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**EVALUATION OF ACCOUNTING SOFTWARE
TAILORED FOR FARMING OPERATIONS**

by

Chad Peder Lee

B.S. Montana College of Mineral Science & Technology, USA, 1994

presented in partial fulfillment of the requirements

for the degree of:

Master of Accountancy

The University of Montana

May 2001

Approved by:



Chairperson



Dean, Graduate School

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Date

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Evaluation of Accounting Software Tailored for Farming Operations

Director: Dr. Terri Herron 

Evaluations were performed on seven software applications to determine the ability of the programs to meet accounting and record keeping needs of production agriculture operations. Six software applications specially tailored for farm operations were evaluated, including: Red Wing Ag CHEK 4.0; T. Murphy Associates Ag Money Manager; Vertical Solutions Easy Farm Pro 6.5; CTN Data Services Farmworks 6.6; FMS/Harvest Perception Accounting 10.02; and FBS Systems TransAction Plus 7.1. QuickBooks Pro 2000, a general-purpose accounting application, was evaluated to provide a comparison of a mass-market software product to the specialized software applications.

Ranking the evaluated software is not an objective of this study. Rather, the objective of this study is to present information about individual programs so that readers can evaluate how programs meet their needs. However, because readers may reasonably expect formative recommendations from this study, the author (with reluctance) provides some recommendations. These recommendations are not endorsements. The author advises readers to think independently, evaluate needs, and focus on individual evaluations.

The evaluation process involved systematically processing a standardized test set of information with the evaluated programs and recording findings on uniform questionnaires. Programs were evaluated individually based upon program functionality and ability to meet reporting needs identified for tax preparation, financial statements, and managerial analysis. Needs were determined by interviewing farmers, bankers, accountants and identifying special needs and issues associated with applying accounting software to agricultural operations.

This study was prompted by a lack of literature evaluating and comparing accounting software for production agriculture. Although it may seem that the findings of this study will become dated as new versions of software are released, this study should remain useful for an extended period. It appears that in many instances the basic structure and design of software do not dramatically change with new releases. The identified needs and special issues described in the study are unlikely to change very soon. This study will provide a starting point for future evaluations and will serve as a guide for readers investigating the application of accounting software to agricultural operations.

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ABOUT THE AUTHOR

Chad Lee was raised on a family farm near Fairfield, Montana and is still involved in the operation. Chad is fascinated by the complex and dynamic variables that affect agriculture and require farmers to utilize numerous disciplines and skills. Chad takes special interest in entrepreneurial farm operations that raise specialty crops, produce value-added products to meet specific market needs, or market directly to end-consumers.

Mr. Lee completed several farm-related personal projects while fulfilling course requirements for the University of Montana's Master of Accountancy program and passing the Uniform CPA Examination. In addition to personal interest, the author pursued this project to address a general lack of information about accounting software designed for farm operations available to farmers from independent sources.

The author recognizes that using a well-designed accounting or management information system does not insure financial success for a farming operation. Rather, weather, market conditions, timing, and a whole range of special situations and opportunities determine financial success. Most of these factors are beyond farmers' control. However, a well-designed system provides a platform to organize information usefully and efficiently so that the user has more time and opportunity to make insightful observations that hopefully lead to better decisions.

NOTE OF THANKS

Deep-felt thanks go out to the many people who made this study possible: the software companies (Red Wing Business Systems, T. Murphy Associates, Vertical Solutions, CTN Data Services / Farmworks, FMS/Harvest, and FBS Systems), who generously loaned software and learning materials and readily answered my questions; the farmers, accountants, and bankers who gave me interviews and were very candid and open; the members of the thesis committee, particularly Dr. Herron, who was patient and provided very helpful advice; my parents and parents-in-law, who were supportive and masked all anxiety; and last, but not least, my wife, Jeanne, who was a ray of sunshine throughout the project.

- Chad Lee

EXECUTIVE SUMMARY

Evaluations were performed on seven software applications to determine the ability of the programs to meet accounting and record keeping needs of production agriculture operations. This study was prompted by a lack of literature evaluating and comparing accounting software for production agriculture. The purpose of this paper is to provide a useful resource to agricultural producers and business professionals to help in making decisions regarding accounting software. Agricultural educators and software companies may also find this paper useful. After identifying accounting and record keeping needs and special issues for farm accounting, evaluations were performed on each program by processing a test set of information developed to model the annual operations of a typical Montana farm. A uniform questionnaire was used to record evaluation findings. Discussions on the findings of the evaluations focus on the ability of programs to meet farmers' tax, financial, and managerial reporting needs and focus on functionality in terms of learning, the setup process, ease of use, and special features.

Six software applications specially tailored for farm operations were evaluated. Additionally, QuickBooks Pro 2000, a general-purpose accounting application, was evaluated to provide a comparison of a mass-market software product to the specialized software applications. Some possible characteristics that make accounting software "tailored" for farm operations include: the software company's intent for the program to serve production agriculture; manuals and help functions that provide examples of farm transactions and situations; a preset chart of accounts typically used by agricultural producers; program structure design that includes data fields, commands, data entry screens, and reports specifically for use by a farm operation; nomenclature directed at agricultural producers; and the ability to record nonfinancial information about farm operations, such as chemical records or field histories.

The farm-tailored programs evaluated include:

- AgCHEK 4.0 by Red Wing Software
- Ag Money Manager by T. Murphy Associates
- Easy Farm Pro 6.5 by Vertical Solutions
- Farmworks 6.6 by CTN Data Services
- Perception Accounting 10.02 by FMS/Harvest
- TransAction Plus 7.1 by FBS Systems

Ranking the evaluated software is not an objective of this study. Users have different needs, priorities, and tastes. Rather, the objective of this study is to present information about individual programs so that readers can evaluate how programs meet their needs. The majority of the paper discusses findings of the evaluations performed on individual programs. The paper includes a chart in Appendix A that provides a comparison of the reporting capabilities and features affecting functionality. The strengths and weaknesses of individual programs are highlighted in the conclusions. Because readers may reasonably expect formative recommendations from this study, the author (with reluctance) provides some recommendations in the conclusions. These recommendations are not endorsements. The author advises readers to think independently, evaluate needs, and focus on individual evaluations.

The evaluation process yielded some general observations about setting up and using accounting software. Learning about program features and how to apply accounting software may be a significant task for people who lack experience with accounting software and only have a rudimentary understanding of accounting. The value of a good manual and help function cannot be overstated. The setup process is a critical step in applying the program to meet the user's

needs. The setup process involves identifying and prioritizing the user's needs and understanding how the program operates to meet those needs. Minimal effort is required to enter transactions for any of the evaluated software packages, even those with less automation and fewer user-friendly features. Piloting the program by setting up and processing a test set of information provides potential benefits that most likely outweigh the upfront cost of time. These benefits include reinforced learning, future timesavings, and assurance that the system will produce the needed information.

Although it may seem that the findings of this study will become dated as new versions of software are released, this study should remain useful for an extended period. It appears that in many instances the basic structure and design of software do not dramatically change with new releases. The identified needs and special issues described in the study are unlikely to change very soon. This study will provide a starting point for future evaluations and will serve as a guide for readers investigating the application of accounting software to agricultural operations.

1.0 INTRODUCTION

The purpose of this paper is to provide a useful resource to agricultural producers and business professionals to help in making decisions regarding accounting software. Agricultural educators and software companies may also find this paper useful. Ranking the evaluated software is not an objective of this study. Rather, the objective of this study is to present information about individual programs so that readers can evaluate how programs meet their needs. The author advises readers to think independently, evaluate needs, and focus on individual evaluations.

This study's findings apply to a broad range of agricultural operations, even though the study was approached from the perspective of agricultural operations in Montana. Montana agricultural operations primarily raise small grains (wheat and barley), cattle, and forage (alfalfa and grass). The lack of diversification can be attributed to restrictive climate and soil conditions, distance from population centers, market conditions, pursuit of economies of scale, and cultural practices and traditions. Most Montana farming operations are dryland farms. A dryland farm relies completely on natural precipitation to provide moisture for crops and typically fallows (leaves unseeded) one third to one half of the farm's cropland. The practice of fallowing land allows the soil to store moisture for the next crop and also enhances the ability of the farmer to control weeds. Irrigated farms tend to grow a wider variety of crops due to the increased growing capability irrigation provides. Organic farms also tend to grow a wider variety of crops due to required rotation of crops and niche marketing opportunities. Many farm operations also raise cattle. Montana ranches typically sell spring-born calves in late fall and raise hay (alfalfa or grass) and sometimes a small amount of grain for feed.

According to the 1997 Agricultural Census, there are 8,697 farming operations in Montana with over \$50,000 in agricultural sales. Of these operations, the average farm generates a net cash

return of \$41,248 from \$193,590 in sales, from approximately 5,160 acres, \$159,416 in equipment, and \$1,335,640 of land and buildings. (National Agricultural Statistics Service, U.S. Department of Agriculture, March 1999, p. 10, 104, 110, 112) Of the operations with over \$50,000 in agricultural sales, 5,245 farms hired farm labor. The average labor expense was \$19,884 per farm that hired employees. On these farms, the average number of employees hired for a period of over 150 days per year was slightly more than two people per farm, and the average number of people hired for a period less than 150 days per year was slightly less than three people. (National Agricultural Statistics Service, U.S. Department of Agriculture, March 1999, p. 108) The legal organization of these operations is distributed accordingly: 60.7% of farms are sole proprietorships, 11.9% are partnerships, and 26.5% are organized as corporations. (National Agricultural Statistics Service, U.S. Department of Agriculture, March 1999, p. 114) Examination of the 1997 Agricultural Census data for Montana indicates that as sales increase, the proportion of farms organized as corporations increases. Farms organized as corporations and partnerships must separate personal financial records from business financial records.

According to a USDA study released on July 30, 1999, 52% of Montana farms own or lease computers; 36% use computers for their business; and 38% have Internet access. Nationally, 40% of farmers own or lease computers, 24% use computers for their business, and 29% have Internet access. (National Agricultural Statistics Service, U.S. Department of Agriculture, July 1999, p. 2) Findings from interviews with bankers and accountants correspond with the USDA study. Interviews in late 1999 and early 2000 with farmers and software companies revealed that many farmers had or were in the process of upgrading accounting software and abandoning DOS-based accounting packages. Much of this was driven by the Y2K phenomenon. In 1996, a student and a University of Montana School of Business Administration professor conducted a study researching Montana ranchers' use of computers. In the study, 500 questionnaires were

sent to ranches in all 56 of Montana's counties and 253 responses were received. Forty-four percent of the respondents used a computer for keeping ranch records for a period of more than five years; 30% of the respondents used a computer for keeping ranch records for three to five year period; and 16% of the respondents used a computer for keeping ranch records for one to two year period. (Tangedahl & Manley, 1996)

This study was prompted by a lack of literature evaluating and comparing accounting software applied to production agriculture. As of recent, professional journals commonly read by producers have focused little attention on accounting software. On-line forums exist within the Internet that provide avenues for learning about accounting software applied to farm operations. One such online forum is the Ag Computing section of Top Talk in the Successful Farming website (www.agriculture.com). Unfortunately, the discussions about accounting software in Top Talk tend not to be in-depth and substantive. The author did not locate any reviews of specialized accounting software or articles on applying general accounting software to farm operations. As stated in newsletter called *The Journal of Computerized Farm Management* published by FBS Systems, "Good help is hard to find. The prominent independent ag computing publications of the '80s – *Doane's Agricultural Computing Newsletter*, *Successful Farming Computer News*, and *Agri-Comp Magazine* – have all come and gone. The few remaining sources of farm computer information often are either poorly informed or just plain biased." (FBS Systems, 1998, p. 2) In Montana, the Montana State University Extension Service and the university system do not actively educate agricultural producers about applying accounting software to farm operations. Agricultural business majors at Montana State University are not trained or exposed to accounting software tailored for use on farming operations. (D. Griffith, personal communication, December 14, 1999) It is uncommon for accounting software tailored for use on agricultural operations to be carried by local distribution

sources. The promotional efforts by farm accounting software companies have failed to reach many potential customers in Montana. Often, software company websites do not provide sufficient information from which to base responsible decisions.

Evaluations were performed on seven software applications to determine the ability of the programs to meet accounting and record keeping needs of production agriculture operations. Table 1-1 shows the software evaluated in this study. Six software applications designed specifically for use by agricultural producers were evaluated. Additionally, QuickBooks Pro 2000, a general-purpose accounting application, was evaluated to provide a comparison of a mass-market software product to the specialized software applications. Some possible characteristics that make accounting software “tailored” for farm operations include: the software company’s intent for the program to serve production agriculture; manuals and help functions that provide examples of farm transactions and situations; a preset chart of accounts typically used by agricultural producers; program structure design that includes data fields, commands, data entry screens, and reports specifically for use by a farm operation; nomenclature directed at agricultural producers; and the ability to record nonfinancial information about farm operations, such as chemical records or field histories.

TABLE 1-1 SOFTWARE SELECTED FOR EVALUATION

| SOFTWARE COMPANY | PROGRAM NAME & SYSTEM CONFIGURATION | SALES PRICE AS TESTED |
|---------------------------|--|------------------------------|
| Red Wing Business Systems | AgCHEK Windows Suite 4.0 (General Ledger, Crop/Chemical Management & Livestock Management modules) | \$1,085 |
| T. Murphy Associates | Ag Money Manager | \$145 |
| Vertical Solutions | Easy Farm Pro | \$395 |
| CTN Data Services | Farmworks Version 6.6 (FarmTrac & Farm Funds) | \$500 |
| FMS/Harvest | Perception 10.02, Ratio/Index module, Depreciation Module, Enterprise Reports Module | \$1,090 |
| FBS Systems | TransAction Plus 7.1, A/R & A/P modules | \$1,785 |
| Intuit | QuickBooks Pro 2000 | \$219 |

1.1 PROGRAM SELECTION

Software applications tailored for farm operations were identified through searching the Internet, examining advertisements and articles in agricultural journals such as *Successful Farming*, and interviewing farmers and accountants. The Alberta Department of Agriculture, Food and Rural Development sponsors a comprehensive index of agricultural software within a website (www.agric.gov.ab.ca/agdex/agsoft/index.html) that includes accounting software.

Ultimately, the author limited the number of programs evaluated due to time restrictions. Selections were made so that evaluations were performed on farm tailored applications with a range of sophistication and price. Programs that were more publicized had an advantage in the selection process. Specialized accounting applications identified by interviewed individuals were automatically selected for evaluation. These include AgCHEK, Farmworks, and TransAction Plus. In order for programs to be considered, the programs had to be Windows based and be marketed by software companies with websites. Another criterion was that there had to be a claim associated with the application declaring the ability of the program to perform both cash basis accounting and accrual basis accounting. The author selected Ag Money Manager by T. Murphy Associates even though it is not an accounting program because it functions to meet many accounting needs and is priced significantly lower than accounting programs tailored for farm use. Ag Money Manager is advertised as “Managing costs, income, cash, taxes, budgets, more. Accountant approved.” (T. Murphy Associates, 2000) Other specialized software applications exist that met the criteria provided but were not selected due to limited time available for review. The software companies donated demonstration copies of farm tailored software and learning materials free of charge.

Even though interviews with accountants, bankers, and farmers indicate that Quicken is the most common accounting software used by farmers, the author selected QuickBooks for evaluation because all of the accountants interviewed and several of the bankers interviewed recommend QuickBooks to clients. Both QuickBooks and Quicken are Intuit products. Reasons provided by accountants and bankers for the preference of QuickBooks over Quicken include QuickBooks' ability to account for inventory, accounts receivable and accounts payable functions, and the ability to perform accrual accounting. Several of the accountants interviewed expressed a preference for QuickBooks over more advance software or accounting software tailored to farming for reasons of price and ease of use. Another reason for selecting QuickBooks is that a special manual, *QuickBooks Farm Accounting Cookbook*, is available to guide users in applying QuickBooks to agricultural operations. Mark Wilsdorf authored *QuickBooks Farm Accounting Cookbook*, and Flagship Technologies publishes it.

1.2 SEQUENCE OF RESEARCH

Research for this study was performed in several phases. An effort was made to identify and understand special problems affecting accounting for production agriculture and to determine agricultural producers' accounting and record keeping needs. This was achieved by interviewing farmers, accountants, and bankers and by examining pronouncements from authoritative sources. To perform a systematic evaluation, the author prepared a test set of financial information, transactions, and reports to be processed and generated by each program. The test set modeled a typical Montana farm and included transactions for a calendar year. To make the evaluation as systematic and objective as possible, the author prepared a standard questionnaire to apply to the evaluation of each program. The questionnaire was designed to collect information about how individual programs met the identified needs, as well as other pertinent information. As the programs processed the test set information, findings were recorded in the questionnaires and

used to develop conclusions. Processing the test set reinforced the understanding of special problems and issues associated with using accounting software for production agriculture.

1.3 LAYOUT OF PAPER

Section 2.0 discusses findings made during the interview process and special issues related to accounting for farm operations and applying accounting software to farm operations. This information is used to identify the accounting software needs of agricultural operations, which are also presented in Section 2.0.

Section 3.0 discusses methodology used to test the programs and the basis for evaluating individual programs.

Section 4.0 provides individual evaluations of each program tailored for agricultural operations. Using a consistent format, each evaluation provides information about the software configuration tested, system requirements, and the software company; discusses the programs reporting capabilities and performance for tax, financial, managerial purposes; and discusses aspects of the program's functionality. Discussion about program functionality is organized into the following segments: look and feel, learning, the setup process, customization and user control, data entry, reporting, and other features and tools.

Section 5.0 provides an evaluation of QuickBooks Pro 2000 using the same format as the other evaluations.

Section 6.0, the conclusions section, provides general observations made about using accounting software and the evaluation process, generalizations about groups of software, discussion about strengths and weaknesses of each program, and recommendations by the author.

Section 7.0 summarizes the process used in the study, discusses findings made during the process.

Appendix A displays and explains a table comparing the reporting capabilities and functionality related features of all the evaluated programs.

Appendix B provides examples showing how different methods of accounting process information to calculate net income.

Appendix C provides contact information for the software companies.

2.0 IDENTIFIED NEEDS & SPECIAL ISSUES ASSOCIATED WITH APPLYING ACCOUNTING SOFTWARE TO AGRICULTURAL OPERATIONS

2.1 FINDINGS FROM INTERVIEWS

Nine farmers, three accountants, and ten bankers were interviewed to determine farmers' accounting and record keeping needs and identify special issues related to accounting software. The interviews also provided information about accounting software usage and what accountants and bankers communicate to their agricultural clients regarding accounting software. The interviewees were primarily located in North Central Montana, a major agricultural area of the state. The agricultural producer clientele of the accountants and bankers interviewed numbers in the hundreds to thousands. The farm operations covered by the interviews have relatively little, if any, non-farm income. The interviewed farmers' operations included dryland farms, irrigated farms, and a ranching operation. Some of the farms were diversified operations and raised several types of crops and cattle. The operations covered by the interviews represented a mix of sole proprietorships, partnerships, and corporations.

2.1.1 Findings from Interviews with Farmers

The interviews with farmers yielded the following information. The primary purpose of farmers for maintaining accounting systems is to collect information for income tax returns. Nearly all of the farmers interviewed use accountants for tax return preparation. A lesser, but important, purpose for maintaining accounting systems is collecting information for financial statements required by lending institutions. The financial statements that farmers said were required by their lenders paralleled findings from interviews with bankers. All but one of the farmers interviewed use the cash basis of accounting. Farmers almost universally use cash basis accounting because cash basis accounting is used for tax accounting, because it provides

information that is more transferable to cash flow budgeting, and because it is more widely understood by farmers. Fewer than 50% of the farmers interviewed conduct some form of enterprising on an annual basis. Enterprising involves tracking costs or income of the operation by crop, variety of crop, field, or lease.

Most of the farmers interviewed use accounting software. The farmers using accounting software stated that their software categorized financial information for tax return preparation. Roughly two-fifths of the farmers using accounting software also use spreadsheet programs to prepare financial reports to overcome deficiencies or difficulties attributable to accounting software. Interviewees expressed that software needed to be easy to learn, easy to use, and that recorded transactions should be easy to edit. Most of the farmers using accounting software use Quicken. The farmers interviewed that used Quicken generally expressed satisfaction with the application. Reasons cited for satisfaction include ease of use and learning, low cost, local popularity, and checkbook-like operation. Shortcomings mentioned include inability to store account receivable or accounts payable information, inability to store nonfinancial operational information, and difficulty in enterprising as desired. Most of the interviewees who use Quicken use spreadsheet programs to prepare financial statements. Only one of the interviewees uses a program tailored for farm operations. This farmer uses Farmworks and is highly satisfied with the program's farm orientation, enterprising capabilities, ability to record nonfinancial operational information, and the number and quality of available reports. The farmer reported that Farmworks was very easy to learn and use.

2.1.2 Findings from Interviews with Accountants

The interviews with accountants yielded the following information. The accountants stated that all of their agricultural clients utilize their services for tax return preparation, 40% to 50% utilize their services for tax planning and projection, and only small number (10% or less) utilize their services for financial statement preparation. Most of the interviewed accounting firms provide their clients with preformatted reports to organize information. However, the accountants stated that information was provided to them in a wide array of formats, and that virtually any form of well-organized information was acceptable. Preformatted reports improve processing efficiency and error prevention. Information needed by accountants for tax return preparation include records of different types revenue and sales of capital assets, records of business expenses, and records of deductible personal expenses. According to the interviewed accountants, the large majority of agricultural producers use the cash basis of accounting. There were mixed responses from accountants regarding the effectiveness of accounting software output for organizing information for tax return preparation. Whether a client's use of accounting software benefits accountants preparing a tax return depends on how the client uses the software. None of the accountants interviewed were transferring electronic output generated from clients' accounting software to tax software.

2.1.3 Findings from Interviews with Bankers

The interviews with bankers yielded the following information. Most bankers stated that information was provided to them in a wide array of formats, and that virtually any form of well-organized information was acceptable. Based on the interviews, the percentage of agricultural customers separating business financial information from personal financial information varies widely between lending institutions. Some banks provide their clients with preformatted reports to organize information. Some lenders, such as Wells Fargo (formerly Norwest) and Farm Credit

Services, require preformatted reports to be used. Banks use preformatted reports for purposes of uniformity and comparability. All of the bankers interviewed require their customers to provide one-year cash flow projections and a balance sheet. The interviewed bankers prefer or require assets in the balance sheet to be based on market value. Nearly all bankers interviewed require farmers to provide copies of income tax returns. Some bankers require a historic income statement, and some bankers require a projected (pro forma) income statement. The bankers stated that virtually all of the income statements they received from agricultural producers were cash basis income statements. Most of the bankers interviewed prefer accrual basis accounting. However, this sentiment among bankers is not universal. Many of the bankers interviewed process cash basis information to accrual basis. When interviews were conducted, Norwest (now Wells Fargo) was in the process of adopting a preformatted report designed to yield accrual basis information. (L. Johnson, personal communication, January 6, 2000) The report format is based on the *Financial Guidelines For Agricultural Producers*, a set of standards developed by the Farm Financial Standards Council (FFSC), an organization established by the Agricultural Bankers Division of the American Bankers Association and other participants. Most of the bankers interviewed were familiar with the FFSC and its *Financial Guidelines For Agricultural Producers*. Several of the banks represented by the interviewed bankers are involved with or have officers directly participating in the FFSC.

2.2 SPECIAL ISSUES

Some of the special issues identified present special challenges for accounting software or any record keeping system. Addressing the issues entails increasing classification of information. The conventions used to categorize information may be diametrically opposed to each other. There are several examples in which information must be classified using different conventions in order to meet information needs. Schedule F tax information reports are generated using cash

basis information while accrual basis accounting is used for accrual basis income statements that conform to Generally Accepted Accounting Principles (GAAP). Reports for financial statements and tax information reports are typically based on calendar years while enterprise reports for managerial purposes are most useful when based on crop years or production cycles. Tax basis depreciation is needed for Schedule F tax information reports and calculating capital gains and losses on equipment disposals for Form 4797, while using economic basis depreciation for financial statements provides more useful information for managerial decisions and determining cost of production. Using the going concern assumption, balance sheets based on book values calculated by applying economic depreciation provide better information for managerial purposes. Balance sheets based on market value are more useful to bankers evaluating risk; owners considering liquidation; and owners evaluating the economic return on investment, who view the going concern assumption as optional. It is technically possible for programmers to add data fields to allow information to be categorized using many different conventions. However, inherent software design is frequently the limiting factor that prevents users from manipulating information to meet all their needs.

2.2.1 Accrual Accounting for Agricultural Operations

In the last decade, lenders have increased interest in viewing farm finances based upon accrual accounting. The FFSC issued the *Financial Guidelines For Agricultural Producers* in an effort to standardize financial reporting for farm operations. These guidelines recommend using accrual basis accounting and provide a method to adjust a cash basis income statement to accrual basis. With a few exceptions, the guidelines comply with GAAP. The guidelines specify and provide examples of financial statements to be prepared, including an accrual basis income statement, a balance sheet, a statement of cash flows, and a statement of owners equity; set forth formulas to be used to calculate a set of sixteen financial ratios; and list other disclosures to be

made in what essentially are financial statements issued by farm operations. The guidelines state that market value information should be provided if the balance sheet is not based on market values.

The FFSC has no power to force agricultural producers to follow the guidelines or to force lending institutions to promulgate the guidelines to agricultural customers. As a result, the guidelines are not widely used. Some lending institutions, such as Farm Credit Services and Norwest (now Wells Fargo), apply the guidelines without requiring customers to generate financial statements by processing information disclosed on preformatted reports issued to customers.

Acceptance and adoption of the *Financial Guidelines For Agricultural Producers* is likely to grow in the future because of the benefits of uniformity and comparability to lenders and because accrual basis accounting information combined with cash flow information provides more information content to lenders than cash flow information by itself. As the number of agricultural lenders decrease, larger lending institutions will have more leverage and incentive to implement the guidelines. As the phenomenon of farm consolidation continues, lenders will also gain leverage since larger farm operations will require higher levels of financing for operations.

Conducting accrual basis accounting in conformance with GAAP involves more than the timing issue in which expenses and revenues are recognized when transactions involving accounts payable and accounts payable initially transpire rather than when the related cash transactions occur. Accrual accounting also involves amortization of costs that benefit multiple periods and adjusting the net income calculation for change in inventories. Many programs' "accrual basis" income statements do not incorporate an adjustment for change in inventories in accrual basis

income statements. Also, program design may create an irresolvable conflict that forces users to choose between properly amortizing costs for accrual basis income statements and immediately expensing costs to generate accurate cash basis Schedule F reports. Appendix B provides examples showing how different methods of accounting process information to calculate net income.

An accrual basis income statement can be achieved for farm operations using two methods, a “cash-to-accrual” method and a “true accrual” method. The true accrual method is in conformance with GAAP. The cash-to-accrual method may be in conformance with GAAP depending on how it is applied. The cash-to-accrual method is more aligned with generating Schedule F tax line information than the true accrual method, and the record keeping task is easier for farmers. For these reasons, farmers are more likely to adopt the cash-to-accrual method. The true accrual method presents a more complicated record keeping task because costs must be tracked and assigned to products and because expenditures that are called expenses in Schedule F tax lines may be classified as inventories in the accounting records. The true accrual method is more aligned with determining actual cost of production than the cash-to-accrual method.

The cash-to-accrual method modifies the cash basis income statement by making an adjustments for change in beginning and ending inventories value at market price, making adjustments for changes in beginning and ending accounts receivable and accounts payable, and including certain non-cash expenses such as depreciation. In this method, inventories primarily refer to inventories of marketable crops or livestock. Inputs into growing crops are treated as expenses and are not inventoried. At harvest date, harvested crop inventories are recognized on the books

and are valued at market value rather than at the cost of production. Correspondingly, owners' equity increases at the harvest date.

The true accrual method generates an accrual basis income statement by following the accounting model of a manufacturing process. Inputs into growing crops are tracked and inventoried as investments in crop. Harvesting a crop results in transferring the cost of production to harvested crop inventory. The harvested crop inventory is valued at the lower of cost or market. The costs of long term inputs such as seeding costs for a perennial crop like alfalfa are inventoried and amortized over time. Owners' equity does not increase until there is a sale of harvested crop inventory. Using the true accrual method, the change in beginning and ending inventories is also included in the calculation of net income, but the valuation of the harvested inventories differs. Inventories are likely to include both marketable crops and livestock and investments in crop, with both valued at cost. Prepaid expenses or post-harvest field operations that would be recognized as expenses using the modified cash method are inventoried using the true accrual method.

2.2.2 Enterprising

Enterprising is a key accounting issue important to farm operations that presents several challenges to accounting software. Enterprising is a process that segregates information pertaining to production cycles (crop years), types of crops, crop varieties, fields, farming practices, leases, types of livestock, groups of livestock, or business entities for the purpose of determining the costs or profitability of those components of the operation. The ability to enterprise using multiple types of enterprises gives operators more opportunity to make insightful observations. Enterprise reports are most useful for managerial purposes when they are

organized by production cycles or crop years rather than calendar years. Production cycles typically do not correspond with calendar years.

The detailed information provided by enterprising can be used to compare the net realizable value of operation alternatives. For example, consider the following scenario. A hypothetical farm consistently has a shortage of pasture resources for its cattle herd and has to compensate by feeding the herd a significant amount of hay raised by the farm that could otherwise be sold for a “high” price. Enterprising would provide information to the farmer to evaluate alternatives such as: (a) purchasing lower cost hay and selling its high value hay, (b) reducing its herd size, (c) renting additional pasture, (d) some combination of a, b, and c, or (e) liquidating the herd and using resources differently. With more detailed information, the farmer can compare the alternatives to determine if profitability can be improved and what alternative offers the most opportunity.

The method of allocating indirect costs may significantly affect apparent enterprise performance. Allocation of indirect costs should be based on accurate causal cost drivers. Program design controls how indirect costs are allocated. Different philosophies exist regarding whether certain indirect costs should be allocated to enterprises. For example, within a relevant range, the cost of all-purpose machinery is a sunk cost regardless of the types and quantities of crops produced by a farm. Some individuals would seek to allocate the cost as if it were a variable cost in an effort to determine full product cost, and other individuals would treat the cost as a fixed overhead cost and not allocate it to any crop enterprise.

Information from enterprising can be used to establish transfer prices of raised crops within the farm. Internal transfers are a significant enterprising issue for agricultural operations since many

operations raise both cash crops and livestock and internally transfer raised cash crops to livestock operations for feed. The valuation of internal transfers may significantly affect enterprise performance since the transfer may be valued at either cost or market value. Depending on the design of accounting software and how the software is used, internal transfers are a potential source of error in Schedule F tax information reports and financial statements.

2.2.3 Depreciation

Asset depreciation is another key accounting issue for farm operations and is complicated by the need to keep two sets of depreciation records, one for tax purposes and one for financial reporting purposes. Many farmers use tax depreciation for their books rather than economic depreciation to reduce record keeping and reduce confusion. Farms make large investments in depreciable equipment. Scheduling depreciation is an important tax management strategy for agricultural producers. Tax depreciation is calculated using rather abstract and ever changing formulas based upon government policy rather than realistic approximation of depreciation. In most situations, tax depreciation does not realistically represent depreciation because it is accelerated. For meaningful financial statements and calculations of operating costs, depreciation needs to be based on economic depreciation. With economic depreciation, the asset life and annual depreciation rate realistically reflect the “using-up” of the implement.

2.3 IDENTIFIED NEEDS

The identified needs are based upon findings from interviews, analysis of special issues, and the author’s observations and experience in agriculture. Ultimately, each user must decide and prioritize these needs. The first three identified needs represent reporting functions that are the reason accounting and operational records are maintained. Discussions on reporting focus on agricultural producers’ needs, priorities, and potentially useful features that benefit the major

reporting functions. The fourth critical need for applying accounting software to an agricultural operation is software functionality. Functionality is a quality that describes how the software product successfully interfaces with the human mind, enabling the user to utilize program capabilities and achieve the reporting objectives. The discussions on functionality focus on the importance of functionality and on software features and characteristics that benefit functionality.

2.3.1 Reports & Tools For Tax Return Preparation

The primary reason farmers keep financial records is to aid tax return preparation. Because of this, the accounting program should segregate information on cash transactions by Schedule F line number and line numbers of other important tax forms. The accounting software should be capable of maintaining Form 1099 records since agricultural operations often file 1099's.

There are potentially many other useful features for the tax return preparation function. Examples include tax planning and projection tools; the capability to generate output files that can be downloaded into tax software; and tools for calculating and keeping records on employment taxes. Tax basis depreciation calculation features and schedule features are useful for applying accounting software to agricultural operations since farms typically have numerous depreciable assets and often make capital investments as part of a tax management strategy. Ideally, the program would generate depreciation schedules using both tax depreciation and economic depreciation. Farms organized as partnerships or corporations would benefit from tools for tracking asset contributions, income distribution, and asset distributions.

2.3.2 Financial Reporting Needs

Preparation of financial reports for lenders is the second main reason farmers keep financial records. To meet the minimum reporting requirements of lenders, accounting software should generate a cash flow budget and balance sheet. Preferably, the software should generate a balance sheet using both market value and book value.

Several other financial reports and accounting software capabilities may be important to agricultural operations. Since lenders often require income statements and are willing to accept cash basis income statements, accounting software used by farm operations should be capable of generating a cash basis income statement. Although lending institutions have not made a strong demand for accrual basis income statements, the capability of accounting software to generate accrual basis income statements is highly desirable because accrual basis accounting provides superior financial information and eventually may be required by lending institutions. Accrual basis income statements that include the change in inventories in the net income calculation are preferable to accrual basis income statements that do not. Accrual basis income statements generated using the “true accrual” method provide superior financial information relative to accrual basis income statements generated using the “cash-to-accrual” method. Other desirable features include: instructions in software manuals or special features for separating personal and business financial information; the ability to generate customized supporting schedules; and the ability to calculate financial ratios, provided that the ratios are calculated correctly or that the software provides the user enough control to ensure correct calculation of ratios.

2.3.3 Reports & Tools for Managerial Analysis

Utilizing financial and operational information to assist farm management and planning presents powerful opportunities for farmers to improve their decision processes. To meet the minimum managerial analysis needs of farm operations, accounting software should allow the user to

perform some form of enterprising. Preferably, the accounting software enables enterprise reports to be based on crop years or production cycles so that crop-year income statements can be generated. Superior program design allows enterprise reports to be generated for multiple types of enterprises so that enterprise reports can be generated by crop, field, or business entity. This is most often achieved when more than one data field in the database is used for enterprising or when the database structure allows sub-enterprises to be created.

Several other software capabilities may be useful for managerial analysis. Potentially useful financial reports include customer and vendor reports, inventory reports, and financial ratio reports. Potentially useful special financial tools include tools for performing breakeven analysis and sensitivity analysis, tools for calculating loan payments, and tools for generating loan interest and principal schedules.

The ability to record nonfinancial operational information within the accounting system transforms the system into a management information system. Centralizing data collection may reduce time spent recording and retrieving information. Centralized data collection may allow nonfinancial information to be integrated with financial information such as for field history records or for calculating full product cost through the allocation of indirect costs using nonfinancial cost drivers. Nonfinancial information may include: labor records; equipment records; field records (yields, crop varieties, chemical inputs, soil tests, weeds, and field operations); and cattle records (calving dates, weaning weights, animal traits, breeding records, etc.). Special features may integrate information collected using GIS-based field mapping systems, such as yield monitors, with financial information to allow the user to generate profit maps.

2.3.4 Functionality

Functionality is a quality that describes how the software product successfully interfaces with the human mind, enabling the user to utilize program capabilities and achieve the reporting objectives. The interviewed farmers, accountants, and bankers identified functionality as a critical need for accounting software. Terms that can be associated with functionality include: simplicity, efficient, effective, intuitive, flexible, easy to learn, easy to use, and customizable. The interviewees identified simplicity, ease of learning, and ease of use as the most important factors for accounting software.

The instructional component of the product can be the most critical factor determining whether the program is easy to learn, set up, and use. Instructional tools such as manuals, tutorials, the built-in help function, technical support, user groups, and training classes may provide significant assistance to the user. Useful features within the program help function include built-in tutorials, sample databases, step-by-step instructions, help topic search engines, topic indexes, hyperlinks to related help topics, and hyperlinks to technical support accessible through the Internet.

The general layout of the program can make a program easier to use. The general layout is the look and feel of the program, which is characterized by properties and features such as the number of screens, organization of screens, menus, command buttons, drop-down menus, captions, icons, font size, and colors. Depending on program design, a scarcity of features may make it more difficult to use relative to other programs or may give the program a quality of simplicity, making it easier to use.

Computer guidance through the use of tools such as wizards, experts, and checklists assist installation and the setup process. Similarly, pre-named and numbered accounts may reduce the time required for the setup process and make the setup process easier. Multiple levels of accounts (sub-accounts) allow users to increase the categorization of information.

Customization features allow the user to tailor how software operates to meet specific or changing needs. Customizable features provide flexibility and can make software more effective or easier to use. Customization features may allow the user to: create data fields; specify ranges for account numbers; make or modify input forms; create or modify controls used to prevent errors; set alarms or warnings for certain events; or make custom reports. Although features enabling customization may increase the utility of the program, the features may increase the time required for learning and make the program more difficult to learn.

Many features exist that benefit functionality for the data entry process. These features help prevent errors, automate data entry or make data entry more rapid and user friendly, expedite editing recorded information, or help identify errors. Features that help prevent data entry errors include: data filters, data-type checks, data reasonableness checks, balanced entry controls for systems using double entry accounting, and confirmation requests prior to recording new or modified transactions. Alarms that notify the user of certain conditions, such as entry of a duplicate check number, help prevent error. Features that improve the efficiency of data entry include: drop-down menus; radio buttons; auto-fill functions that semi-intelligently fill in data fields or keystroke-driven list scrolling; graphical calendars for entering date data fields; controls that limit menu options based on the type of transaction; memorized transactions; specialized data entry screens for different types of transactions, particularly transactions related to farm activities; data entry forms designed to minimize the number of required keystrokes required.

The ability to apply partial payments to individual invoices is very useful. Programs that are designed to share information between related credit and cash transactions reduce the amount of data entry necessary. Because making errors or needing to change entries is virtually inevitable, programs should allow the user to easily locate and modify the details of recorded transactions. A program that allows users to modify existing entries is more user-friendly than a program that forces users to delete the transaction and re-enter it correctly. For purposes of editing and viewing information, it is preferable that the program retains transaction details indefinitely and allows details of historic transactions to be modified for an indefinite period. Programs that use a year-end closure process may delete historic transaction details when performing the year-end closure, may not allow historic transactions to be modified, or may require the user to perform a special procedure to modify historic transactions that is more cumbersome than modifying transactions in the current period. For these reasons, programs that do not use a year-end closure process are preferable. Although generally considered components of program report functions, features that help detect errors include: bank statement reconciliation tools; graphically driven drill-down tools; and special audit functions that retain records of all changed or deleted entries. Graphically driven drill-down tools allow the user to double-click summary numbers in reports and “drill-down” from summary level information to transaction detail information to see the underlying transactions and source documents. Data drill-down tools can be useful for locating errors or omissions and for editing transactions.

Several features and characteristics benefit the reporting function of accounting software. Time and date stamp features help prevent potential mix-ups; the programs with this feature print the time and date on reports when the reports are printed. Although some agricultural producers may complete preformatted financial statements for lenders, the ability to generate reports with a presentation quality appearance remains important to others who prepare reports for lenders and

makes reports easier to use for internal management purposes. The ability to customize or control report formatting, font type, and font size help users generate appealing reports. Charts can present information in a useful, easy to understand format. Features that allow users to modify reports using filters and parameter settings, perform calculations, or generate custom reports provide flexibility and may be useful for meeting some financial reporting objectives such as producing customized supporting schedules. It is convenient if accounting software has the ability to generate accrual basis and cash basis reports simultaneously. The ability to export data or reports to spreadsheets or word processing programs allows users to reformat reports, make modifications, improve appearance, and perform additional calculations or processing on the data. Many of the interviewed farmers modify reports using spreadsheets or create reports using spreadsheets. Some users may benefit from features that allow information to be exported to tax software or financial report software, such as the University of Minnesota's FINPACK agriculture-specific financial reporting and benchmarking software.

Other features are important to the general functionality of accounting software. Functions that create backup files and perform data recovery are essential for disaster protection. Features beneficial to the backup function make the backup process easy and encourage making backup files. Well-designed backup features compress backup files to reduce memory storage space occupied by the backup files and automate saving files to multiple disks. Although access control is probably not critical to most agricultural operations, passwords, usernames, and permissions may be useful to protect against file corruption from unauthorized users such as children.

Special tools and features can add to the functionality of a program. Examples of special tools or capabilities include: inventory tracking; payroll features for tracking time and calculating payroll

liabilities; event-triggered alarms providing reminders of discount deadlines, payment deadlines, or overdue invoices; reports aging accounts receivable and accounts payable; instructions or features for separating business financial information and personal financial information; check printing; and on-line banking capabilities. Additional modules may be available which increase the capabilities of the accounting system.

Software company characteristics, policies, and programs can affect functionality. Information about the reputation and stability of the software company, the company's commitment to designing software for agricultural operations, customer satisfaction, and reliability of software is generally unobtainable. Things to consider include: technical support subscriptions and policies; resources providing technical support on the company website; the quality of software manuals in terms of thoroughness and readability; the availability of training seminars; the availability of demonstration versions of software; the frequency and cost of program updates; and special services offered by the software company. Information which may potentially correlate with the quality of the software or service include: the size of the company's technical support and programming staff; the age of the software company; the narrowness of the company's product line; and the number of product licenses issued for the particular software.

3.0 EVALUATION METHODOLOGY

In pursuit of consistency and objectivity, the evaluation process was performed systematically by processing a pre-established test set of information with each program and recording findings on a uniform questionnaire. After completion of the testing phase, the programs were evaluated individually based upon ability to meet reporting needs identified in Section 2.3 for tax preparation, financial statements, and managerial analysis. Program functionality was evaluated based on the presence of features or characteristics benefiting functionality and on observations recorded in the questionnaire.

The author created a data set of financial and operational information simulating a year's operations on a diversified farm organized as a sole proprietorship. The model farm was based on a typical Montana farm raising small grains, alfalfa, and cattle on dryland and irrigated land with owned and rented acreage. The data set included information necessary to set up the business on the program, transactions, economic events, and reports needed for tax return preparation, financial statements, and managerial analysis. Tax return preparation reports used cash basis. The financial statements were prepared from the data set in accordance with the *Financial Guidelines For Agricultural Producers*. Test set enterprise reports used a crop-year basis and were organized into field and crop type enterprises.

The author developed the questionnaire using general purpose accounting software reviews from the *Journal of Accountancy* and knowledge gained during the research process for guidance. The questionnaires were completed while the programs processed the test set information. The questionnaire was organized to gather information about the software company, learning resources, the learning process, the setup process, customization and user control, data entry,

processing and report generation, and special tools and features. Reports generated by the software were compared against test set reports. The questionnaires documented factors affecting reporting capabilities and whether reports generated by programs matched test set reports. Functionality was documented in the questionnaire during the evaluation procedures by identifying the presence, effectiveness, and utility of functionality characteristics and features described in Section 2.3.4. Additional features enhancing functionality were also documented. Time spent performing major tasks, such as learning the software, the setup process, data entry, and report generation, was tracked. The questionnaires recorded problems encountered while using the program and deficiencies in the learning materials.

4.0 EVALUATION OF SOFTWARE TAILORED FOR FARM OPERATIONS

The Appendix provides a table comparing the reporting capabilities and functionality-related features of all the evaluated programs.

4.1 AGCHEK 4.0 BY RED WING BUSINESS SYSTEMS

The test set was processed using AgCHEK 4.0 integrated with Red Wing's Crop/Chemical Management Module and Livestock Management Module. The Crop/Chemical Management module (\$295) enhances AgCHEK's enterprising capabilities for crop operations, provides some management tools, and records operational information, such as chemical application records. The Livestock Management module (\$195) enhances enterprising capabilities for livestock operations. According to product literature, AgCHEK requires a CD-ROM drive; Windows 95 or higher; a 133 MHz Pentium processor or higher; 32 Mb RAM or more, and 40 Mb of hard drive space. During testing, Windows Explorer showed the programs using slightly over 32 Mb of hard drive space. AgCHEK uses Access 97 as its database engine.

4.1.1 Description of Software Firm

Red Wing Business Systems is based in Red Wing, Minnesota and has been in operation since 1979. The company employs 35 people. Ten employees work in technical support, and there are 7 programmers. Red Wing is a Microsoft Certified Developer. In addition to agriculture accounting software, Red Wing markets accounting software and related services to small and midsize businesses. The company is split into an agricultural division and a small business division, with slightly more than 5,000 active business customers and slightly less than 5,000 active agricultural customers. (T. Balow, personal communication, March 6, 2001) In 1999, *Accounting Today* reported that Red Wing's non-agriculture customers account for 75% of its

revenue. (Covaleski, 1999) The Red Wing website (www.redwingsoftware.com) states that the company has over 500 dealers in North America.

Red Wing offers three “Maintenance Plus” technical support subscription programs. Technical support consists of email support, a toll free number to contact technical support, a newsletter, and free upgrades to updated programs. The Gold Plus technical support subscription (\$399 per year) guarantees a response by the next available technician. The Silver technical support subscription (\$299 per year) guarantees a response within one hour. The Bronze technical support subscription (\$159 per year) does not have a guaranteed response time. Technical support is available for \$40 per incident issue for users who do not participate in the Maintenance Plus program. Free updates are available to those who subscribe to Maintenance Plus programs. Red Wing issued two updates in 2000: AgCHEK 3.0 on February 15, 2000 and AgCHEK 4.0 on November 29, 2000.

Thirty-day demo versions of AgCHEK 4.0, the Crop/Chemical Management Module, and the Livestock Management Module can be downloaded from the Red Wing Business Systems website (www.redwingsoftware.com). Red Wing also mails a demo CD-ROM with these programs free of charge.

4.1.2 Tax Return Preparation Reports & Tools

AgCHEK is capable of producing a cash basis Schedule F report using a cash basis “General Summary Report” if accounts and “summary accounts” are set up properly and if transactions are entered in a manner congruent with the goal of generating a cash basis Schedule F report. The General Summary Report is not a tax return information report but can provide the information necessary to complete Schedule F. To successfully generate a Schedule F tax line information

report, the user must choose one of the preset chart of accounts or replicate the preset summary accounts, if the user manually creates the chart of accounts. The preset summary accounts match Schedule F line items. Individual expense and revenue accounts are linked to summary accounts. The depreciation expense presented in the report will be appropriate for Schedule F only if tax basis depreciation is used instead of book depreciation. In order to generate the proper line item amounts for a cash basis Schedule F report, purchases of supplies or prepaid expenses need to be recorded as expenses instead of being inventoried so that the expenditure is included in the cash basis Schedule F report. AgCHEK prepares Form 1099 information reports. AgCHEK does not have built-in features for calculating depreciation or making depreciation schedules.

4.1.3 Financial Reports & Tools

AgCHEK 4.0 produces the basic reports needed for farmers' financial reporting purpose: market value and book value basis balance sheets, a cash basis income statement, and a cash flow budget. The program maintains a historic record of market values. If the market value of an asset is different at a new balance sheet date from previous dates, the market value balance for the asset is adjusted rather than replaced. The income statement uses a single-step format. The cash basis income statement includes non-cash expenses such as depreciation expense. The accrual basis income statement is not in accordance with GAAP because the net income calculation does not include an adjustment for change in inventories. In the budget, cash flows to income accounts, expense accounts, asset accounts, and liability accounts are entered at the whole business level or at the sub-enterprise level. It is possible to create a budget by copying previous budgets and converting actual results to a new budget in addition to creating budgets from scratch. It is not possible to budget cash flow items to owners' equity accounts, such as Withdrawals. The income statement can be constructed to compare actual results and budget amounts and show the variance and percent variance between actual results and the budget.

AgCHEK prepares reports showing two sets of financial ratios, a set of financial indicators developed by Red Wing and the set of ratios recommended and defined by the FFSC. For both sets, certain accounts (such as interest and depreciation expense accounts) must be assigned to “key accounts” used for calculating these ratios and financial indicators. Prior to building the FFSC ratio report, the user must enter as many as seven dollar-amount values for financial totals such as withdrawals, annual interest and principal payments on capital purchases, and total principal payments on the current portion of long-term debt. These settings give the user some control over the financial ratio calculations. However, it is not possible to adjust *how* the financial ratios are calculated. Some FFSC ratios calculated by AgCHEK after processing the test set information differed from ratios calculated for the test set ratio report. It is not possible to view the numbers AgCHEK used for the calculations to determine why the calculated ratios differed.

The statement of cash flows produced by AgCHEK 4.0 is not in a format that conforms with GAAP because it only shows cash transactions involving expense and revenue accounts.

Another report, called the Sources and Uses Report, shows cash transactions for investing and financing activities, in addition to cash revenue and expense transactions, but does not show cash transactions that affect owners’ equity accounts, such as withdrawals. Information from the Sources and Uses Report could be used to prepare a statement of cash flows in conformance with GAAP.

AgCHEK 4.0 does not produce a statement of owners’ equity. A transaction summary report could be used to prepare a properly formatted statement of owners’ equity.

4.1.4 Farm Management Reporting & Tools

Two sets of enterprise reports are produced by the AgCHEK system: enterprise reports generated by the AgCHEK general ledger and enterprise reports generated by the Crop/Chemical Management and Livestock Management modules. The general ledger generates the enterprise reports using a fiscal year basis and organizes enterprise reports by business units and profit centers. The management modules generate enterprise reports using a crop year or production cycle basis and organize enterprise reports by livestock enterprises, livestock groups, crop enterprises, and plantings. If individual plantings are defined for each field, it is possible to generate an enterprise report for individual fields. Neither category of enterprise income statement includes the value of unsold crop inventory in the enterprise income statement. For the management modules, users define costs as direct or indirect and define direct costs as fixed or variable. Indirect expenses can be allocated based on ratios or acres. This information is used in breakeven analysis calculations and for generating reports that show cost per unit of production, cost per acre, and cost per raised animal.

The management modules produce numerous reports that are useful for management purposes and record a significant amount of nonfinancial operational information in their data fields. The Field History Report lists plantings made on a field, inputs used, projected and actual costs for the field, and notes about the field and chemical applications. The Chemical Application Report displays chemical application and chemical inventory records in detail to meet EPA record keeping requirements. The Crop Inventory Position Report and the Feeder Livestock Position Report show inventory on hand and commitments to contracts and hedges. The Pre-expensed Inventory Report shows year-to-date levels of consumable items that have been purchased and expensed but not used in the production process. The Cost Position Report performs a breakeven analysis based on actual or projected costs factoring for interest, carrying costs, and hauling

costs. The Cost Sensitivity Report in the Livestock Management module shows projected net income per head in a matrix that shows the effect of 5% changes in the projected expense and price. The Production Efficiency Report in the Livestock Management module makes financial efficiency calculations regarding the conversion of feed and other expenses to income.

4.1.5 Evaluation of Functionality & Features

Look & Feel

Well-organized hierarchal menus make it easy to navigate the program. Database features and terminology are well named and logical. The menu structure is easy to learn. The program has a modern appearance, and screens that appear after menu selections are logical and clean-cut.

The Help Function screens are very functional. Help topics are organized in a table of contents and a searchable indexed. Clicking the help button displays help topics that pertain to the particular screen in use. Each help topic screen has hyperlinks to subtopics, drop-down glossary definitions for select terms, a diagram showing the menu tree selections used to reach the program screen, and links to related help items and step-by-step Cue Cards.

There are several negative aspects of AgCHEK's look and feel. The program does not have a graphically driven drill-down feature to view the data and transactions summarized in reports. It is not possible to view the data used in analysis calculations. The appearance of reports exported to Excel is disappointing. The procedure used to enter transactions for payments on accounts payable or receipts on accounts receivable involves a certain sequence of mouse clicks, the last of which is easy to forget.

Learning

The program is relatively easy to learn due to its help function, screen organization and design, and logical terminology. However, the program may take a significant amount of time to learn because of the quantity and thoroughness of the learning resources provided and because of the number of features in the general ledger and management modules. While processing the test set, more time was spent learning about AgCHEK than many of the evaluated programs.

AgCHEK's help function is the best of the evaluated software tailored for agricultural operations due to its scope, thoroughness, effectiveness, and special features. Components of the help function include a table of contents with several main categories of help; a searchable index of help topics; a glossary of terminology; and a feature called Cue Cards, which provide step-by-step instructions for setup, transaction entry, and special procedures. The table of contents component of the help function includes basic instructions for navigating the program; a section called Understanding AgCHEK, which explains certain features and concepts of the program; a section that provides detailed explanations of every menu selection; and a section that discusses basic accounting concepts. Within the program, users can create a set of help topics or notes. A sample database is provided with the program to aid learning. The website (www.redwingsoftware.com) includes a section of frequently asked questions.

A manual is not provided with the demo software. Manuals do come with the purchase of software. A chapter in the manual provides a tutorial using the sample database.

Training seminars are available at the Red Wing Training Center in Red Wing, Minnesota. Two-day training seminars are held at various locations during winter months.

Setup Process

When processing the test set, setting up AgCHEK and the management modules was relatively easy, even though the setup process was relatively slow. The program uses a wizard for the initial stage of the setup process. The wizard is not used for setting up accounts and enterprising information. The user can choose from several sets of preset chart of accounts or set up accounts manually. Two of the preset chart of accounts use summary accounts that replicate Schedule F line items. Individual expense and revenue accounts are linked to summary accounts. One preset chart of accounts creates account names that correspond with standard FINPACK account names. There are two account name data fields, one with a six-character data field for abbreviations or account numbers and another for an account description that has a large data field size. It is possible to set up three levels of accounts. Beginning balances and inventory quantities are entered using general journal entries, which is somewhat cumbersome compared to programs that do not use this method. The user may want to choose a beginning balance date before the beginning of the first fiscal year so that the beginning balances can be used in a balance sheet comparing historic balances. Limited benefit is realized from setting up individual asset accounts for depreciable assets since AgCHEK does not have a depreciation calculation feature or depreciation schedule feature. To reduce time spent on the setup process and avoid clogging drop-down lists for accounts, users can create accounts for depreciable equipment that represent groups of equipment instead of individual pieces of equipment.

During the setup process, associations or links created between data fields control available selections in data entry screens and reduce the amount of data entry required. Associations are made between income and expense accounts and business unit and profit center enterprises. Expenses accounts are identified as direct or indirect. When setting up information in the management modules, plantings and livestock groups are associated with business and profit

center enterprises. Plantings and livestock groups are also associated with field, crop enterprise, and crop year data fields. As a result, when the user identifies a particular planting for a transaction involving an expense account classified as a direct expense, the program automatically applies the expense to a particular crop year, field and crop enterprise without additional instruction or data entry.

Customization and User Control

AgCHEK has few features that enable customization or enhance user control. The user can manually adjust percentages used for payroll deductions. The setup process for expenses, enterprises, and plantings enable the user to control the content of the data entry screens and automate the data entry process. The appearance and content of reports can be controlled to some degree by adjusting sorting and filtering data ranges such as: dates covered, enterprises covered, accounts included, and accounting basis. AgCHEK does not have a feature for creating custom reports.

Data Entry

Despite many data entry features, entering the test set data required slightly more time than the other programs evaluated. Data entry screens use drop-down menus, complimented by keystroke-driven list scrolling. The accounts available in data entry drop-down lists are determined by transaction type and account classification. As previously explained, linked data fields automate the data entry process. The program uses special data entry screens for particular inventory transactions to automate data entry. When paying on accounts payable or receiving on accounts receivable, the user can allocate payments to specific invoices. A memorized transaction feature also aids the data entry process. A batch transaction feature allows users to

enter numerous transactions before posting. A graphical calendar can be used to enter the date into a date data field.

There are several features that help prevent data entry error. Duplicate check numbers and invoice numbers cannot be entered. Unbalanced transactions cannot be posted. Alarms alert the user when transaction entries are unbalanced or when certain data fields are left blank in the enterprising data entry screen. However, no alarm alerts the user when the cash balance becomes negative.

It is possible to edit previous entries. An audit function records deleted transactions and modifications made to entries. Previous entries are easily located using sort and search functions within the data entry screen or by scrolling through transactions listed in the data entry screen. The program does not have a graphically driven drill-down feature that can be used to view and edit transactions underlying summary totals in reports. No special procedures are required for posting or editing transactions in previous fiscal periods because AgCHEK does not perform a year-end closure of expense and revenue accounts. Posting future transactions is restricted because AgCHEK will not post transactions dated more than 30 days in advance of the current date. The database retains journal entry details indefinitely unless the user chooses to compact the database to reduce the size of the file. When the database is compacted, the account records are consolidated to monthly totals and detailed transaction information is removed.

Reports

In both the general ledger program and the management modules, AgCHEK generates many reports and allows users to control the contents with parameter settings that filter the reports by date ranges, enterprises, accounts, and accounting basis. The number of reports the program

offers, combined with the capability to control content using filters, offsets the absence of a custom report feature. It is easy to locate a desired report in the menus. The financial graph feature allows three sets of account data to be charted using pie, bar, area, line, or tape graphs and allows the user to control the content through many parameter settings. Income statements and balance sheets can be generated comparing current values with historical values for one, three, and five years. Horizontal analysis calculations can be calculated for actual vs. historical results and actual vs. budget results. Vertical analysis percentages can be calculated for income statements in numerous ways. Reports can be generated showing the aging of accounts receivable and accounts payable in categories of total invoices and invoices older than 30 days, 60 days, and 90 days. A feature called Report Sets allows users to automatically generate sets of reports using preset report parameters.

Within AgCHEK, there are no adjustments for fonts or formatting parameters that change the cosmetic appearance of reports. However, reports generated by AgCHEK have a nice appearance and use presentation quality fonts. Time and date stamps are printed on all reports. Reports can be exported to Word or Excel. Initially, reports exported to Word have a nicer appearance than reports exported to Excel.

Other Features & Tools

AgCHEK has several special tools that add to the functionality of the program. A loan calculator calculates loan payments and generates a payment schedule that includes the principal and interest portions of each payment for typical equal-payment loans and loans that end in a balloon payment. The program has special external interface tools for exporting information to Lacerte (a tax program used by many accountants) and FINPACK. AgCHEK has a check-printing feature. There is a tool for checking account reconciliation. AgCHEK has password protection.

Backup files are automatically compressed using WinZip. When processing the test set, the backup of the test set database file compressed from 3,296 Kb to 497 Kb. Additionally, a utility can reduce the database file size by removing detailed transaction information and consolidating transaction amounts to monthly totals for transactions in prior fiscal periods.

The Crop/Chemical Management and Livestock Management modules increase AgCHEK's enterprising capabilities and provide several management tools previously discussed. Red Wing offers standalone software for agricultural producers including a program for livestock production record keeping (Cow/Calf), a payroll program (Payroll) that will post to AgCHEK, and a DOS depreciation program (Asset Depreciation) that makes depreciation calculations and schedules using both tax depreciation and economic depreciation methods.

4.2 AG MONEY MANAGER BY T. MURPHY ASSOCIATES

Ag Money Manager is not an accounting program in terms of financial report generation capabilities. Rather, it is a management program that meets certain accounting needs of farmers. T. Murphy & Associates claims that Ag Money Manager is not an accounting program, but rather a management information system that can be used as a ledger for an accounting program. Ag Money Manager was evaluated because it meets certain accounting needs; is tailored specifically for farm operations; is priced considerably lower than the other software evaluated (with the exception of QuickBooks); and provides a unique managerial accounting approach that differs from the other software evaluated. T. Murphy & Associates also markets a program called Asset Manager. This program stores balance sheet information and imports data from Ag Money Manager for preparation of financial reports. Asset Manager was tested only to a limited extent. Both Ag Money Manager and Asset Manager require very little hard drive memory. Each fits on a 1.44 Mb floppy diskette.

4.2.1 Description of Software Firm

T. Murphy Associates is a one-man operation based in Western, Nebraska that has been in business for 20 years. The firm focuses totally on farm business software. Owner Tom Murphy performs all programming and technical support. Before starting his farm business software firm and returning to work on his family's farm, Mr. Murphy worked as a systems consultant for multinational corporations in Europe, Mexico, and New York. Mr. Murphy estimates that 650 licenses of Ag Money Manager have been sold, including approximately 175 licenses of the Windows edition. Mr. Murphy also estimates that 2,000 students at Southeast Community College were trained with the program. Upgrades do not occur with great frequency and cost in the range of \$30 to \$45. There is no charge for email or telephone technical support, but a toll-free phone number is not available. The availability of technical support is limited to the ability of Mr. Murphy or any associates to respond to inquiries. (T. Murphy, personal communication, October 11, 2000) A 90-day demo version of Ag Money Manager is available for \$10. If a purchase is made, the cost of the demo version is deducted from the purchase price.

4.2.2 Tax Return Preparation Reports & Tools

Ag Money Manager will generate tax return information reports for Schedule F, Schedule C, and a third tax return report in which the user can set up custom tax lines, such as for itemized deduction line items in Schedule A. The tax return information report initially shows summary results, but activating a command button generates a report which shows a list of individual transactions organized by tax lines. Each transaction has a data field for tax line information that must be entered for the transaction to be included in tax information reports. If the user does not want the transaction to be included in the tax information records, no entry is made for the tax line data field. When processing the test set, the program-generated tax information report matched the test set Schedule F report. The program does not have tools for calculating

depreciation or generating depreciation schedules. Depreciation may be entered as a non-cash transaction using any whatever basis the user chooses. If the user chooses economic-based depreciation, the tax line data field should be left blank during data entry. “Dummy” transactions can be entered so that a pro forma Schedule F report can be generated to aid in tax planning. These transactions must be “killed” later when the actual transactions transpire. The tax basis of assets can be recorded in the Asset Manager program.

4.2.3 Financial Reports & Tools

Ag Money Manager does not produce standard financial reports. It does generate reports that provide both cash basis and accrual basis financial information that can be used to build financial reports. Ag Money Manager does not generate a balance sheet, income statement, statement of owners’ equity, or month-by-month budget report. The program allows users to segregate personal financial information and business financial information.

The cash flow statement that Ag Money Manager generates is not formatted in accordance with GAAP but provides all the information necessary to prepare a statement of cash flows in accordance with GAAP. The cash flow statement probably meets the needs of most farmers. It groups information by beginning cash balance, revenue, production costs, other expenses, and loan activity. The program does not make a distinction between expenditures and expenses; capital expenditures have to be called expenses in Ag Money Manager so that cash balances in Ag Money Manager will match actual cash balances.

The program does not have a budget report, but budget information can be observed in summary in a report called “For Accountants”. Budgets are entered as a special type of transaction entry, and can be for either cash or non-cash budget transaction entries. The method for setting up a

budget is slow and laborious compared to other software evaluated. In the For Accountants report the budget transactions are tallied with actual results to show prospective results, allowing the user to focus on future results. Unfortunately, the For Accountants report cannot show actual results and budget information in a month-by-month format.

The Asset Manager program generates net worth statements and a financial ratio report for the 16 ratios recommended by the FFSC. Market, book, and tax basis valuations can all be recorded for assets in Asset Manager and selected as the basis of valuation for net worth statements. Owners' equity is a calculated plug value in a net worth statement. The program does not allow owners' equity to be further divided into contributed capital and retained earnings or any other equity accounts. When processing the test set, the financial ratio report was not generated because the author could not establish the link that allows Ag Money Manager to transfer information to Asset Manager. The author expects that the new release of Ag Money Manager will not have this complication since it integrates directly with Asset Manager.

4.2.4 Farm Management Reporting & Tools

Product costing is the primary managerial accounting capability of Ag Money Manager. The primary management report generated by Ag Money Manager is the Product Cost Statement. The Product Cost Statement shows production costs and post-production costs for individual products along with calculated values of total cost per acre, total cost per unit produced, and breakeven price per unit using cash costs and total costs. The manual provides an example of how this information can be applied to making marketing decisions. The Product Cost Statement does not include revenue information. The Product Cost Statement report also functions as a type of enterprise report since the reports are filtered by product and sites or sub-sites representing farms or fields. Including a year in the product name makes it possible to enterprise

information using a crop year basis. Numerous guides are available from T. Murphy Associates to assist users in setting up both crop and animal enterprises.

Ag Money Manager does not have preset data fields for recording nonfinancial operational information. However because of the flexibility designed into the program, special “pages” can be created to record nonfinancial operational information using “note transactions”. Utility reports can display these note transactions. The program design restricts the ability of the user to systematically organize nonfinancial operational information recorded by the note transactions so that the information cannot be sorted and filtered.

4.2.5 Evaluation of Functionality & Features

Look & Feel

Screens are simple and reasonably well organized, and it is easy to navigate the program. Some of the terminology used by the program is abstract, which makes the program less intuitive. The main menu is organized into two segments: inputs and outputs. The input portion includes access to the transaction screen, setup screens, and a screen for adjusting the quantities for inventories and asset. The program uses one transaction screen for recording all information. The output portion includes access to various reports.

Learning

Despite the relative simplicity of its design, Ag Money Manager was relatively difficult to learn when processing the test set. The manuals and brochures are not always easy to follow. Much of the terminology is abstract. Examples in the manual and instructional brochures often rely heavily on printouts of screens without providing enough verbiage to allow the user to easily follow and convert the example to practice. The program is designed to be very flexible so that it

can be used creatively. The user needs to have a fundamental understanding of the program to exercise creativity. Achieving a fundamental understanding requires concentration and special effort. Because of flexibility, the program is not highly defined and organized, and therefore instructional material for the program may be more difficult to write and understand. The author expects that, in the evaluation process, learning and implementing Ag Money Manager would have been easier and more successful if technical support had been utilized. Once set up, operating the program is relatively easy.

Manuals come with the purchase of Ag Money Manager. The program does not have a built-in manual or online help function. Numerous instructional brochures that model many types of crop and livestock operations are available to help users set up the program to model their operations. The program is taught in classes at Southeast Community College in Beatrice, Nebraska.

Setup Process

When processing the test set, the author spent approximately the same amount of time and effort setting up Ag Money Manager as most of the software tested. In some instances, the manual does not provide clear guidance or explanation of concepts that need to be understood in order to set up the program to produce the desired information. The setup process involves creating pages (various types of accounts); setting up enterprises and sites and sub-sites associated with enterprises; setting up products; setting up quantities for sites, sub-sites, and products; making vendor and customer lists; and entering budget transactions to set up the cash flow budget. The size of account name data field is small and cannot be increased. As a result, page (account) names are less descriptive and reports appear less professional. Only 12 products can be set up. Balance sheet information is set up in Asset Manager. Setting up the cash flow budget and

balance sheet information were the most time-consuming setup tasks when processing the test set.

Customization and User Control

The features of Ag Money Manager are not customizable, and there are few settings that can be changed. However, the database of Ag Money Manager has a simple structure that allows the program to be used creatively so that users can create a model of their operation and create information repositories for nonfinancial operational information.

Data Entry

Ag Money Manager records six types of information in categories it calls transactions types: expenditures, deposits, carry-over/carry-in costs of production, budgeted expenditures, expected deposits, and note transactions. Expenditures and deposits are used to record cash and non-cash financial transactions. Accounts payable and accounts receivable transactions are recorded using expenditures and deposits, but the “Date Paid” data field is left blank. When associated cash transaction occurs, the user must look up the original transaction and fill in the Date Paid data field. Carry-over/carry-in costs of production are a special transaction type for non-cash production costs that do not affect cash balances or tax line information reports. The year-end function makes an automated entry using this type of transaction for inventory-in-process at the beginning of a new year. Budgeted expenditures and expected deposits are used for budgeting and do not affect the cash balance or tax line information reports. Finally, the note transaction is a special transaction for recording nonfinancial information to any page.

When processing the test set, the data entry process proceeded rapidly and easily. Drop-down menus are used to enter information into many data fields. The program scrolls through drop-

down menus semi-intelligently in response to keystrokes. The size of the data field for memos is small and cannot be increased. Enterprise, site or sub-site, and tax line data fields are part of every transaction. Quantity information for inventories is entered separately from transactions. Split entries are entered differently in Ag Money Manager than the other programs that were evaluated. Each component of the split is independent. A tool called “Multiples” tabulates split entry amounts to help prevent the user from forgetting part of the entry. However, the Multiples tool does not prohibit the user from recording an entry in which part of the split is omitted. Ag Money Manager does not use debits or credits; so the error caused by an omission of a split item may be harder to detect.

The user may modify transactions made within the current fiscal period. It is not possible to erase an entry, but it is possible to “kill” an entry to delete its effect on the records. The program generates internal transaction numbers to track transactions for audit purposes.

At the beginning of a new fiscal period, pages (accounts) are zeroed out using a function called “Year End”. Costs associated with unfinished products are carried over into the next year. After running the year-end function, transactions in previous periods cannot be modified. When processing the test set, the year-end process was not tested because the author did not want to lose the transaction information.

Reports

Reports are generated easily and rapidly. Some learning is required to interpret certain reports. Time and date stamps are printed on every report. In terms of font and finished look, the appearance of reports produced by Ag Money Manager is not of a presentation quality that most users expect from current Windows-based software. Because Ag Money Manager is a

management tool and not a program designed for preparing financial reports, this may not be a concern to its users. It is not possible to change the font or font size. There are several parameters, which can be used to modify report content. It is not possible to generate custom reports. Reports can be copied to the Clipboard and inserted into spreadsheet files or word-processing files. Historical performance reports for previous fiscal years cannot be produced because the Year-End feature erases page (account) balances and transaction information. In addition to reports discussed previously, Ag Money Manager generates a “Due/Past Due” report for outstanding receivables and payables. When the program generates production cost reports, the program searches for and reports errors that affect the report. When generating balance sheets in Asset Manager, caution needs to be used so that each asset’s valuation basis is set correctly for the type of report being generated.

Ag Money Manager does not have a graphically driven drill-down feature for viewing transactions underlying summary totals and accessing transactions for editing. However, it is possible to generate reports for individual pages that show the transactions for the period covered.

Other Features & Tools

It is possible to print checks using the program. The program does not have password protection. The program lacks a special command for making backup copies of the database. In order to make backup records, the user must copy data files using a file management program such as Windows Explorer. The data files generated by processing the test set used 63 Kb of memory.

Asset Manager is a tool for Ag Money Manager that assists in providing information useful for accounting purposes. Transactions are not entered into Asset Manager. To preserve a historic record, the user must periodically save the balances as a view.

4.2.6 Upcoming Release

As of March 2001, students at Southeast Community College in Beatrice, Nebraska are testing an updated beta version of Ag Money Manager. (T. Murphy, personal communication, March 7, 2001) According to T. Murphy, the updated version of Ag Money Manager is greatly improved. The most significant change is that Asset Manager is combined with Ag Money Manager in the updated version. The new beta version of Ag Money Manager uses slightly more than 1.44 Mb of hard drive space. The new version of Ag Money Manager was not evaluated.

4.3 EASY FARM PRO 6.5 BY VERTICAL SOLUTIONS

The test set was processed using Easy Farm Pro Version 6.5. This software includes an accounting module integrated with a module called Crop & Field Manager, which is used for enterprising and recording nonfinancial operational information. According to product literature, Easy Farm Pro 6.5 requires a CD-ROM drive for installation, Windows 3.1 or Windows 95 and higher operating systems, a 486 processor or higher, 8 Mb of RAM, and 5 Mb of hard drive space. Windows Explorer showed the program using 23 Mb of hard drive space. Easy Farm uses Fox Pro as its database engine.

4.3.1 Description of Software Firm

Vertical Solutions is based in Minot, North Dakota and has been in operation for 16 years. The earliest version of Easy Farm was created in 1985. In 1994, Vertical Solutions incorporated and began marketing Easy Farm nationally. (G. Spengler, personal communication, April 7, 2000)

Vertical Solutions employs three full time employees and one part time employee. Two employees are programmers, and one and one-half employees are involved in technical support. Technical support is free for users with “newer” versions. A toll-free phone number is available for technical support. The charge for technical support for users with older versions is on a per-situation basis or approximately \$25/hour. (G. Spengler, personal communication, April 7, 2000)

In one brochure, Vertical Solutions claims that its staff returns phone calls in the evenings and on weekends. According to Vertical Solutions, it generally updates programs on a 12 to 18 month cycle. Vertical Solutions estimates the cost of updating to Version 7.0 to be less than \$50. (G. Spengler, personal communication, April 7, 2000)

Free demo versions of Easy Farm are not available, but Easy Farm Pro (\$395) and all Vertical Solutions software come with a 90-day money-back guarantee. Vertical Solutions estimates 20% of its customers receive training from resellers and farm business managers. This training entails a seven-hour class and costs approximately \$50. (G. Spengler, personal communication, April 7, 2000)

Vertical Solutions estimates that it sold approximately 3,000 licenses of Easy Farm as of April 2000. (G. Spengler, personal communication, April 7, 2000)

Approximately 98% of Vertical Solutions’ business is attributed to farm accounting software; the other 2% is attributed to construction-oriented software. (G. Spengler, personal communication, April 7, 2000)

4.3.2 Tax Return Preparation Reports & Tools

Easy Farm prepares a tax return preparation report for Schedule F line items. The user must select the cash basis accounting setting during the initial setup in order to produce a cash basis Schedule F report, which is what most farmers use. If the user selects the accrual basis accounting setting during initial setup, the Schedule F report will be for the cash/accrual basis portion of Schedule F. During initial setup the user creates an association between income and

expense accounts and Schedule F line number items. Easy Farm has a feature that calculates tax basis depreciation and generates depreciation schedules and automates data entry for depreciation. When processing the test set, the Schedule F report generated by Easy Farm matched the test set Schedule F report, except for the depreciation line item. As of April 2000, Vertical Solutions confirmed a problem existed with automated depreciation entries and some reports that used depreciation information. Vertical Solutions reported that it was working to resolve the problem. (G. Spengler, personal communication, April 7, 2000) Reportedly the problem has been resolved in Version 7.0. (G. Spengler, personal communication, March 29, 2001)

If the user uses the built-in depreciation feature, the basis of depreciation is tax basis depreciation. If the depreciation feature is used, each depreciable asset is represented by only one account with a balance equal to the tax basis of the asset (original cost net of accumulated tax basis depreciation). However, if the user prefers to use economic basis depreciation for financial report purposes and establishes accumulated depreciation accounts for each asset, the depreciation feature cannot be used. If the user uses economic basis depreciation the depreciation expense account should not be associated with the Schedule F depreciation line item. The program cannot generate a depreciation schedule using economic basis depreciation.

4.3.3 Financial Reports & Tools

Easy Farm produces the basic reports needed for farmers' financial reporting purposes: both market value and book value basis balance sheets, a cash flow budget, and a cash basis income statement. The balance sheet can be prepared using book value or market value. Both values may be displayed together in the balance sheet. The program uses one account to represent owners' equity and calculates the balance of owners' equity as difference between assets and

liabilities. Additional owners' equity accounts cannot be created. Choices made during initial setup determine the basis used for the income statement. The program does not allow users to simultaneously generate income statements using either cash basis or accrual basis. When processing the test set, the author selected cash basis during the setup due to this restriction and because tax return preparation is the highest reporting priority of agricultural producers. However, if accrual basis is selected during the initial setup, accrual basis income statements generated by Easy Farm are not in accordance with GAAP because the net income calculation does not include an adjustment for change in inventories. In order to generate the proper line item amounts for a cash basis Schedule F report, purchases of supplies or prepaid expenses need to be recorded as expenses instead of being inventoried so that the expenditure is included in the cash basis Schedule F report. The income statement uses a single-step format. The cash flow budget was easy to set up and understand. Easy Farm's Performance Report compares actual results to budgeted results.

Easy Farm also produces other reports with financial accounting information and displays reports for different periods such as month, full year, month-to-date, and year-to-date. One report compares income and expenses over a five-year period. The program is designed so that business financial information is kept separate from personal financial information within the same set of data files. The statement of cash flows shows beginning cash, cash income, cash expenses, and ending cash and is not organized in a format that is in accordance with GAAP. The program does not generate a statement of owners' equity or calculate financial ratios.

4.3.4 Farm Management Reporting & Tools

The Crop & Field Manager Module generates enterprise reports by field, crop, and farm (economic unit) using a crop year basis. The Crop & Field Manager Module enterprise reports

also show information on a per-acre basis. The Accounting Module performs enterprising using a fiscal year basis. The Accounting Module can only perform simple single dimensional enterprising because sub-enterprises cannot be created and only one data field is used for enterprising. All enterprising for livestock must be performed using the Accounting Module because the Crop & Field Manager Module is not designed to record information specific to livestock operations. In the Accounting Module, individual transactions may not be directly allocated to an enterprise, crop year, or field. Expenses are allocated to enterprises using percentages assigned to each “direct crop expense” account and income account in the enterprise setup. Information on certain direct crop inputs (seed, fertilizer, and chemicals) is entered in the Crop & Field Manager Module and is used in enterprising performed by the Crop & Field Manager Module. According to Vertical Solutions, Version 7.0 enables the user to directly allocate transaction amounts to enterprises during data entry. (G. Spengler, personal communication, March 29, 2001)

The Crop & Field Manager Module is designed to record a large amount of financial and nonfinancial information regarding farm operations, field information, inputs, and production. The module allows users to generate reports with operational information using preformatted reports.

4.3.5 Evaluation of Functionality & Features

Look & Feel

The screens seem to be well designed and well named. Menus, commands, and terminology are logical, well named, and agriculture-oriented. It is easy to navigate the program. Separate screens are used for each module, and it is easy to go back and forth between modules.

However, using some screens is frustrating because inconvenient scrolling is required to view the

contents of the screen. The program does not allow screens to be expanded by dragging the corners or edges of the window with the mouse.

Learning

When processing the test set, Easy Farm required the least amount of time to learn of any of the software tested. Part of the reason for this is attributable to program screen design and generally well prepared manuals. However, deficiencies and shortages in the amount of instructional material available and the absence of features for customizing program operation and modifying reports resulted in less time spent learning the program. The program does not have a built-in help function. Manuals are available in hard copy and PDF files. The manuals cover many topics and are organized logically. But, the manuals lack in-depth explanations and warnings for potential pitfalls.

The following provides examples of shortcomings in the manuals. Discussion in the manual about selecting the accounting basis (cash basis vs. cash/accrual basis) during the setup process provides insufficient guidance. The manual does not expressly state that the program's depreciation feature uses tax basis depreciation. The manual does not describe how the program handles and processes depreciation; nor does it explain the implications this may have for the user. Explanation of the enterprising function is brief and does not describe in depth how the enterprise function works, limitations, or how the two modules interface with regard to enterprising. Instructions for recording accounts receivable and accounts payable transactions are not clear.

Setup Process

When processing the test set, the setup process required a similar amount of time as other farm accounting programs. Shortcomings in the manuals added some difficulty to the setup process. Setup must be performed with caution to avoid error. In some cases, it is not possible to edit set-up information.

The program uses both account numbers and account names. The program will allow the user to use the same account name for more than one account number. Account names may need to be abbreviated because the size of the account name data field is small and cannot be increased. The program has many preformatted accounts specific to agricultural operations that assist the setup process. Some preformatted accounts appear to have special properties that cannot be imitated for accounts set up by the user. For this reason, the author recommends that preformatted accounts be used as much as possible and that caution be used when deleting unneeded preformatted accounts. When setting up depreciation information for the depreciation calculation feature, the program only allows the user to depreciate items over certain tax-based service lives. The asset service lives provided are limited and do not include all possibilities.

Customization and User Control

The program is not customizable, and very few settings can be adjusted. The Crop & Field Manager Module gives the user control over report contents through filtering and sorting. Neither module can generate custom reports. It is not possible to create data fields to add to the database.

Data Entry

When processing the test set, data entry was fairly rapid. The program uses several features to reduce data entry error, including drop-down menus, radio buttons, and an auto-fill feature that automatically enters drop-down list items into data fields in response to keystrokes. The program automatically fills in default values for some data fields. Alphanumeric characters cannot be entered in numeric data fields. The program controls what accounts are listed in the account drop-down list for certain transactions and does not allow users to enter non-existent account numbers. The program performs double entry accounting using what appears to be single entry data entry forms. However, journal entries are performed with single unbalanced entries that affect only one account. Not all of the forms for recording transactions have a memo data field. The size of the memo data field is small in transaction forms with a memo data field. Financial information for direct crop inputs (seed, fertilizer, and chemicals) is entered separately in both modules.

The program allows previous entries to be edited. Entries can be entered for previous accounting periods and future accounting periods. However, the program uses a year-end closure process, which complicates the process of entering late and early entries. Modifications to transactions involving inventory affect inventory amounts as if a new entry occurred, as opposed to changing a historic transaction quantity and re-calculating the current inventory quantity.

Reports

Reports are easy to generate. Time and date stamps are printed on all reports. The Accounting Module does not have adjustable report parameters to control report content or appearance. The Crop & Field Manager Module gives the user control over report contents through filtering and sorting. Neither module can generate custom reports. Fonts, font size, and report formats cannot

be adjusted. In terms of font and finished look, the appearance of reports produced by Easy Farm Pro 6.5 is not of a presentation quality that most users expect from current Windows-based software. The program does not have the ability to export reports to spreadsheets or word processing program. The program can export financial results and information to FINPACK. Exporting to FINPACK requires assigning FINPACK codes to accounts. The manual provides FINPACK codes. The program does not have a graphically driven drill-down feature to view the transactions underlying summary totals in reports.

Other Features & Tools

The Accounting Module has several special features and tools including a check printing tool, the depreciation feature, password protection, a diary and calendar tool, and a feature for calculating and tracking payroll taxes. Payroll tax tables must be updated manually. The program has tools for making compressed backup files and restoring data. When processing the test set, it was possible to store a backup file of the test set data on a 1.44 Mb floppy disk.

The Crop & Field Manager Module functions as a tool for performing enterprising and recording nonfinancial operational information. The Crop & Field Manager Module also has some special tools for calculating bin volumes and making metric conversions.

4.3.6 Upcoming Release

As of April 2000, Vertical Solutions was in the process of completing an updated version Easy Farm Version 7.0. The author did not examine Version 7.0. To guide the development of Version 7.0, Vertical Solutions analyzed recorded customer support calls and addressed recurring problems. Vertical Solutions provided the author a list of changes made to the Accounting Module and Crop & Field Manager Module. In the author's view, the most significant change

enables the user to directly allocate transaction amounts to enterprises during data entry. Version 7.0 also allows transaction amounts to be allocated using set percentages, the enterprising method used in previous versions. According to the correspondence, Vertical Solutions corrected a significant problem associated with the calculation of the depreciation expense reported in the Schedule F report. This problem was detected when processing the test set information. One change improves how the program handles modifications to transactions involving inventory accounts. It appears that the ability of the program to record nonfinancial operational information has been expanded, and user-friendly features related to that function have been added. The data field size for account names and memo data fields is larger. Reports use a new font, but users cannot modify the font. The manuals have been updated, but the program still does not use an integrated help function. This discussion does not cover all the changes made in Version 7.0. (G. Spengler, personal communication, March 29, 2001)

4.4 FARMWORKS 6.6 BY CTN DATA SERVICE, INC.

The test set was processed using Farmworks Version 6.6 using the integrated Farm Trac and Farm Funds modules. Farmworks is a software system made up of programs that integrate with each other. The Farm Funds program is the accounting module of the Farmworks system. The Farm Trac program is a farm operations record keeping program. Farm Trac is a required for all configurations of Farmworks software systems. Farm Trac is used to build a graphical model of the farm and store nonfinancial information about the farm and farm operations. The graphical model is used as an interface for recording operational information. Other components can be added to the Farmworks system. The Farm Stock program is used for livestock record keeping. The Farm Site program adds GIS (geographical information system) capabilities to the map-making function of Farmworks. Farmworks sells a programmed hand-held PC that can download recorded field notes to Farm Trac. Farmworks also sells a programmed hand-held PC and GPS

device for GIS mapping that downloads to the Farm Site program. The requirements for the evaluated configuration of Farmworks include a Pentium processor or higher, Windows 95 or higher, 16 Mb of RAM, and 40 Mb of hard drive space.

4.4.1 Description of Software Firm

The parent company, CTN Data Service, Inc., provides information systems for grain elevators and co-ops and was founded in 1980. CTN is based in Hamilton, Indiana. In 1992, CTN started Farmworks. All of Farmworks' business revolves around its integrated production agriculture software. According to the company website (www.farmworks.com), there are approximately 15,000 Farmworks users representing approximately 13,000 producers and agribusinesses. As of March 2001, the website states that Farmworks employs 22 people including 6 programmers and 6 people involved in technical support. Farmworks offers a phone-based technical support subscription for \$120 per year. Farmworks provides email technical support to users free of charge. Each year, CTN representatives hold training classes priced at \$150 per day at various locations throughout the United States. Multiple program updates were released in 2000, and one updated version has been released in 2001. The cost of updating to Version 7.1 is \$75. The update fee covers all updates between the user's version and the most current update. Free demo versions of Farm Trac, Farm Funds, Farm Site, and Farm Stock can be downloaded from the website or obtained through the mail from Farmworks.

4.4.2 Tax Return Preparation Reports & Tools

Using the Tax Schedule Report tool, users can create tax schedule reports for any tax form. The program comes with a preformatted Schedule F tax schedule. Users can create multiple tax schedules. In individual tax schedules, accounts are assigned to tax line descriptions created by the user. More than one account may be assigned to a tax line. Tax basis depreciation should be

used if the depreciation expense account is assigned to the Schedule F depreciation tax line. If the user chooses to use economic basis depreciation, the depreciation expense account should not be assigned to the Schedule F depreciation line.

The program has a built-in contingent tax liability tool that calculates the potential tax liability or tax benefit resulting from the gains or losses generated by the hypothetical sale of assets.

Potential gains or losses are calculated as the difference between the market value and tax basis book value. Because tax basis book value is required for the calculation to be correct, tax basis depreciation must also be used in order for the tool to work correctly.

4.4.3 Financial Reports & Tools

Using Farmworks, it is possible to generate the basic financial reports needed by most farmers: a balance sheet using book values or market values, a cash basis or accrual basis income statement, and a budget report. Farmworks does not generate a financial ratios report or calculate financial ratios. The program does not generate a statement of cash flows or statement of owners' equity.

The user must choose between book value basis and market value basis when generating the balance sheet; it is not possible to print both valuations on the same balance sheet. The accrual basis balance sheet shows inventory at cost, and the cash basis balance sheet does not include inventory items at all. Farmworks maintains only one set of values for book value; so users must choose whether to value assets using tax basis or an economic basis. Records of cost, accumulated depreciation, and current year depreciation are kept for individual equipment items, but multiple items of equipment can be assigned to one account so that cost and accumulated depreciation are summarized in the balance sheet. Multiple owners' equity accounts can be

created, but there is always one equity account with a calculated balance (plug value) that makes the sum of total liabilities and owners' equity match the asset balance.

Farmworks generates both cash basis and accrual basis income statements using a single-step format. The income statement includes a column showing revenue and expense items as a percentage of total revenue. The cash basis income statement includes non-cash expenses such as depreciation expense. Farmworks is one of two programs evaluated that generate an accrual basis income statement in accordance with GAAP by including an adjustment for change in inventories in the calculation of net income. The program performs accrual accounting using the true accrual method described in Section 2.2.1. When processing the test set, the amounts displayed in the both the Schedule F tax return information report and the accrual basis income statement generated by Farmworks were correct. Year-end purchases of supplies will not change the accrual basis net income, but will increase a supply-related expense in the Schedule F report and the cash basis income statement. Based on differences in design, it appears the potential for error in the Schedule F report related to supply-type expenditures is less with Farmworks than Perception Accounting, the other program that generates an accrual basis income statement in accordance with GAAP.

The budget function is for cash budgeting only. The budget function is very easy to use and understand. In addition to operating cash flows, the budget function allows capital expenditures, financing, and withdrawals to be budgeted. The budget report is organized in a format similar to a GAAP-compliant statement of cash flows. Budgets are created for specific years and preserved instead of being replaced by succeeding budgets. Budget reports can be exported to spreadsheet programs as comma delimited text files. The budget vs. actual report (comparative report) covers only operating activities and does not include investing and financing activities like the budget

report. The budget vs. actual report displays budget and actual amounts but does not calculate the difference between the amounts. The budget vs. actual report cannot be exported to a spreadsheet program. One negative aspect about the cash flow budget is that the displayed cash balance is the sum of the actual cash account netted against the outstanding value of an operating loan or line of credit. If the outstanding operating loan is greater than the balance of the cash account, the cash balance shown in the cash flow budget is negative, when in fact the actual cash account balance is positive.

4.4.4 Farm Management Reporting & Tools

Using an enterprise report called “Enterprise Statement”, enterprise reports can be prepared for any of the Farmworks enterprise items: crops, livestock, equipment, structures, and people. Farmers normally think of enterprises for crops and livestock. For the purpose of the evaluation, enterprise reporting refers to crop and livestock enterprises. Each crop enterprise is a unique combination of crop year, crop type, and field. Livestock enterprises only have one variable. Numbers representing the production cycle could be included in the livestock enterprise name to add a production cycle distinction. The program design allows the value of internal transfers to be based on either cost or market prices for enterprising purposes without creating errors in financial reports or tax line information reports.

Enterprise Statements are highly flexible because any number of crop enterprises or any number of livestock enterprises may be included in the report. So, the user can make an enterprise report for: a single field to make a field enterprise report; several fields with the same type of crop to make a crop enterprise report; all fields within a crop year to make a crop year report. Crop enterprises and livestock enterprises cannot be combined in an Enterprise Statement. Crop enterprise reports show supplies, equipment, and other inputs allocated to the enterprise by

quantity, quantity unit cost, cost per acre, cost per bushel harvested, and total cost. Crop enterprise report also show the yield, yield per acre, net profit or loss on crop sold (including internal sales) and calculate the unit price needed for unsold crop inventories so that the enterprise's total costs are recovered.

Of the software evaluated, Farmworks has the best design for collecting and using information about farm operations to make cost allocation easier and more accurate. Farming operations are recorded in the program using "farming actions". Prior to entering a farming action, icons (representing people and implements used in the farming action) are selected and are "loaded" with the appropriate inventory supplies (fuel, fertilizer, herbicide, etc.) When the farming action is performed, fields are selected from the farm map, and data is entered in a special form that includes cost driver quantities needed for allocating the cost of the various resources used in the farming action. The fields are linked to crop and livestock enterprises. Costs are accumulated in equipment enterprises and are transferred to crop or livestock enterprises based upon utilization. Unit cost information for certain resources (machinery cost attributed to depreciation, for example) does not need to be entered in the farming action data entry form because the program will calculate the unit cost later using the sum of cost driver quantities. In addition to depreciation expense, the cost of machinery may include expenses such as repairs and maintenance that occur after the farming action. It is also possible to allocate costs to enterprises without using farming action entries.

The program has many reports that show nonfinancial information. Report parameters allow users to control which types of notes are included in reports and the period of time reports cover. When farming actions are performed, a great deal of nonfinancial operational information about farm operations is recorded in the farming action data entry form. Additionally, the user can

record notes for any farming action, supply, field, livestock group, equipment item, structure, or person. General notes can be recorded as well. Farming action data entry forms enable users to maintain detailed chemical application records.

4.4.5 Evaluation of Functionality & Features

Look & Feel

The program is relatively easy to operate once a moderate level of experience and understanding are attained. Menus, database components, and program terminology are well named. The farm map and icons used for farming actions are pretty to look at and useful for recording farming actions and nonfinancial information. This use of graphics helps make using the program a more intuitive, visual process and may reduce data entry error. However, the heavy use of graphics may slow down data entry relative to other methods of data entry. The lack of a “farming” menu may frustrate some users. Farming actions may not be initiated from menus; instead farming actions are recorded by manipulating icons. The menu structure is simple, but the most heavily used menu is full of menu items to the point of being congested. The toolbar on the main screen contains CAD-like drawing tool command buttons for map drawing. For most users, map drawing is probably done in the initial setup and very little thereafter. The main screen toolbar does not include command buttons that generate reports or provide shortcuts to data entry screens. Data entry screens for cash, accounts receivable, and accounts payable transactions include a toolbar with button commands that aid in financial transaction entry.

In many instances, it is not possible to view the data entry screen contents of previously recorded transactions. Recorded data can only be viewed in reports that may not be formatted in such a way as to show all the data entered in the data entry screens. The program does not have a graphically driven drill-down feature that can be used to view the transactions underlying

summary totals in reports. This makes it harder to see what the user did, identify mistakes, and understand how the program works. To edit an entry, the entry must be voided and re-entered. The inability access and edit data entry screens showing previously recorded information creates fear of making mistakes, which may lead to slower data entry and apprehension that reduces user enjoyment.

Learning

The program comes with manuals, a built-in help function, and a CD-ROM that contains tutorials and other learning material that supplement the built-in help function. The built-in help function is thorough and provides two levels of help (standard and detailed). The tutorials on the CD-ROM cover the program thoroughly. The guidance provided by the CD-ROM and built-in help function is better than guidance provided by the manuals, but the manuals compliment these tutorials as an introduction. The Farmworks website provides some step-by-step advice and includes a Question & Answer section that is a repository of answers to over 2,000 previously asked questions.

Extensive learning materials, good program design, and well-named terminology make the program relatively easy to learn. When processing the test set, learning required a significant but moderate amount of time due to the large amount of learning material examined. Understanding how the program works may be challenging because the absence of a graphically driven drill-down feature and inability to view all previously recorded transactions impairs its transparency.

One major deficiency in the learning materials is the failure of the manuals and help menu to discuss how the Account Register feature can be used for data entry. Certain characteristics of the Account Register make it superior to the Accounting menu for entering purchases, sales, and

transfers. The Account Register feature shows cash account transactions and allows the user to view some of the recorded details of those transactions. All types of transactions affecting cash accounts, accounts payable, and accounts receivable can be entered from the Account Register screen using the menu and tool bar command buttons. Accounts payable and accounts receivable transactions do not appear in the Account Register screen but can be recorded from the screen.

Setup Process

Setting up the program is a relatively rapid and easy process because of the program design, a well-organized setup worksheet, and information provided in reference materials. Setup worksheets are provided with the manuals that establish the setup sequence, identify the information needed, and provide writing space.

Before setting up the accounting program, Farm Funds, a mapping and farm records program called Farm Trac must be set up. Farmworks requires the user to create a graphical farm map. The program has drawing tools and acreage calculators to assist setting up the farm map. It is also possible to import certain map files or scan aerial photos and USGS maps for a more accurate graphical model of the farm. Setting up the map may be time consuming if the user is trying to generate an accurate map of fields with irregular boundaries. The map building process can be accelerated by setting up fields as rectangles that are easily adjusted to the correct acreage and placed on the main screen for convenient viewing rather than geographic accuracy.

Enterprises are at least partially created in Farm Trac. Setting up enterprise information involves defining fields, crops, livestock, equipment, and structures. Setting up enterprise information is a critical part of the setup process; when processing the test set, mistakes were made in setting up enterprises that were not correctable. The learning materials do not provide an in-depth

explanation of how the program performs enterprising, how enterprises need to be set up, and potential pitfalls associated with setting up enterprises. The guidance in the literature for setting up livestock operations seems to be based on a feeder livestock enterprising model and does not provide a good model for a cow-calf type of operation, the type of operation that is most prevalent in Montana.

The chart of accounts has predefined categories of accounts that channel the user in creating and organizing accounts. The account categories have names that are logical for farming operations and play an important role in data entry and report generation. Predefined accounts typical to agricultural operations are available to assist the setup process. There is not a data field for account numbers. If the user wants to use account numbers to organize accounts, the numbers must be included in the first part of the account name. During the setup process, the program creates an expense account for each supply inventory. These expense accounts need to be associated with line items in the Schedule F tax schedule so that the cash basis Schedule F will report correct line item totals. The depreciation expense account should not be associated with Schedule F depreciation if the user decides to base depreciation on economic usage rather than tax basis. Machinery assets are set up individually but are summarized by one account for reports. Other long-term assets are set up similarly. The program has a feature that assists the user in creating an account for the current portion of a long-term loan. The user cannot control how the program processes the loan payment. Unfortunately, when a loan payment is made, the program reduces the long-term portion of the loan instead of the short-term portion. The short-term portion of the loan represents principal due within one year. The long-term portion of the loan represents principal due beyond one year. Payments include accumulated interest and principal (the short-term portion of the loan). Most loans are equal payment loans, and as a result, the portion of interest due decreases and the portion of principal due increases over the

life of the loan. The short-term portion of the loan therefore changes and should be eliminated and reset with each payment. The program has a special feature that assists setting up equity accounts according to whether the operation is organized as a sole proprietorship, partnership, or corporation. It is very easy to set up projected monthly cash flow information in the cash flow budget feature.

Customization and User Control

Farmworks has few features that enable its operation to be customized. It is possible for users to update payroll tax tables manually. Some reports have parameters that can be adjusted. It is not possible to create additional information fields for data entry.

Data Entry

When processing the test set, approximately the same amount of time was spent entering data with Farmworks as with the other programs. The program uses several features to reduce data entry error and speed up the data entry process including: an auto-fill feature, drop-down menus, radio buttons, toolbar command buttons within select data entry screens, memorized transactions, and the farming action entries. Transactions are automatically generated when farming actions are performed and when inventoried costs are transferred between stages of production or between enterprises (internal transfers). The program automatically allocates indirect costs to enterprises using cost driver information entered in farming actions.

The accounts payable transaction data entry form has a special feature that affects how discounts are processed when early payment occurs. The program allows users to choose whether to account for discounts as revenue or to net discounts against the cost of the purchase. Information about the due date and discount amount or percentage is input when the bill is entered. If the bill

is paid by the due date, the program automatically calculates the discount and automatically generates a transaction.

Several input controls help prevent data entry error. Transactions must be balanced before the program will record an entry. When duplicate check numbers are entered, the program asks whether the check number should be re-used, but the program does not prevent duplicate check numbers from being entered. A control prevents a credit sale transaction from being voided if a related cash receipt transaction has been recorded and has not been voided first. It is not possible to delete entries; however it is possible to “void” or nullify entries. No alarm occurs when a transaction causes the cash balance to become negative.

Previously recorded entries cannot be edited. In order to change entries, the accounting or farming action entry must be voided and re-entered. Voided entries are automatically recorded in the journal to maintain an audit trail. The program does not have a graphically driven drill-down feature that allows users to view and edit the transactions underlying report summary totals. However, some reports, called detailed reports, show the transactions underlying summary totals.

Farmworks uses a year-end closure process to create a zero balance for revenue and expense accounts for the next fiscal period. The program has a reminder checklist for closing entries. The year-end closure process does not erase recorded transaction details. Once a fiscal year is closed, changes cannot be made to the previous year’s records, and transactions cannot be recorded in the closed year. Transactions can be entered for a future fiscal period prior to closing the current period. The income statement is not affected by early entries made for a future fiscal period prior to closing because the income statement is built using entries with transaction dates within the open fiscal period. However, the balance sheet and trial balance are

affected by early entries because amounts displayed in those reports are the result of all transactions entered rather than summing the beginning balances and transactions occurring within the fiscal period.

Reports

Farmworks generates numerous reports in addition to the tax information, financial, and managerial reports previously mentioned. Among these reports, two reports function as aging reports for accounts payable and accounts receivable but do not classify outstanding invoices by age. Time and date stamps are printed on all reports. The program generates presentation quality reports, but the type and size of fonts used in reports cannot be changed. Although parameters are used to control report content for some reports, Farmworks does not have the capability to generate true custom reports.

Most reports cannot be exported to spreadsheet programs. The Trial Balance report can be exported to a spreadsheet program as a comma delimited text file. While not listed under reports in the program's menus, the Account Register, Market Value Setup, and Budget Setup are screens that have a report-like appearance and can be exported to a spreadsheet program as a comma delimited text file. The Account Register shows transactions related to cash accounts only.

Other Features & Tools

To protect the database Farmworks has a case-sensitive password protection feature and database backup and recovery tools. The backup tool compresses a set of database files into one file. The size of the backup file depends on the compression setting used and the amount of data in the

database. When processing the test set, the backup feature compressed the test set database from 664 Kb to 65 Kb.

Farmworks provides several tools that make the program more functional. Farmworks has tools for check-writing and checking account reconciliation. A special payroll feature calculates and tracks payroll taxes. The software comes preset with current federal and state payroll tax rates. Payroll tax tables must be updated manually. Farmworks generates a set of reports that are farming action data entry worksheets to be placed with equipment. The program's drawing tools are very useful for creating and modifying the farm map.

Farmworks has several tools for economic and financial calculations. The Enterprise Statement calculates cost of production per acre, cost of production per unit of product, and the breakeven price for unsold crop inventories. Farmworks has a special feature for crop share land rent arrangements that tracks farm operator and landlord inputs so that Enterprise Statement reports show the farm operator's share, the landlord's share, or the combined total of each.

4.4.6 Farmworks Version 7.1

Farmworks Version 7.1 is the most recent version of the Farmworks system. It was not evaluated. The Farmworks website (www.farmworks.com) lists changes made between Version 6.6 and Version 7.1 for each Farmworks module. The changes listed in the website are numerous but do not appear to be revolutionary. It does not appear that using the new version would have significantly changed how Farmworks processed the test set information. Changes have been made to graphical interfaces and components of the program affecting data entry and report generation that probably improve the look, feel, and functionality of the program. It appears some significant improvements have been made to the capabilities of the Enterprise Statement

function and several other reports. It appears that the user must still perform a year-end closing. It appears that it is still not possible to edit previous entries. However, it may be easier to delete (void) transactions that need to be re-entered.

4.5 PERCEPTION ACCOUNTING VERSION 10.02 BY FMS/HARVEST

The test set was processed using Perception Accounting 10.02 with the Enterprise Analysis Module, Depreciation Module, and Ratio/Index Analysis Module. The price for individual modules is \$295. If the modules are purchased with a new version of Perception, the first module is priced at \$200, and additional modules are priced at \$150 each.

The Enterprise Analysis Module expands the system's enterprise reporting capabilities, allowing enterprise reports to be organized by field, crop, and crop year. The Depreciation Module calculates both tax basis depreciation and economic basis depreciation, prepares depreciation schedules, and integrates with Perception Accounting so that monthly depreciation expense entries can be generated automatically. The Ratio/Index Analysis Module calculates the FFSC financial ratios and calculates a suite of ratios called the Ferguson System Indicators. In addition to these modules, FMS/Harvest offers a Payroll Module under the same pricing scheme. The Payroll Module was not evaluated when processing the test set.

According to product literature, the minimum system requirements for Perception accounting include a CD ROM drive, Windows 95 or higher operating system, a 486 33 MHz processor or higher, 16 Mb of RAM, and 25Mb hard drive space. FMS/Harvest recommends using a system with a 200 MHz Pentium processor, 32Mb of RAM, and a 4Gb hard drive. When processing the test set, Windows Explorer showed the program using nearly 38Mb of hard drive space.

Perception Accounting uses Sybase SQL Anywhere for its database engine. Built-in reports are created using Crystal Reports Professional.

Perception Accounting uses a special feature called templates. Templates are a feature unique to Perception Accounting. Because the template feature is powerful and dominates the setup and operation of Perception Accounting, the following explanation is provided. Even with the explanation, templates may seem to be an abstract concept until the reader gains an understanding by using the program.

Templates are special instructions for transactions and budget items that are created during the setup process. Transactions are defined by one or more templates. Templates determine the appearance of data entry forms. Templates control: which account or accounts that the template will affect, which enterprise or enterprises the template will affect, which data fields are used for collecting information, default values for any of the data fields, and the order of data fields within data entry forms. Templates that are very simple in design (affect only two accounts) and assign many default values to data fields are the most useful and trouble-free. Such templates define very specific transactions. Many templates need to be created to fit every specific transaction affecting a field or crop. When processing the test set, over 60 templates were constructed, and many more should have been created. It takes time to conceptualize and construct all these templates. Properly designed templates need to be set up only once. Poorly designed templates can complicate or sabotage budget creation and data entry, which may lead to error in reports. Well designed templates allow the user to: make very detailed and specific budgets with relative ease; automate a portion of data entry by assigning default values for certain data fields; decrease the amount of time spent entering data; minimize potential for data entry error; and reduce the amount of thought required to make data entries.

Templates are initially hard to understand. It is not easy to see how templates function until templates are put into use. When processing the test set, faulty template design resulted in report errors and an unusable budget. This experience helped the author understand how templates work and gave insight to proper template design.

4.5.1 Description of Software Firm

FMS/Harvest was founded in 1981 and is based in New Lenox, Illinois. FMS/Harvest employs 12 people, with 5 employees involved in technical support and 2 people employed as programmers. Approximately 98% of FMS/Harvest's business is farm accounting software. As of March 2001, FMS/Harvest estimates that there are approximately 11,000 current or near current product licenses of Perception Accounting in circulation. (M. Hilton, personal communication, March 2, 2001) Perception 11 can be downloaded from the website (www.fmsharvest.com) for a free 30-day evaluation. FMS/Harvest also issues a demo CD-ROM containing Perception Accounting and all the additional modules except for the Easi Crops program. Programs installed from the demo CD-ROM lock after 30 days.

It is possible to obtain technical support from FMS/Harvest via email or a toll free telephone call. FMS/Harvest offers two levels of technical support subscriptions, Basic Service (\$125 per year) and Priority Service (\$225 per year). The main difference between the technical support subscription programs is that responses to Priority Service inquiries receive priority over Basic Service inquiries and have a one hour guaranteed response time compared to a guaranteed two business day response time. FMS/Harvest requires customers to purchase a one-year technical support subscription with the purchase of Perception Accounting. The FMS/Harvest website (www.fmsharvest.com) contains a searchable knowledge base that presents potential problems,

causes, and solutions. The website contains other pages that describe how to perform certain procedures.

FMS/Harvest updates programs annually. FMS/Harvest offers two software update subscriptions with the purchase of a technical support program. One option costs \$100 per year and covers Perception Accounting and the Enterprise Analysis, Depreciation, and Ratio/Index Analysis modules. The other option costs \$195 and covers the Payroll Module and Payroll Tax Tables in addition to the other programs. If customer does not choose to purchase an update support plan after the first year, updates may be purchased individually at the following prices: Perception Accounting (\$125), Enterprise Analysis (\$50), Depreciation (\$50), Ratio/Index (\$50), and Payroll (\$120).

4.5.2 Tax Return Preparation Reports & Tools

Perception Accounting has ready-made reports for Schedule F, Schedule C, and 1099 forms. For Schedule F and Schedule C reports, users must set up the reports by creating an association between accounts and tax schedule lines. Custom tax schedules can be created for other tax forms. The depreciation expense account should be assigned to the Schedule F depreciation line if tax basis depreciation is used to calculate the depreciation expense.

The Depreciation Module simultaneously calculates tax basis and economic basis depreciation. The module generates depreciation schedules for both depreciation bases and integrates with Perception Accounting. Users must choose which depreciation basis is used for making automated depreciation entries in Perception Accounting. If the user chooses economic basis depreciation for automated depreciation entries, the depreciation expense account should not be assigned to the Schedule F report depreciation expense tax line.

The Payroll Module operates similarly to the Depreciation Module. It calculates employment tax liability and transfers information to Perception Accounting. According to FMS/Harvest, tax tables in the Payroll Module can be updated manually by the user or by installing purchased update files. (M. Hilton, Personal Communication, March 2, 2001)

4.5.3 Financial Reports & Tools

Perception Accounting generates balance sheets using both market value and book value bases, an accrual basis income statement, and a budget report. The program does not generate a cash basis income statement. The report most similar to a cash basis income statement is a report called the Flow of Funds Statement that shows the cash flows to and from accounts.

The accrual basis income statement uses a multiple-step format; although the format differs slightly from the norm because the program includes “other revenue” in the revenue above the gross margin. Perception Accounting is one of two programs evaluated that generate an accrual basis income statement in accordance with GAAP by including an adjustment for change in inventories in the calculation of net income. The program performs accrual basis accounting using the true accrual method described in Section 2.2.1. When processing the test set, the amounts displayed in the both the Schedule F tax return information report and the accrual basis income statement generated by Perception Accounting were correct. Year-end purchases of supplies will not change the accrual basis net income, but will increase a supply-related expense in the Schedule F report.

The budget feature can be used to generate pro forma financial statements. When the budget is created, templates are used to enter budgeted transactions, including non-cash transactions.

When processing the test set, the budget was unusable because of the author’s errors in template

design. The income statement can be set up to compare actual vs. budget values, and the Flow of Funds Statement can be set up to show budgeted cash flows.

It is possible to create reports comparing historical values for the balance sheet, income statement, and Flow of Funds Statement. Ratios can be calculated for actual vs. budget and historical comparison reports for horizontal analysis. The Flow of Funds Statement is not organized in the format prescribed by GAAP for statement of cash flows. Information from the Flow of Funds Statement can be used to prepare a statement of cash flows in accordance with GAAP. Perception Accounting does not generate a statement of owners' equity.

Financial ratios are calculated in the Ratio/Index Module. Screens within the Ratio/Index Module indicate that one set of ratios is calculated using the formulas prescribed by the FFSC. Although the program shows some summary information used to calculate the ratios, it is not possible to view all the underlying financial information used to calculate the ratios. It is not possible to adjust how the Ratio/Index Module calculates the financial ratios. The help function and tutorials on the demo CD-ROM do not provide guidance for setting up accounts so that the ratios can be calculated using appropriate information.

4.5.4 Farm Management Reporting & Tools

Perception accounting uses three data fields for collecting enterprise-type information: enterprise (crop, livestock group, and other), production center (field), and crop year. Reports in the accounting module can only be filtered using the enterprise data field. Within the accounting module, the income statement (and some other reports) can be filtered by enterprise to generate an enterprise income statement. The accounting module of the program cannot make per unit

production or per acre calculations. Because the budget feature uses templates, budgeting is performed for enterprises and the whole entity simultaneously.

The Enterprise Analysis Module expands the program's enterprise report capabilities. Enterprise Analysis provides flexibility for organizing and segregating information using all three enterprising data fields: enterprise (crop, livestock group, and other), production center (field), and crop year. The Enterprise Analysis Report filters financial information using all the enterprise data fields. A hierarchy is assigned to the data fields so that information of the highest order bundles information of lower orders. Any combination of hierarchies can be established for the three data fields. Users can drill down to information of the lowest order from reports showing the highest order. For the following example, the hierarchy, in descending order, is: crop year, crop enterprise, and field enterprise. The highest order enterprise report bundles all the enterprise totals into crop years, allowing users to compare performance between crop years. Users can drill down to view crop enterprise performance in a particular crop year to compare the performance of different crops. From this report, users can drill down to view the performance of individual fields belonging to a particular crop enterprise in the particular crop year. In addition to generating enterprise reports with multiple levels of information, the module can assign unallocated costs to enterprises for report purposes and make cost per unit production and cost per acre calculations displayed in reports.

Perception Accounting does not collect nonfinancial operational information. The recently released Perception Accounting Version 11 integrates with a farm operations record keeping program called Easi Crops 2001.

4.5.5 Evaluation of Functionality & Features

Look & Feel

The program is easy to navigate because the screen layout is relatively simple. There are a moderate number of menus, and certain screens have their own menus. Toolbar command buttons provide single click access to heavily used menu items. Captions appear when the mouse pointer is placed over toolbar command buttons. Perception Accounting provides direct access to additional modules. The program's graphics are pleasant to look at and appear modern.

Certain aspects of the program are very intuitive and logical. Data fields and transaction types are well named and logical for agricultural users. However, some of the terminology used by the program is abstract. Some of the rules that govern how the program operates seem hidden. These aspects make it difficult to conceptualize how the program works.

Learning

When processing the test set, a large amount of time (approximately 29 hours) was spent learning about Perception Accounting and the additional modules. A large amount of time was spent learning for several reasons. Setting up and operating Perception Accounting and the associated modules entails a lot of learning because the programs have many capabilities. The demo CD-ROM tutorials for Perception Accounting and the modules, the built-in help function, and the sample database provide a large amount of learning material and require a significant amount of time for examination. Additionally, the FMS/Harvest website contains a searchable "knowledge base" that provides instructions for detailed procedures and presents possible causes and solutions of potential problems. The CD-ROM tutorials provide a series of lessons on many topics and processes. The Perception Accounting tutorial is thorough and provides good explanations of the program and accounting for farm operations. The built-in help function

covers many topics and has a table of contents and searchable index. Some help topic titles are not well named. A particular strength of the built-in help function is the guidance it provides on how to record transactions typical to an agricultural operation.

The learning material available for the evaluation (tutorials on the demo CD-ROM and the built-in help function) fails to provide clear guidance in a few areas. In spite of the fact that much is written about templates, the learning materials do not clearly and completely explain templates and the implications templates have on how the program functions. The learning materials do not thoroughly explain automated depreciation entries or limitations of the Depreciation Module. Setting up loan accounts and the accrued interest calculations were not well explained. The learning materials failed to provide adequate guidance for setting up the parameters of the Schedule F report. As a result, when processing the test set, special efforts were required to troubleshoot the Schedule F report.

Manuals were not provided with the demo CD-ROM used in the evaluation. Manuals may clarify the issues discussed in the previous paragraph. Manuals are included with purchased software. According to FMS/Harvest, manuals provide more elaborate explanation of the setup process and include written tutorial help. (M. Hilton, Personal Communication, March 2, 2001)

FMS/Harvest provides three-day training seminars each year during winter and early spring months in the US & Canada at a cost of approximately \$80 per day. The seminars are organized so that users can selectively enroll in the day-long seminars that apply to their needs or levels of experience.

Setup Process

When processing the test set, a considerable amount of time was spent setting up the test set information. Setting up templates within Perception Accounting and setting up asset book value and tax basis information within the Depreciation Module were particular tasks that consumed time when processing the test set. In the author's opinion, the key step in the setup process is creating templates because templates have a controlling impact on data entry and budgeting.

Perception Accounting features a setup wizard to guide the creation of the database. The setup wizard asks questions and sets up the database structure based upon information provided by the user describing the farm, enterprises, and desired accounting methods. The user chooses whether adjustments for changes in inventory will be incorporated into the income statement. This is necessary to calculate net income in accordance with GAAP. The program allows the user to choose whether or not to maintain personal finance information within the database but separate from farm records. If the user chooses to record personal finances within the database, the program assists the user in setting up additional accounts. The program builds the database when the user completes the wizard and automatically generates some list items (including templates and accounts) that correspond to selections made in the setup wizard or that are typical to a farm operation.

After the setup wizard completes the initial database setup, list items (companies, names, accounts, enterprises, production centers, storage centers, templates, and terms of credit) are set up. A help topic item suggests the sequence for setting up list items. Templates can also be constructed manually or by using a special template wizard. There are numerous types and categories of accounts. Some types of accounts have more parameters than others. List item parameter settings can always be modified. Accounts, enterprises, and production centers can be

grouped so that information is consolidated in reports. Account numbers can be used, but do not have to be used. The size of the account name data field is an adequate 30 characters. During the setup process, depreciable asset information and payroll information are entered if the user has the Depreciation Module and Payroll Module, respectively.

The program uses transaction entries to set up beginning account balances. The learning materials provide guidance about the necessity of assigning special dates to initial account balance entries. If the Depreciation Module is installed, initial account balances should not be entered for depreciable assets. If the Depreciation Module is installed and the automatic depreciation entry feature is used, only one account per individual asset should be set up; the Depreciation Module exports only one value per asset: net book value or market value. If the Depreciation Module is not installed, a two-account system can be used for depreciable assets showing cost and accumulated depreciation.

Customization and User Control

The template feature is a powerful customization and control tool. As previously described, templates allow users to customize how specific transactions are recorded, control the layout of data screens, and automate the data entry process. Templates for certain types of transactions include two optional user-defined quantity data fields.

The User Define Report allows the user to design a custom report in a spreadsheet-like format. However the report does not provide as much freedom as a spreadsheet program to manipulate data. Certain restrictions limit the level of customization available to the user for generating custom reports. Formulas are applied to a whole row or column and cannot be applied to individual cells within the report matrix. Transaction type filters are applied to a whole column

and cannot be applied to individual cells within the report matrix. It is also not possible to insert an account balance into a cell as of a certain date in time or to manually insert a value in a cell.

Data Entry

When processing the test set, Perception Accounting required less time for entering transaction data than any of the programs evaluated, primarily due to the automation provided by templates. Perception Accounting performs double entry accounting, but templates allow many transactions to be recorded with what appears to be a single entry. Data entry would have proceeded at a faster rate when processing the test set if the author had not created poorly designed templates. Tools and features that help make data entry rapid include: drop-down menus; keystroke-driven list scrolling; memorized transactions; data entry screens dedicated to cash, accounts receivable, and accounts payable transactions; and special transaction entry tools. Data entry screens are easy to work with; although a data field called “total amount” can show illogical numbers when complex templates are used. Data entry screens restrict which types of templates are available for certain transactions. This conveniently narrows the list of available templates but takes away some flexibility from the user. Special data entry screens are used for recording new production, adjusting raised inventory quantities, expensing investments in production, adjusting the price of raised inventory, and recording weight gain for livestock held for resale. Other special data entry tools are used for automating entries for accrued interest, depreciation (Depreciation Module required), and payroll (Payroll Module required). Entries can be created and stored without being posted. Transaction entries can also be scheduled. It is possible to set up scheduled alerts to remind the user of upcoming entries. Alerts notify the user when accounts payable and accounts receivable payments are due. However, there no alarm signals when the cash balance becomes negative.

Transaction entry information is retained indefinitely. Perception Accounting does not use a year-end closure process. It is easy to enter or edit entries made in previous fiscal periods. Previously entered transactions can be accessed and modified using the Transaction Search report feature or using the drill-down feature in a balance sheet, income statement, or the Flow of Funds Statement. The Transaction Search report lists transactions and is used to locate transactions for viewing and editing. Many filters can be applied to the Transaction Search report to target the search and narrow the list of transactions. Transaction data entry screens are accessed from the Transaction Search report by double clicking a listed transaction. The Audit Report shows entries that have been deleted or modified. Fiscal periods must be “opened” prior to entering transactions in future fiscal periods.

Reports

Numerous reports are available in addition to the financial reports, tax information reports, enterprise reports, and custom reports previously discussed. Date range filtering can be applied all reports. The major financial statements can be filtered by enterprise. Perception Accounting generates two sets of pie charts, one for the whole business and one for individual enterprises, showing the top accounts for each component of the income statement: revenue, cost of goods, and expense.

Perception Accounting generates presentation quality reports using a nice font. It is not possible to customize or modify the fonts used in reports. Time and date stamps are printed on each report. On reports measuring performance, such as income statements, the program also prints the reporting period. All reports can be exported as files readable by Excel or Word. The reports generated in the Financial Analysis screen (balance sheet, income statement, Flow of Funds Statement, and budget) can be exported directly to Excel.

Other Features & Tools

Several special tools and features enhance the functionality of Perception Accounting. The program is capable of printing checks and has a tool for bank account reconciliation. The “Associated Accounts” data field allows the user to associate a transaction with an account that is not used in the transaction, for example associating an equipment repair expense transaction with an equipment asset account. The program allows users to choose between several methods of inventory valuation: average cost, FIFO, or LIFO. The program can be set up to import data from a combine yield monitor. Multiple usernames can be set up and individually assigned passwords. When processing the test set, the backup feature compressed the test set database from 4.43 Mb to 1.18 Mb.

4.5.6 Perception Accounting Version 11

The evaluation was performed prior to the release of Perception Accounting Version 11. The author did not examine the new version. FMS/Harvest provided the author a list of changes made for Version 11. (M. Hilton, personal communication, March 26, 2001) Based upon examination of this list, it appears that, among other changes, potentially significant changes have been made in the areas of budgeting, templates, control of report formatting, and the Financial Analysis report feature. (The Financial Analysis feature generates the income statement, balance sheet, budget, and flow of funds report.) Templates are still used in Version 11, but may possibly be easier to use. The budgeting process may benefit from a new help topic that provides step-by-step instructions for setting up budgets. According to the FMS/Harvest website (www.fmsharvest.com), Perception Accounting Version 11 will integrate with a farm operations record keeping program called Easi Crops 2001 Professional (\$495). Easi Crops 2001 integrates with the Easi Maps program, which has GIS features.

4.6 TRANSACTION PLUS 7.1 BY FBS SYSTEMS INC.

The test set was processed using FBS TransAction Plus 7.1. The CD-ROM sent by FBS included several other programs that integrate with TransAction Plus, including the Accounts Payable Module, Accounts Receivable Module, and a farm operations record keeping program called Crop Audit Plus. The Accounts Receivable Module (\$395) and the Accounts Payable Module (\$395) were included in the evaluation. Crop Audit Plus (\$995) was installed but not evaluated because FBS did not provide a manual for Crop Audit Plus and because the built-in help function did not describe how to use Crop Audit Plus. It was not possible to determine how to use Crop Audit Plus without this guidance.

FBS markets other modules that integrate with TransAction Plus. These modules include: a program that enhances financial report generation capabilities and calculates financial ratios (AFRA, \$995); a program for livestock feeding operations (Smart Feeder, \$1,495); a program for breeding herd management (Smart Breeder, price unknown); a module called PROMIS (price unknown) that integrates PigCHAMP (a swine production records program developed by the University of Minnesota College of Veterinary Medicine) with TransAction Plus; a module for calculating and tracking payroll liabilities (Payroll); a program for calculating depreciation (Depreciation Plus); a module that integrates SSToolbox GIS software with TransAction Plus and Crop Audit Plus (MaCH 1.0, \$1,495); and a module that enables the program to import yield monitor information (Yield Monitor 3000 Interface, \$595). The module prices are subject to change. In March 2001, FBS issued a special offer in which if two programs were purchased, the second program was discounted 50% or if three programs were purchased, the third program was free.

According to product literature, the TransAction Plus 7.1 requires Windows 95 or higher, a 300 MHz Pentium processor, 32Mb of RAM, and a 4 Gb hard drive. When processing the test set, Windows Explorer showed that program files (including Crop Audit Plus) used 11.1 Mb of hard drive memory and that data files used 694 Kb of memory.

4.6.1 Description of Software Firm

FBS Systems Inc. is based in Aledo, Illinois and has been in operation since 1982. The FBS software portfolio includes its integrated accounting and management information system tailored for agricultural producers, software for farm managers, and software for trust management. FBS employs nine people. Two employees are programmers, and two people are involved in technical support (N. Brown, personal communication, February 28, 2001). FBS did not reply to inquiries regarding the number of licenses of TransAction Plus that have been issued. Evaluation copies of programs are available for \$35 per program, plus shipping & handling.

FBS offers three technical support subscriptions: Basic Support (\$199 per year), Priority Support (\$299 per year), and VIP Support (\$599 per year). The technical support subscriptions include program updates. In order for service contracts to be honored, users must use the most current versions of software. Technical service is suspended for anyone not enrolled in a current plan. FBS requests that customers initially email questions, rather than place telephone calls. This allows FBS to respond more efficiently. The main differences between the different technical support plans involve: guaranteed response times, the time period in which technical support is available, the type of questions that technical support covers, the cost of upgrades, and the priority of receiving program updates. Unlike the other two plans, the Basic Support plan has

a per incidence service charge (\$15 minimum) for telephone technical support lasting more than five minutes.

4.6.2 Tax Return Preparation Reports & Tools

TransAction Plus 7.1 generates a Schedule F tax line information report and cannot generate other tax line information reports. To set up the Schedule F report, revenue and expense accounts are assigned to Schedule F tax lines. In order to generate the proper line item amounts for a cash basis Schedule F report, purchases of supplies or prepaid expenses need to be recorded as expenses instead of being inventoried so that the expenditure is included in the cash basis Schedule F report. In the budget screen, a command button (Calc Sch F) calculates total projected Schedule F receipts and payments for each month. This feature may be useful for tax planning. Users must decide which whether to use tax basis depreciation or economic basis depreciation for calculating depreciation expense. If a user chooses to calculate depreciation expense using an economic basis for financial report purposes, then the depreciation expense account should not be assigned to the Schedule F depreciation expense tax line. The program does not have tools that calculate depreciation. The program enables users to track information for preparing 1099 forms.

4.6.3 Financial Reports & Tools

TransAction Plus 7.1 produces the basic financial reports needed by most farmers: a balance sheet using book values or market values, a cash basis or accrual basis income statement, and a budget report. Before generating a balance sheet, a choice between book value and market value is made using a report parameter screen. Prior to generating a market value balance sheet for the first time, special “market value transactions” must be entered to adjust the market value balance of the account from the book value balance to the market value. As the market value changes,

the market value balance must be adjusted using the special market value transactions. The program's income statement uses a single-step format and can be generated using either cash basis or accrual basis. The accrual basis income statement is not in accordance with GAAP because the net income calculation does not include an adjustment for change in inventories. The Ledger Account Summary Report feature can be used to make historic comparisons of financial performance and financial position. These reports display ratios that are useful for horizontal and vertical analysis. The cash flow budget is easily generated using the program's budgeting tool, which can prepare any number of budgets. The budget function consists of a spreadsheet-like screen with columns labeled for each month, rows labeled with account names, and cells showing cash inflow or outflow for the account and month. Cash flow is budgeted to all types of accounts: revenue, expense, asset, liability, and equity accounts. The Ledger Account Summary Report feature can be used to compare actual results with budgets. Ledger Account Summary comparison reports also display ratios useful for horizontal and vertical analysis. The comparison of actual vs. budget cash flow for balance sheet accounts (asset accounts, liability accounts, and owners' equity accounts) is meaningless because values used for the actual column are account balances instead of cash flow amounts. A separate budget for ending balances of balance sheet accounts may be prepared if the user wishes to generate a budget vs. actual report comparing the account balances for those accounts.

Except for the ratios displayed in Ledger Account Summary comparison reports, TransAction Plus 7.1 does not calculate financial ratios. Formulas can be set up in a spreadsheet program to calculate financial ratios using account balance information from an exported Ledger Account Summary Report. The AFRA Module, which was not evaluated, calculates the financial ratios prescribed the FFSC. TransAction Plus 7.1 does not generate a statement of owners' equity.

TransAction Plus 7.1 can generate a statement of cash flows in a format that conforms with GAAP if the AFRA module is installed.

4.6.4 Farm Management Reporting & Tools

TransAction Plus 7.1 uses one data field for enterprising. Depending on the creativity of the user, enterprises can be created that enable enterprise reports to be generated by field, crop, or crop year. The enterprise report prepared by TransAction Plus 7.1 shows revenues and expenses for each enterprise, along with any asset, liability, and equity account amounts that are associated with the enterprise. Income statements may be filtered by enterprise to generate enterprise income statements. The enterprising and report capabilities offered by Crop Audit Plus are unknown because it was not used to process the test set information for reasons previously discussed. The menus indicate that Crop Audit Plus has field reports and cost analysis reports. According to FBS, overhead can be allocated to enterprises based on cost driver information entered into Crop Audit Plus Version 7.2 (crop operations) or Smart Feeder (livestock feeding operations). (N. Brown, Personal Communication, February 28, 2001)

TransAction Plus 7.1 does not have the capability to record farm-oriented nonfinancial operational information. The menus indicate that Crop Audit Plus records farm operational information.

4.6.5 Evaluation of Functionality

Look & Feel

The program's screens and menus give the program a feel of simplicity. The program uses few menus with relatively few items per menu. Data entry screens are standardized and consistent in appearance. The screens are adjustable in size, but enlarging a screen does not increase the text

area within the screens. TransAction Plus 7.1 uses relatively few graphical interface features such as toolbars and icons. In some instances, navigating through the input forms was awkward because drop-down screens got in the way or slowed the movement through data entry cells.

The additional modules appear to be well integrated because screens for entering data and generating reports using these modules are part of the standard TransAction Plus screens and menus. There are items within screens that relate to modules that are not installed or modules that are not yet integrated with the Windows versions of TransAction Plus. This causes some confusion when the program is being learned.

Learning

Manuals come with purchased software. FBS provided a manual for TransAction Plus 7.1 with the demo CD-ROM but did not provide a manual for Crop Audit Plus. The program's built-in help function basically duplicates the TransAction Plus manual. The built-in help function of TransAction Plus 7.1 covers TransAction Plus 7.1, the Accounts Payable Module, and the Accounts Receivable Module but does not cover the Crop Audit Plus Module. According to FBS president, Norm Brown, the help function in TransAction Plus 7.2 has been expanded to include Crop Audit Plus (N. Brown, Personal Communication, February 28, 2001). The help function includes a searchable index and a table of contents for locating help topics. Help topic titles are the only keywords used in the searchable index. Neither the manual nor the help function contain tutorials. The learning materials rarely provide examples.

After initially examining the learning materials during testing, the program seemed easily understandable and well explained. For the most part, it was fairly easy to learn, set up, and use TransAction Plus 7.1. Many portions of the manual are well composed. However, after actually

operating the program, it seems that there are some significant shortcomings in the learning materials regarding some aspects of the program. The manual does not clearly describe how to use the entry type and report type options to generate accrual basis, cash basis, and market value basis reports. The manual does not clearly explain the process used to establish and adjust asset market values using market value transaction. The manual does not explain that in the actual vs. budget report the “actual” amounts for balance sheet accounts (asset, liabilities, and owners’ equity accounts) are accounts balances instead of cash flow amounts. The manual does not explain the “Calc Sch F” button located in the budget setup screen. The manual does not provide instructions for some accounting activities, such as voiding checks and the performing the “rollover” process used to start a new fiscal year. In the setup section, the manual did not clearly explain setting up initial account balances. As a result, when processing the test set information, the test set beginning balances were set up wrong. Fortunately, this did not cause great harm. A separate and unassociated section in the manual discusses a utility used to establish beginning balances after initial setup and reveals some specifics on how the program works. The manual does not provide a special explanation for setting up the payroll ledger accounts so that the Payroll Liability Report can be generated. The payroll type ledger account was not listed in the setup section of the manual as an available ledger account type. The payroll type ledger account was instead discussed in the manual in the section on the Payroll Liability Report. That section does not provide instructions for setting up the program to meet payroll record keeping needs. There were other shortcomings in the manual that relate to modules that were not evaluated.

Consultation and in-house and on-site training are available from FBS is available by appointment. Previously, FBS has administered TransAction Plus classes at conventions. The website and promotional materials did not provide information on the cost of seminars or individualized training.

Setup Process

When processing the test set information, the setup process required only a moderate amount of time and was only moderately difficult. The program uses a sequence of steps similar to a wizard during the initial setup. The program organizes accounts by account numbers but also uses a description data field for account names. Enterprises are also organized by numbers and have a description data field for enterprise name. For accounts and enterprises, the size of the number data field is six characters, and the size of the description data field is 20 characters. The account and enterprise number data fields may use numbers, letters, or both. The program does not use sub-accounts, and the manual suggests using the description field to achieve sub-account coding detail. Three sets of preformatted account numbers and names are available, including a National Pork Producers Council chart of accounts, to assist the setup process. Users can also create a chart of accounts manually. Accounts are classified into five classes (asset, liability, owner equity, income, and expense) and are further classified into “types.” The “types” classification controls which data fields are used in data entry. Initial account balances are entered using special unbalanced transaction entries. The setup for vendors and customers includes address and phone information and whether a vendor should be eligible for a 1099. There are many setup parameters. The manual lists the parameters but does not necessarily provide in-depth explanations. Some setup parameters guide integration with Crop Audit Plus and other modules.

Customization and User Control

The user can customize the output to checks and invoice forms to control what information is printed. It is not possible to add additional data fields to data entry screens. Manual changes can be made to modify the calculation of FICA and Medicare payroll liabilities. The income statement setup allows the user to control the grouping, labeling, and placement of revenue and

expense items within the income statement. The User Defined Report feature can generate custom transaction reports by setting parameters and applying filters to information recorded in transaction data fields. Report parameters can be applied to all reports to perform some degree of filtering, but filters can be applied to any and all data fields by the User Defined Report feature. The User Defined Report feature does not allow the user to control report organization in a manner similar to the income statement setup.

Data Entry

When processing the test set information with TransAction Plus 7.1, data entry transpired rapidly. Program features that benefit rapid data entry include: drop-down menus, keystroke-driven list scrolling, a graphical calendar for entering dates in date data fields, and memorized transactions. However, the drop-down menus sometimes hamper movement through data entry cells. Inventory changes and changes in inventory value are easy to record in the data entry screen. The program design allows partial payments on accounts receivable and accounts payable transactions to be recorded. Entries must be balanced before they will be saved, with the exception of the special types of entry used to enter initial account balances. It is possible to enter duplicate invoice and check numbers without a warning. There is no warning when the cash balance becomes negative.

There are two different kinds of description data fields in the data entry screen. In order to make a description over 20 characters long, the user has to click a button labeled "Enter Long Description." When long descriptions are used, some transaction reports show the description field to be blank.

Transactions can be accessed for editing or deletion directly from the data entry screen by double clicking the specific transaction line. The entry search feature within the data input menu narrows the list of entries displayed. Only entries used to set up initial account balances cannot be edited. Modified entries and deleted entries are saved and can be viewed in a report called Deleted Transactions Report. In “detail” reports, the transactions listed for an account can be edited by turning on the drill-down tool and right-clicking the transaction line. However, the program drill-down feature is limited to detail reports (reports showing transactions) and does not exist for reports displaying summary totals only.

The program uses a year-end closure process. However, it is possible to enter transactions in prior periods and future periods. A special utility must be used to update current year balances if a prior period transaction is entered or modified after performing the year-end closure process. The program preserves transaction details indefinitely.

Reports

TransAction Plus 7.1 generates presentation quality reports. Font type and font size can be adjusted. The order of data columns can be changed. Time and date stamps are printed on all reports. All reports can be saved as spreadsheet files. If the account receivable and account payable modules are installed, Transaction Plus 7.1 generates reports showing the aging of accounts receivable and accounts payable. Several styles of graphs may be generated for many of the reports, and the program gives the user full control over the columns and rows represented in the graphs. There is a drill-down tool available in “detail” reports, but that is the only drill-down tool available in TransAction Plus 7.1. According to FBS, Crop Audit Plus 7.2 can drill down to a list of transactions from a summary total in the Cost Analysis report. (N. Brown, Personal Communication, February 28, 2001)

Other Features & Tools

TransAction Plus 7.1 is capable of printing checks and invoice forms and has a tool for bank account reconciliation. TransAction Plus 7.1 has a backup function with settings for multiple levels of data compression. A tool within the backup utility estimates the backup file size. If the backup file requires more than one disk, the program guides the user to make a sequence of backup disks. The manual provides a warning that all existing data on the “save drive” will be erased. To the author, this indicates that potentially the computer hard drive could be erased if a directory in the hard drive is selected for the backup. When processing the test set, the backup feature created a backup file that used 50 Kb of floppy diskette memory with the compression setting turned on and a set of backup files that used 449 Kb of floppy diskette memory with the compression setting turned off. When processing the test set information, the author was unable to locate a password protection feature. Network capable versions of TransAction Plus are available for an additional cost.

4.6.6 TransAction Plus 7.2

As of April 2001, TransAction Plus 7.2 is the most current version of the program. TransAction Plus 7.2 was not evaluated. The FBS website (www.fbssystems.com) lists improvements made to TransAction Plus. The improvements that were of the most interest to the author involved the Crop Audit Plus Module, which was not evaluated. One of those improvements included adding on-line documentation for the Crop Audit Plus Module within the built-in help function.

According to FBS president Norm Brown, numerous incremental enhancements were made in addition to the improvements listed on the website. (N. Brown, personal communication, February 28, 2001)

5.0 EVALUATION OF INTUIT QUICKBOOKS PRO 2000 - GENERAL PURPOSE ACCOUNTING SOFTWARE

The test set was processed using QuickBooks Pro 2000. The QuickBooks Pro version has more features and capabilities than QuickBooks, but QuickBooks is adequate for meeting the needs of most agricultural operations. The QuickBooks website (www.quickbooks.com) explains differences between the two versions. According to product literature, this software requires a CD-ROM drive for installation, Windows 95 or higher, a 166 MHz Pentium processor or higher, 32 Mb of RAM, and 85 Mb of hard drive space. Intuit recommends 64 Mb of RAM. Internet Explorer 5.0 is included with the QuickBooks CD-ROM for users who do not have it installed. The program requires that Internet Explorer 5.0 or higher be installed.

Appendix A provides a table comparing the reporting capabilities and functionality related features of all the evaluated programs, including QuickBooks Pro 2000.

5.1 DESCRIPTION OF SOFTWARE FIRM

Intuit is headquartered in Mountain View, California and was founded in 1983. In 1992, Intuit introduced QuickBooks general-purpose small business accounting software. (Intuit, www.intuit.com/corporate/history.html) Intuit is a publicly traded multinational corporation with approximately 4,500 employees. (Intuit, October 2000, pp. 15) In addition to QuickBooks, Intuit markets Quicken personal finance software, Quicken TurboTax personal tax return preparation software, Lacerte and Pro Series professional tax software, and numerous services related to these products. Intuit's Small Business Division, which includes QuickBooks and related services and products, accounted for 36% of fiscal year 2000 revenues with revenues of \$394.3 million. (Intuit, October 2000, pp. 3, 23) There are 2.9 million registered QuickBooks users, including 500,000 new users in fiscal year 2000. (Intuit, August 2000) Intuit estimates 45,000

farmer and ranch operations use QuickBooks. (D. Gregory, personal communication, April 4, 2001) QuickBooks, Quicken, and Quicken TurboTax are the best-selling software in their respective product classes. (Intuit, October 2000, pp. 11, 12) Intuit claims that QuickBooks' market share of unit sales of small business accounting desktop software in the retail channel exceeded 85% from August 1999 through July 2000. (Intuit, October 2000, pp. 11) QuickBooks primary competitor is Peachtree Software. (Intuit, October 2000, pp. 11)

Technical support programs include the Premier Plan telephone and email support subscription (\$179 per year initially and \$149 per year for renewals) or pay-by-the-minute telephone technical support for \$3 per minute with a \$40 minimum. Technical support provided by the Premier Plan is available 24 hours a day, 7 days a week. Toll-free phone support is available for installation, upgrade assistance, and product defects.

Classes, seminars, and individual assistance can be purchased and obtained from QuickBooks Professional Advisors. Professional Advisors complete a special QuickBooks training course and pay a fee to Intuit for the training, designation, and listing on the QuickBooks website. There are numerous Professional Advisors throughout Montana; these people generally are accountants in CPA firms.

QuickBooks updates its software annually. Minor updates to annual releases can be downloaded free from the website. The price for updating to QuickBooks 2001 and QuickBooks Pro 2001 from previous versions is \$89.95 and \$169.95, respectively. Prospective customers can order a free trial CD-ROM for QuickBooks 2001 that allows 15 uses. Both QuickBooks 2001 and QuickBooks Pro 2001 come with a 60-day money-back guarantee.

5.2 TAX RETURN PREPARATION REPORTS & TOOLS

QuickBooks prepares tax information reports that show tax line information for Schedule F, Schedule C, and many other tax schedules. Tax lines are assigned to accounts during the account setup. The program can export tax line information directly to Quicken Turbo Tax. The business is set up in the program as a sole proprietorship, partnership, corporation, S corporation, or tax-exempt organization; that setting determines the tax lines available for setting up tax schedule reports. The tax lines for sole proprietorships include tax lines for personal living items in Schedule A and Form 1040. It is not possible to create a custom tax schedules or custom tax lines. In order to generate the proper line item amounts for a cash basis Schedule F report, purchases of supplies or prepaid expenses need to be recorded as expenses instead of being inventoried so that the expenditure is included in the cash basis Schedule F report.

The program's Schedule F tax lines do not include a tax line for depreciation. Because depreciation cannot be included in a Schedule F report, economic basis depreciation can be used for financial reporting purposes without creating an error in the Schedule F report. If economic basis depreciation is used, a tax line should not be assigned to the capital gain income account used to account for gains on sales of depreciable assets. The economic gain and tax gain may vary if the asset is not fully depreciated. Since the program does not have a feature for creating depreciation schedules, some users may choose to set up summary accounts for depreciable assets and create asset schedules in a spreadsheet using both economic basis and tax basis depreciation.

5.3 FINANCIAL REPORTS & TOOLS

QuickBooks produces the basic reports needed by most farmers: a balance sheet, a cash basis or accrual basis income statement, and a budget report. The program does not record both book

value and market value for long-term assets. Users must decide whether a market value balance sheet or book value balance sheet is preferred and set up and operate the program accordingly. The inventory system is not designed to accumulate product costs for a manufacturing process, such as raising crops or livestock. QuickBooks generates a report that compares the balance sheet position between periods and shows variance and percent change.

The program's income statement uses a single-step format and can be generated using either cash basis or accrual basis. The cash basis income statement includes non-cash expenses such as depreciation. The accrual basis income statement is not in accordance with GAAP because the net income calculation does not include an adjustment for change in inventories. If "Jobs" are used (a feature available only in QuickBooks Pro), the income statement is prepared using a multiple-step format. The learning materials used during the evaluation do not provide guidance for applying the Jobs feature to production agriculture so that the cost of goods sold (raised products) can be shown on an income statement. QuickBooks generates a report that compares current year and previous year income statements and shows variance and percent change.

The budget report can be generated showing the budget only or comparing the budget to actual results. Monthly budgets can be set up for expense and revenue accounts and balance sheet accounts. Only one budget can be set up per fiscal year. When setting up the revenue and expense budget, amounts budgeted to accounts can be associated with specific jobs and enterprises. The amounts listed in expense and revenue account budgets are budgeted cash flows; so cash flow budget reports should use a cash basis report parameter setting. In addition to showing actual and budget amounts, the budget vs. actual cash flow report shows the variance from the budget and shows actual results as a percentage of the budget. The amounts listed in balance sheet account budgets are budgeted end-of-month account balances. The balance sheet

budget vs. actual report compares the actual end-of-month balance sheet account balances to budgeted balance sheet account balances.

QuickBooks generates a statement of cash flows in a format that is in accordance with GAAP. The statement of cash flows uses special setup parameters to guide the classification of cash flow activities. QuickBooks does not generate a statement of owners' equity or a financial ratio report. It is possible to generate a custom report that provides the information needed to prepare a properly formatted statement of owners' equity. The custom report cannot be used to calculate custom ratios.

5.4 FARM MANAGEMENT REPORTING & TOOLS

QuickBooks associates transactions with enterprises using a data field called "Class". Enterprising is somewhat restricted since the program uses a single data field for enterprising. However, multiple levels of Classes (Sub-Classes) can be created to enable transactions to be distinguished by crop years, crop types, and fields. However, because the Class data field structure is hierarchal, Sub-Classes must be prioritized and organized to meet the farmers' needs.

The program has a preformatted income statement that presents the income statement by Class. The program enables users to modify reports using a report filter feature to control the Sub-Classes displayed in reports. The custom report feature can also be used to generate enterprise reports. Modified or custom reports can be "memorized" to preserve the special settings.

Because QuickBooks is a general-purpose accounting program, it does not have farm-oriented data fields dedicated to recording nonfinancial operational information. Nonfinancial operational information must be recorded in the memo data field. Custom data fields can be

created for inventory items, service activities, customers, vendors, and employees. It may be possible to creatively use custom data fields to record some nonfinancial operational information.

5.5 EVALUATION OF FUNCTIONALITY & FEATURES

Look & Feel

The program is designed for versatility so that many types of businesses can use it. As a result, the program has some features that agricultural producers are less likely to use, and the program does not have special screens related to farm operations.

The QuickBooks user interface is highly flexible and user-friendly. Often there is more than one method to navigate to a particular screen within the program. There are two main menus, including a customizable menu composed of shortcuts to program screens. Screens called Navigators display accounting cycle flow diagrams with icons that function as shortcuts to data entry forms. A feature called Preferences enables users to adjust many user interface features. Multiple password-protected usernames can be created and assigned “Permissions” to restrict individuals’ access to certain areas of the program. Many screens have a feature called Report Finder, which lists preformatted reports related to the particular screen. Accessing the help function from a particular screen yields help topics that directly relate to the screen. Within the program, multiple windows can be open at once. Windows are scaleable and are simultaneously updated when changes are made. Most data entry screens are formatted to look like the business forms they represent, such as invoices, checks, receipts, purchase orders, etc. Information entered from accounts payable and accounts receivable transactions is automatically transferred when related cash transactions are made. There are multiple ways to view and edit transactions.

Learning

With assistance from the manual, built-in help function, and ***The QuickBooks Farm Accounting CookBook***, it was easy to learn QuickBooks and apply the program to the agricultural operation modeled by the test set. QuickBooks has many menu items, options, and tools. The manual, built-in help function, and web-based learning tools provide a large amount of learning material that can require a significant amount of time to examine. The built-in help function is searchable and indexed. The built-in help function presents some instructions in a step-by-step order and provides some advice toward specific industries, but not farming or ranching. The QuickBooks manual is thorough and expansive in its coverage but does not provide clear guidance for applying program features to farming, such as setting up inventory items for raised products or setting up classes for farm enterprising. Two sample databases are installed with the program, one providing an example of a service-based company and one providing an example of a product-based retail company. The QuickBooks website contains a searchable help function of commonly asked questions called Knowledgebase and an industry-specific help section called Industry Centers. The Industry Centers help section does not provide advice for the agriculture industry. A section in the website called Message Boards allows users to post questions and suggestions to each other and is organized by topic.

Because QuickBooks is a mass-market product, books are available to supplement the learning material provided by QuickBooks. For guidance in applying QuickBooks to a farm operation, the author obtained a copy of ***The QuickBooks Farm Accounting CookBook***, written by Mark Wilsdorf and published by Flagship Technologies. This book is a very useful resource for learning about the limitations of QuickBooks, for learning techniques, and for guidance in the setup process. The ***QuickBooks Farm Accounting CookBook*** explains that the QuickBooks

inventory system is not designed to accumulate product costs for manufactured or raised inventories created by a manufacturing process and provides a methodology for creating inventory items for raised products. The *QuickBooks Farm Accounting CookBook* also provides useful tips and examples for setting up Classes for enterprising. The Flagship Technologies website (www.goflagship.com) has a section that is a questions and answers forum about applying QuickBooks to farm operations.

Setup Process

QuickBooks uses a setup wizard to guide the setup process. The wizard makes queries and uses responses to guide and automate the setup process. Text within wizard screens provides guidance for answering queries. Users can direct the program to create a preset chart of accounts that is typical to the user's industry, including a chart of accounts for agricultural operations.

Account numbers are optional and can be used in addition to account names. The size of the data field used for account names is 31 characters. Sub-accounts can be created. During the setup process, the user selects the form of organization (sole proprietorship, partnership, S corporation, or C corporation), which determines the tax lines available to assign to accounts. Other information set up within the wizard includes: customers, vendors, inventory items, and various parameter settings. Many setup settings that affect the program's operation and appearance can be modified later using a parameters screen, accessed through program menus.

The learning materials provided limited guidance for setting up the statement of cash flows. As a result, the user may have difficulty obtaining the correct results. In QuickBooks, any transaction involving a balance sheet account changes cash flow in one of the three categories (operating activities, investment activities, and finance activities) even if the transaction does not involve

cash. To generate a correct statement of cash flows, each account must be assigned to the correct statement of cash flow category.

Customization and User Control

QuickBooks has several features that allow users to customize or control the way it operates. One main menu is customizable. The Preferences feature allows the user to adjust the program's appearance and operation. The user can create reminders and to-do lists. Five custom data fields can be created for inventory and service items. Seven custom data fields can be created for customers, vendors, and employees. The program allows users to customize the content and appearance of printed business forms and business forms in program screens used for data entry.

Data Entry

QuickBooks has many features that benefit the data entry process. Features that save time and reduce data entry error include: drop-down lists; radio buttons; an auto-fill feature; a graphic calendar for entering dates in date data fields; and memorized transactions. The program automates data entry by filling in some information in the data entry screen of a new transaction based upon the vendor's or customer's most recent transaction. This is generally convenient since transactions for a given vendor or customer tend to be similar or repeat. When cash transactions related to accounts payable and accounts receivable transactions are recorded, information recorded in the original transaction is shared with the new transaction. The program has a special data entry screen for adjusting inventory value and quantity.

QuickBooks uses alarms as a preventative measure to alert the user of changes, potential problems, and upcoming events. The program sounds an audible alarm when a record is originally entered and when a modified entry is recorded. Transactions must balance to be

recorded; a warning appears when users attempt to record unbalanced entries. Warnings appear when users attempt to record transactions that have duplicate transaction reference numbers; however, transactions can be recorded if the warnings are ignored. When entering a sale transaction, the program warns the user if the sale quantity exceeds the quantity of inventory available as per the inventory records. The program automatically creates reminders for credit transactions and certain accounting activities and allows the timing of reminders to be adjusted.

Transactions can be accessed from several program screens for editing or deletion. Previous transactions can be accessed from data entry forms or account registers. In reports, the drill-down feature can be used to access and edit data entry forms. If the audit feature is turned on, the program maintains a historical record of changes made to entries. Because QuickBooks does not use a year-end closure process, there are no special procedures for entering or editing transactions in a previous fiscal period or for entering transactions in a future fiscal period.

Transaction detail information is retained indefinitely, unless the user condenses the database to reduce the file size. The condense command deletes the detail of individual transactions and creates monthly account totals for the condensed period.

Reports

QuickBooks has numerous preformatted reports, all of which can be modified by: changing the date range, changing the basis, creating filters, selecting columns to be displayed, adjusting the order of columns; editing report titles; and changing the type, size, and color of fonts. Report settings can be saved using the memorized reports feature. The program enables users to generate custom reports that include any data field, including custom fields. The custom report feature provides a significant amount of control through filtering and parameter settings. The custom report does not allow users to prepare multiple-step reports, create custom rows, make

calculations, or merge reports. QuickBooks generates six preset bar graphs and pie charts used to graphically present information about revenues and expenses; sales; accounts receivable; accounts payable; net worth; and budget vs. actual comparisons.

The program generates presentation quality reports using adjustable fonts. Time and date stamps are printed on all reports. Reports showing sub-accounts can be “collapsed” to the highest level of accounts but not to intermediate level sub-accounts. The drill-down feature allows users to view the transactions underlying summary totals in reports. All reports can be exported to Excel. To export reports to Excel, QuickBooks users must print reports as files readable by a spreadsheet program. QuickBooks Pro users can export reports directly to Excel directly from program report screens.

Other Features & Tools

Special features within the program enhance the program’s functionality. QuickBooks can be used to perform online banking with participating financial institutions. Users can print checks and other business forms using special forms available from QuickBooks. Users can design the layout of business forms to fit other custom forms. Permissions assigned to individual users restrict access to certain task areas of the program. Users log on to the program using usernames and passwords. QuickBooks does not maintain an access log, but when the audit trail is activated, the program records who enters or modifies transactions. When processing the test set information, the backup feature compressed the test set database from 850 Kb to 137 Kb. A recovery feature is used to decompress backup files. The database file size can be reduced using the condensing data feature, which replaces transaction detail records with monthly account totals. Many accountants use QuickBooks. The program has a feature that can be used to share the database file with an accountant and merge the accountant’s copy with the user’s file after the

accountant performs modifications. QuickBooks generates special tax line information files that can be imported by TurboTax.

Additional services are available that enhance the program's functionality. QuickBooks offers special services for on-line billing and merchant credit card services. The program's payroll feature can be operated manually, or users may subscribe to one of two special web-based payroll services that integrate with the program. The basic payroll service subscription costs \$129 per year, provides up-to-date payroll tax tables, and makes earnings and deductions calculations. The deluxe payroll service subscription costs \$384 per year, calculates payroll information, deposits state and federal payroll taxes, and files payroll information returns.

5.6 QUICKBOOKS 2001 / QUICKBOOKS PRO 2001

Intuit released QuickBooks 2001 (\$149) and QuickBooks Pro 2001 (\$249) in December 2000. These releases were not evaluated. The author reviewed QuickBooks Pro 2001 product information on the QuickBooks website and did not identify changes that would have led to substantially different conclusions had QuickBooks Pro 2001 been evaluated instead of QuickBooks Pro 2000. In the author's view, changes improve functionality, particularly user-friendliness, but do not particularly affect tax, financial, or management report capabilities. Some of the changes include: improvements to the graphical interface benefiting program navigation; a spell-check feature; improvements to the report function related to report layout; the ability to print reports in batches; addition of an accounting basis stamp to the time and date stamp feature; an improvement for partial payment of invoices; a new capability to email or fax invoices and estimates directly from the program; and a new capability in QuickBooks Pro 2001 for defining multiple price levels for inventory items and services. An automated tour of QuickBooks 2001 can be viewed on the website.

6.0 CONCLUSIONS

6.1 GENERAL INSIGHTS

6.1.1 Setting up an Accounting System

The evaluation provides insights about the process of learning, setting up, and using accounting software. Learning about program features and how to apply accounting software may be a significant task for people who lack experience with accounting software and only have a rudimentary understanding of accounting. The value of a good manual and help function cannot be overstated. The setup process is a critical step in applying the program to meet the users needs. Far beyond creating a chart of accounts, the setup process includes identifying and prioritizing the user's needs and understanding how the program operates to meet those needs. Users need to understand how the program processes data and creates reports prior to the setup process to identify the limitations and intricacies that affect report generation. The setup process may require more time than expected. Individuals may benefit from professional assistance. When processing the test set information, entering a year's worth of transactions required significantly less time than either the learning process or the setup process. Minimal effort is required to enter transactions for any of the evaluated software packages, even those with less automation and fewer user-friendly features.

Piloting the program by setting up and processing a test set of information provides benefits that most likely outweigh the upfront cost of time. These benefits include reinforced learning, future timesavings, and assurance that the system will produce the needed information. The test run enables the user to work out bugs in the setup process and data entry process before the program is implemented and relied upon. For best results, the test set should approximate the user's operation.

Most software companies offer free demo versions of software. This provides potential purchasers a chance to perform their own evaluation of the software without purchasing the software. Performing a systematic analysis is both difficult and time consuming, particularly if the individual does not have much experience evaluating or using accounting software. Nevertheless, agricultural producers may want to take advantage of the opportunity. To avoid becoming bogged down, individuals should narrow the list of candidate programs. Individuals should set aside enough time to thoroughly evaluate those programs. Hasty and superficial evaluations may lead to acquisition based on insufficient information, excessive focus on price, allure of pretty graphics, or enticement by the software firm with the boldest claims.

6.1.2 General Findings For the Evaluated Software as a Group

The evaluation exercise provides insights about the evaluated packages as a group. To a varying degree, the manuals and help functions of the software tailored for farm operations either: provided inadequate explanations of certain important topics or terminology; covered a limited scope of topics; or both. AgCHEK's learning materials and help function are an exception to this statement. The statement applies less to Perception Accounting and Farmworks than the other software tailored for farm operations. The QuickBooks manual and learning materials are thorough and are useful for learning about the program but do not provide guidance for applying the program to a farm operation. The *QuickBooks Farm Accounting Cookbook*, published by Flagship Technologies, provides special guidance for farm operations. In all cases, but particularly when programs with deficient manuals and help functions are used, problems can be avoided by: using a simple account structure and enterprise structure and choosing not to use complex program features.

Except for FMS/Harvest Perception Accounting, CTN Data Service Farmworks, and T. Murphy Associates Ag Money Manager, the inventory functions of the evaluated software packages are not designed to accumulate product costs for manufactured or raised inventories created by a manufacturing process. Only FMS/Harvest Perception Accounting and CTN Data Service Farmworks calculate net income in accordance with GAAP by including an adjustment for change in inventories in the calculation of accrual basis net income.

6.2 PRIMARY STRENGTHS & WEAKNESSES OF INDIVIDUAL PROGRAMS

The strengths and weaknesses described in this section pertain to individual programs and are not strengths and weaknesses of programs in relation to each other.

6.2.1 Red Wing Business Systems AgCHEK 4.0

The primary strengths of AgCHEK 4.0 include its thorough and effective help function; the enterprising capabilities and management tools of the Crop/Chemical Management and Livestock Management modules; and the way the database links data fields to reduce data entry and control the data entry process. Of the programs tailored for farm operations, AgCHEK possessed the most effective, thorough, and user-friendly help function. Besides thoroughly explaining a broad scope of topics related to the program, the help function uses many tools including: hyperlinks to sub-topics and related topics, drop-down glossary definitions, step-by-step Cue Cards, and menu tree diagrams. The tradeoff of the help function is that it may take a significant amount of time to examine all of the software documentation. The management modules generate crop year-based enterprise reports based upon direct costs and allocated indirect costs. The program allows users to classify expenses as fixed or variable, and the management modules use the classification when breakeven analysis calculations are performed. The management modules generate numerous managerial reports including reports dealing with: raised inventories,

financial and operational efficiency, field histories, and chemical application records. AgCHEK meets farmers' reporting needs for tax information reports, financial reports, and managerial reports. The primary weaknesses of AgCHEK 4.0 include: the lack of a graphically driven drill-down feature; the inability to view the numbers the program used to calculate financial ratios; and the lack of a data field that specifically associates an account or transaction with a tax return line.

6.2.2 T. Murphy Associates Ag Money Manager

Ag Money Manager is not an accounting program in terms of financial report generation capabilities. Rather, it is a management program that meets certain accounting needs of farmers. Ag Money Manager was evaluated because it meets certain accounting needs; is tailored specifically for farm operations; is priced considerably lower than the other software evaluated (with the exception of QuickBooks); and provides a unique managerial accounting approach that differs from the other software evaluated.

The strengths of Ag Money Manager lie in its product costing capabilities, tax line information report compilation, focus on future financial results, and flexibility to make the program fit many different types of agricultural operations. The learning materials provide many examples of applying the program to different agricultural operations. Ag Money Manager allows users to perform true product costing. The program is also useful for operational budgeting and analysis.

The most serious weakness is that the user may have difficulty learning the program design and terminology, and as a result have difficulty in setting up and using the program properly. The manual and brochures do not discuss some topics and concepts in a manner that is clear and easy to understand. However, the program has been in use since the 1980's and has been learned by a

considerable number of people. Due to the way the program's year-end closure process operates, recorded information is not preserved indefinitely. The program does not have a graphically driven drill-down feature. The program's financial report capabilities may be insufficient for many users. The program collects the necessary information, but most users probably will need to generate reports using other software.

6.2.3 Vertical Solutions Easy Farm 6.5

The primary strengths of Easy Farm 6.5 include the relative ease with which it can be learned, its ability to collect and store a large amount of nonfinancial operational information, and low cost for technical support and program maintenance. When processing the test set information, less time was required to examine the learning materials for Easy Farm Pro than the other evaluated programs. This is partially explained by well-named terminology and logical screens, but deficiencies in thoroughness of the manuals also explain this. It is the only program evaluated in which the standard accounting program is capable of calculating depreciation (tax-basis depreciation). The Crop & Field Manager Module allows users to record a large amount of non-financial operational information. Easy Farm Pro meets farmers' reporting needs for tax information reports, financial reports, and managerial reports.

The primary weaknesses of the program include: deficiencies in the manual; a malfunction in the automated depreciation function; inability to perform direct allocation to enterprises; and lack of a graphically driven drill-down feature. The program cannot simultaneously perform accrual and cash basis accounting. The program uses a year-end closure process, which prevents users from modifying transactions recorded in previous periods. Reports cannot be exported to spreadsheets. According to Vertical Solutions, in Version 7.0, the problem with the depreciation

function has been fixed; transactions can be directly allocated to enterprises; and the manual has been updated. (G. Spengler, personal communication, March 29, 2001)

6.2.4 CTN Data Service Farmworks 6.6

The fundamental strength of Farmworks is how it performs detailed product cost enterprising with a high level of user friendliness. Of the programs evaluated, the enterprising features and design of Farmworks make it the best program for enterprising in terms of capabilities and user-friendliness. Farmworks has several other primary strengths. Farmworks allows users to set up multiple tax schedules for tax line information reports. Farmworks generates cash basis tax information reports, while at the same time preparing an accrual basis income statement in which net income is calculated in accordance with GAAP using the true accrual method. Farmworks uses a manufacturing process inventory system to accumulate product costs for manufactured or raised inventories created by a manufacturing process. Farmworks allows users to record a large amount of nonfinancial information using a user-friendly graphical interface. The learning material included in the program, CD-ROM, and built-in help function provide high quality reference material that helps to make the program relatively easy to learn. Setting up the program is relatively rapid and easy because of the program design, a well-organized setup worksheet, and information provided in reference materials. Farmworks meets farmers' reporting needs for tax information reports, financial reports, and managerial reports.

Farmworks has several primary weaknesses that deserve attention. It is not possible to edit a transaction without voiding and re-entering the transaction. It seems difficult to access information recorded in the database because the program does not have a graphically driven drill-down feature and because it is not possible to examine data entry screens after transactions are recorded. The year-end closure process prevents users from modifying transactions recorded

in closed fiscal periods. Relatively few reports can be exported to spreadsheet programs; most notably, balance sheets and income statements cannot be exported. The program reference materials could communicate information more effectively, particularly setting up livestock enterprises and the use of the Account Register feature for data entry.

6.2.5 FMS/Harvest Perception Accounting 10.02

The primary strengths of Perception Accounting include: the benefits provided by its template feature; the ability to generate a multiple-step accrual basis income statement that adjusts for change in inventories using the true accrual method, while at the same time generating a cash basis Schedule F report; thorough and detailed instructional material; wizards that provide guidance for setting up the database and setting up templates; special transaction entry screens for recording non-cash financial events; special automated entries; and the ease with which adjustments can be made to quantities and valuations of harvested inventories. The template feature is unique to Perception Accounting. The template features makes Perception Accounting the most powerful program evaluated for automating and controlling data entry. Templates control data entry and budget creation. Templates allow the user to customize the data entry process, resulting in more rapid data entry while reducing the potential for making errors. Templates enable very detailed budgets to be generated with relative ease. Perception Accounting is the only software evaluated that generates a multiple-step income statement. Perception Accounting uses a manufacturing process inventory system to accumulate product costs for manufactured or raised inventories created by a manufacturing process. Perception Accounting meets farmers' reporting needs for tax information reports, financial reports, and managerial reports. Add-on modules may significantly enhance the program's capabilities. The addition of the Enterprise Analysis Module gives Perception Accounting more flexibility for generating enterprise reports than the other programs evaluated. The addition of the

Depreciation Module gives users the ability to create tax basis and economic basis depreciation schedules and automatically post depreciation expense entries.

The program's major weakness involves the complexity of templates and the amount of time and effort required to set up templates. Other primary weaknesses include: the large amount of learning needed to set up and operate the program; shortcomings within the learning materials in the explanation of certain topics; and the amount of time required to set up the database. Proper template design is crucial to successful utilization of Perception Accounting. Poorly designed templates lead to errors in reports and difficulty in creating budgets. Initially, the template feature is difficult to understand. The learning materials do not reveal or explain the pitfalls of poor template design. Setting up templates may be very time consuming if templates are set up for every type and variation of transaction impacting the various enterprises. It is not necessary to design such specific templates, but very specific templates are more useful for data entry and budgeting. The learning process is a major task because the program has many features, tools, and settings. Some of the concepts are abstract and complex. The learning materials seek to be thorough in providing information, but certain features are not well explained, including templates and certain automated transactions. When processing the test set information, the setup process required more time than the other evaluated software because of the amount of time spent creating templates. Even if the author initially understood templates better, this would not have changed.

6.2.6 FBS Systems TransAction Plus 7.1

Although FBS provided a farm records program (Crop Audit Plus 7.1) with the accounting program (TransAction Plus 7.1), only TransAction Plus 7.1 was tested because a manual was not provided for the Crop Audit Plus and because the built-in help function did not cover Crop Audit Plus 7.1.

The primary strengths of TransAction Plus 7.1 include: its relatively simple and logical menu structure and program terminology; the amount of control the user is given in generating reports through filtering, column arrangement, and adjustable fonts; the ability to save any report as a file readable by spreadsheet programs; the ability to generate graphs and control the contents of graphs; the ability to search for and edit transactions; the ability to compare account balances between years; and potential increased capabilities from numerous additional modules. FBS offers a comprehensive set of modules that integrate with TransAction Plus. The modular design makes it possible for users to select a configuration that meets their particular needs or to create a very complete system. It appears that the TransAction Plus system capabilities can be expanded more through modules than the other software evaluated. TransAction Plus 7.1 meets farmers' reporting needs for tax information reports, financial reports, and managerial reports.

The primary weakness of Transaction Plus 7.1 involves shortcomings in the manual and built-in help function. The manual and help function omit discussion on some features and procedures, lack good explanation or clarity in describing some features and procedures, and use few examples to help the user understand the program. The help function's searchable index only lists help topic titles, and only help topic titles are used as keywords for searches. The number of help topic index items is sparse in relation to the amount of information covered by the help function. Other significant weaknesses include: a lack of true graphical drill-down capability from summary reports; the design of the cash flow budget feature, which may result in confusing or erroneous budget vs. actual comparisons for balance sheet accounts; and inconvenience in entering transaction descriptions due to restricted data field size or extra steps required to enter long descriptions. The price for TransAction Plus and additional modules is relatively high compared to other software evaluated with similar, although not identical, capabilities.

6.2.7 Intuit QuickBooks Pro 2000

The primary strengths of QuickBooks relate to its functionality and its position as a mass-market product. QuickBooks' graphical interface, many user-friendly features, flexibility, and customizability make it easy to operate and learn. Of the software evaluated, QuickBooks is the most flexible and user-friendly. The program's general-purpose nature and flexibility may particularly benefit agricultural operations venturing into non-traditional value-added or service-oriented enterprises. With the aid of the *QuickBooks Farm Accounting CookBook*, QuickBooks was the easiest program to learn of the evaluated software. QuickBooks is widely used, and there are various learning resources available external to the software company, in addition to learning resources provided by Intuit. Because QuickBooks is widely used, there is an increased likelihood that help is available from accountants and neighbors. Many accountants use QuickBooks, making it easy for QuickBooks users to transfer database files to accountants for examination. QuickBooks' market leading position creates some assurance against obsolescence. Because of its scale, Intuit probably has going-concern stability over the long term. As the leader in a large and highly competitive market, Intuit has the resources and motivation to keep the program up-to-date and constantly improve the product. Finally, although the products are not the same, QuickBooks has a price advantage over accounting software tailored for farm operations. QuickBooks meets farmers' reporting needs for tax information reports, financial reports, and managerial reports.

The primary weaknesses of QuickBooks mostly relate to its generalized approach. Because QuickBooks has so many features and because so much learning material is available to meet the general needs of many types of businesses, agricultural producers may have difficulty in identifying what they need to know to streamline the learning process. Special guidance for

applying QuickBooks to agricultural operations is not provided within the QuickBooks manual, help function, or web-based learning tools. Because QuickBooks is a general-purpose accounting program, the database and graphical interface are not set up with data fields dedicated to recording agriculture-oriented nonfinancial operational information. Raising crops or livestock is essentially a manufacturing process. The inventory function is not designed to perform as a manufacturing process inventory system that accumulates product costs. As a general-purpose accounting program, QuickBooks meets the inventory needs of the majority of its market without offering this capability. The calculation of net income in the accrual basis income statement does not include an adjustment for change in inventories. This prevents QuickBooks from generating an accrual income statement that is in accordance with GAAP. Finally, if the user chooses to keep current and utilize special services, the total product cost of QuickBooks may be higher than expected due to the costs of annual updates and numerous service subscriptions.

6.3 THE AUTHOR'S RECOMMENDATIONS

These recommendations are not endorsements. The evaluation process was performed primarily to assist agricultural producers and professionals serving production agriculture. The purpose of this paper is to help these parties gain a better understanding of issues faced in accounting for a farm operation and provide information about individual program's features and potential problems that can only be learned through testing. The author advises readers to evaluate their needs and focus on findings for individual programs rather give too much weight to the author's recommendations. The author advises readers to think independently, obtain demo versions of software to test for themselves, and make inquiries to software companies. Even though a great effort was made in this study to systematically evaluate the programs to reduce subjectivity and maintain fairness, subjective judgment could not be avoided. Evaluating software is not like

testing the strength of steel in an engineering laboratory. If this paper were limited to totally objective statements, it would be of little value to readers. Thus, the challenge to perform an essentially subjective task with as much objectivity and fairness as possible was exceedingly difficult. The author hesitates to make recommendations but believes that readers reasonably expect the author to share these subjective conclusions.

For an agricultural producer with simple needs, who does not record nonfinancial operational information or is willing to use a separate system for recording nonfinancial operational information, QuickBooks may very likely be the best choice of the evaluated programs because of its user friendliness, flexibility, many resources for learning, low price, and ability to sufficiently track direct product costs. The major tradeoff is that QuickBooks is not designed to be applied specifically to farm operations and does not have data fields or special data entry screens for recording farm-oriented nonfinancial operational information. The author recommends that farmers who purchase QuickBooks also purchase *The QuickBooks Farm Accounting Cookbook* for guidance in applying QuickBooks to a farm operation. Spreadsheet programs can be used to compensate for QuickBooks' shortcomings. Reports can be exported to spreadsheet programs to be modified to meet users' needs. For example, income statements can be modified to incorporate change in inventories into the net income calculation. Users can allocate indirect costs to products or enterprises using a spreadsheet program. Spreadsheet or database programs can be used to record nonfinancial operational information.

Farmworks may be the best choice of the evaluated programs for an agricultural producer who places a very high priority on enterprising capabilities, determining the true cost of production, and recording nonfinancial operational information. Tradeoffs exist and are discussed in

previous sections. The Farmworks system integrates the accounting function with the operational records function so that operational information is used to allocate indirect costs to enterprises and products. Farm operation information is entered via a user-friendly interface. Farmworks' accrual basis income statements do not have to be adjusted to conform to GAAP. The program enables users to create custom tax return information reports. The program classifies purchases of supplies or prepaid expenses as expenses in the Schedule F tax information report while classifying the supplies or prepaid expenses as inventories in the balance sheet.

7.0 SUMMARY

Relatively little information is readily available to farmers and ranchers to aid them in making decisions about acquiring accounting software. The purpose of this paper is to provide a useful resource to agricultural producers to help in making decisions regarding accounting software. The objective of this study is not to generate a ranking of the selected programs. Rather, the objective of this study is to present information about individual programs so that potential users and advisors can compare the programs and determine if the programs meet their needs. Even though the objective of the evaluation is not to rank the software, certain distinguishing qualities and features, as well as shortcomings, differentiate the software packages.

The evaluation process was performed on six software packages tailored for farm operations and one general-purpose entry level accounting program, QuickBooks Pro 2000. The farm-tailored programs evaluated include:

- AgCHEK 4.0 by Red Wing Software
- Ag Money Manager by T. Murphy Associates
- Easy Farm Pro 6.5 by Vertical Solutions
- Farmworks 6.6 by CTN Data Services
- Perception Accounting 10.01 by FMS/Harvest
- TransAction Plus 7.1 by FBS Systems

Research for this study was performed in several phases. An effort was made to identify and understand special problems affecting accounting for production agriculture and to determine agricultural producers' accounting and record keeping needs. To expedite a methodical evaluation, the author prepared a test set of financial information, transactions, and reports to be

processed and generated by each program. The author prepared a standard questionnaire to apply to the evaluation of each program. After completing the testing phase, the author evaluated the ability of each program to meet farmers' reporting needs, identified deficiencies, and identified features benefiting functionality.

In Montana, the majority of farms and ranches keep financial records primarily for tax return preparation and financing. The use of financial records for guiding management decisions is also important. The key accounting reports identified include: cash basis Schedule F tax line information reports; cash basis income statements or cash flow statements, cash flow budgets; balance sheets; and enterprise reports. Meeting these minimum reporting needs does not present a technical challenge for most of the software evaluated. Interviewees identified functionality as a critical need for accounting software. Functionality is a quality that describes how the software interfaces with the human mind to enable the user to utilize the program's capabilities and achieve reporting objectives. Interviewees identified simplicity, ease of learning, and ease of use as the most important factors. Whether the program is easy to learn and use may be the controlling factor determining the potential benefit of the program to the user, regardless of the program's available reports and technical capabilities.

Several key issues important to accounting for agricultural operations increase the classification of information. Classifying information in numerous ways presents technical challenges for accounting software, particularly since the conventions used to classify information may be diametrically opposed to each other. Most agricultural producers use cash basis accounting because they prepare cash basis tax returns, utilizing cash basis accounting to defer and manage taxes; because they perceive cash basis accounting as easier to understand than accrual basis; and because the lenders, from whom they obtain financing, primarily focus on historic and forecasted

cash flow. However, accrual basis accounting portrays financial performance more accurately. Two methods can be used to generate accrual basis income statements in accordance with GAAP: the cash-to-accrual method and the true accrual method. These methods include an adjustment for change in inventories in the calculation of net income. Farmers are more likely to use the cash-to-accrual method because record keeping is easier and because it is more aligned with generating Schedule F tax line information than the true accrual method. The true accrual method is more aligned with determining actual cost of production than the cash-to-accrual method. The accrual basis income statements of most of the evaluated software do not adjust for change in inventories, and therefore do not comply with GAAP. Enterprising is an important technique used for evaluating the performance of components of the farm operations and determining the cost of production. Enterprising is most powerful when multiple types of enterprises are used and enterprise reports are organized on a production cycle basis rather than a fiscal year basis. Asset depreciation is a key accounting issue for farm operations and is complicated by the need to keep two sets of depreciation records, one for tax purposes and one for financial reporting purposes. Scheduling depreciation is an important tax management strategy for agricultural producers. For meaningful financial statements and calculations of operating costs, depreciation needs to be based on economic depreciation. The book value of capital assets in the balance sheet is directly related to depreciation. To evaluate solvency, lenders are also interested in the market value of capital assets and marketable inventories. However, lenders place less emphasis on the market value of assets now than in the late 1970's and early 1980's.

General Findings For the Evaluated Software

- The programs, with minor exceptions, meet farmers' reporting needs for tax information reports, financial reports, and managerial reports. Ag Money Manager meets many of farmers' information collection needs but has limited financial report capabilities.
- The programs force users to choose between using tax basis depreciation and economic basis depreciation for depreciation expense; this decision impacts tax information reports and financial reports.
- Most program's accrual basis income statements only factor-in depreciation and the recognition of expenses and revenues that result from accounts receivable and accounts payable transactions. Additionally, most of the programs expense prepaid expenses rather than capitalize these costs as inventories because the design of these programs favors generating cash basis tax preparation reports over preparing accrual basis income statements in accordance with GAAP. Only Perception Accounting and Farmworks include an adjustment for change in inventories as part of the calculation of net income, and simultaneously prepare cash basis tax preparation reports.
- To a varying degree, the manuals and help functions of the software tailored for farm operations either: provide inadequate explanations of certain important topics; cover a limited scope of topics; or both. AgCHEK's learning materials and help function are an exception to this statement. The statement applies less to Perception Accounting and Farmworks than to the other software tailored for farm operations.

Insights on Setting Up an Accounting System

The evaluation process yielded some general observations about setting up and using accounting software.

- The value of a good manual and help function cannot be overstated. Learning about program features and how to apply accounting software may be a significant task.
- The setup process is a critical step in applying the program to meet users' needs. Identifying and prioritizing the user's needs and understanding how the program operates are part of the setup process.
- Minimal effort is required to perform data entry using any of the evaluated software packages, even those with less automation and fewer user-friendly features.
- Piloting the program by setting up and processing a test set of information provides potential benefits that most likely outweigh the upfront cost of time. These benefits include reinforced learning, future timesavings, and assurance that the system will produce the needed information.

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APPENDIX A

COMPARISON TABLE - EVALUATED SOFTWARE

COMPARISON TABLE - EVALUATED SOFTWARE

| | AgCHEK 4.0 | Ag Money Manager | Easy Farm 6.5 | Farmworks 6.6 | Perception 10.02 | TransAction 7.1 | QuickBooks Pro 2000 |
|--|----------------|------------------|-----------------|-----------------|------------------|-----------------|---------------------|
| Tax Reports | | | | | | | |
| Cash Basis Schedule F Report | • | • | • | • | • | • | • |
| Other Tax Schedules | | • | | • ³⁴ | • ⁴⁵ | | • |
| 1099 Reports | • | | | • | • | • | • |
| Depreciation Calculations or Schedules | | | • | | • ⁴⁶ | | |
| Financial Reports | | | | | | | |
| Balance Sheet | • | • ¹³ | • | • | • | • | • |
| Balance Sheet - Market Value & Book Value | • | • ¹³ | • | • | • | • | |
| Income Statement – Cash Basis | • | | • ²¹ | • ³⁵ | • | • | • |
| Income Statement – Accrual Basis | • | | • ²¹ | • | • | • | • |
| Income Statement – Accrual Basis, calculated per GAAP | | | | • | • | | |
| Cash Flow Budget Report | • | • | • | • | • | • | • |
| Cash Flow Report – Budget vs. Actual | • | • | • | • | • | • | • |
| Statement of Cash Flow, GAAP format & contents | | | | | | • ⁵⁸ | • ⁷¹ |
| Statement of Owners Equity | | | | | | • ⁵⁸ | |
| FFSC Financial Ratio Calculations | • | • ¹³ | | | • ⁴⁷ | • ⁵⁸ | |
| Managerial Reports | | | | | | | |
| Enterprise Report | • ¹ | | • ²² | • | • | • ⁵⁹ | • |
| Enterprise Report – Crop Year | • ² | • ¹⁴ | • ²³ | • | • ⁴⁸ | • ⁵⁹ | • ⁷² |
| Enterprise Report – Crop Type | • ² | • | • ²⁴ | • | • ⁴⁸ | • ⁵⁹ | • ⁷² |
| Enterprise Report – Field | • ² | • ¹⁴ | • ²³ | • | • ⁴⁸ | • ⁵⁹ | • ⁷² |
| Reports on Nonfinancial Operational Information | • ² | • ¹⁵ | • ²⁵ | • | • ⁴⁹ | • ⁶⁰ | |
| Chemical Application Report | • ² | | • ²⁵ | • | • ⁴⁹ | • ⁶⁰ | |
| Features Affecting Functionality | | | | | | | |
| Setup Wizard | • | | | | • | | • |
| Pre-set Chart of Accounts Available | • | | • | • | • | • | • |
| Account Numbers: Not Used (Blank) / Optional (Opt.) / Required (•) Optional (Opt.) | Opt. | | • | | Opt. | • | Opt. |
| Custom Data Fields | | | | | • ⁵⁰ | | • ⁷³ |
| Searchable Indexed Help Function | • | | | • | • | • | • |
| Drop-down Menus | • | • | • | • | • | • | • |
| Graphical Calendar | • | | • ²⁶ | | | | • |
| Auto-fill Feature | • | • | • | • | • | • ⁶¹ | • |
| Memorized Transactions | • | | | • | • | • | • |
| Special Data Entry Screens for Types of Transactions | • | | • | • | • | • | • |
| Special Data Entry Screens Specific to Farming | • | | • ²⁵ | • | • | • ⁶² | |

Further explanation of table line-items is provided in Section A.2

COMPARISON TABLE - EVALUATED SOFTWARE (CONT.)

| | AgCHEK 4.0 | Ag Money Manager | Easy Farm 6.5 | Farmworks 6.6 | Perception 10.02 | TransAction 7.1 | QuickBooks Pro 2000 |
|---|-----------------|------------------|-----------------|-----------------|------------------|-----------------|---------------------|
| Features Affecting Functionality (continued) | | | | | | | |
| Allocates Payments to Specific Invoices | • | • ¹⁶ | | • | • | • | • |
| Transaction Editing Without Deleting Entry | • | • | • | | • | • | • |
| Audit Function Tracks Changes & Deletions | • | • | | • | • | • | • |
| Reminders or To-do Lists | • ³ | | | • ³⁶ | • ⁵¹ | | • |
| Year-End Closure of Accounts Required | | • | • | • | | • | |
| Graphically Driven Drill-down Feature | | | | | • | • ⁶³ | • |
| Time & Date Stamps | • | • | • | • | • | • | • |
| Adjustable Fonts | | | | | | • | • |
| Modifiable Reports | • | • | • ²⁷ | • ³⁷ | • | • | • |
| Custom Reports | | | | | • ⁵² | • ⁶⁴ | • ⁷⁴ |
| Graphs | • ⁴ | | | | • ⁵³ | • | • ⁷⁵ |
| Historical Comparison Reports | • | | • | | • | • | • |
| Vertical Analysis Calculations For Income Statements | • | | | • | | • | • |
| Aging of Accounts Receivable and Accounts Payable | • | | | • | • | • ⁶⁵ | • |
| Exports Reports to Spreadsheets | • | • ¹⁷ | | • ³⁸ | • | • | • |
| Passwords | • | | • | • | • | | • |
| Ability To Set Up Usernames | | | | | • | | • ⁷⁶ |
| Compressed Backup Files | • | | • | • | • | • | • |
| Special Features or Available Additional Modules | | | | | | | |
| Data Fields for Operational Notes & Records | • ² | • ¹⁵ | • ²⁵ | • | • ⁴⁹ | • ⁶² | |
| Check Writing | • | • | • | • | • | • | • |
| Bank Account Reconciliation | • | | • | • | • | • | • |
| Payroll Calculation Features or Services | • ⁵ | | • ²⁸ | • ³⁹ | • ⁵⁴ | • ⁶⁶ | • ⁷⁷ |
| Online Banking | | | | | | | • ⁷⁸ |
| Bill Paying Service | | | | | | | • ⁷⁸ |
| Credit Card Merchant Service | | | | | | | • ⁷⁸ |
| Farm Records Module | • ⁶ | | • ²⁹ | • | • ⁴⁹ | • | |
| GIS Module | | | | • ⁴⁰ | • ⁵⁵ | • | |
| Livestock Production Records Module | • ⁷ | | • ³⁰ | • ⁴¹ | | • | |
| Livestock Herd Records Module | • ⁸ | | • ³⁰ | • ⁴¹ | | • | |
| Depreciation Module | • ⁹ | | | | • | • | |
| Financial Report Module | | • ¹⁸ | | | | • ⁶⁷ | |
| Financial Ratios Module | | • ¹⁸ | | | • | • ⁶⁷ | |
| Payroll Module | • ¹⁰ | | | | • | • | |

Further explanation of table line-items is provided in Section A.2

COMPARISON TABLE - EVALUATED SOFTWARE (CONT.)

| | AgCHEK 4.0 | Ag Money Manager | Easy Farm 6.5 | Farmworks 6.6 | Perception 10.02 | TransAction 7.1 | QuickBooks Pro 2000 |
|---|-----------------------|-------------------------|----------------------|---------------------------|-------------------------|------------------------|-----------------------------|
| Technical Support | | | | | | | |
| Cost of Annual Technical Support Subscription | \$159 - \$399 | \$0 ¹⁹ | \$0 ³¹ | \$120 ⁴² | \$125 - \$225 | \$199 - \$599 | \$179 / \$149 ⁷⁶ |
| Toll-free Technical Support Phone Number | ● | | ● | | ● | ● ⁶⁸ | ● |
| Frequently Asked (technical) Questions on Website | ● | | | ● ⁴³ | ● ⁵⁶ | | ● |
| User Group Bulletin Board on Website | | | | ● ⁴³ | | | ● |
| Price of Software | | | | | | | |
| Base Price | \$696 ¹¹ | \$145 | \$249 ³² | \$500 | \$590 ⁵⁷ | \$995 ⁶⁹ | \$149 ⁸⁰ |
| Price as Tested | \$1,085 | \$145 | \$395 | \$500 | \$1,090 | \$1,785 | \$249 ⁸¹ |
| Software Company Information | | | | | | | |
| Date Founded | 1979 | 1981 | 1985 | 1980 / 1992 ⁴⁴ | 1981 | 1982 | 1983 |
| Number of Employees | 35 | 1 | 3 ½ | 22 | 12 | 9 | 4,500 |
| Percent of Business That is Agriculture Related | 25%/50% ¹² | 100% | 98% | 100% | 100% | 100% | <2% ⁸² |
| Estimated Number of Farmers Using Program | 5,000 | 175 | 3,000 | 13,000 | 11,000 | NP ⁷⁰ | 45,000 |
| Release Date of Evaluated Version of Software | 11/00 | 1994 | NA | NA | 10/99 | 10/99 | 12/99 |
| Release Date of Most Current Version (as of April 2001) | 11/00 | ?/01 ²⁰ | ?/01 ³³ | 1/01 | 12/00 | 10/00 | 12/00 |

Further explanation of table line-items is provided in Section A.2

A.1 NOTATIONS FOR COMPARISON TABLE

(1 – 12) Red Wing AgCHEK

- 1 General Ledger Component
- 2 Using Crop/Chemical Management Module & Livestock Management Module
- 3 The Batch Transactions data entry field can be used to remind the user of transactions
- 4 Graphs and Charts are available for specific sets of information
- 5 The program can calculate payroll deductions manually set up by the user.
- 6 Crop/Chemical Management Module
- 7 Livestock Management Module
- 8 Cow/Calf Program – not integrated with AgCHEK General Ledger
- 9 Depreciation Program – not integrated with AgCHEK General Ledger
- 10 Payroll Program – integrates with General Ledger Program
- 11 AgCHEK 4.0 General Ledger only. The tested version included AgCHEK General Ledger, the Crop/Chemical Management module, and the Livestock Management module.
- 12 25% by revenues (J. Covalleski, 1999, p. 28-29)
50% by active business customers (T. Balow, personal communication, March 6, 2001)

(13-20) T Murphy Associates Ag Money Manager

- 13 Using Asset Manager Program
- 14 The Product Cost Report can be set up to allow crop year information to be identified and the reports can be filtered to show information for individual fields and products.
- 15 "Pages" can be created to record nonfinancial operational information
- 16 Credit transactions are left open until the "Date Paid" data field is filled in
- 17 Reports can be copied to the Clipboard and inserted into spreadsheets
- 18 Function of Asset Manager Program
- 19 No technical support subscription plan. Support provided for free but on user's phone bill.
- 20 Not released as of April 2001, due to be released in 2001

(21 – 33) Vertical Solutions Easy Farm Pro

- 21 Choices made during the setup process determine whether the income statement is cash basis or accrual basis.
- 22 In the Accounting Module, the enterprise report is based on a fiscal basis and is only for a single dimension operational enterprise
- 23 In the Crop & Field Manager Module only. Enterprise reports are based upon crop year basis.
- 24 A crop type enterprise report can be generated in both the Crop & Field Manager Module and the Accounting Module. The Crop & Field Manager Module uses a crop year basis, and the Accounting Module uses a fiscal year basis.
- 25 In the Crop & Field Manager Module only.
- 26 The graphical calendar belongs to a diary tool and is not integrated into data entry
- 27 Reports contents can be controlled only in The Crop & Field Manager Module.
- 28 Tax table information for payroll deductions is set up manually, not by installing update files
- 29 This is the Crop & Field Manager Module that comes with Easy Farm Pro, which does not have to be purchased
- 30 A separate program called Cattle Manager Commercial, which does not integrate with Accounting Module.
- 31 Technical support is free for users with up-to-date versions, \$25 per hour for others.
- 32 Base price is for Easy Farm Plus, which does not include the Crop & Field Manager Module. The evaluation was performed using Easy Farm Pro, which includes Crop & Field Manager Module.
- 33 Version 7.0 not released as of April 2001, due to be released in 2001

(34 – 44) CTN Data Service Farmworks

- 34 The user must set up other tax schedules and tax lines.
- 35 The cash basis income statement includes non-cash expenses such as depreciation but does not adjust for change in inventories.
- 36 When the program initially opens, the program posts a reminder of payables coming due or overdue. The reminder date is set when the payable is recorded.
- 37 The user can partially control the contents of only some reports
- 38 Relatively few reports can be exported to a spreadsheet.
- 39 The program has features for manually setting up payroll deductions.
- 40 The Farm Site program has GIS capabilities and directly integrates with Farm Trac and Farm Funds.
- 41 The Farm Stock program is a livestock production and herd management program that integrates directly with Farm Trac and Farm Funds and.

- 42 The subscription is for phone-based technical support. Email technical support is provided at no cost to the user.
- 43 The group discussion page on the website contains users' questions about the various Farmworks programs and responses by other users and Farmworks personal for a five year period.
- 44 CTN Data Services was founded in 1980. CTN Data Services founded Farmworks in 1992.

(45 – 57) FMS/Harvest Perception Accounting 10.02

- 45 Schedule C tax information report. The User Defined Report can be used to create other tax line information reports.
- 46 Using Depreciation module calculates and tracks both tax basis and economic basis depreciation. User chooses which depreciation is used for book depreciation.
- 47 Using Ratio/Index module
- 48 Using Enterprise Analysis module
- 49 Using Easi Crops 2001 module
- 50 A user-defined field can be set up for each "template".
- 51 An adjustable feature called "Schedule Alert" displays credit transactions nearing due dates and upcoming "scheduled" recurring transactions.
- 52 The user-defined report allows the user to create a custom report, but has some restrictions that limit the user.
- 53 Two sets of pie charts show income statement information for the company as a whole and for enterprises.
- 54 Only using the Payroll Module. Tax tables in the Payroll module can be updated manually by the user or by installing purchased update files
- 55 Using the Easi Crops 2001 module and the Easi Maps module.
- 56 The website has a searchable knowledgebase and instructions for certain procedures.
- 57 Perception Accounting only. The evaluation was performed using the Enterprise Analysis Module, Depreciation Module, and Ratio/Index Module.

(58 – 70) FBS TransAction Plus 7.1

- 58 Using an additional financial statement module called AFRA.
- 59 TransAction 7.1 uses one data field for enterprising. The enterprising capabilities are limited to the specificity of the enterprises set up. Crop Audit Plus was not evaluated; so its abilities are unknown. Based upon the report menu, it appears that the additional Crop Audit Plus module adds more dimension to enterprising so that enterprising can be performed by field.
- 60 TransAction Plus does not have the capability of recording farm operational information, but it integrates with the Crop Audit Plus program with does have the capability.
- 61 The program does not actually semi-intelligently enter list data based upon keystrokes, but does automatically scroll through lists in drop down menus based upon keystrokes.
- 62 Available for use if Crop Audit Plus module is installed.
- 63 There is a graphically driven drill-down feature available in "detail" reports (reports that list transactions) that allows the user to drill down from the transaction to its data entry screen. This is not the same as a drill-down feature that allows a user to see the transactions that underlie report summary totals.
- 64 The user-defined report allows users to build a customized list of transactions and control the content through filtering and some format controls.
- 65 The Accounts Receivable Module and Accounts Payable Module are required.
- 66 There is a feature for calculating FICA and Medicare liabilities. The Payroll Module has additional capabilities.

- 67 The AFRA module functions to generate financial reports and financial ratios.
- 68 Three technical support programs are available; certain restrictions apply to the lowest priced subscription that can lead to incidental charges.
- 69 TransAction 7.1 only. The evaluation was performed using TransAction 7.1, the Accounts Receivable Module, and the Accounts Payable Module.
- 70 Information not provided by FBS.

(71 – 82) Intuit QuickBooks Pro 2000

- 71 The user must make sure the Statement of Cash Flows is set up properly so that cash transactions are properly classified in the statement.
- 72 QuickBooks uses one data field for enterprising. However, multiple layers of (classes) sub-enterprises can be set up, which may allow the user to enterprise by crop year, crop type, and field if set up appropriately.
- 73 Custom data fields can be created for inventory items, service items, customers, vendors, and employees. This, combined with the features for modifying reports or generating custom reports may enable users to generate reports with nonfinancial operational information content.
- 74 The custom report feature allows the user to build custom transaction reports and control the appearance through filtering organizing data columns. The custom report does not allow the user to generate multiple step reports or set up calculations.
- 75 QuickBooks generates a set of six pre-set bar graphs and pie charts.
- 76 In addition to setting up password protected user names, permissions can be assigned to users to control what areas of the program users have access to.
- 77 The payroll feature of QuickBooks can be set up to calculate certain payroll withholdings and deductions and allow users to manually input payroll deduction information that cannot be calculated. QuickBooks offers additional payroll service subscriptions to automatically update tax tables and calculate all payroll items. The highest level service automatically pays payroll liabilities and files payroll information returns to the appropriate government agencies.
- 78 Users can subscribe to these services for an additional fee.
- 79 Technical support subscription is initially \$179 and \$149 for renewals.
- 80 QuickBooks 2001
- 81 QuickBooks Pro 2001
- 82 Based on proportion of the number of licenses issued to farmers and ranchers (45,000) to total number of licenses issued (2.9 million)

A.2 FURTHER EXPLANATION OF TABLE LINE-ITEMS

Explanations are provided for line items that may need further explanation.

In the “tax reports” section, the “Other Tax Schedules” line refers to the ability to generate tax line information reports for tax schedules, in addition to Schedule F, such as for Schedule A, Schedule C, or Form 1040. The “1099 Reports” line refers to the ability to generate reports used to prepare Form 1099.

In the “financial reports” section, the “Balance Sheet – Market Value & Book Value” refers to the ability to store both market value and book value information for accounts and prepare balance sheets displaying either or both valuations. The “Income Statement – Accrual Basis, calculated per GAAP” line refers to an income statement that includes an adjustment for change in inventories in the calculation of net income. The “Statement of Cash Flow, GAAP format &

contents” line refers to a statement of cash flow that groups cash flow into three activities: cash flow from operations, cash flow from investing activities, and cash flow from financing activities.

In the “managerial reports” section, the “Enterprise Report” line refers to any enterprise report, regardless of whether it is based on a fiscal year or crop year. The “Enterprise Report – Crop Year” line refers to any enterprise report that is for a crop year, as opposed to a fiscal year. The “Enterprise Report – Crop Type” line and “Enterprise Report – Field Reports on Nonfinancial Operational Information” line refer to the ability to generate an enterprise reports organized by crop type and field, respectively. The “Reports on Nonfinancial Operational Information” line refers to reports that show nonfinancial information such as field histories or production information.

In the “features affecting functionality” section, the “Setup Wizard” line refers to a graphical interface that guides the setup process. If the cell in the “Account Number” line is blank, the program does not have a data field for account numbers. If the cell in the Account Number line is labeled “Opt.”, then the user has the option of using account numbers because there is more than one data field identifying the account. If the cell in the Account Number line is labeled “●”, the program uses a data field specifically for account numbers, and the user must use account numbers to identify accounts. The “Custom Data Fields” line refers to the ability to create a whole new data field for data entry. The “Graphical Calendar” line refers to a graphical calendar that is used to enter the date in the date data field during data entry. The “Auto-fill Feature” line refers to the ability of the program to automatically scroll through a list or semi-intelligently fill-in a data field based upon the keystrokes entered. The “Graphically Driven Drill-down Feature” line refers to an ability to view underlying transactions or transaction details of a summary total within a report by double-clicking the report line or number. The “Modifiable Reports” line refers to the ability to control the contents of a report by setting parameters or filters. The “Custom Reports” line refers the ability to generate a custom report by selecting data fields and modifying the report by setting parameters or filters or creating calculated values.

In the “special features or available additional modules” section, “Data Fields for Operational Notes & Records” line refers to the availability of data fields for recording nonfinancial information such as farm inputs, operations, crop history information, crop quality testing information, soil tests, and weather records. The “Payroll Calculation Features or Services” line refers to features within the accounting component of the program used to calculate payroll items and any additional services available from the software company related to the program’s payroll feature. The “Credit Card Merchant Service” line refers to a service available from the software company that enables the user to accept and process credit card sales. The “GIS Module” line refers to an integrated mapping module that uses GIS information from a GIS yield monitor or handheld GPS device.

In the “technical support” section, the “Frequently Asked (technical) Questions on Website” line refers to a web page, within the software company website, that provides solutions to common technical support questions. The “User Group Bulletin Board on Website” line refers to a web page, within the software company website, that enables users to post technical support-type questions and view responses from other users or technical support staff.

In the “price of software” section, the “Base Price” line refers to the price of the software accounting component without adding other modules. The “Price as Tested” line refers to the price of the software configuration used in the evaluation.

APPENDIX B
METHODS OF CALCULATING NET INCOME

COMPARISON OF METHODS USED TO CALCULATE NET INCOME

| METHOD OF CALCULATING NET INCOME | NET INCOME (LOSS) |
|---|--------------------------|
| True Cash Basis | \$40,000 |
| Cash Basis – Modified Cash Basis | \$10,000 |
| Accrual Basis – (A/R & A/P Effect Only) | (\$13,500) |
| Accrual Basis – Cash-To-Accrual Method | \$14,500 |
| Accrual Basis – True Accrual Method | (\$11,000) |

FINANCIAL INFORMATION USED FOR INCOME STATEMENT DEMONSTRATION

| | |
|--|------------------|
| Total 2000 Cash Sales | |
| Sales of 1999 Crop | \$60,000 |
| Sales of 2000 Crop | \$120,000 |
| Total 2000 Cash Sales | <u>\$180,000</u> |
| Total 2000 Cash Receipts | |
| Total 2000 Cash Sales (from above) | \$180,000 |
| Receipt of cash from credit sale in 1999 (payment on account receivable) | \$30,000 |
| Total 2000 Cash Receipts | <u>\$210,000</u> |
| Total Direct Costs (cash & non-cash) of 1999 Crop sold in 2000 | \$40,000 |
| 1999 Cash Expenditures for 2000 Crop | |
| 1999 Cash Expenditures for direct costs of Sold 2000 Crop | \$8,000 |
| 1999 Cash Expenditures for direct costs of Unsold 2000 Crop | \$6,000 |
| Total 1999 Cash Expenditures for 2000 Crop | <u>\$14,000</u> |
| 2000 Cash Expenditures | |
| 2000 Cash Expenditures for direct costs of Sold 1999 Crop (payment on 1999 accounts payable transaction) | \$10,000 |
| 2000 Cash Expenditures for direct costs of Sold 2000 Crop | \$60,000 |
| 2000 Cash Expenditures for direct costs of Unsold 2000 Crop | \$45,000 |
| 2000 Cash Expenditures for direct costs of 2001 Crop | \$10,000 |
| 2000 Cash Expenditures for indirect costs | \$45,000 |
| Total 2000 Cash Expenditures | <u>\$170,000</u> |
| 2000 Non-cash Expenses | |
| 2000 Depreciation Expense | \$30,000 |
| Accrued expenses for direct costs of Sold 2000 Crop (accounts payable transaction) | \$2,000 |
| Accrued expenses for direct costs of Unsold 2000 Crop (accounts payable transaction) | \$1,500 |
| Total 2000 Non-cash Expenses | <u>\$33,500</u> |
| 2000 Beginning Inventory (Cost Basis) | |
| Total Direct Costs (cash & non-cash) of 1999 Crop sold in 2000 | \$40,000 |
| Total 1999 Cash Expenditures for 2000 Crop | \$14,000 |
| Total 2000 Beginning Inventory (Cost Basis) | <u>\$54,000</u> |
| 2000 Ending Inventory (Cost Basis) | |
| 2000 Cash Expenditures for direct costs of Unsold 2000 Crop | \$45,000 |
| Accrued expenses for direct costs of Unsold 2000 Crop (accounts payable transaction) | \$1,500 |
| 2000 Cash Expenditures for direct costs of 2001 Crop | \$10,000 |
| Total Ending Inventory (Cost Basis) | <u>\$56,500</u> |
| Market Value of 2000 Beginning Inventory | \$65,000 |
| Market Value of 2000 Ending Inventory | \$93,000 |

| INCOME STATEMENT: TRUE CASH BASIS | |
|---|------------------------|
| Total 2000 Cash Receipts | \$210,000 |
| Total 2000 Cash Expenditures | (\$170,000) |
| <i>Net Income (Loss) - True Cash Basis</i> | <u>\$40,000</u> |

| INCOME STATEMENT: CASH BASIS / MODIFIED CASH BASIS | |
|--|------------------------|
| Total 2000 Cash Receipts | \$210,000 |
| Total 2000 Cash Expenditures | (\$170,000) |
| 2000 Depreciation Expense | (\$30,000) |
| Total Expenses | (\$200,000) |
| <i>Net Income (Loss) - Cash Basis / Modified Cash Basis</i> | <u>\$10,000</u> |

Note: This is the type of cash basis income statement that most programs use.

| INCOME STATEMENT: ACCRUAL BASIS (A/R & A/P EFFECT ONLY) | |
|--|--------------------------|
| Total 2000 Cash Sales | \$180,000 |
| Expenses: | |
| 2000 Cash Expenditures for direct costs of Sold 2000 Crop | (\$60,000) |
| 2000 Cash Expenditures for direct costs of Unsold 2000 Crop | (\$45,000) |
| 2000 Cash Expenditures for direct costs of 2001 Crop | (\$10,000) |
| 2000 Cash Expenditures for indirect costs | (\$45,000) |
| 2000 Depreciation Expense | (\$30,000) |
| Accrued expenses for direct costs of Sold 2000 Crop (accounts payable transaction) | (\$2,000) |
| Accrued expenses for direct costs of Unsold 2000 Crop (accounts payable transaction) | (\$1,500) |
| Total Cash / Non-cash / Accrued Expenses for 2000 | (\$193,500) |
| <i>Net Income (Loss) - Accrual Basis (A/R & A/P Effect Only)</i> | <u>(\$13,500)</u> |

Notes:

- This is the type of accrual basis income statement that most programs use.
- This income statement essentially adjusts the (cash basis) modified cash basis income statement by applying accrual basis rules for accounts payable and accounts receivable transactions.
- Note that the receipt of cash for a 1999 credit sale is not included in Sales.
- Note that the payment on expenses accrued in 1999 is not included.
- Note that the accrued expenses (unpaid accounts payable transactions) are included.

| INCOME STATEMENT: ACCRUAL BASIS / CASH-TO-ACCRUAL METHOD | | |
|--|-------------|------------------------|
| Total 2000 Cash Receipts | | \$210,000 |
| Adjustment for decrease in Accounts Receivable | | (\$30,000) |
| Adjusted Revenue | | <u>\$180,000</u> |
| Adjustment for Change in Crop Inventories (Market Value): | | |
| Market Value of 2000 Ending Inventory | \$93,000 | |
| Less: Market Value of 2000 Beginning Inventory | (\$65,000) | |
| Adjustment for Change in Crop Inventories | | <u>\$28,000</u> |
| Expenses: | | |
| Total 2000 Cash Expenditures | (\$170,000) | |
| Adjustment for decrease in Accounts Payable | \$6,500 | |
| 2000 Depreciation Expense | (\$30,000) | |
| Total Cash Expenses + Depreciation | | <u>(\$193,500)</u> |
| <i>Net Income (Loss) – Accrual Basis / Cash-To-Accrual Method</i> | | <u>\$14,500</u> |

Notes:

- The cash-to-accrual method accrual basis income statement is acceptable under GAAP. None of the software used this method.
- The difference between the accrual basis cash-to-accrual method and the accrual basis (A/R & A/P effect only) method is that an adjustment for change in inventories based on market value is included in the net income calculation in income statements generated using the cash-to-accrual method.
- The difference between the accrual basis cash-to-accrual method and the true accrual basis method is that the valuation of inventories for the cash-to-accrual method is based on market value, and the value of inventories for the true accrual basis is based on cost. Costs are tracked and accumulated for specific inventories when the true accrual method is used, but costs are not inventoried when the cash-to-accrual method is used.

| INCOME STATEMENT: ACCRUAL BASIS – TRUE ACCRUAL METHOD | | |
|--|------------------|--------------------------|
| Total 2000 Cash Sales | | \$180,000 |
| Cost of Goods Sold: | | |
| Total 2000 Beginning Inventory (Cost Basis) | \$54,000 | |
| Purchases: | | |
| 2000 Cash Expenditures for direct costs of Sold 2000 Crop | \$60,000 | |
| 2000 Cash Expenditures for direct costs of Unsold 2000 Crop | \$45,000 | |
| 2000 Cash Expenditures for direct costs of 2001 Crop | \$10,000 | |
| Accrued expenses for direct costs of Sold 2000 Crop (accounts payable transaction) | \$2,000 | |
| Accrued expenses for direct costs of Unsold 2000 Crop (accounts payable transaction) | \$1,500 | |
| Direct Costs | \$118,500 | |
| Cost of Goods Available for Sale | \$172,500 | |
| Less: Total Ending Inventory (Cost Basis) | (\$56,500) | |
| Cost of Goods Sold | | (\$116,000) |
| Gross Margin | | \$64,000 |
| Other Expenses: | | |
| 2000 Cash Expenditures for indirect costs | (\$45,000) | |
| 2000 Depreciation Expense | (\$30,000) | |
| Total Other Expenses | | (\$75,000) |
| <i>Net Income (Loss) – Accrual Basis / True Accrual Method</i> | | <u>(\$11,000)</u> |

Notes:

- The true accrual method accrual basis income statement is the preferred method under GAAP.
- Farmworks and Perception Accounting use this method to generate accrual basis income statements.
- The Farmworks accrual basis income statement differs from this income statement because it uses a single-step format.
- Perception Accounting uses a multiple-step accrual basis income statement similar to this income statement.

APPENDIX C

SOFTWARE COMPANY CONTACT INFORMATION

SOFTWARE COMPANY CONTACT INFORMATION

CTN Data Services / Farmworks

PO Box 250
Hamilton, IN 46742-0250
1-800-225-2848
www.farmworks.com

FBS Systems

1855 55th Ave.
Aledo, IL 61231-8610
1-800-437-7638
www.fbssystems.com

FMS/Harvest

1200 E. Haven. Ave.
New Lenox, IL 60451
1-800-992-2814 or 1-800-284-8483
www.fmsharvest.com

Intuit

2535 Garcia Ave.
Mountain View, CA 94043
1-650-944-6000 (Intuit Corporate Headquarters)
1-888-264-8848 (QuickBooks Sales & Service Representatives)
www.intuit.com
www.quickbooks.com

Red Wing Business Systems

491 Highway 19
PO Box 19
Red Wing, MN 55066
1-800-732-9464
www.redwingsoftware.com

T. Murphy Associates

Box 475
Western, NE 68464
1-402-433-4801
www.agmis.com

Vertical Solutions

203 11th Ave. SW
Minot, ND 58701
1-800-396-3279
www.easyfarm.com