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ELECTRONIC PROCESSING OF FARM RECORDS

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Within the last five or six years a considerable amount of work has been devoted toward developing Electronic Farm Record Projects. Objectives and methods used have varied almost as much as the number of states working in this area. There are three University sponsored electronic farm record projects currently being developed in the Western States: One in California, one in Arizona and the other in Washington. The basic objective of the Washington Project (Western Electronic Account Project) is to provide managers of business firms (primarily farmers) with information which they can use to maximize profits or minimize losses. Secondary objectives are to develop a project which would provide Extension workers with detailed enterprise information and to provide information for research purposes. Although data from such a project may be biased for certain types of research studies, it should also be a challenge to researchers to determine the extent of this bias and to make adjustments for it.

Electronic accounting by its very nature, must contain elements of service as well as education. Success of Electronic Farm Accounting will depend on the amount and kind of information that can be provided farmers in a way they can clearly understand and use it. Few, if any of us, would argue that, theoretically, electronic farm accounting has the potential to provide information for making improved management decisions and for conducting Extension and research programs. The area of disagreement centers primarily on how close we can approximate the theoretical in actual practice. One of the most common comments heard in discussing use of computers for farm accounting, including enterprise cost accounting, is that computers only mechanize clerical work; computers do nothing that cannot be done by hand; at best, it is difficult to get farmers to provide the basic record information and computers cannot help you there.

If it is theoretically possible to do enterprise cost accounting for farmers on a mass basis, then the real challenge lies in how do we overcome the obstacles.

To get farmers to report details of their business consistantly and accurately has been a problem since the first farm accounts were kept. It is my belief that it is not impractical to develop methods which make it relatively easy for farmers to report, to report in detail, to report consistantly and to report accurately.

The amount of detailed information supplied by farmers will depend upon the individual farmer's understanding of his management needs. The more his knowledge is increased, the greater his demand will be for more detailed knowledge.

A farm business, as is any business, is composed of many segments which, if it is to be managed efficiently and profitably, requires individual analyses, evaluation and decisions. It is not logical for a large corporation to make important management decisions based on analyses of the corporations, aggregated operating and financial statements. Neither is it any more true for farmers.

The Western Electronic Accounting Project (WEAP) being developed at Washington State University requires that every income, expense, or phy-

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sical transaction be allocated by the farmer to a major enterprise or a service or a holding account at the time it is incurred. Monthly and to-date transactions for each enterprise and service account are printed out each month. A farm business summary can be obtained by the addition of all similar transactions from each enterprise.

Farm business records may be divided into five categories. They are major enterprise accounts, service accounts, sub-service on holding accounts, overhead accounts and capital accounts. Major enterprise accounts are the accounts that provide the major sources of income to the farm and make it necessary for other accounts to exist. The degree to which major accounts are analyzed depends upon conditions that exist on each farm. Each crop or livestock enterprise may be analyzed separately. Environmental or other conditions may suggest that each field or each lot of livestock may need analyses.

Service accounts are set up to accurately evaluate the cost of providing service to the major enterprise accounts. Service accounts are usually set up for major pieces of machinery and buildings. Their function is to accumulate costs of owning and using equipment and buildings. Each piece of equipment and each building can be numbered if there are more than one item of the same kind. For example, a service account for a Crawler Tractor No. 2 would accumulate costs each month and year-to-date which would include repairs and maintenance, insurance, personal property taxes, depreciation, interest on investment, fuel, license and other costs associated with owning and using this machine. These costs are accumulated under the headings of fixed and variable costs. Hours of tractor use should also be recorded and divided into these costs to arrive at unit costs per hour of operation. Estimated cost per hour, per mile or per acre of operation can be developed for each major piece of equipment and used to allocate expenses throughout the year to major accounts. Adjustment can be made at the end of the year to equate estimated costs to actual costs.

Subservice or holding accounts and overhead accounts serve as means of accumulating various costs until these costs can be allocated to the service accounts or to the major accounts. Many input items such as feed, fuel, fertilizer, etc. are purchased in quantities and cannot be allocated at time of purchase. These items can be put in holding accounts until allocated to major accounts.

Capital accounts provide a convenient place to keep records of accounts payable, accounts receivable, debt payments, incurred debts, and records of purchases and sales of capital assets.

Major accounts and service accounts serve only one function. That is, to accumulate the physical and dollar returns and the physical inputs (where appropriate) and dollar input costs for each enterprise or account separately. Once this has been accomplished, analyses may be made of net prices received, production efficiency, physical inputs per unit of production, costs per unit of production, scale of operation and other factors affecting net returns to that particular segment of the farming operation.

Enterprise accounting provides a method for analyzing, independently, various segments of a business. The number of segments to be analyzed depends

upon the relative importance of each of the segments in relation to the total.

The mechanical success of WEAP or other records projects depends upon how farmer transactions are reported and how they are processed. In WEAP, all transactions including income, expenses, intra-farm transactions, physical inputs, physical outputs, credit payments and charges, capital purchases and sales, are all reported on one form. Each transaction is reported separately and on one line of the reporting form. Transactions include physical amounts where appropriate, dollar amounts, description of item, whether a purchase, sale or trade and are usually listed by dates. The farmer also lists the enterprise or account that each transaction is to be charged or credited to. Details of each transaction are punched on a separate card and entered into the machine as an independent transaction. The transaction retains its identity in computer storage; it can be taken out of storage, used by the computer, and returned to storage as many times as desired. Individual transactions may be selected on their own characteristics, used for certain analysis and then put into storage until they are used again. Depending on the analyses desired, an individual piece of stored data may be used once or as many times during the processing period as needed. The speed, accuracy and flexibility of the computer is a tool that has the potential to make detailed enterprise records possible.

The person reporting lists the details of the transactions only. He does not allocate the physical and dollar amount to any one of 15 to 30 or more columns as is customary in conventional hand records. The farmer does not have to add, subtract or make mathematical computations. His work is completed when he lists details of the transaction on the reporting form. Coding for machine processing is done at the processing center in the WEAP project.

The mechanical listing of the transaction requires only a minimum of effort. The primary decision made at recording time is determining the enterprise that the transaction is listed under. If the transaction involves an allocation of expense from a service account to major accounts, supplemental records are used for determining the distribution.

Once record data has been reported properly, the editing, coding and processing become a routine mechanical process.

The Western Electronic Accounting Project was developed in a way that makes it possible to process the bare minimum of records for tax purposes to the most complex of enterprise records.

The farmer selects his own level of record keeping. As his knowledge and understanding of how to use records increase, he needs only to report transactions in more detail to obtain the desired information.

Experience in the Western Electronic Record project indicates that farmer reporting can be greatly improved with training and experience and should not be a major problem. Coding procedures have been perfected that are flexible, detailed and comprehensive. Computer system and detailed programming have not been entirely worked out and will require considerably more work. However, this is a matter of time and resources and should not be considered a permanent problem.

As WEAP becomes more thoroughly developed and expanded, it should provide a mass of accurate, detailed information about crops and livestock enterprises by farms, by counties and by states. It should also provide detailed information about costs of owning and operating machinery and equipment which has not been available before. It will provide more detailed record data summarized in a similar way than has ever been available before in the west. Farmers in Washington, Oregon, California, Montana, Utah, Wyoming and Colorado are participating in the WEAP Project.

WEAP should also provide a challenge to the researcher to study and analyze this data. It could provide information for many applied research studies.

Electronic data processing should also provide researchers with detailed, accurate data for testing theories and models. The cost of this data should be considerably less than that obtained by surveys even though additional or complementary data may have to be obtained. Consideration has been given to the research potentials of WEAP. Additional refinements will be made to make data more useful for research purposes.

The efforts being devoted to electronic farm accounting projects throughout the nation will undoubtedly result in systems and projects that are successful. Successful methods and techniques developed in one area will be adopted in others bringing about greater uniformity and comparability of data.

One of the biggest problems in Extension, applied research and to some extent in basic research is the lack of detailed physical and financial information that meets the educational needs of workers in these fields. Data obtained in the past has been costly to obtain, dependent in many cases to recall on memory of the people surveyed and suitable only for studying specific objectives.

The development of successful electronic farm record projects will challenge Extension and research workers to carefully study educational opportunities never before available to them. They will need to become acquainted with the way record information is submitted, the limitations in its usefulness and what, if any, changes are needed to make it more useful for their purposes.

However, the researchers needs must, of necessity, be secondary to providing information to farmers for making management decisions. Except for tax purposes, the needs of Extension workers are closely related to needs of farmers and others making decisions related to agriculture. As the size and complexity of agriculture grows, so will their managerial needs and their demands on those who serve them. If Extension and Research workers are to continue to be of service to agriculture, they will need to adjust their educational programs if they are to be ahead instead of behind their clientele. Electronic farm record projects should provide an excellent opportunity for developing educational management programs for farmers. The more successful these programs are, the greater the demand will be, and the more successful will be the electronic record projects. Computers, coding systems, report forms, etc. are merely tools which I believe can be used successfully to accomplish service and educational objectives. It is our responsibility as University people to perfect these tools if it enables us to be more productive in our work.