based upon a certain level of accounting knowledge. The user should ascertain whether he/she feels comfortable with that level. Does the program explain procedures enough or is there unnecessary detail? Some programs differentiate clearly between income and expense entries, while others assume

prior knowledge of the types of entries required. As mentioned earlier, the more complex the program, the greater the level of expertise that is needed by the user.

Other questions to consider when reviewing inputting functions include whether the program requires single or double input and if it allows split entries. Single or double "input" is not synonymous with single or double "entry". Entry refers to how an entry is recorded to the various accounts, while input refers to how many times the user must physically record the data. With computer programs, single input means a single input from which all affected accounts are adjusted. For example, a farmer purchases feed for use that week and pays with a check. In this particular accounting system, that transaction would require a decrease (credit) to the farm's cash balance for the amount of the check and an increase (debit) to the farm's feed expense record. A single input system would allow the farmer to input the dollar amount, check number, date, and description once, as well as indicate any accounts to increase or decrease (in this situation, feed expense and cash). A double input system would require the farmer to record all of the above information once for its effect on the feed account and then again for its effect on the cash account. It should be apparent that double input is unnecessary when using a computer.

Most programs (single as well as double input) enable entries to be split into more than one account. One check may pay for supplies, minerals, parts, or miscellaneous supplies. It is crucial that the system can split an entry to reflect the transactions to each category. Some programs have a limit to the number of accounts to which one entry can be split. Once again, the user must review his/her own situation to assess whether the program is satisfactory. If the user pays regular checks to vendors that pay for a variety of items, the program that offers an unlimited number of splits is the most compatible. Related to the idea of a split entry is whether the program allows the user to record gross and net amounts, as well as items such as discounts. A dairy farmer needs this capability so he/she can record the milk check at the gross amount and then record all appropriate deductions. The difference between the two should equal the net amount of the check. An attractive feature of some programs is an automatic reconciliation that keeps a constant total of the difference between the "plusses and minuses" (debits and credits) so the user can spot an error if the net figure is not correct. This feature also aids when recording a check split into many entries. The final balance between the check amount and the expense totals should equal zero; if not, an entry has been posted in error or possibly the check was written for the incorrect amount. Farmers who take advantage of discounts will also appreciate this feature. It should allow the user to record individual expenses at the gross amount (i.e., as they appear on the bill) and then make a final entry to a special account for the amount of the discount. The net effect should be zero, and expenses will be recorded at the gross amount as well as at the net cash amount. These features are more appropriate for larger operations, but can also be beneficial to small farms concerned with the detail of certain categories or for farms that frequently make lump payments for various expenses.

Coding of Accounts

Each accounting program has some method of classifying the activities of the farm into the respective categories of receipts and withdrawals. These various categories make up the system's Chart of Accounts. How these categories are coded and the steps the user needs to follow are important aspects to evaluate (Table 5).

Table 5. Coding of Accounts For Farm Computer Accounting Programs

Codes
B/S, I/S classification
Number or letter
User-Defined
Codes
Enterprises
Miscellaneous
Add or delete codes without losing existing balances
Obtain account list print-out at any time

The codes used can vary. Some programs use 4-5 digits which can designate whether the account is a balance sheet account or an account that affects the income statement. The same number also may indicate to the computer program what type of expense, for example, and which enterprise it affects. For a simple illustration, a system which uses four digits for each of its codes may use the first digit to indicate the type of account (i.e., 1000-2000 = assets, 3000-4000 = liabilities, 5000-6000 = income, 7000-8000 = expense, 9000 = nonfarm). The next two digits may indicate the actual account (i.e., 7110 = fertilizer expense, 7120 = vet expense), while the last digit is used to indicate the appropriate enterprise (i.e., 7111 = corn enterprise, 7112 = alfalfa enterprise). Thus, the number 7112 denotes a fertilizer (7112) expense (7112) used on the alfalfa crop (7112). This example illustrates how a program can be limited in terms of accounts or enterprises available. The above system would only allow 10 enterprises since there can only be 10 different digits in the fourth position of the code. Programs using digits will be more flexible in establishing accounts and enterprises. Programs are also available that use letters to refer to accounts. While being less flexible, this type of system is also much easier to work with and understand. Each account may be indicated by a four letter code (i.e., fertilizer = FERT). This greatly simplifies the use of codes and within a short time the user can recall codes from memory. Once again, the more complex systems that utilize numbers are more flexible and probably better suited to larger farms with many enterprises. However, if the user is not comfortable with numbers to refer to accounts and the farm is less complex with fewer enterprises, the systems utilizing letters may be more advantageous.

When a program states that it has "user-defined" codes, it means that the farm manager can establish accounts and enterprises he/she wants and match them to the appropriate letter or number code. Other programs have preset codes that cannot be changed or common codes that can be adapted as little or as much as necessary. When evaluating these, the farm manager must determine whether the preset codes suit his/her needs or if there is a

need to break down the codes to meet a unique situation. For smaller farms, a system that has preset codes plus an enterprising capability often offers enough flexibility. If the farm has a more complex set of records, however, it may require a system that allows personal customizing.

These codes are used when the user inputs data. When entering the dollar amount, date, and description, the program also asks which account should be increased or decreased, at which point the user inputs the letter or number code. This indicates to the computer whether it is an asset, liability, income or expense and possibly what enterprise. There are additional features which can add to the program's usefulness. A program that aids in tax preparation must be capable of separating activities into categories beyond the basic income and expenses. It should allow the user to differentiate between capital and ordinary purchases and sales, identify purchases for resale and associated expenses, separate livestock into animals purchased versus raised, separate livestock over versus under a required age, and differentiates new versus used. This also applies to other common sources of income for the farm. The program should be capable of separating nonfarm income and expenses. The income statement should also reflect these various classifications (i.e., nonfarm income should not be included in total farm income, capital expenses should not be included in net farm operating income).

Some final capabilities that would be beneficial include the ability to add or delete accounts at any time during the year. It is not uncommon to discover three months into the year an expense that does not quite apply to any of the expense accounts already established. A flexible program allows the user to update for these situations when they occur. The reverse can also happen if the user discovers he/she has become overloaded with too many useless accounts and wants to simplify the list. One caution is that there needs to be a device within the program that prevents the user from unknowingly eliminating an account that has a current balance. If this were to occur, the amount would be lost and the records would become out of balance and incorrect. It may be very difficult to later find the error.

A listing of the Chart of Accounts is an invaluable tool for the user, especially when inputting. The list becomes a reference when coding activities for inputting, when later reviewing for errors, or when working with outputs. Programs should be capable of printing this list at any time during the year, especially if there have been changes made to the accounts. This list should only be accounts and their code numbers or letters, and not include account balances. As mentioned before, this feature is more necessary to the larger, more complex operations. A small farm with only basic accounts and enterprises may not be as concerned with this capability.

Error Procedures

A very important component of any program is its method of handling errors, both by the user and errors within the program (Table 6). The software should include procedures that enable the user to track inputted data to ensure it is recorded properly and to change data if necessary. The program should be free of internal errors ("bugs"), but if problems do

occur, the company should stand behind their product and assist the user in correcting the situation.

Table 6. Error Procedures of Farm Computer Accounting Programs

Search-Edit Routine By
Date
Check/deposit number
Amount
Code
Paid to/received from
Description
Flags
Allows Editing Before Posting, Recording
Can Edit Data From Closed Periods
Questions Unusual Inputs
Discs
Warns if data may be erased
Will not run with wrong disc
Tells of faulty disc
Error Messages
When occurred
What happened
How to correct
Whether data may have been lost
Support

To have any value, the software package must contain a "search-edit" type routine that allows the user to review data that has been inputted. Without this capability, the program would be worthless since the user could never go back and verify what data he/she inputted, or correct it if something were to change later. Most search-edit routines can "search" for data by one or more of the following: date, check or deposit number, dollar amount, account code, paid to/received from, or the description. The program usually asks the user what to look for, at which time the user may try to estimate the approximate check number, date, description or whatever the program can search for. The more flexible programs allow the user to find data without knowing exact dates, check numbers or descriptions. Other programs are limited requiring exact numbers or figures. One feature offered by many programs is the use of "flags". With this process, the user inserts a common symbol before or after the description inputted. For example, all debt payments to one lender may have an asterick following the name of the lender. Thus, the user could implement the search-edit routine by requesting all entries with an asterick in the description. The results would be a list of all payments to that lender.

There are other error/edit procedures associated with the inputting activities. The program should allow the user to edit data before it posts entries, either on an individual basis as they are inputted or a group of

entries at month's end. Programs that allow the user to edit each entry after it is completed are easier to work with than programs that only edit after finishing a group of data. New users appreciate this format since it makes correcting much easier. The second format can be equally efficient, however, once the user has become accustomed to its use.

Another question to ask when evaluating edit procedures is whether the program allows editing of data from closed periods. A closed period usually is by month - after all activities are recorded the program totals each of the accounts. Many programs erase all of the detail in an effort to save storage space on the disc. Once this occurs, prior data cannot be changed. Although this may seem like a disadvantage, for many users it is not. As long as the user maintains print-outs of monthly detail, adjustments can be made in later months based on these records. The main problem is that later adjustments will affect the month when the adjustment was made instead of the month when the error occurred. The final year-end balance will be correct. To keep this from happening, the user should take every precaution to ensure that monthly data is correct before closing it out. Needing to make adjustments to prior months should not be a common occurrence.

One final process that is found in programs is the ability of the program to question unusual inputs. For instance, it may not allow letters to be inputted when asking for a dollar amount. Another possibility is to alert the user if he/she tries to input data that is out of range for that particular entry. An example of this could be an attempt to enter a corn price of \$380 per bushel instead of \$3.80. Most programs will alert the inputter if he/she is trying to input an invalid account or enterprise code.

Another important area for error procedures involves the handling of discs. For users with little or no prior experience with computers, knowing how to handle the discs is a major task. A well written program can assist in this area. Most programs have at least two discs that are used frequently. Data is continually being transferred and summarized from one to another, it is easy to erase data unintentionally. A valuable attribute is a program that gives the user ample warning when he/she is in a procedure that could erase data. Other messages that would help include not running if the wrong disc has been inserted, as well as notifying the user if the disc being used is faulty.

When problems do occur, the program usually flashes an error message on the screen. The most helpful programs give these messages in a language that a noncomputer programmer can understand. The message should explain what happened, when it occurred, how to correct it, and whether data may have been lost. Some programs have a section in the user's manual that outlines these messages, as well as other problems that commonly occur and what they mean. These explanations should be in layman's terms in order to be worthwhile to the user.

The company's commitment to support becomes evident at this time. A user having difficulty with a program should be able to get assistance from the company. If it is a problem with the program itself (a "bug"), the company should correct the error and replace any faulty discs. It should

also help the user with data that may have been lost due to the "bug" within the program, by taking the user's disc and attempting to salvage any data still intact.

Loan Register

"Loan Register" is a name given to indicate how the program handles accounts payable, accounts receivable, loans, and notes (Table 7). Individual programs may not refer to it with the same term, but most have some capabilities in this area.

Table 7. Loan Registers of Farm Computing Accounting Programs

User-Specified Accounts
Payments/Receipts Automatically Offset Balances
Adjusts for noncash transactions
Ages Accounts 30, 60, 90 Days
Outputs
Gives detail of activity
Prints statements
User-specified

It is important to distinguish here between a loan register and an actual amortization program. An amortization program is capable of calculating loan payments and separating between the interest and principal portions. The user can designate the amount of the loan, interest rate, amount and timing of each payment, and the length of the loan. Therefore, the user has the tools available to analyze different loan arrangements.

A loan register does not have the capabilities to determine payment schedules like an amortization program. Loan registers usually separate accounts payable and receivable as well as balances due on mortgages and loans. The user can apply payments against these balances and some offer reports on a regular basis, which enables the user to review his/her current debt situation. Loan registers are not capable of identifying the interest portion of a payment unless it also has amortization capabilities.

Amortization programs are normally offered separately from the basic accounting package. While large farms with numerous credit lending sources may find an amortization program useful, the majority of farms will not. Operating and mortgage loans are obtained from one or two main sources, who also determine the interest and principal portion of each payment. Finance charges on local dealer accounts are usually noted on the monthly bills. Therefore, for the purposes of this study, amortization programs are not evaluated.

Each program should be flexible enough to allow the user to specify the accounts within the loan register. A program with preset categories that do not allow the user to at least identify each account in some manner

is limiting. The number of accounts allowed is also an important consideration for the user. Some farms do not keep a record of current accounts due or receivable and prefer to simply record year-end balances. Other farms have extensive credit activity and need to keep an accurate total of the current balances. The first type of farm should be satisfied with a simple system for recording only major operating loans and/or mortgages that are due on a monthly or quarterly basis. The second type of farm needs a much more complex system that allows frequent recordings of activities and up-to-date balances in all of the accounts.

Regardless of whether the user requires the simple or more complex system, the features needed to make it a good program are basically the same. Payments and receipts recorded to the bookkeeping system should automatically offset the account balances. A system that requires manual changes of the balances is of little benefit; the user would need to keep a separate manual record of changes to the account.

The system may also allow the user to record adjustments to the accounts for noncash transactions. This would be beneficial for recording the stock transactions associated with the loan or discounts for early payment on store accounts. The user must determine how important this capability is to his/her situation - a farm that has few or none of these transactions within a year may not be as concerned with it.

Larger farms that have significant note activity may be interested in a program that ages accounts. For instance, if the farm has a number of accounts receivables, this program would classify the loans as current, overdue 30 days, overdue 60 days, overdue 90 days. This would enable the farm manager to keep an accurate record of not only how much is due, but also for how long it has been due. This type of system is primarily for retail operations, although some of the larger farms that give credit may find it useful.

Two final capabilities that are important regardless of the size of the farm are printouts and output the program provides. The user should be able to obtain detail of the activity that has occurred to each account individually, on a yearly and/or monthly basis. In addition, the program should be capable of printing reports for the accounts. For many farms, it would be beneficial if these reports could be user-specified so the user could define just what information was printed and in what format.

Enterprises

Enterprising is an important feature for accounting packages (Table 8). Many farm managers need this form of recordkeeping which separates financial data into the major production units of the farm. Most programs that offer enterprising post data automatically from daily expense and receipt inputs. This is usually accomplished through coding that allocates the income/expense to enterprises. A few programs do require, however, that the enterprise data be inputted directly. This would mean the user would have to input the same data twice, once for the general income and expenses, the second time to post the same income and expenses to the various enterprises.

Table 8. Enterprises of Farm Computer Accounting Programs

Posted Automatically
Cash and Accrual
Print-Outs
User-defined reports
User-defined periods
Income Statement and Balance Sheet by Enterprise
Enterprise Analysis
Divided by Business Arrangement
Prior Year Comparisons
Add or Delete at Mid-Year

It is possible that the type of accounting method used by the program is also used for the enterprises. It should be noted by the user whether the program uses cash or accrual or how it is used in the enterprise. Printouts should be reviewed to determine whether the type of information the farm manager needs is presented. If the program is on a cash basis with accrual adjustments, the enterprise program should also be affected by adjustments.

A valuable capability of an enterprise program is the print-outs it can produce. The farm may want to consider whether there is a need for user-defined reports and periods. The program may allow the user to establish his/her own reports in addition to standard ones, as well as what time periods the user wants to use. The primary report the program should offer is a return over variable costs. This figure helps the farm manager to identify activities that are profitable above the costs specific to that activity. Fixed costs, such as land taxes, are not usually considered since they are present regardless of whether the enterprise is continued or not and, thus, do not affect individual enterprise profitability.

Other important considerations for an enterprise program are allowing for the recording of noncash costs and intrafarm transfers. Examples of these, respectively, are manager time and labor, or the utilization of produce from crop enterprises for feed within the dairy enterprise. Although no money has been exchanged, the value of these goods and services should be recorded to accurately reflect the profitability of each enterprise.

A program that allows prior year comparisons by enterprise is also beneficial to the farm manager. This allows the user to view any trends that may be occurring by enterprise. The program should also allow enterprises to be added or deleted once into the year.

Month-End/Year-End

There are many procedures that can be implemented at the end of periods - usually month-end and year-end. This section details the more

common outputs (Table 9), with the exception of financial statements (i.e., Income Statement, Balance Sheet). These are discussed in a later section.

Table 9. Month-End, Year-End Procedures of Farm Computer Accounting Programs

Proof of Cash
Checkbook reconciliation
Generates Trial Balance
Month-End
Year-End
Updates Balance Sheet Accounts
Month-End
Year-End
Close Out
Month-End
Year-End
User-Defined Statements

Each program should have some capability that enables the user to reconcile inputted data with the source documents (the checkbook). This may be an actual "proof of cash" procedure or the program may offer a detail listing of activity that has all the necessary information. The user must be able to identify each of the original inputs and verify that it was inputted correctly. This may be done following any inputs, or at least month-end, before the data for that period is closed out. The program must offer output that lists, at a minimum, the dollar amount and coding and document number of each entry individually. A checkbook reconciliation, which verifies the checkbook data to the bank, is also an important step for businesslike recordkeeping. This should be done before the proof of cash to assure that the original data being inputted are correct. Although some programs offer a checkbook reconciliation procedure, it is not a necessity that this step be computerized since the check stubs already offer the output needed.

If the program is a double-entry system, it should offer a Trial Balance procedure, preferably on a monthly basis. This should show whether the debits equal the credits and, if there are differences, where they occur. Once again, the detail listing procedure may have enough of this information without requiring a separate procedure. Some programs do not allow the user to finish an entry unless the debits and credits are equal. With these programs a Trial Balance is unnecessary.

For single-entry programs, it would be helpful if the program allowed entry into balance sheet accounts since, by definition, a single-entry program does not automatically enter data to assets, liabilities or equity accounts. These updates may be monthly or only at year-end and their use requires that the user keep track of changes to these accounts, so the

balances can be entered manually. It can be an aid to the farm manager since outputs are more meaningful and up-to-date.

Each program "closes out" at least once during the year. This process totals up the entries and summarizes them into the various accounts. It may erase all detail and only maintain account totals or individual entry detail may be preserved. Most programs do this at the end of each month, while others only close at year-end. Usually, programs that close monthly require more time to use, but they also allow monthly print-outs. This may only be a detail listing or it may include financial statements that report monthly and year-to-date activity. Programs that only close at year-end are not able to offer these capabilities. Activity is not totalled until year-end; thus, any print-out during the year would be detail listings, usually summarized by account. The disadvantage of this type of program is that it probably is not capable of preparing monthly income statements. Activity may be grouped by account, but not by income or expense categories. It should be recognized that the data are available from these print-outs to prepare a manual income statement if desired. Although these programs cannot offer financial statements during the year, they take much less time to run. Large farms with varied activity throughout the year may rely on monthly reports of activity and need programs that total and summarize at month-end. Smaller farms that do not see much variation from month to month may not gain from monthly statements and may be satisfied with the less complex year-end closing programs.

Another consideration for the user to review is whether the program allows user-defined statements. The print-outs offered by programs should suit most farms. However, for larger farms, farms that are more complex or farms with atypical enterprises, it may be an important component of an accounting package that the user can design his/her own print-outs. This would be in addition to the standard print-outs of the package.

Tax Accounting

Software packages designed for tax accounting vary in the level of complexity. Some programs are capable of producing complete tax returns from data inputted. Other programs are developed to present data in a manner that simplifies preparing the return. The first type of program must be constantly updated to keep abreast of current tax laws; thus, caution must be used in choosing such a package. The company must have the qualifications and expertise to not only interpret the laws accurately, but also to amend the program so that it correctly reflects these changes. The taxpayer is still held responsible for an error on the return caused by a faulty program. Because of the extensive review that would be necessary to evaluate one of these programs, this study only concerns the second type of program. This type of program that presents data in a format that assists the tax preparer is usually an added feature to a basic accounting package (Table 10).

The success of a tax accounting feature begins with the coding of accounts. It should enable the user to separate income and expense amounts by their tax classifications. This would include differentiating between capital and ordinary purchases and sales, delineating purchases for resale and associated expenses, classifying livestock as purchased or raised,

separating animals that have been held the required time, and differentiating new versus used. This also applies to other common sources of income for the farm. The program should be capable of separating nonfarm income and expenses. The Income Statement should also reflect these various classifications (i.e., nonfarm income should not be included in total farm income).

Table 10. Tax Accounting Procedures of Farm Computer Accounting Programs

Coding of Accounts

- Capital purchases, sales
- Ordinary expenses, income
- Purchases for resale and associated expenses
- Purchased/Raised, held required time, new/used
- Nonfarm expenses and income

Reporting Purposes

- Formatted for Federal 1040 Schedule F
- Capital income separated from ordinary income
- Capital sales shown with depreciation taken
- Offsetting expenses for purchases for resale
- Separate nontaxable

Tax Planning

One of the major objectives of many farm managers in obtaining a computerized accounting system is to aid in tax preparation and planning. Thus, one of the basic features to look for in a package is the format used to report income and expenses. A few programs have designed their Income Statement to resemble the Federal 1040 Schedule F. Others offer enough flexibility to enable the user to achieve the same effect through coding of accounts and possibly user-designed printouts.

A unique situation occurs when preparing an Income Statement for livestock operations. Ordinary income, such as veal calves or feeder pigs, are reported on Schedule F. However, the sale of milk cows or sows held for breeding are reported on a separate schedule. On many dairy farms, for example, replacement cattle are bought and cull cattle are sold on a fairly regular basis. These are common expenses and sources of income to the farmer. However, for tax purposes, most of these are capital transactions. This means the gain or loss earned is recorded separately from the Schedule F and the purchases are put on the depreciation schedule. Therefore, the Income Statement can either include these transactions with ordinary income and expenses or it can separate them as capital transactions. The farm manager should be aware of this situation when choosing an accounting program.

There are separate reporting requirements for the sale of raised animals, as opposed to animals that were purchased and depreciated. Thus, the program should allow the user to keep a record of: dates purchased, sold, how long the asset was held (this can apply to machinery as well as livestock), basis in the asset (cost less depreciation taken), costs associated with selling the asset, sale price, and for livestock whether it

was purchased or raised. Usually this data is maintained on a separate livestock records package or a depreciation program. Purchases for resale are reflected on Schedule F when sold, but the offsetting expenses should be kept separate until they are sold, at which time the farmer recognizes both the income and expense.

Most of these situations are taken care of through the coding procedures and, if the program offers these capabilities, it is usually possible to separate them on the Income Statement also. This may mean indicating the different types of income by the title given to the account, it may still be included in the total income figure but the user is able to tell at a glance which amounts to deduct to determine ordinary income. For most farms, however, it is important to select a program that actually separates the different types of income and expenses and gives an ordinary income figure as well as capital income or loss.

The program should keep nontaxable or nondeductible items separate, as well as off-farm income or expenses. This may be accomplished through a family living account, which should enable the user to identify other items that may be necessary for the tax return but that do not apply to the farm operation. Examples of this could be family medical expenses that may be used for itemizing deductions or interest income earned on savings or checking accounts.

Tax planning is an added benefit of a package that offers tax accounting formats. The farm manager should be able to produce tax-related data prior to year-end so that he/she can take the necessary steps to practice sound income tax management. A program that can interface with a worksheet package, such as Visicalc, is valuable at this stage since the user is able to input actual year-to-date figures and the estimated remaining income and expenses. The resulting tax effect can then be measured and the farm manager can manage taxable income over the remaining time.

Farm managers who hire specialists at year-end to prepare their taxes should consult with that person or business when considering an accounting package. These specialists can identify areas important for their purposes and may be able to assist the farm manager in determining his/her reporting needs.

Outputs

This final section of criteria analyzes the types of output offered by a program (Table 1). The basic reports of an accounting package that are important for farm managers are the Income Statement and Balance Sheet. However, there are also other financial reports and enterprise summaries that may be presented.

Income Statement

The Income Statement is one of the most used printouts from an accounting package (Table 11). All programs, regardless of the method of accounting used, offer at least a statement of total income and total expenses. The data presented should be generated directly from the daily activity inputs. The codes the user inputs determine where each

transaction is recorded and how it affects the income statement and balance sheet if at all. A program that offers additional programs, such as Depreciation, Payroll, Inventory, Accounts Payable, and Accounts Receivable, should integrate with these programs so that the data from them can be correctly included in farm income and expenses.

Table 11. Income Statement of Farm Computer Accounting Programs

Generated from cash receipts and disbursements

Integrates with Depreciation, Payroll, Inventory, Accounts Payable, and Accounts Receivable

Format

- Separates Return to Labor, Management and Ownership
- Prepares Cash Basis - modified accrual
- Monthly and year-to-date
- Compare to prior-year activities
- Compare actual to budgeted
- User-defined format

Printouts

- Indicate separate enterprises
 - Separate by business arrangement
 - User-specified headings
 - Totals and final balances are clearly defined
 - Separated family living
 - Prints for any period
 - Printout on monitor or printer
-

If the program uses the cash basis method of accounting, it should be noted whether it allows the user to make adjustments at year-end to inventory, payables and receivables and whether these adjustments are reflected on the Income Statement. These adjustments give the user a modified accrual income measure at year-end which would make the information more meaningful for management purposes. The cash income and expense figures should be calculated separately, with accrual adjustments made after the net cash farm income. This allows the user to also have income figures to be used for tax and management purposes.

The format of the Income Statement can vary with each program. The data used to achieve the final income figure may also vary. The objective of this statement should be to present ordinary income and expenses as would be reported on Schedule F, then add capital sales and purchases and, finally, to adjust for changes in inventories and payables and receivables to arrive at net farm income.

The most effective format is to present income on a cash basis, then makes accrual adjustments for each category individually. This would then generate an adjusted accrual total for each type of income and expense, the net effect of which is the modified accrual income statement. This method enables more accurate analysis of the farm's progress, also, efficiency and productivity analysis costs include accrual adjustments. For example, ratios using feed costs are, therefore, based on actual feed use. Many

accounting programs, however, make accrual adjustments once for summary figures (all changes in inventory are presented together), thus, they lose the valuable breakdown by individual category.

Monthly and year-to-date formats enable the user to see the current month's activity as separate from year-to-date income. This is especially useful if prior year activities are presented in the same format. The farm manager can then compare current progress to prior years and, possibly, identify trends or areas needing improvement. Another capability that is beneficial is to present actual data as compared to budgeted data the user has inputted at an earlier date. Each of these is an important aid from a management standpoint and highlights the value of having the farm records on a computerized system. Certain farm managers may also have unique situations that require more than these basic formats. These would, therefore, also need a program that offers user-defined formats and printouts.

What type of printouts the program offers is very important to the user. As discussed earlier, enterprise features should produce an income over variable expense report for each enterprise. Tax features must print information in formats relevant to tax reporting, such as the Federal 1040 Schedule F. For farms with many enterprises, the user should evaluate whether the income statement can be separated by enterprise, as well as in total. It may also be important for partnerships or other multiple-owner farms whether the income statement can be reported in total as well as separated by each owner's applicable share.

Certain farms will want to specify the headings used in addition to user-designed formats. Totals and final balances should be clearly defined as being such, regardless of whether the user was able to specify them or not. Family withdrawals and off-farm income should be distinct, they must not be confused with farm income and expenses.

Printouts of the current month's activities are the most common type of output. However, some farm managers may want the capability of printing activities as of a prior date. If back-ups were not made, this may not be possible. Keeping prior data discs and printouts from prior months in a safe location are crucial precautionary measures. However, if the user wants to view the data from a printout but for various reasons does not want it printed on paper, a program that offers printouts on the monitor, in addition to on paper, can be very helpful. Many times the user may be able to spot errors or changes before wasting paper and time. Programs that require every activity to be printed on paper will soon become cumbersome and very time-consuming.

Balance Sheets

Double-entry programs have the capability to prepare Balance Sheets and usually include them (Table 12). The balances in the accounts should be generated from beginning balances and current year activities. Single-entry programs may also have balance sheet accounts which the user adjusts directly at the end of periods. If the program has compatible programs in Depreciation, Payroll, Inventory, Accounts Payable, and Accounts Receivable, they would integrate with the Balance Sheet program so the changes in asset and liability accounts can be properly reflected.

Table 12. Balance Sheets of Computer Accounting Programs

Generated from beginning balances and current year activities

Integrates with Depreciation, Payroll, Inventory, Accounts Payable, and Accounts Receivable

Format

- Monthly, year-to-date, or user-specified periods
- Comparison to prior years
- Market value and book value
- Includes nonfarm separately
- User-defined format, headings
- Separates by enterprise
- Separates by business arrangement

Printout on Printer or Monitor

Balance Sheets should be available each time the Income Statement is printed. Therefore, if the Income Statement is available monthly, year-to-date, and/or at user-specified periods, the Balance Sheet should be also. Similar to the Income Statement, Balance Sheet data presented in comparison to prior years or to budgeted data aid in management decision making. The Income Statement and Balance Sheet presented together in these formats allow the user to study for trends and weak areas that need increased attention. Comparison of book value to market value is another capability to consider. This would enable the user to study the value of the farm if liquidated today, compared to the value as recorded on the books. The option allowing users to define headings and format may also be an important factor for certain farm managers.

Included with the idea of format is that nonfarm assets and liabilities are clearly labeled as such and/or shown separately. Partnerships and multiple-owner farms benefit when assets and liabilities can be separated by owner.

As mentioned with the Income Statement, a program that allows the user to review the printout on the monitor before actually printing it on paper can be convenient. The user may discover errors or decide to change the format and can do so without printing a new Balance Sheet each time, thus saving time and paper.

Other Reports

While the Income Statement and Balance Sheet are the most common outputs of accounting packages, there are other reports available (Table 13). Many of these are available only through purchasing an additional, compatible program; therefore, they are only reviewed briefly in this study.

A cash flow summary is a valuable management tool. It presents the actual "flow" of cash usually on a monthly basis so the user can identify periods when cash may be short or months when debt payments and expenses

should be paid since more cash is expected to be available. Useful additions to the basic program would include comparisons to prior years and comparisons to budgeted data. The program may offer a "what if" type analysis that allows the user to anticipate, for example, increases in feed costs by five percent. The user could adjust the estimated cash flow to see how the change may alter future plans. This capability usually requires interfacing with a worksheet software package. The cash flow summary should include family withdrawals and income per month.

Table 13. Other Reports of Farm Computer Accounting Programs

Cash Flow Summary
- Compare to prior years
- Compare to budgeted
- What if analysis
- Includes family withdrawals
Source and Use of Funds
Statement of Retained Earnings
User-Defined Reports
Business Analysis Programs
- Types
- Trend analysis
- By enterprise or business arrangement

A Source and Use of Funds Statement helps the user to identify what money is available, as well as where it was spent. This, therefore, includes cash farm income, family nonfarm income, capital sales, savings accounts, and cash balances, as well as farm expenses, family withdrawals, capital purchases, and debt repayment.

The Statement of Retained Earnings identifies what has occurred within the equity account from the beginning balance, current year farm income, draws, and the ending balance. In addition, programs may offer the user the capability of defining his/her own reports. For example, the user may want to see all income from one person or all expenses paid to one vendor. There are many combinations possible with this capability.

Business Analysis Programs are in-depth programs that look into various factors of the farm beyond income, expense and changes in the balance sheet. These programs review the farm in terms of solvency, liquidity and debt schedules, profitability and efficiency, and productivity analysis. Usually these programs are quite extensive and, therefore, are offered separate from the accounting package. However, they are very useful as management aids and should be considered by the evaluator when looking at compatible packages. These programs can offer trend analysis over a number of years and may be able to be separated by enterprise and/or business arrangement.

EVALUATION RESULTS

There are two objectives for this report, the second of which is to evaluate representative programs. Five programs were selected, in this chapter the strengths and weaknesses of each are defined. In addition, an appraisal is presented regarding the type(s) of farm each would be best suited to.

The following sections review each of the programs on an individual basis, then summarize the results collectively in Table 18. The five programs chosen are: the Agdisk Farm Accounting Package, Farmplan's Bookkeeper, the Harvest Farm Ledger Pro, Redwing's General Ledger, and the Secretary of Agriculture's Transaction Program. Each of these was run on the Apple II, Apple II+ or the Apple IIe so that differences caused by hardware capabilities would be minimized. The results reported here are based on each program's version as of October 1, 1983 with the exception of the Harvest Farm Ledger Pro package which is as of April 1, 1984. Any updates made to these programs after these dates were not reviewed and, therefore, are not included in this report.

Each program is evaluated for the basic categories presented previously including general capabilities, type of accounting system, inputs, coding of accounts, error checking, accounts payable, receivables and the loan register, enterprises, month-end/year-end, tax reporting, and reports (Table 1). For each category the program is rated on a five point scale as being excellent, good, fair, poor, or not applicable (for categories the program does not have). The final section of this chapter compares the programs, enabling the reader to obtain an overall view of the evaluation results.

For the purposes of this study, each of the five programs selected were evaluated on a four point scale for each category (excellent, good, fair, poor). An overall rating is then determined for each program as to how it met the needs of various size and types of farms. For example, a complex program could be one that offers double entry accounting on an accrual basis, extensive enterprising capabilities, depreciation, and financial statements beyond the Income Statement and Balance Sheet. While this may be suitable for a large operation, many small farms that prefer single entry accounting and/or the cash basis, and have little need for depreciation and anything more than an Income Statement, would find this complex program frustrating and unnecessary. A much simpler program would suit their needs much better.

The purpose of this study, therefore, is not to rank the five programs in order as being first, second or third. They are judged in comparison to each other, but only for measurements of overall quality. Rather, it is the intent of this study to help the farm manager in determining his/her needs and then choose the categories necessary to meet those needs. The farmer can then decide which of the five programs best suits his/her operation. If none of the five presented meet the requirements of the farmer, he/she has the criteria to evaluate alternative programs. In this study, each program is viewed on an individual basis in relation to the individual farm's needs.

Agdisk

Harris Technical Systems, from Lincoln, Nebraska has developed a farm accounting package entitled AGDISK. This program has been modified from a nonagricultural package, Financial Partner.

General Capabilities

The Agdisk program is a very user-friendly program. It is self-starting and menu driven, with an escape option on each menu. The screen instructions are clear and more than sufficient. In fact, after the user is accustomed to the program, the help messages often become burdensome due to the constant reminders and cautions. The program provides a prompt to the user whenever it is running internally, which is helpful since it can take some time when recording activities to a permanent record.

The first item presented on the screen when entering the program is a farm scene, with accompanying music. The same style is applied in the entire program since all of the menus are in a nice, easy-to-follow format. However, there are four program discs and excessive disc handling is required throughout. The need for four discs may be due to the extensive screens and excessive instructions. Every attempt is made to protect the user from losing data by stressing back-ups and warning when the process will erase the disc being inputted. Although there is extensive disc shuffling involved, titles are given to each disc so the program does not run if the wrong disc has been inserted.

The manual which accompanies this program is very thorough. It explains each process and why it is necessary and works through the steps with the user. It also has a separate appendix which outlines common problems and what steps to follow to solve them. There is an entire chapter devoted to the basics of accounting and a glossary of terms. Probably the biggest problem with the manual is that it is not basic enough. The farm manager with no background in business accounting or computer experience may get frustrated with the section on accounting basics or the section devoted to setting up the program and initializing discs.

When reviewing this package, an error "bug" was discovered in the program. The company was able to solve the problem and save most of the data that had been inputted. However, it took over a month and a half before this was accomplished, which is a long time for a farm manager to not have access to the farm records. The company supporting the program does not offer a special trouble-shooting number should problems arise.

Time-saving techniques are available, such as "default" entries. This means that at certain points the computer tries to guess the entry needed. For example, when recording a check, the user inputs the total amount, then when it later asks for a breakdown, the user either applies the total amount to one expense or divides it among a number of expense categories. The default automatically enters the total amount of that check to one expense account. The program also inputs the current date (inputted when starting up the program each time) to each entry unless the user designates differently. This program took approximately 10 minutes to enter deposits, 50 minutes to enter checks, and 10 minutes to close out each month based on the data of the representative farm referred to earlier (pages 6-7).

Harris Technical Systems offers a full line of compatible packages, many which interact directly with the accounting package. Some programs are cash flow, budgeting, enterprise analysis, payroll, and a check writing expansion module.

Type of Accounting System

This program is a double-entry system, but has a single-input process. It is basically a cash basis system, but by offering an accounts payable program, it can make accrual adjustments. Although the program does not handle accounts receivable, it can be adapted quite well for farms desiring modified accrual records for expenses.

This program can develop a chart of accounts that meets all the requirements of a proper farm accounting system. Assets and liabilities are classified as current, intermediate, and long-term. There are also separate classifications for Equity, Farm Income, Expenses, Nonfarm Income, Expenses, and Income Tax Expenses. A convenient feature of this program is that it allows the user a choice of developing his/her own chart of accounts or using one of six pre-established chart of accounts. These pre-established charts are based on six "typical" operations and include accounts unique to each type. The choices include: general farm, cash crop, cash crop with cattle, cash crop with swine, ranch, and family. The user also has the option of choosing one of these lists and then modifying it to better suit his/her needs.

Another flexibility of the program is in allowing the user to specify the time periods to be used. Report formats, however, cannot be changed and the Farm Accounting Package cannot separate the reports to a per partner basis. By changing the names of accounts, the Income Statement can be made to resemble the Schedule F used for tax reporting, but items that require special tax treatment are not separated out properly. Examples of items not separated include capital items, purchases for resale, or noncash transactions.

Inputs

Agdisk is a complex program that, as mentioned earlier, requires some disc shuffling. It does offer a "road map" within the manual, which attempts to present to the user the flow of inputs and activity. It may take some time before the user fully understands the processes.

The four main activities Agdisk records are: expenses and payments, deposits, accounts payable, and adjustments. The initial entry for a payment or deposit requires the date, who it was paid to/received from, check/deposit number, dollar amount, and the expense or income accounts. It does not include the capability to record quantities, which is a crucial deficiency for a farm recordkeeping system. The system allows more than one checking account; thus, the user can indicate which has been deposited to/withdrawn from. It also allows for the recording of cash transactions. The basic accounting package does not allow any enterprising, but a separate module can be purchased for this capability. The system does not allow void checks to be entered, nor does it record intrafarm transfers (not necessary without enterprises).

The handling of debits and credits is an important factor. Agdisk dedicates an entire chapter of its manual to explaining the basics of accounting and defining debits and credits. The pre-established charts of accounts also ease potential difficulties. However, the user must accept that, to successfully use this program, he/she has to have a rudimentary understanding of accounting. Because of the organization of the chart of accounts and the design of the input screens, it is easy to differentiate between expenses and incomes. Neither has to be entered as a negative amount (user does not have to identify debits and credits), yet the program allows the user to post such items as "contra-asset" accounts, for instance a discount on a feed bill or the gross milk check, less appropriate deductions. When the user splits an entry, such as a milk check, into more than one account, the program keeps a running balance of the debits and credits. Thus, the user can post the gross amount to income and also record each of the deductions to the appropriate expense accounts. The net amount of the check is the amount of the deposit, and the difference between the gross amount and deductions should equal this net deposit. A running balance helps the user find errors made when splitting entries.

Coding of Accounts

As previously discussed, Agdisk allows the user to classify accounts as being either balance sheet or income statement accounts. These accounts are designated by a three-digit number. The user can define up to 150 accounts, use the pre-established account lists or modify them as needed. A printout of this list can be obtained at any time, either on the monitor or the printer. This list of accounts is established when the records are first entered into the program but can be modified at any time. There are four reserved accounts that cannot be removed (checking, accounts payable, net worth prior year, and net worth current year). However, other accounts can be deleted later, even if they have a balance other than zero. The deletion of a nonzero account would cause serious problems since the records would no longer be accurate.

Error Checking

Corrections can be made to original entries through the review or change option, which allow the user to edit entries before posting them to the permanent records. Each entry that occurs in the Agdisk program is assigned a transaction number by the system. This becomes the only identification the system understands when later trying to trace activities. The user must first review the 'batch report' which lists each entry in detail. From here the user can locate the entry's transaction number. Then, if the user wishes to recall that entry to make corrections or adjustments, he/she must tell the program the transaction number.

This system protects the user from losing data. Each time a month is about to be closed (data is summarized, posted to permanent records, then individual data is erased), the program warns that appropriate reports should be printed and that 'history discs' should be made. History discs allow the user to store the past data with individual detail still intact. These discs can then be used for a variety of purposes, including: adjusting cash data to accrual (cash data still are maintained separately on original discs), making projections by adjusting current data for expected

changes, tax planning, and for use with many of the extension modules. It also gives the user a detailed record that can be used later to locate and correct past errors from closed periods.

Error messages may appear on the screen, indicating what has occurred; however, these messages can be hard to interpret. The appendix within the manual devoted strictly to errors helps to clarify these messages somewhat, but they are not in terms that are easy to understand.

A final error checking capability of Agdisk is its process for questioning unusual inputs. It does not allow the user to post entries to an account that does not exist. It also prevents letters from being inputted where numbers are required.

Loan Register

In addition to the basic expenses and income, Agdisk allows the recording of bills and accounts payable. The user is able to specify the accounts that are applicable and the balances due on each. To record payments, the user must be in the bill payment mode and each accounts payable account must be identified by a four-letter abbreviation that the user establishes when first initiating the account. The balance sheet is automatically offset from this step. The user is also able to adjust the balances without a corresponding payment. This program prints a detail of the payable's activities, although at a certain point it becomes too full and the user needs to remove some of the detail. The user has some control over the format of the printed statement through the order of the accounts he/she establishes. The printed statement reports the entered and posted bills and payments, and the user can designate which accounts to print. This report can be reviewed on the monitor or with an actual printout. This program is designed more for operating accounts than for long-term notes, although it is suitable for both.

Enterprises

As mentioned earlier, the basic farm accounting package does not have enterprising capabilities, it is offered as a separate module. To implement it the user must have made history discs when in the original program.

Other options available that require separate modules include cash flow, budgeting, financial management, and check-writing capabilities.

Month-End/Year-End

Agdisk offers a trial balance report, which allows the user to verify that the accounts are in balance (debits equal credits). This can be printed at any time after the current transactions have been posted to the permanent record. It does not have a proof of cash (a report to verify that the amounts per the checkbook equal the amounts posted to the records), but the batch report, a listing of each transaction individually, can be used to verify postings.

Records are closed out at the end of each period (usually each month).

This process totals the amounts and adds them to the respective accounts. The totals per account are maintained, but individual detail for each entry is then erased to free up space on the disc. At this point the system warns the user numerous times that detail will be lost, and the importance of maintaining back-up discs, printed reports, and history discs. If the user chooses to take any of these precautions, the program "walks" the user through the necessary steps.

Balance sheet accounts are updated each time the program closes out a period; thus, the records are kept current. Since this is a double-entry system, the program does not close out if the debits and credits are out of balance, a warning signal of an error.

While the user cannot change the format of the statements, he/she can manipulate them by changing the order of accounts when first setting up the original account list.

Tax Accounting

The Agdisk program is somewhat limited in its effectiveness for tax reporting. Accounts can be identified as being capital, ordinary, for resale, and whether they are purchased/raised, new/used, over/under the required age. However, this is done only through the title of the account. All income and expenses are included in the total farm profit (loss), regardless of whether they should be given special tax treatment. Nonfarm income and expense is separated, as well as income tax expense. However, separating the expenses of income taxes is not a primary concern for farms and is certainly not as important as distinguishing between the various types of income and expenses. This is one area where modifying a business program to meet the needs of farmers reduces the usefulness of the program.

One effective use of the history disks is for tax planning. By studying 10 to 11 month data on these disks, farm managers can predict the tax consequences of their current position and manage the year's remaining expenses and income accordingly.

Printouts

The main reports offered by Agdisk are the Batch Report (detail of each activity), Period-to-Date Register (gives summary of all posted entries for the current period), Trail Balance, Income Statement, and Balance Sheet (Table 14). If the user chooses to implement the accounts payable function, a detail list of these accounts can be obtained. A list of the Chart of Accounts can also be produced at any time. No other reports are available with this package.

As discussed earlier, Agdisk farm accounting cannot separate the Income Statement or Balance Sheet by enterprise or business arrangement, although separate modules may have the capability.

The user is able to specify the titles for these printed reports. The user is also able to specify the periods for the reports and can obtain data on a monthly and year-to-date basis. Statements for prior periods can

be printed, as long as history discs were maintained for the appropriate periods.

The Income Statement separates family living from farm profit (loss), but the Balance Sheet does not separate personal assets and liabilities. Depreciation can be entered manually, the remaining balances are generated from beginning balances and the current year's activity.

The Balance Sheet presents totals for all accounts. It is not able to present market value comparisons to book value, nor can it compare to prior years, although these may be possible through the use of an extension module.

Income Statement

The Income Statement for Agdisk is generated directly from receipts and disbursements. The format cannot be changed except to the extent of changing the order that accounts are listed. This statement comes down to farm profit or loss, then adjusts for nonfarm income and expenses, and, finally, income tax expenses (Tables 15 and 16). It does not separate returns to labor, management, and ownership. However, the extension module Financial Management Series One offers more flexibility.

The Income Statement is presented on a cash basis, but can be adjusted for accrual expenses through the use of history discs. Income is presented monthly and year-to-date, and it gives the percentage each expense is of total income. The basic Farm Accounting Package does not have the capability to compare data to prior years or to budgeted; however, these comparisons are possible through the use of the history discs and the appropriate extension modules.

Summary

Agdisk is a complex program because it meets the requirements of a proper double-entry accounting system. A prospective user should be ready to work with the general accounting theories and the concepts of debits and credits.

The program is missing some basic needs of agricultural reporting. It does not allow the recording of quantities, an important source of information for the farm manager. It also does not allow the special reporting designations for certain types of income and purchases. It offers enterprising, but as a separate package while most programs include enterprising with the basic accounting package.

The foundation business package was modified in an attempt to meet the needs of agriculture. The accounts payable feature offers a good opportunity for farm managers to adjust from cash to accrual while retaining the benefits of both systems. However, the package was not modified sufficiently to totally meet farm accounting requirements. It does not have the capability to easily record inventory changes or changes in accounts receivable. Therefore, any adjusted accrual income measure is not complete.

Farmplan

The Farmplan Bookkeeper is a general ledger system offered by Farmplan Computer Systems, Inc., of Santa Jose, California. It is promoted as an "easy to use double-entry, cash or accrual accounting system", and is just one of many agriculturally-oriented software packages sold by this company.

The Farmplan Bookkeeper does not integrate directly with other packages offered by the company. It is their simplest financial program and was developed in an attempt to meet the needs of smaller farm operations that do not require the complexity of their larger programs. They offer a variety of financial programs that combine a general ledger with such additional features as accounts payable, accounts receivable, inventory, and payroll. Also available are programs for crop, dairy, and swine records, as well as least cost rations, filing capabilities, and programs to use with Visicalc.

General Capabilities

The Bookkeeper is a self-starting, menu driven system. Each menu has an escape option to allow the user to return to the previous menu. The program has the capabilities to format and copy discs; thus, the user does not need to rely on the separate disc operating system (DOS) disc and manual. The manual also contains easy to follow instructions for performing these functions. This package requires the use of two discs, the program disc and the data disc. Therefore, the user encounters very little disc-handling. The importance of back-up discs is stressed often and the instructions for doing so are easily understood. Warnings are also clear if a process could conceivably erase data.

The manual is presented in a manner that makes it easier for the user to understand what the program can do and in what order operations are performed. The set-up procedures are not well documented, however. For a person with some experience with computer programs and business accounting, the steps are not difficult. But, for a user that may be lacking in either of these areas, these steps could be confusing and lacking in detail.

A data disc containing sample data is included with the package. The user can review this to become familiar with the system and its chart of accounts can be copied and adjusted to meet the user's needs. The Farmplan company offers a yearly warranty, which covers updates and repairs to the program. The manual includes a phone number for contacting the company with regards to the warranty, but does not indicate whether it should be used for actual problems with the program. When contacted directly, the company's representatives were very friendly and eager to help.

In an effort to shorten inputting time, check and deposit numbers change incrementally with each entry. This program also uses default values whenever possible. This is useful when recording the debits and credits of an entry. Since they must be equal before posting, the last entry defaults to whatever value is necessary to balance. Furthermore, this is a good error check. For example, a check written to the local Agway store could include a number of purchases. After recording the

breakdown to the various expense accounts, the last entry (a credit) should be equal to the amount of the check. If the default value is not equal to the check amount, the user is alerted that an error has been made.

When posting the sample data to this system, deposits took an average time of seven minutes per month, checks averaged 30 minutes, and the time required to close out the month and post it took approximately 20 minutes. This program allows up to 98 transactions per entry. For every deposit made, the user can post to the account representing the type of income (i.e., corn sales) and to the account indicating where the money was deposited (i.e., a particular checking account). Many farmers make one deposit that includes money coming from a variety of sources. He/she could post to the appropriate accounts for the various types of sales, then make one entry to the code for the checking account. A third choice would be to post all transactions at the end of the month. With this, the user would post all of the deposits to the income accounts, then make one entry that represents the total cash deposited.

By grouping entries together, it is possible to greatly reduce inputting time. However, the quality of the audit trail may be sacrificed since individual checks are then harder to trace. The user must determine which is the priority, a more detailed audit trail or less time spent inputting. This decision can be made or changed each time the user inputs, it is not a decision that needs to be made on a permanent basis, which is a valuable flexibility of this program.

Inputs

There are three types of entries that can be made with the Farmplan Bookkeeper: checks, deposits, and general journal entries. This system is capable of handling up to 98 transactions per entry, or a total of 750 complete transactions per period. As previously discussed, the ability to combine transactions into one entry can greatly reduce the time spent inputting. Once the user is familiar with the processes, this can be a very fast program to utilize.

The documentation is weak with regards to assisting the user with accounting concepts. However, inputting has been simplified for the user who is unfamiliar with debits and credits. When entering checks, the program automatically assumes the entries are debits, unless indicated otherwise. This means that for each expense entered as a debit, the next entry automatically shows a negative value, representing the anticipated credit to the cash account. The user can continue posting expenses, and the final entry should show a default value that equals the total amount of checks posted. The same concepts apply when posting deposits. Entries are assumed to be credits, the default value is equal to the amount of cash deposited to the checking account.

These assumptions are helpful to the new user and can ease the adjustment to a double-entry system requiring debits and credits. The user is still able to split checks or deposits to more than one account and entries can be posted at gross and net amounts. Through the use of general journal entries, intrafarm transfers can also be posted (exchanges between enterprises, such as feed for the dairy from the corn enterprise).

Each input for checks or deposits requires the date, to whom it was paid/received from, the check or deposit number, dollar amount, a description, and the account and enterprise codes. The system verifies whether the account code is valid before accepting it. It does not have the capability to accept quantities, however. Total debits must equal total credits before posting and a total is presented on the screen which represents the difference between the debits and credits after each transaction. This helps the user to verify entries being made.

This package allows up to nine different checking accounts and records cash transactions and voided checks. Once transactions have been entered, the user can review a "Transaction Entry Listing", presented either on the monitor or a printout. This gives the user the opportunity to verify the entries and possibly locate errors. The final step is to post the entries. This procedure enters values to the accounts and erases the detail of the individual entries. Once completed, entries cannot be directly changed. The user needs to correct any errors by posting an offsetting transaction. A "Transactions Posted" listing is automatically printed when entries are posted, thus providing a good audit trail of the activities and which accounts they affected.

Coding of Accounts

This program can maintain up to 300 accounts and up to 15 enterprises. The accounts are classified as Balance Sheet, Profit/Loss, or personal expense accounts, and are subdivided within those categories. The user must designate at least one account for family living. Balance Sheet accounts include current assets, fixed assets, current liabilities, long-term liabilities, and capital accounts. Profit/loss statements include income, cost of sales, operating expenses, other income, and other expenses.

Having a separate section for cost of sales accounts is not always used in farm accounting. Livestock sales are often recorded net of the cost of sales (commissions, trucking), unless they are purchases for resale. In that situation, the costs associated with purchasing and maintaining the commodity or livestock are kept separate until the year of sale. At that time, the sale price is recorded, followed by the basis in the item, to achieve a net amount. Therefore, on the Income Statement, the sale price should be shown immediately followed by the basis in the item. With this program, all types of sales (i.e., livestock, crop sales) are grouped together, cost of sales are presented later rather than with the applicable sale.

Accounts are identified by a five digit number. The first three digits indicate the account, the remaining digits are used to indicate one of two items. These can be used to identify the account as a "consolidation" or a "subaccount" or they can represent a specific enterprise.

This system allows the user to define the chart of accounts and enterprises or the user can copy the accounts used for the sample data and edit it to match his/her needs. Each account must be further classified as a consolidation or subaccount and as a summary or postable account. These determine which accounts have transactions posted directly to them, which

represent a summary total for a number of accounts, and how they are presented on the printed reports. However, the relationship between these categories is complicated and the explanation within the manual for this design can be confusing.

Once accounts have been established, the user must assign each a "user-reference code". While this seems to prolong the initial process of setting up the system, it can be worthwhile because it enables the user to identify accounts by letters instead of the five-digit code. Each account is given a code up to seven characters in length. The original five-digit code can be used or the farm manager may prefer to use phrases that are more meaningful. For example, trucking expense could be given the code TRUCKIN, which would be easier to remember and, thus, quicker to input than five numbers.

Accounts can be added or deleted at any time, although the program protects the user from losing data by prohibiting the deletion of accounts that contain any transactions or are classified as special accounts. Special accounts include checking accounts, any accumulated profit accounts (retained earnings), and the accumulated personal expense account. These accounts are necessary for the proper recording and balancing of the data; thus, they cannot be eliminated. Once an account is created it cannot be changed, although the name and reference code can be. While these precautions are valuable for protecting the new user, they can become restrictive to the veteran user who wishes to cancel outdated accounts and can correctly manipulate balances without losing data.

The chart of accounts list can be obtained at any time and can be presented either on the monitor or printer. This list shows each account, type of account, enterprises, and the applicable user-reference codes.

Error Checking

The Farmplan Bookkeeper can only search for entries by the check or deposit number. Once it is found, the user can edit or delete the entry or continue the search or exit from the edit mode. "List transactions" is a printout of all transactions not yet posted and can be seen on the monitor or printer, which could aid in the search for a specific transaction.

If the user is still on the original entry, all previous entries can be reviewed and changed (this would be applicable when a number of transactions are posted at once). The left key arrow can erase data, plus the program allows the user to edit whatever data the cursor is next to. Once transactions are posted, they can only be corrected by recording an offsetting transaction. Data from prior periods cannot be edited, although back-up discs can produce printed reports.

The manual describes the two types of messages the user may encounter (operating system error or data file error) and the steps to take if either occur. If the user has enough transactions to require more than one data disc, the program gives a warning when the disc is full and does not continue until those transactions are posted. This protects the user from losing data.

Loan Register

Because the Bookkeeper is a double-entry system, accounts can be established for accounts receivable and accounts payable. However, their effective use would require accrual accounting methods and it is not possible to get separate reports of loan activity unless enterprise codes are implemented.

Enterprises

Enterprises are defined by the user for up to 15 enterprises. They are on a cash basis, although accrual adjustments can be made at year-end.

An Income Statement format is used for this report. Through the use of the account classifications, and capabilities for adjusting spacing and columns, the format can be designed somewhat by the user. Reports can be for any period(s), up to 12 periods. The user is also able to compare actual data to prior periods. The program is capable of presenting an enterprise's progress on a per unit basis. The user defines the unit to be used and the number of applicable units. If the user only applies variable costs to the enterprises, the enterprise reports are presented as return over variable costs. This, combined with the per unit reports, can provide valuable information for business analysis.

Month-End/Year-End

This program contains an automatic procedure for closing out each month (period) and at year-end. At this time, the system checks to ensure that all transactions entered have been posted. If not, the user must go back and post them.

The user has the option of whether to run the standard reports. The system notifies the user if they have not been printed since new data has been entered, but allows the user to continue without printing them.

The "standard reports" include the Check Register, General Journal, Audit Report, Balance Sheet, and Profit/Loss Report. The manual suggests to the user to at least print the Check Register, General Journal listing, and the Audit Report since once the period is closed the detail for these reports is unavailable.

The Check Register presents all checks and deposits made to and from the checking accounts and gives the detail necessary to perform a checkbook reconciliation. The General Journal listing gives the same type of detail for journal entries. The Audit Report gives the detail of all activity for each account within the current period. This provides a written audit trail, enabling the user to trace prior entries made.

The system does not generate a Trial Balance, but it does not process if the accounts are out of balance. Therefore, the user needs to use the above reports to search for errors if there is a problem.

Tax Accounting

When defining codes for accounts, this program allows the user to separate accounts that represent cost of sales. If the farm manager has resale items, this could be used to separate the costs of purchases for resale. The system was not designed for this purpose; therefore, it requires some extra manipulation by the user. For instance, since the costs associated with resale items are not to be recognized until the items are sold, the costs should be held separately in a balance sheet account until the year the items are sold. Then the user can post these costs to the costs of sales accounts. This process requires an understanding of basic accounting concepts to be recorded correctly.

This system presents "other income" and "other expenses" separately. These accounts could be used for a number of purposes, such as making accrual adjustments, recording noncash transactions such as depreciation, and recording capital sales and purchases, but again, this requires extra manipulation by the user.

Because of the manner in which profit/loss accounts are presented on the Income Statement and through the effective use of account titles and their order, this program could be beneficial for tax reporting purposes. Cash income can be reported separately from accrual, and capital and ordinary transactions can be set apart. Thus, a report can be presented prior to the end of the tax year that enables the user to make an estimate of current taxable income and appropriate action can be taken to adjust it where possible.

Reports

The Farmplan Bookkeeper package produces a number of reports (Table 14). A list of the Chart of Accounts can be obtained at any time. In addition, the standard reports include a Check Register (all checks and deposits for the period), a General Journal (detail of journal entries), an Audit Report (detail of the activity to each account for each period), a Balance Sheet, and a Profit/Loss Report. It also offers an Entry Listing, which lists all unposted entries, a list of Transactions Posted, and the Profit/Loss Report can be organized to produce an Enterprise Report.

Income Statement

The Income Statement is generated directly from daily transactions and general journal entries (Tables 15 and 16). The user has some control over the format by adjusting spacings, columns, headings, and account titles. The report can be obtained for any number of periods, including the prior year. For example, if the current month is June and the prior year's date is in the system, a report can be presented that includes the 12 months since last July.

Each report automatically calculates the percentage that each figure is of total sales. Monthly and year-to-date totals are available, as well as comparisons to prior year data. Budgeted data can be entered manually and can be changed at any time; thus, reports also print actual data compared to budgeted amounts. Separate reports can also be printed of individual enterprises.

Modified accrual statements can be developed, but it requires careful adjustments by the user. The user would need to establish income and expense accounts for the year-end (or month-end) posting of adjustments for the change in inventories and receivables and payables. The user could define these accounts so that when the Income Statement is presented, it shows these accounts separately under "other income" and "other expenses". The results would be net cash income as well as modified accrual.

Balance Sheet

For this report, only accounts originally classified as "consolidation" accounts are printed. Balances are generated from daily transactions and general journal entries. The user has the same control over the format as for prior reports: headings, spacing, columns, and account titles.

Account balances are shown as of the current month, year-to-date, and the change from the beginning balance. This report can also be presented in comparison to the prior year, although the user must have been on the system at least a year to achieve this.

Summary

The Farmplan Bookkeeper has the advantage of a double-entry system, but entries are simple and easy to make. The program's biggest shortcoming is its documentation. There are many sections where it does not offer enough assistance or is not basic enough for the new user. Once the user is comfortable with the system, however, it can be quick and suitable to the needs of an operation that wants a simple double-entry program.

Harvest

Farm Ledger Pro is one of the many agricultural software packages offered by Harvest Computer Systems, Inc., of Alexandria, Indiana. It is a relatively simple accounting program that is easy to use, partly due to the fact that it is a single-entry, cash basis program. The Farm Ledger Pro is designed for the farm manager and recognizes that many of these managers have had little or no prior experience with computers.

General Capabilities

Farm Ledger Pro is self-starting and menu driven. The screens are easy to understand and, many times, include short messages describing the process chosen. Each menu offers an escape option and the manual contains a chart that summarizes special instruction keys and their functions.

The program utilizes four program discs: Bookkeeping, Analysis, Utility, and a final diskette which contains cash flow and a set of sample data. The instructions for the disc handling are very explicit and very basic. It is clear that the program was written with the first-time computer user in mind. The package contains a special feature which enables the user to "read" a disc to determine how much space is left for data. However, it does not contain any warnings when space for data is exhausted; thus, it is possible for the user to lose data by exceeding disc storage space.

Documentation for this program is excellent. It is very detailed and explains each process step-by-step. At the beginning of the manual is a brief series of steps for the user to follow when first implementing the program. It summarizes the routines and helps clarify for the user the system capabilities.

The documentation is extensive. As examples, the manual defines "booting" a program, what menus are, what the cursor is for, and which way to hold the diskettes when inserting them. The sample data diskette, along with the manual, walks the user through a series of basic steps for each function. As it works through these examples, it mentions errors that can be made and what to do if they occur.

In addition to describing each process, the manual describes the reports that can be generated. Included is a brief discussion of what information is given and why it can be important to the farm manager.

Any updates or corrections to the program are available to the user at no additional charge. When the company was contacted directly about a faulty disc, a new disc was delivered within three days. Harvest representatives were very eager to help and to listen to suggestions about their program.

Farm Ledger Pro has the capability to print checks directly from the expenses inputted into the program. This process saves time and reduces the chance for errors. The date, check and deposit numbers change incrementally, thus eliminating some input time for the user.

As another example of the company's dedication to the special needs of farmers, there is a section devoted to special entries. This outlines entries that may be uncommon for some farmers or a little different procedure may be necessary to properly record the transaction. Examples of entries covered are compounding interest in savings accounts, landlord transactions, payroll, seed use by field, or hedging account transactions.

When the data for the sample farm of this report was inputted, checks averaged around 43 minutes per month to input and deposits averaged eight minutes. It was one of the faster programs of those reviewed. One reason is the system used for coding (five characters) and that the list of these codes is presented on the screen for each input.

Harvest offers a number of programs, many of which integrate with the Farm Ledger Pro. Other accounting programs are available as an alternative to the Farm Ledger Pro; a more complex double-entry system or a package similar to the Farm Ledger Pro without the analysis capabilities. There is also a package that maintains depreciation records and integrates with the accounting packages.

Management packages are available for crops, hogs, dairy, and ration balancing. There are also a number of packages to aid the user in decision making.

Type of Accounting System

Farm Ledger Pro is a single-entry cash basis accounting program that allows for modified accrual entries at the end of periods. The sample data disc contains a chart of accounts the user can copy or a new chart can be established. The user has the option to set the date for the end of the fiscal year, otherwise it is automatically set for December as the year-end. Most of the reports available allow defining the categories to present, the farm heading to use, and the months to include for the report.

Inputs

Entries made to the Harvest Ledger Pro include the date, to whom it was paid/received from, the check or deposit number, the dollar amount, the coding of the item, a description, and up to two quantities. When entering the date, only the month and day are necessary. This program allows up to eight different checking accounts, thus if more than one is used, the affected checking account must be indicated. Void checks can also be entered. Checks can be printed directly from the initial input of the data. The programs add the year to the date and an address can be added to the name of the payee.

Through use of the Non-Deposited Income Routine, cash transactions can be recorded. This program allows the recording of cash that is never deposited and farm deductible expenses that are paid "out of the pocket". The difference between cash income and cash expenses is recognized as family living, although it is also possible to get a more detailed schedule of activity by actually posting family expenditures. Intrafarm transfers and expenses can also be posted through the use of this routine.

Because this is a single-entry program, it does not require that the user distinguish between debits and credits. The program allows up to 10 separate entries per transaction. The description, date, and check or deposit number do not change. When reports other than the check register are printed, these items will remain separated. While inputting a number of items for one transaction, a running total appears on the screen.

Coding of Accounts

Harvest Ledger Pro has a maximum of 18 income and 32 expense categories. In addition, each category can be divided further for up to six subcategories. The large number of categories allows the user to maintain detail while maintaining major categories and report simplicity. As an example, the user may want to keep machinery repairs separate from farm auto repairs or building repairs. A category for repairs could be subdivided into machinery, farm auto, and building accounts which are maintained separately but are summarized for reporting purposes into the general account "repairs".

This program is a single-entry, cash basis package. Thus, categories are not designated as being balance sheet or income statement accounts. However, the user is allowed to designate whether each category is taxable or nontaxable, farm or nonfarm, and resale or not. If categories are indicated as being taxable, the user must also indicate whether they are for capital sales or purchases.

As previously mentioned, the sample data disc contains codes which may be used or new categories may be established. The user can add or delete accounts at any time. Each category is designated by a five character name instead of the more common numbers. These names are displayed on the screen as an aid to the user whenever he/she is inputting. In reports, these categories are identified by nine-character names.

The user is able to establish enterprises through the use of tags - a special character attached to the end of a description or name which can be singled out by the search routine or the separate enterprise analysis package. The user also defines accounts for split entries. This procedure enables the user to automatically split expenses, for example, gasoline expense to both farm and nonfarm. The second entry is made automatically and it is up to the user to determine which account to apply it to and in what percentage. As an example, instead of applying the second portion to family expense, the user may split an entry between different farm expense accounts.

Error Checking

This package contains a search-edit routine that searches for data using only approximate dates or amounts, as inputted by the user. The user has the choice of entering exact data, but if he/she cannot recall the exact data (for example, the check number or date), this routine tries to locate it by recalling any entries that are similar to the value inputted by the user.

When originally entering data, the program posts each entry directly after input. After each entry the user has the option to continue, edit or record the entry.

When later editing the data, the user must confirm the deletion (to protect from deleting entries by mistake). If the user edits an entry that triggered an automatic offsetting entry (for example, a split-entry that applied personal share of a utility bill to family living), the offsetting entry must be edited separately. The edit does not trigger an automatic offsetting edit of the separate entry. Use of the Entry Trace Report helps alleviate the danger of missing such entries. It presents each entry in the order that it was made. This provides a good audit trail and should be kept up-to-date with changes made.

This program does not contain a separate section on errors and how to correct them. As mentioned earlier, the documentation does mention errors that could be made while in a particular routine, but these are not summarized anywhere within the manual for quick reference.

Loan Register

Although Farm Ledger Pro is a cash basis program, it contains a routine for entering activities on account or note transactions. Through use of the special account code, the user can differentiate with the name that is entered. Payments and receipts automatically offset the balances and a routine is available for recording noncash transactions.

There are four types of activities that can be recorded: money borrowed on note, money invested or loaned, money you owe on account, and money owed you on account. Reports can be presented on the printer or monitor and are flexible with regards to what is printed. The user can obtain an activity summary for one or all accounts.

Enterprises

By adding a unique character to the description or name of an entry, the user can obtain enterprise reports. The search-edit routine traces all entries for whatever character chosen and the Income and Expense Detail Report produces a summary of all applicable entries, creating an enterprise report. Therefore, for all expenses associated with the dairy enterprise, the user attaches a common character to the description. A report can then be obtained that includes all expenses with that common character.

The Harvest Company offers a separate module designed specifically for enterprise profit analysis. This package interfaces with the Farm Ledger Pro.

Month-End/Year-End

This package does not generate a trial balance or proof of cash because it is a single-entry program. It also does not close out balances until year-end. However, at the end of a period it does offer a Check Register, Checkbook Reconciliation, Month and Year-To-Date Totals, Income and Expense Detail, Entry Trace, Account and Resale Reports. All of these reports may be obtained at month-end, quarterly or year-end and can be obtained on the printer or monitor.

The Check Register presents the beginning balance, transactions, and the ending balance. The Checkbook Reconciliation summarizes outstanding checks, deposits, and adjustments. These two reports enable the user to balance the checkbook and verify entries recorded.

The Month and Year-To-Date Totals Report presents the totals for each category for the month and year-to-date totals. The user can also compare actual data to cash flow projections. Categories are presented based upon their tax classification and final totals are given for cash in, cash out, and net cash.

The Income and Expense Detail Report presents entries that have been designated through the search-edit report. Therefore, the user can define what is to be included with this report, such as enterprise reports. Entries are printed in an order based upon their tax classifications and subtotals are presented. The Entry Trace Report prints every entry in the order that it was inputted. The Account Report presents loan and open account activities. The user can define which accounts to include. The Resale Report summarizes resale activity so that the user can monitor its progress and current taxable income.

Tax Accounting

Harvest Ledger Pro gives special attention to the classification of

taxable versus nontaxable items. When first establishing the chart of accounts, the user classifies each category as farm or nonfarm, current taxable income or deductible expense, and whether it is a resale item or not. Reports are then presented in a format that separates these items.

Items for resale have two predefined accounts, although these can be changed or more may be added. Units can be defined for quantity prompting, up to two quantities can be maintained. This program carries resale data over from prior years to the appropriate year that it is taxable. A report is also available that summarizes resale activity through a specific month. This report includes resale income to date and resale purchases, separated as to whether they are currently deductible or not.

Capital Purchases and Sales can be coded separately and are reported separately on the Month and Year-To-Date Totals Report of Income and Expenses. Nontaxable and nondeductible items, as well as family living, are also separated. Through careful planning when setting up the categories, the Income Statement can be made to closely resemble Schedule F from the Federal Form 1040. However, it is not automatically presented as such; it is up to the user to define the format.

Business Analysis

A unique feature of the Harvest Ledger Pro accounting package is its added capabilities for business analysis through the Analysis Module. This includes Profit Analysis, Trend Analysis, and Balance Sheet Analysis. The documentation for this section is very thorough. It not only introduces each routine, but also explains the use of the report and how it can be beneficial to the farm manager.

The user can either use data directly from the Bookkeeping module (included in the Farm Ledger Pro), the Depreciation Log, and the Balance Sheet Module or data can be entered manually. Additional data needs to be entered, such as the number of workers, principal payments due, beginning and ending balance sheet information, and the number of tillable acres worked.

Profit Analysis enables the user to modify the farm's cash basis records to accrual and presents an Income Statement that reflects these adjusted net earnings (Tables 15 and 16). The Accuracy Report summarizes the Sources of Funds, Uses of Funds, and their difference, which could represent missing data or an error within the records. This is a report that is common to double-entry systems and helps to verify the accuracy of the records. It also aids the user in realizing where funds are generated from and where they are utilized.

The Earnings Analysis presents to the user productivity and cost factors, profitability analysis, capitalization, risk factors, and a per unit cost analysis (per cow, per acre). Profit Analysis analyzes profitability for any time period and can be presented on the printer or monitor.

The Trend Analysis presents the modified accrual Income Statement, the Accuracy Report, and all the factors included in the Earnings Analysis over a five year period. This allows the user to compare current progress with that of prior years or data from up to five different farms or operations

can be presented side-by-side for comparison purposes.

The Balance Sheet Analysis presents Balance Sheet Data generated from manual entry and/or interface with the Balance Sheet module and Depreciation Log. Asset to Debt ratios are calculated as well as current, intermediate, and long-term liabilities to total debt, net worth to total assets, and net worth to total liabilities ratios. Each classification can be printed separately. For example, dollar value of inventories are summarized, along with quantities, and liabilities are presented with the current portion indicated separately.

The documentation includes a narrative describing each of these reports and how the farm manager can use them effectively. The Harvest Company offers an additional analysis aid to farmers through the use of a comparison program to other farm businesses. Interested farmers must submit their yearly Profit Analysis to participate, this program is reported to be at little or no additional cost to the farmer.

Reports

The reports developed by the Farm Ledger Pro are generated automatically from cash receipts and disbursements or can be generated from manual data input (many of the profit analysis reports). The Ledger reports presented by this program include the Month and Year-To-Date Totals, Income and Expense Detail Report, Entry Trace Report, Account Report, Resale Report, Check Register, and Check Balancer. The Analysis Reports available include the modified accrual Income Statement, Accuracy Report, Earnings Analysis, each of these on a five year trend basis, and Balance Sheet Reports (by classification) (Table 14).

The user can specify the accounts to be included when printing the Income and Expense Detail Report, the Account Report, the Resale Report, the Check Register, and Check Balancer. Through the use of Visicalc or Multiplan worksheets the user can prepare the Month and Year-To-Date report in comparison to cash flow projections. The user can also enter the projections manually.

Separate modules available include the Enterprise module and the Depreciation Log. The user can specify the headings to be used and can receive any of the reports on the printer or monitor. Because this program does not close out and total summaries until year-end, reports can be obtained for any period. Another nice feature of this package is the fact that the Income and Expense Detail Reports will total quantities per account.

The Balance Sheet available through this package needs most of its data to be entered manually since it is a single-entry program. However, balances that remain unchanged can be carried forward to the next reporting period and a separate balance sheet module is being developed by the company.

Summary

The Harvest Farm Ledger Pro is a unique program since it combines a single-entry, cash basis ledger program with extensive analysis reports.

It has excellent documentation that is presented in layman's terms and should adapt to the farmer's experience or knowledge level easily. However, it is not so simple that a more experienced user could not utilize it effectively.

The Analysis module emphasizes data and ratios that should be meaningful to the farm manager and could make the original ledger reports much more useful. This is a program that should adapt well to small to midsize farms or large farms who do not utilize double-entry systems. The additional packages that it can interface with add to its appeal as an excellent program to grow with.

Red Wing

Red Wing Business Systems, from Red Wing, Minnesota, offer a number of software packages to aid in farm recordkeeping and management. The General Ledger is the package reviewed in this research. This program performs the basic accounting functions for a farm business. It is a sophisticated system and can be adapted to the individual operation quite well.

General Capabilities

The Red Wing System is a self-starting, menu driven program. The questions and prompts are easy to understand and often require either a yes/no response or a single digit. Each menu has an escape key that allows the user to return to the main menu and the program does notify the user if it is running internally and, thus, should not be disturbed.

This program has a unique feature that enables it to adapt itself to the user's level of ability. The user inputs a value between zero and nine; a zero indicates little or no experience so the computer responds with a number of messages to aid the user when entering data. The lower the level of experience, the longer the help messages remain on the screen. The digit nine indicates high expertise; there are less help messages and the data are processed more quickly. This feature makes it easier for the user to grow with the program at his/her pace since this level can be changed within the program at any time by the user.

There are three program discs included with this package (when used on the Apple IIe). They are the main program disc, a miscellaneous disc, and a disc for yearly transactions. Thus, there is relatively little disc shuffling with this program. If the wrong disc is inserted, the program notifies the user and allows him/her to reinsert and restart the process by pressing one key. The manual does not give specific instructions for initializing and copying discs. It refers the user to his/her Disc Operating System (DOS) manual and then takes the user to the next step, assuming these processes have been completed. There are warnings within the manual and the program for the user to make back-ups. Once again, it does not aid the user in performing these steps. The manual (and occasionally the screen) also warn the user that the process about to be implemented erases the detail of daily transactions. Thus, the user is given time to print a list of the data about to be erased if desired. This is a step that should be taken since it provides the user with an audit trail of data that otherwise cannot be retraced.

The General Ledger manual is very helpful and thorough. It includes sections on "System Planning" and "Operation Summary" to aid the user in understanding the program. System Planning assists the user in setting up his/her records on the general ledger, while the Operating Summary helps give the user an overall picture of the capabilities of the package. It leads the user through its processes and includes a sample system (both in the manual and on the discs) that the user can follow in order to become familiar with the program. It is laid out in such a way that the reader can pictorialize where he/she is headed. Included in the appendix is a section of specific problems that may be encountered, the error message they trigger, and the suggested action to take. There is also a glossary of terms and a section describing the technical programming of the package.

The Red Wing General Ledger is a double-entry accounting system requiring an understanding of accounting basics. The manual devotes a separate section to the concepts of accounting and tries to simplify them for the user. As with most double-entry systems, this may be a difficult area for the farm manager. If the user can become accustomed to the data required and entry procedures, the remaining processes are internal and are performed without any user input. However, the user must fully understand what data is normally entered as debits or credits, and how to distinguish between these debits and credits when making the initial entries. The Red Wing Company tries to make these concepts easier to work with, but the explanations may still be frustrating to someone with a limited background in business accounting.

Red Wing stands behind its product by offering updates and corrections to everyone who has purchased and requested their package. When contacted directly for assistance, the personnel were friendly and eager to solve any problems. If the new user does have difficulty, the manual suggests contacting the salesman and tells what information to relay to him/her when describing the error.

This program allows the user protection from unauthorized access to the files through the use of a password designated by the user. It automatically enters the current date on inputs and enables the user to decide whether check numbers should be automatically incremented.

As mentioned earlier, a higher experience level increases the speed of the program. The program also utilizes a default value - the computer will try to guess the next entry. Each of these processes increase the speed of the program.

This program required an average of 10 minutes per month to record deposits, 55 minutes to record checks, and about one-half hour to summarize the data at the end of each month. This was based on performing only the two most necessary procedures, as explained later.

The Red Wing Company also offers compatible software for payroll, accounts payable, accounts receivable, farm inventory, decision aids, liability management, tax planning, and project management.

Type of Accounting System

The Red Wing General Ledger is a double-entry system where the user must post the debit and the credit. Through the use of the default values, it can be a double-entry, single input system. This occurs because as a debit is entered, the default value for whatever amount the corresponding credit should be to make it balance automatically appears. If it is correct (there are no further breakdowns), the user simply enters it. This program is more suited to be used on a cash basis, although separate modules are available to maintain accounts payable and accounts receivable.

The Chart of Accounts and enterprise accounts are user-defined, although the program does indicate where classification of accounts must go. A sample system is provided. The program has pre-established time periods that summarize data month-to-date and year-to-date. It allows the user flexibility when designing reports. By classifying each account as a heading, detail, summary or primary account, the user designates which accounts to list when preparing most of the reports. This program should appeal to partnerships because most of the reports are able to be prepared on a per partner basis for up to three partners.

Inputs

When entering cash receipts and expenditures to the Red Wing General Ledger, the user is asked to enter a date, description to whom it was paid to/received from, the document number, dollar amount, account, enterprise, and an optional quantity entry.

The system has reduced the amount of entry. For example, the user need only enter the current day; the month and year are already in the system. There are also a number of error checks to aid the user during the inputting process. With each entry, the screen automatically presents the transaction last entered. Entering an account and enterprise code can require up to six digits, the system prints the name of the account entered each time, as a check for the user. Total debits must total credits before the system posts the transactions; thus, assuring the accuracy of a double-entry system. The user is given the option of printing transactions as an audit trail after posting them to the accounts. A Summary Report is also provided which displays each account and how the current transactions have affected it. The user is allowed the option of entering quantities, but there is no provision for totalling these within each account. There is also no option for the user to specify units for the quantity entered.

Because this is a double-entry system, the user must enter the source for each cash transaction. The user defines the codes and can, therefore, establish as many checking accounts as are necessary. The program facilitates the recording of cash transactions assuming a cash balance has been established at the beginning of the year and an account code has been assigned. Also, due to the double-entry characteristic, this system can record intrafarm transfers from one enterprise account to another.

As previously discussed, this program requires a certain level of business accounting knowledge. Each entry requires at least one debit and credit, and their totals must be equal. The screen presents reminders when posting income that warn the user to record income as a negative amount.

The user cannot rely on these reminders to successfully use the program, however; a more thorough understanding of accounting concepts is necessary.

Having to record debits and credits offers flexibility to the program. It enables the user to easily record discounts or to break down gross amounts to arrive at the net figure, such as a milk check. Each of the deductions is accurately recorded to the appropriate expense or capital account, total milk sales reflect the gross amount, and the deposit is the net amount. Once again, the system does not post until debits equal credits, thus assuring that all items have been recorded.

Coding of Accounts

The Red Wing General Ledger System allows the user to define the necessary account and enterprise codes. Account codes are separated into Balance Sheet and Income Statement classifications and are denoted by a four-digit number. The user can rearrange the number of accounts, for example, set it up so there are less asset accounts and more expense accounts. The maximum number of transactions is directly related to the number of accounts. Through manipulation, the user therefore has some control over the maximum number of transactions.

To add to the adaptability of this program, there are a number of adjustments the user can make when first establishing his/her accounts. One feature is the use of autosplits. The user will designate how a particular expense is to be applied to the available enterprises. For example, it may be estimated that 70 percent of the fuel expense is used for the crops and 30 percent by the dairy operation. Therefore, the user does not need to calculate the breakdown each time he/she enters an expense for fuel. These percentages can be changed at any time.

Another feature is one which labels accounts as being a Heading, Detail, Primary or Summary account. This system of coding enables the user to declare which accounts are to be printed only as a heading (i.e., Current Assets) and which accounts should contain actual data. From here the user can designate accounts to be added together and shown as only one total on the report; thus, unnecessary detail can be avoided and statements are easier to work with. An example of this occurs when a farmer rents land from a number of sources and wishes to record them separately. However, for the purposes of financial statements, rent expense is shown as one figure.

The manual contains a Chart of Accounts Planning Worksheet for use when first setting up the system. It also presents a sample system and suggests that the user either base it on his/her current accounts or consult with an accountant in establishing the necessary accounts. These accounts can be added or deleted at any time, so the user can estimate his/her needs and make adjustments later. An account list can be obtained at any time that lists all current accounts and their classification (heading, detail, primary, summary) as well as enterprises and any autosplits to be applied. There are certain protections within the system that prevent the user from losing data by removing an account with a month-to-date or year-to-date balance. The manual also warns that any changes should be

done with extreme caution.

Error Checking

The General Ledger does not have a specific search-edit routine, editing must be done by reviewing all transactions from the Transaction List. This list can be presented on the monitor, but if an entry is needed from the end of a month's data, the entire month must be reviewed. The user must first identify the type of entries he/she wants to review (cash receipts, cash expenses, miscellaneous journal entries), then a list is prepared of all the transactions of that type that have been posted for the month. However, the user can simplify the monthly transaction listing by requesting a specific account only. This listing also provides a good audit trail at the end of each month for all transactions entered.

While in the inputting mode, the system enables the user to review the entry and adjust it if necessary. It also offers a few precautionary measures that help the user ensure that the entry is correct. These include printing the account name after its code is typed and presenting the prior entry on the screen. If the account being entered is incorrect, the system displays the four closest accounts to the code entered, assuming the user may have simply hit the wrong key. If the data entered is not acceptable (account code not in existence or letters where numbers should be, an error message flashes and the user re-enters the data.

The General Ledger System has the capability of maintaining a year of detailed data by storing the history on a separate disc. The user can then gain access to this data through listing or a display on the monitor. All of the transactions can be reviewed or the user may segregate specific accounts or groups of accounts. The user is also able to change this prior data through a process entitled "Maintain History Information". These prior data are valuable when presenting comparative income statements or balance sheets and the editing capabilities enable the user to correct an error made in a prior month that has been closed. This function is also useful if the farm manager wants to input data for months prior to the start-up of the system, thereby being able to store data from the old recordkeeping system. In case of a major problem, the system allows the user to reset month-to-date and/or year-to-date balances to zero. However, this procedure must be used with extreme caution since the chance of losing data is great.

Included in the manual is an error appendix which contains reference to actual errors and/or error messages. Through these messages the user should be able to determine the necessary steps to take when a problem arises, determine whether data may have been erased, whether the disc may be faulty or what to do in the case of a power failure.

Loan Register

The General Ledger System records accounts receivable and accounts payable, since it is a double-entry system. However, any changes must be completed manually and their effective use require accrual accounting methods. The Red Wing System offers special recording capabilities for these accounts under a separate module which is compatible with the General Ledger System.

Enterprises

When the user is first introduced to the Red Wing General Ledger System, a section on setting up his/her records for the general ledger package is presented. The manual includes two worksheets, one to be used for establishing the necessary accounts, the other for defining enterprises. A maximum of 99 enterprises are allowed with the capability of separating family living or activities the user wishes to exclude from the financial reports. The system allows the user to add or delete enterprise codes at any time, but the manual warns that they should not be removed if they have been used. Therefore, it is possible to lose data by closing an account that contains a balance.

The enterprise balances are automatically adjusted from the receipts and expenses of daily transactions. The user is able to define the headings of the reports and, through the use of separate categories for accounts (heading, detail, primary, and summary accounts), the user can more or less control their format. Statements are presented on a month-to-date and/or year-to-date basis and, through use of the History feature, can be compared to data from the previous 12 months. Budgeted data can also be maintained within the program and presented in comparison to actual. The report can be composed of any group of accounts (or a single account) and the user can change history or budgeted data at any time.

Autosplits, a feature mentioned earlier, allow the user to designate a percentage to be automatically applied to various enterprises from one account. The user may decide that 75 percent of the utility bill is used for the farm, 25 percent by the family. Each time a utility bill is paid, the computer automatically applies it to the predesignated enterprises by these percentages.

The reports separate net income by the various enterprises. If the user has consistently applied only variable expenses to the enterprises, these reports enable the farm manager to analyze the profitability of each enterprise. Another feature of this system is the ability to generate these reports on a per partner basis for up to three partners. By designating initially the profit and loss percentages to be applied to each partner, the user can view progress not only per enterprise, but also for each partner's share.

In addition to the Income Statement, this package produces a Balance Sheet (also by partner) for each enterprise. It recognizes, however, that this may be out of balance and could be of limited use. This is due to the difficulty of trying to correctly separate farm assets, for instance the checking account or machinery and equipment, by enterprise. Many pieces of machinery are utilized by all of the enterprises.

Although the concept of enterprises and their usefulness may be obvious to some, the detail and information on enterprising within this program may be confusing for the inexperienced. The fact that enterprise codes may be added at any time is helpful since it allows the user the chance to grow slowly with the program.

Month-End/Year-End

This package offers standard as well as optional features to be performed at the end of a month or the end of the year. A nice feature is the ability to set this month-end process automatically so the user does not need to be present while it is running.

The end-of-month menu contains the following options: a Trial Balance, entry of additional transactions, a list of transactions, an Income Statement, month-end journal entries, saving transactions on a yearly file, a Balance Sheet, a Retained Earnings Statement, a Statement of Changes in Financial Position, and an End-of-Month/End-of-Year closing. Two of these processes must be run before the system allows a new month to be started. The two are preparation of month-end journal entries and the end-of-month/end-of-year closing. Month-end journal entries simply summarize the transactions for each account, while the end-of-month/end-of-year closing resets the month-to-date amounts to zero and the detail is removed.

Once the user begins the end-of-month menu processes, he/she cannot exit until the processing is completed. The system warns the user of this, both on the screen and in the manual, and suggests that if there is monthly data that has not yet been posted, the user should print the desired statements from a different menu entitled "Financial Statements Menu". Thus, the user can review the statements and still have the option of entering data for the open month. This Financial Statement Menu offers a Trial Balance, Income Statement, Balance Sheet, Retained Earnings Statement, and Statement of Changes in Financial Position.

Once the user determines that he/she is ready to close out the month, the customization features allow a user-designed month-end process. Any or all of the options from the end-of-month menu are performed automatically without requiring that the user be present. As mentioned before, the month-end journal entries and end-of-month/end-of-year closing are mandatory; however, the rest are optional.

A Trial Balance can, therefore, be generated both at month-end and year-end. The user should recognize the importance of this report since it indicates whether the debits and credits are equal; if out of balance it provides the magnitude of the error. This provides a good error check. If it is out of balance, the user would review the daily transaction listing to detect the error. The second option of the end-of-month menu is then implemented - enter transactions.

Through preparing the monthly transaction listing by source entry and/or account number inquiry, the user has the data necessary to produce a checkbook reconciliation or proof of cash.

One of the discouraging factors of the Red Wing System is the amount of time it needs to close out a month and the reports it produces automatically. For example, the average month took one-half hour just to perform the two mandatory processes of month-end journal entries and the end-of-month/end-of-year closing. In addition, a report is generated that gives the summary of the journal entries, but it is presented in a format that is basically useless to the farm manager. Any data presented in it can be found in other reports; thus, it is a waste of computer time and paper.

Tax Accounting

Because this system allows the user to define the accounts and categorize them (as heading, detail, primary or summary), it is possible to code accounts specifically for tax purposes. However, it is not easily adaptable to tax reporting.

Through the order of accounts and user-specified headings, the Income Statement can be made to resemble the Schedule F. Nonfarm (and nontaxable) income and expenses can be separated on the Income Statement, but capital sales or expenses cannot, and are included in the net figure. The flexibility available when first setting up the chart of accounts makes it possible to identify tax preference items. The user needs to recognize that this is an area where personal customization is necessary to achieve the desired benefits.

Tax planning is possible through implementing the budgeting and forecasting capabilities. Actual data for 10 (or whatever) months can be prepared, then the user can manipulate the remaining months with forecasted data and use the results as a guide to effective tax management.

Business Analysis

The Red Wing System contains valuable forecasting and budgeting capabilities. Actual data can be transferred into a forecast file for one, a few, or all months. Standard amounts can be entered and changes for each of the following months based on a percentage can be initiated. By saving data on a yearly file, detailed history can also be maintained. Reports can be presented of a 12 month forecast, the prior 12 month's history, comparisons of actual to budgeted or prior data, or even a combination that lists actual data for the months available, then completed the remaining months with budgeted data. Any of these balances can be changed or reset to zero at any time.

Once familiar with these capabilities, the user has the flexibility to project financial statements based on past performance and expected changes, to review trends by comparing past data to current data, and to implement tax planning.

These processes can be run with a spreadsheet program also, through the use of a data interchange format (DIF) file. This saves the user from manually entering all of the data and offers even greater budgeting and cash flow projection capabilities.

Each of these reports can be printed for all accounts or for a specific grouping of accounts. In addition to the more common reports, this program also offers a Statement of Changes in Financial Position and a Statement of Retained Earnings. The Statement of Changes is entirely designed by the user and allows him/her to analyze where capital came from and where it was put to use within the operation. The Statement of Retained Earnings presents the change in each enterprise (and the farm business) as a result of the current year's activities. Each of these offer valuable information for managing the farm operation. However, a number of managers may need to grow into the system before being able to fully utilize the

potential of these statements as decision aids.

Reports

The Redwing system can produce a number of financial reports, as well as the General Ledger Accounts Listing (the Chart of Accounts) (Table 14). A list of monthly transactions can be generated for all activity or for a specific account or enterprise. The standard reports that can be prepared at the end of each month include a Trial Balance, Income Statement, Balance Sheet, Statement of Retained Earnings, and a Statement of Changes in Financial Position. Enterprise reports are also available.

Income Statement

The Income Statement prepared by this package is generated directly from daily transactions (Tables 15 and 16). The user has a certain degree of control over the format through the manipulation of accounts and defining the headings. It is possible to prepare statements on a cash basis with modified accrual at year-end, but it takes careful planning and special income accounts to reflect the changes in accounts payable, receivable, and inventories. This system offers a separate package for the recording of accounts payable and receivable.

There are a number of available options for this report. They include an Income Statement for: 1) the current year, presented both month-to-date and year-to-date as well as the percent each value is of total sales; 2) a monthly comparison, current compared to the prior year's data; 3) a budget comparison, which shows month-to-date and year-to-date data, including actual, forecasted, and the variance; and 4) by partnership breakdown, which shows each account applied to the respective partners representing their share of ownership.

These reports can be printed at any time during the year and the type of report is also separated into three options: 1) totals and summaries for the entire operation, 2) income per enterprise, and 3) income for a specific enterprise. Family living can be separated or removed from the report entirely.

Depreciation can be entered manually. The program integrates with the other packages available, which were outlined earlier.

Balance Sheet

The Balance Sheet can be presented for current year information only, on a monthly comparison with the prior year or by partnership breakdown. This report is also generated directly from daily transactions and can integrate with the additional packages offered through the Red Wing System.

The report can be printed at any time and allows the user the same flexibility with regards to designing the format. It can report for the entire operation, for each enterprise separately, or for a specific enterprise selected, although, as previously discussed, these may not be in balance.

Summary

The Red Wing General Ledger System offers flexibility with regards to individual customization. The user is able to define report headings, manipulate formats through the categories assigned to accounts, and obtain reports for any period and any group of accounts or enterprises.

This is an excellent program from an accounting standpoint. However, for that very reason it may be too complex for the potential user with little or no background in accounting. The manual and program attempt to ease the transition, but, at times, it is not enough. This is a sophisticated program with many benefits for the user that is either familiar with business accounting concepts or is willing to spend some time adapting to it.

Secretary of Agriculture

FBS Systems, from Aledo, Illinois, offer the Secretary of Agriculture's Transaction program. This is based on the Illinois Farm Business Farm Management Records System; thus, recognizes many of the unique needs of farm recordkeeping. It is a complete system with regards to enterprise records and it offers special sections on how to handle commodity account transactions, feed and inventory transfers from one enterprise to another, tracing uncleared checks, and accounts payable and receivable.

General Capabilities

This program was written with the concept that the user would have farm experience but not necessarily computer experience. The manual starts out in very basic terms with detailed, step-by-step instructions. The program requires a CP/M operating system, which means an additional board may have to be inserted in the computer, depending upon the brand of hardware. It also means that the user must perform some complex steps before starting, just to prepare the discs for use. For the user with little or no computer experience, this process can be frustrating and time consuming. Once accomplished, however, the steps become easier.

The program can be made to be self-starting through one of the steps when adapting to the CP/M system. It is menu driven and the screens and questions are clear and easy to understand. There is a simple method of escaping from each menu and, although the screen does not say so, the manual warns the user when the program is running internally.

There is very little disc shuffling with this program once the set-up has been accomplished. A program and data disc are all that is used. There is a running total on the bottom of each input screen that notifies the user of how many free discs are left; once these are filled, a new data disc must be prepared. Since the program does not summarize data on a monthly basis, detail of each entry is maintained throughout the year. Thus, once the user has filled one or more data discs, some disc shuffling is required to produce certain reports.

Warnings to the user about disc-handling are all within the manual, the screen does not present such warnings. Therefore, it is important that the user follows the manual closely until he/she feels comfortable with the

processes involved. The appendix contains a thorough explanation on the importance of back-ups, and describes the Grandfather-Father-Son concept for safely storing data.

As mentioned earlier, the manual begins in very basic terms. However, sometimes it can be too brief and there is not enough explanation of the steps being performed. A major fault of the manual is its organization. The appendix contains an outline entitled "A Typical Accounting Year" and a transactions flowchart. If these were presented in the beginning of the manual, it would help the user pictorialize where he/she is headed, what steps are necessary in the beginning, and what steps are performed later in the year.

There seemed to be some discrepancy between what the manual stated the program could do and what it actually did. For example, the manual claimed that the date entered on inputs would flow automatically through to the next entry and that the check number would increase by one, but while the date flowed through, the check number did not. It stated that each check or deposit could be split into five accounts and a running balance would be displayed of the amount of the entry left to be applied. On the program used for this report, only three accounts were allowed and no balance was shown.

A nice feature of the manual is a question and answer section dealing with typical questions and problems the user may encounter. There is a phone number in the manual to be used to contact the company. In my contact, the company representatives were friendly and eager to solve any problems that arose. The company seems willing to work with new ideas, as the manual repeatedly asks for suggestions from its users.

The program offers a few features that reduce data entry. Errors can be edited while still on the entry through the use of the arrow keys. This saves having to get into the exit mode just to change a minor error. As previously discussed, the date automatically flows through. Another feature is a listing of all the bank accounts, the list of accounts, and all enterprise codes each time the user needs to input a code to designate one of these. While this helps to minimize inputting the wrong code, it also slows down inputting. After the user has become accustomed to the system, many of the more common codes become memorized. The user does not need to review these lists for every input; it would save time if this feature was made optional with each input instead of automatic.

This program took an average time of eight minutes per month to enter deposits (based on five deposits), and 50 minutes per month to enter checks (based on 55 checks). Response was quick after each input and since the program does not close out at the end of each month, you could input data from the next month without delay.

FBS Systems offers additional programs that can interact with this Transaction program. They include a cash flow budget using Visicalc, as well as a Depreciation package, Herd Audit and Crop Audit packages. The Depreciation package offers a fixed asset register, which can maintain a permanent record, updated yearly. The Herd and Crop Audit packages are production record program that can update the inventories within the

Transaction program.

Type of Accounting System

Transaction is a single-entry accounting system, prepared on a cash basis. It allows accrual adjustments to be made either through manual input or through the use of the separate modules mentioned earlier. The manual downplays the importance of a double-entry system claiming that through the use of their special entries, the accuracy of a double-entry system can be achieved for certain applications. These "special situations" include intrafarm transfers, accounts payable and receivable, commodity accounts, and uncleared checks.

The chart of accounts is pre-established, but the user can adjust the titles of most accounts. Time periods are designated each time the user requests a report, otherwise the system maintains a full year of data. Reports are pre-established, or the user has the option of defining his/her own. Although statements cannot be printed to duplicate tax forms, all of the information is available to simplify their preparation. This program does not offer reports separated by business arrangement (for example, divide each item by each partner's share).

Inputs

Transaction inputs allow the user to enter the date, to whom it was paid/received from, the check/deposit number, the bank account affected, dollar amount, coding of the appropriate account, a description, a quantity, and the applicable enterprises. As previously discussed, each time it asks for a code, bank account, or enterprise, these will be automatically listed at the bottom of the screen. Although the user does not specify units for quantity, the manual suggests that units within each enterprise or account be applied consistently.

There are special screen formats that appear whenever the user chooses any of the following accounts: crop/feed sales, capital machinery and building sales, money borrowed, livestock sales, capital livestock sales, capital breeding animals purchases, livestock purchases, capital machinery and building purchases, and hired labor.

The capital accounts require referencing with the depreciation module, if it is used. Capital purchases trigger a screen that asks information necessary for depreciation and taxation (new or used, type of method to use, years of useful life). The description of these transactions should be used to record necessary tax information for reference when the asset is disposed of.

Livestock sales trigger a screen that also includes an insert for weight. Crop/feed sales and purchases require careful use of description and enterprise codes. These can aid in separating purchases for resale or in using the separate herd and crop audit modules.

The screen for money borrowed asks for the date due instead of quantity. Information used in this screen combines with the debt register, which is discussed later. The hired labor category allows inputting of the employee's name, total amount paid, gross pay, FICA, federal withholdings,

state withholdings, other deductions, and net pay. The net figure is automatically updated after each deduction. The program also allows the user to record payroll-related expenses, such as insurance or retirement plans, through the use of enterprising the hired labor code.

Two special features related to inputs are a vendor listing and the ability to write checks. The user can input up to 100 vendors and addresses, which can automatically be entered to the input request of who the amount was paid to or received from. The system also prints checks, at the user's request, and applies a vendor's name and address to the check automatically.

There are 10 available asset accounts, which the user can designate. These usually are checking accounts or bank accounts where money may be withdrawn or deposited. These may also be used for "dummy" accounts to allow the recording of commodity activities, accounts receivable, and accounts payable. However, these procedures are complex; the user may prefer to wait until he/she becomes more comfortable with the program before attempting these transactions.

The Transaction program allows the recording of void checks, but only if a zero amount is applied to an account (for example, miscellaneous expense). The user can also make intrafarm transfers to record exchanges between enterprises.

Since this is a single-entry cash system, a familiarity with debits and credits is not required. It is easy to differentiate between income and expense entries and the only negative entries that need to be made are deductions from gross amounts such as the milk check. However, as mentioned earlier, the program reviewed for this report only allowed three breakdowns, which were not enough to accurately record all of the deductions.

Coding of Accounts

Transaction is a quick program to set up since there are not many choices. Codes are pre-established, designated by two-digit numbers, but the user can change certain titles. A few codes cannot be changed because of their special screens, as discussed earlier.

Enterprises are not preset, but there are suggested codes in the appendix which would suit most farm operations. If more are needed, they can be added.

Because Transaction is a single-entry program, codes are not specifically designated as Balance Sheet or Income Statement accounts. However, the system does separate family and nontaxable transactions when preparing the Income Statement, as well as defining Schedule F income as separate from capital transactions.

A flexibility of this program is that it allows printouts of reports for any time period, including the list of accounts. However, it does not protect the user from deleting an account with a current balance in it. Therefore, data can be lost.

Error Checking

This program allows edit searches by identifying any of the basic input entries (date, check number). If the user is not sure, he/she may designate general ranges and the program searches until the entries are found. Once in the edit mode, the user can change asset (bank) accounts, enterprises, vendors, account categories, or transfers. It also can edit checks and deposits and the codes applied to them. The user is allowed to edit each entry directly after input, before leaving the entry. A valuable record can be maintained of deleted accounts, since the printer provides an audit trail whenever an entry is deleted.

A Utilities Routine is offered which is capable of changing basic data such as the farm name or the beginning date of the fiscal year. It also assists the user in preparing new discs if the current data disc is full or to do the end-of-year carryover of data procedure. The manual leads the user through these steps and warns of any steps that could lose data.

There are no explanations provided if the user should encounter error messages on the screen. If he/she is confused as to what occurred, the only answer would be to contact an area consultant, salesman, or the company directly.

Loan Register

Transaction allows the user to specify loans for the debt (loan) register, whereby the balances are automatically offset by payments and receipts. It also allows the user to enter balances due from prior years. This program utilizes the enterprise capability to separate loans by establishing each loan as a separate enterprise. The user can obtain a detail of the activity for all accounts or for a specified one. This loan register gives the up-to-date status of loans.

The program also describes procedures the user can follow to establish accounts payable and receivable. However, as described earlier, he/she may prefer to wait before implementing this complex procedure.

Enterprises

Transaction makes full use of the enterprising concept. The user is able to define his/her own enterprises or can base them on the suggested enterprises of the Illinois Farm Management System. Enterprises can be added or deleted at any time, for up to 100 enterprise codes.

The balances on each account are automatically adjusted from cash receipts and disbursements, and reports can be obtained for any period. These reports show total receipts, payments, and net difference for one or more enterprises. These can report individual transactions per enterprise or each enterprise's total balance without detail. If quantity and weight apply to the enterprise, an average per unit will also be given.

If the user only applies variable costs to each enterprise, then these reports represent income over variable costs for each, a valuable figure for use in management decision making.

Month-End/Year-End

Because this a single-entry program, it does not generate a Trial Balance. It does, however, offer a report entitled the Category Summary. This report contains useful information for a variety of purposes. It provides sources and uses of dollars and a net balance. It summarizes the total for each category for the current period and total to date, and presents both the beginning and ending bank balance. It also reports the budget amount (if the budget module is used), percent of budget, and the percent each category is of the total sources or uses. It also presents a total for Schedule F income and expense, excluding depreciation.

The Check Register is another useful report that can aid in reconciling the checkbook, since it breaks out each bank account by individual withdrawals, deposits, and net value.

This program only closes out detail at year end. Therefore, through the use of user-defined statements, a report can be obtained for any period throughout the year, regardless of the current date.

Tax Accounting

For a single-entry system, Transaction offers considerable flexibility. Certain accounts are pre-established as capital accounts and, therefore, allow the user to input valuable tax information, such as the date it was purchased, depreciation information, whether it was new or used, and trade-in information. Through consistent use of this system, this information is on hand when the assets are later sold, making the tax implications easier to calculate.

The Income Statement separates out the applicable capital transactions, therefore cash income represents Schedule F income. The Category Summary designates net Schedule F income without depreciation. This would be a valuable tool for tax planning since it could be prepared as of October or November, thus alerting the farm manager to necessary tax strategies to be taken before the end of the year.

If the user chooses the depreciation module, capital assets could be presented at book value (cost less depreciation). If not, these records would need to be kept manually.

Reports

Transaction is a very flexible program with regards to the reports it is capable of producing (Table 14). In addition to the aforementioned category summary, enterprise listings, check register, debt register, and bank account listings, it also produces an income and net worth statement and a user-defined report.

The user-defined report is exactly what the title implies, the user designates what information is to be printed and for what dates. The choices include bank accounts, income and expense accounts, enterprises, vendors, even descriptions. There are obviously many purposes for this. As an example, the user may need to review transactions with specific

vendors, entries to certain expense accounts, or he/she may have used special descriptions so that those particular transactions could be retrieved later.

Income Statement

The Income Statement for Transaction is generated directly from cash receipts and disbursements (Tables 15 and 16). The user may change the format only through changing the order of account titles. However, keep in mind that certain capital nonfarm and nontaxable accounts should not be tampered with. This is because the program separates these categories when calculating income and expenses.

The Income Statement is presented in a Total-To-Date format and combined with the manual entries necessary, a net accrual income is calculated. It is a very important report for analyzing the farm's progress. The user may combine information from the depreciation module or outstanding loan balances with this report. Or the user may input this information manually, as well as current asset and liability balances.

As a result, the program produces an Income Statement that gives totals for each receipt category, then total receipts broken up by nonfarm, nontaxable, cash sales, and capital sales. Expense categories are summarized, depreciation is included, and total income is designated as net cash income and net cash taxable income.

The next report presented is Capital and Inventory Change, which shows the asset accounts beginning and ending balances and the net change. From these reports an accrual income statement is prepared which adjusts the cash income for changes in inventory, capital, cash, and accounts receivable and payable.

Balance Sheet

A net worth statement is also prepared which shows assets separated by farm and nonfarm, liabilities, and net worth. This statement shows each category balance as of the beginning of the year and the current date, and the net change. Therefore, if the user has the data for manual input, these reports can be prepared prior to the end of the year. It does not compare to prior years, to budget (although the category summary does with the additional module), nor does it present market values or separate by enterprise or business arrangement.

Summary

Secretary of Agriculture's Transaction offers many features that should appeal to farm operators. It is flexible in its handling of enterprises and the reports it offers. However, being a single-entry system, it has to become more complicated to achieve the capabilities a double-entry system handles easily. The ideas and concepts are good, but at times it appears the manipulations required to get the necessary information could be programmed simpler through a double-entry system.

Comparison of Accounting Software

As a result of the analyses of the five programs; conclusions have been formulated regarding the programs. Tables 14 through 18 summarize the reports generated by each program, the items included in the calculation of income, the formulas used to calculate net income for each program, the major strengths and weaknesses of each program, and the evaluation results for each category.

Based upon the criteria established for this study, the five representative program were rated overall as follows: Agdisk: fair, Farmplan: fair, Harvest: good, Redwing: good, Secretary of Agriculture: good (Table 18).

The Agdisk and Farmplan programs, while being accurate from a business accounting standpoint, were not flexible enough to meet the unique needs of agricultural accounting (Table 17). Neither program allowed quantities to be entered and a major fault of both programs was the reports generated. They were not easily adaptable to cash basis accounting or to separating farm income and expense into various tax classifications. Neither program offered special business analysis reports. These programs would be best suited to a retail-type business that requires double-entry accounting.

The strongpoint of Harvest Farm Ledger Pro is its Business Analysis capabilities (Table 17). While it scored excellent for general capabilities and inputs, it was rated as fair for error checking procedures (Table 18). Error messages and assistance were either nonexistent or not thorough enough. This basic package contains some enterprise capabilities, but to achieve a complete recordkeeping system for enterprises the separate module recordkeeping system for enterprises the separate module is needed. Reports generated by this package are excellent, from a tax reporting as well as managerial standpoint. The documentation for this program is excellent and it is well suited to farm managers who have little or no prior computer experience. The extensive analysis features, as well as the compatible programs offered by the company, make it suitable for small as well as large sole proprietorship farms who wish to use a single-entry cash basis program. Large farms that are incorporated or that desire a double-entry system may not find it to be thorough enough.

Redwing's General Ledger program should appeal to large farm operations, including partnerships and corporations. It is able to report income and enterprise profitability on a per partner basis. It is a double-entry system and, therefore, offers many business oriented reports such as a Balance Sheet, Statement of Retained Earnings, and a Statement of Changes in Financial Position. It allows extensive budgeting and forecasting, as well as presenting prior data for comparison purposes. The main factors that limit this program are the Income Statement it generates and the extensive use of accounting concepts (Table 17). It does not allow for a breakdown of taxable net income as separated from accrual income for managerial purposes. The user can choose to implement the program on either a cash or accrual basis, but adjusting from one to the other is difficult and requires special procedures. Although the manual reviews general accounting theories with the user and the screen gives extra guidance when inputting debits or credits, this is still a complex, double-entry system. The user is exposed to situations where he/she needs understand these theories and procedures.

Secretary of Agriculture's Transaction program is the most thorough with regards to recognizing what the farm manager needs. The reports generated are excellent sources of information for tax preparation and as managerial decision aids. It offers as standard complete enterprises capabilities, as well as special routines for unique transactions such as hedging accounts. However, it has weaknesses that are major deterrents (Table 17). The program is not flexible enough. For example, income from the milk check cannot be posted at gross and net amounts. Entries can only be split into three categories. The user is limited with regards to the editing that can be done to the original chart of accounts and many are special accounts that do not allow changes to be made. The documentation is very clear at times, but in areas such as disc handling, it can be too brief and appears to assume prior knowledge on the part of the user. This program is best suited to small to mid-size farms that are sole proprietorships or small partnerships. A large corporate farm that requires the accuracy of a double-entry system may not find it to be complete enough.

Table 14. Reports Generated by Selected Farm Computer Accounting Programs

	AGDISK	FARMPAN	HARVEST	REDWING	SEC OF AG
Income Statement	X	X	X	X	X
Balance Sheet	X	X	X	X	X
Enterprise Reports		X	X	X	X
Detail of Activity	X	X	X	X	X
Loan Register	X		X		X
Chart of Accounts	X	X		X	
Trial Balance	X			X	
Check Register		X	X		X
Listing of Posted Entries	X	X			
Resale Report			X		
Source & Use of Funds			X	X	X
Earnings Analysis			X		
Trend Analysis			X		
Cash Flow			X		
Statement of Retained Earnings				X	
Bank Account Listing					X
User-Defined Report					X

Table 15. Items Included in the Income Statement for Selected Farm Computer Accounting Programs

	AGDISK	FARMPAN	HARVEST	REDWING	SEC OF AG
Ordinary Cash Farm Income	NB	NB	X	NB	X
Capital Sales	NB	NB	X	NB	X
Nonfarm Receipts	X	X		NB	X
Nontaxable Receipts	NB	NB		NB	X
Resale Items	NB	NB	X	NB	NB
Change in Accounts Payable and Receivable	NB	NB	X	NB	X
Change in Inventories	NB	NB	X	NB	X
Ordinary Cash Farm Expenses	NB	NB	X	NB	X
Depreciation	NB	NB	X	NB	X
Capital Purchases	NB	NB	X	NB	X
Change in Cash Balance	NB	NB		NB	X
Nonfarm Nondeductible Expenses	X	X	X	NB	NB
Nonfarm Deductible Expenses	NB	X	X	NB	
Income Tax Expense	X	NB		X	NB
Schedule F Income	NB	NB	NB	NB	X
Schedule F Expense	NB	NB	NB	NB	X
Cash	X	X		X	
Modified Accrual			X		X

NB = no breakdown

Table 16. Formulas for Calculating Net Income by Selected Farm Computer Accounting Programs

Agdisk

+ Farm Income
 - Farm Expense
 = FARM PROFIT OR (LOSS)
 + Nonfarm Income
 - Nonfarm Expense
 = PRETAX PROFIT OR (LOSS)
 - Income Tax Expense
 = NET PROFIT OR (LOSS)

Farmplan

+ Farm Income
 - Operating Expenses
 + Other Income
 - Other Expenses
 = TOTAL NET INCOME
 - Personal Expenses

Redwing

+ Farm Income
 - Farm Expenses
 = TOTAL NET INCOME

Harvest

+ Farm Cash Income
 - Farm Cash Expenses
 + Purchases for Resale
 + Capital Sales
 - Capital Purchases
 + Nonfarm Income
 - Nonfarm Deductible Expenses
 - Nonfarm Nondeductible Expenses
 + Receipts from Accounts
 - Payments to Accounts
 = CASH IN
 = CASH OUT
 = NET CASH

Sec of AgIncome Statement

+ Total Nonfarm Receipts
 + Total Cash Sales
 + Total Capital Sales
 = TOTAL RECEIPTS
 - TOTAL EXPENSES (includes depreciation)
 = NET CASH INCOME
 + NET CASH TAXABLE INCOME

Accrual Income

+/- Inventory Change
 +/- Capital Change
 +/- Cash Balance
 +/- Accounts Receivable
 +/- Accounts Payable
 = NET ACCRUAL INCOME

Category Summary

summary of all accounts,
 gives total for:
 = TOTAL SCHEDULE F INCOME
 = TOTAL SCHEDULE F EXPENSE
 -does not include deprec.

Accrual Income Statement

+ Cash Farm Income
 +/- Change in Inventories
 +/- Money Owned You on Account
 - Cost of Resale Purchases
 = ADJUSTED GROSS INCOME
 - Cash Farm Expenses
 +/- Change in Inventories
 +/- Accounts Payable
 - Depreciation
 = ADJUSTED EXPENSES
 = NET FARM INCOME
 + Nonfarm Income
 - Nonfarm Nondeductible Expenses
 - Nonfarm Deductible Expenses
 - Net Nonfarm Draw on Farm
 = NET EARNINGS

Table 17. Strengths and Weaknesses of Selected Farm Computer Accounting Programs

	STRENGTHS	WEAKNESSES
Agdisk	<ul style="list-style-type: none"> -User aids are thorough -Application of accounting theories, accuracy -Compatible packages offered 	<ul style="list-style-type: none"> -Reports not suitable for farm management -Extensive disc shuffling
Farmplan	<ul style="list-style-type: none"> -Application of accounting theories, accuracy -Input procedure is fast 	<ul style="list-style-type: none"> -Reports not suitable for farm management -Documentation is poor
Harvest	<ul style="list-style-type: none"> -User-friendly, excellent documentation -Simplicity of single-entry -Tax and management reports, analysis -Compatible packages offered 	<ul style="list-style-type: none"> -Enterprising is limited (separate module) -Error checking procedures are poor
Redwing	<ul style="list-style-type: none"> -Applications of accounting theories, accuracy -Enterprise capabilities -Reporting capabilities (partnerships) -Compatible packages offered 	<ul style="list-style-type: none"> -Level of accounting knowledge required -Reports not suitable for farm management
Sec of Ag	<ul style="list-style-type: none"> -Tax and management reports -Enterprise capabilities -Simplicity of single-entry 	<ul style="list-style-type: none"> -Flexibility - coding, inputs -Documentation is weak on disc handling

Table 18. Evaluation Results of Selected Farm Computer Accounting Program

	AGDISK	FARMPAN	HARVEST	REDWING	SEC OF AG
General Capabilities	GOOD	GOOD	EXCELLENT	EXCELLENT	GOOD
Type of Acctg. System	DOUBLE BOTH	DOUBLE BOTH	SINGLE MODIFIED	DOUBLE BOTH	SINGLE MODIFIED
Inputs	GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT
Coding of Accounts	EXCELLENT	GOOD	GOOD	EXCELLENT	GOOD
Error Checking	EXCELLENT	GOOD	FAIR	EXCELLENT	GOOD
Loan Register	GOOD	N/A	EXCELLENT	N/A	GOOD
Enterprises	N/A	GOOD	FAIR	EXCELLENT	EXCELLENT
Month-End/ Year-End	GOOD	EXCELLENT	EXCELLENT	GOOD	EXCELLENT
Tax Accounting	FAIR	FAIR	GOOD	FAIR	EXCELLENT
Business Analysis	N/A	N/A	EXCELLENT	GOOD	N/A
Reports	GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT
Overall	FAIR	FAIR	GOOD	GOOD	GOOD

SUMMARY AND CONCLUSIONS

The use of computer software in the agricultural community has grown within the past decade and will continue to grow. Program capabilities are constantly being updated and new programs developed. This industry is still in its infancy; thus, there are and will be numerous attempts to enter the field. Farmers are also in the early stages of acceptance of computer use. Therefore, software capabilities and farm needs are changing rapidly.

Methodology and Research

The objectives of this study were:

1. To establish criteria which farmers, agribusiness, and extension personnel may use in evaluating accounting software programs.
2. To evaluate selected accounting software programs utilizing the criteria established.

In order to meet these objectives, criteria were established that outlined the most important features of a farm accounting package, as well as additional capabilities that could enhance the program's appeal. The intent is for the farm manager, agribusiness or extension personnel to be able to follow these guidelines when studying prospective programs.

A New York State dairy operation was chosen for the sample data to be used. An entire year of financial activity for that farm was entered into each software program. The entries are representative of a wide variety of operations. Each program was evaluated based upon how well it met the criteria that had been established.

Conclusions

The conclusions presented are based upon the results of this analysis and the professional judgement of the author. The results of these reviews can be summarized by the following points:

1. Objective criteria by which to evaluate farm computer software can be developed.
2. On-farm computer accounting systems provide accuracy of data analysis, timeliness of results, and breadth of reports as opposed to a savings of inputting time.
3. Extra time above that required by manual or mail-in systems needs to be spent with "starting-up" the computerized system. However, documentation keeps time required to an acceptable level and product support by the company significantly reduces time required and frustration.
4. The user must recognize that to get full benefits from the program, additional time needs to be spent reviewing and utilizing the reports generated in managing the business.

5. A sound program from an agricultural, accounting, and management viewpoint still must be user-friendly for successful use by farm managers.
6. Significant differences exist among programs in almost every aspect. Farmers selecting a program should keep the characteristics they need in mind when making a selection.
7. Double-entry systems applied to agriculture need to recognize that cash basis is the predominant form of farm tax reporting.
8. There is potential for double-entry systems to be used by farmers but no system of the ones researched meet all the criteria.
9. The Agdisk Farm Accounting Package and Farmplan's Bookkeeper are excellent as accurate, double-entry recordkeeping systems. However, they do not meet the unique needs of farm recordkeeping. Therefore, they would be best suited to larger, retail-type businesses desiring the accuracy of these systems but not needing special agriculturally oriented recordkeeping methods.
10. Harvest's Farm Ledger Pro and the Secretary of Agriculture's Transaction programs have potential as effective farm recordkeeping systems. However, each program is weak in its user-friendly capabilities. Both programs are single-entry and are suitable for any size farm that does not require a double-entry system.
11. Redwing's General Ledger package has potential as an effective double-entry farm recordkeeping system. It needs to recognize the unique cash-basis reporting needs of farmers, however. This program is suitable for midsize to larger farms that have multiple owners, or desire a double-entry system.
12. Not all agricultural software meets the criteria of agricultural applications. Therefore, there is significant potential for improvement in agricultural software.

Implications

Based upon the final conclusion, there are implications which should be considered for future research. They are:

1. Objective criteria need to be developed by which to evaluate farm computer software in addition to farm accounting.
2. The costs and benefits associated with the acceptance and use of agricultural software by the agricultural community needs to be researched.

An important conclusion of this study relates to the capabilities of single versus double-entry systems and what the farm manager needs. Very few farms report taxes on an accrual basis. Therefore, farm managers need to be able to distinguish net cash income for taxation purposes. For

managerial needs, however, modified accrual income is more effective. Therefore, farmers require a system that allows the separation of net cash income from modified accrual income.

The emphasis placed on double-entry systems is due to their accuracy and ability to generate accrual records as management tools. A good double-entry system should recognize the need, however, for also generating a cash basis income figure. None of the double-entry systems reviewed for this study allow this breakdown easily. Income statements produced will not enable the user to separate cash farm income from accrual without careful manipulation and special procedures.

A good double-entry system that is suitable for farms requiring both cash basis and modified accrual is not yet available. Farmers desiring both reports should make certain, when acquiring a system, that it is capable of producing both a cash basis and modified accrual income statement. Of the programs examined for this study, only those systems described as being single-entry, cash basis programs offered that capability.

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