

*New Management Tool
Aids Decision-Making
on the Farm*



Electronic FARM ENTERPRISE ACCOUNTING

E. A. LIBRA, JR. • R. O. LEONARD

Electronic Data Processing (EDP) allows high-speed processing of large amounts of farm data permitting more detailed analysis and quicker answers to management problems. The machine analysis of coded data provides a system of management accounting supplying the physical and financial information farmers so critically need for such management decisions as credit requirement determinations,

budget controls on credit transactions and for many other essential operating statistics that mean profit or loss. By processing records through machines, many of the routine bookkeeping tasks are also eliminated, particularly in calculating, posting and categorizing. This progress report summarizes first-year results of the Agricultural Extension Service Electronic Farm Enterprise Accounting project.

and used for making management decisions—not for income tax accounting.

Two pilot projects were conducted in 1963 using IBM equipment for processing enterprise records. The San Joaquin Valley project utilized data processing equipment furnished by the California Farm Bureau Marketing Association in Visalia. The other pilot program was in the Monterey Bay area where the IBM equipment was provided by the Byron Blout Data Processing Center, Salinas. At each of the processing locations several farmers and growers, including dairy, crop and poultry operators, sent in records each month. The reporting form was comparable with one used in similar experiments in many other states.

FOR MANY YEARS the Agricultural Extension Service in California has encouraged farmers to use enterprise accounts as one of their management "tools." Arthur Shultis, a University of California Farm Management Specialist, developed a simple enterprise accounting system based on many years of practical

family farm up to the corporation with farm office staff and machines, in determining the profit or loss possibility existing for each crop or kind of livestock on the farm.

Although many farmers now appreciate the value of enterprise records, most farmers do not have time to keep detailed records by hand. A system processed by electronic machines appears to be necessary of this study were: (1) simple, workable reports; (2) develop a standardized system of coding for the machines on an enterprise; (3) to develop a report that could be understood

The coding system for the machines was designed specifically for identifying and presenting farm enterprise business data to the farm manager as a basis for management decisions. Two general number code systems were used: (1) the ITEM CODE, used to classify every income and expense transaction; and (2) the ENTERPRISE CODE, used to identify the crop or livestock enterprise to be charged or credited with expenditures or receipts. Each crop and type of livestock was con-



sidered as an enterprise and assigned a code based on three digits, for example: barley, 012; cotton, 020, etc. Enterprises were grouped into broad categories, for example: field crops, 010; forages, 050, etc.

Within each category there is a detailed breakdown of enterprises, for example: in the field crop category there is provision for 39 crops ranging from barley and cotton to watermelons and wheat.

Item code

All farm expenses are assigned a four-digit code that classifies each item of expense according to broad categories or on a detailed basis, for example: labor, 6010; business, 6050; custom work, 6070; feed, 6100; pesticides-materials, 6190; milk check deduction, 6230; seeds, plants, 6260; etc. If more detail is desired, there is provision within the code to provide this information, for example: 6010 is the category classification for LABOR, but does not identify the type of labor performed. There is provision in the code to do this, for example: 6013 identifies labor for disking.

The coding system used to classify income is based on the three-digit enterprise code with the number "4" preceding each enterprise code number. There is also provision for miscellaneous income, such as, rental income, gas tax refunds, government payments, etc.

Often, within a farming operation, there are inter-enterprise charges and credits, such as sales of hay from the alfalfa enterprise to the dairy herd. In this case, the alfalfa should receive a credit and the dairy a charge for the transaction. To assign each enterprise proper charges or credits, the same four-digit code used to classify income and expenses is used for these non-cash transactions.

In this experimental project, the Extension Service set up the coding; however, there is no valid reason why this cannot be done by the grower or his bookkeeper. Four basic types of monthly reports to the farmer are under consideration:

1. *Budget Control*: Designed specifically for growers who want to know the inputs and costs for each enterprise on a current and accumulated basis. Considered as one of the most important management "tools" for growers operating with credit.

2. *General Ledger*: Provides almost the same information as "budget control," but only on a gross amount basis. In addition, it does not show comparisons

with credit budget and actual costs and does not reflect income.

3. *Profit and Loss*: Gives a detailed breakdown of income, costs and profits by enterprise on a current basis and year to date. Designed primarily for diversified dairies.

4. *Unit Costs*: By far the most popular report, providing the farmer with a detailed schedule of inputs and costs for each enterprise.

The coding system worked well with the limited number of records processed. The main problem was that, within the enterprise and expense code categories, not enough space was provided to add additional enterprises and expense categories. A change is also contemplated in the present code that is assigned to inter-enterprise charges and credits. Under the present code there is no method of separating cash from non-cash transactions. For example, if calves are transferred to the replacement enterprise, or sold for cash, this is reported as income to the dairy enterprise, but does not differentiate between a cash or non-cash transaction. Although the actual coding can be done by the grower or his bookkeeper, it may be possible to eliminate some of the coding. Under experimentation is a report in which the items of income and expense are established once, then the report goes back to the processing center and is automatically coded by the electronic equipment. Each month the farmer receives a pre-coded form, so all he has to enter is quantities and dollars. Provision is also made for new items of income and expense to be entered, which are then automatically coded each month.

Farmer reporting

To partially overcome farmer objections to detailed reporting forms, a new reporting idea has been worked out and favorably used by a limited number of farmers. After the farmer has sent in the first report on the regular reporting form, he receives his monthly report back with provision on the form to report the next month's figures.

Because farmers are vitally interested in knowing all costs, one of the features incorporated into the report is the idea of using "constants" each month. Items within this expense category will vary depending upon the enterprise, but in most cases will consist of taxes, insurance, interest, rent, depreciation and other overhead or general expense. Once the "constants" are established the farmer does not have to enter these figures again on his monthly report. The electronic

machine automatically does the recording. A report is now being used that combines unit costs, profit and loss and budget control. Therefore, depending on the information a farmer desires, there is flexibility within the format to provide data on either a broad or detailed basis.

Because farm enterprise accounting with IBM machines is relatively new in the farm business field, meetings were held at each project location to acquaint farmers and other agricultural leaders with this new management "tool." In addition, IBM staff members cooperated in several enterprise accounting schools in pointing out how electronic equipment can help farmers obtain better records for management purposes. A mobile IBM trailer for electronic farm accounting demonstrations has also been used to allow greater coverage of farming territory, since electronic equipment is still located primarily in city areas.

Quick answers

The possibilities of using electronic equipment to give farmers extremely valuable management information for decision-making are practically unlimited. With hand enterprise accounting methods a farmer can get the answers to many of his management problems; however, in many instances time is the limiting factor and the data is not available when needed. Enterprise machine accounting will provide this information quickly. Many of the growers in California need to know the exact cost of production for each unit grown. This is extremely vital information for crops such as sweetcorn, potatoes, and other cash crops with very high production costs. Without this information at his fingertips, the grower cannot know how much his product must bring to show a profit. The grower cannot easily influence the market price of his crop, but knowing exactly how much it costs to produce the crop puts him in a much stronger bargaining position, and may help him decide whether to grow certain unprofitable crops.

Electronic data processing is economically feasible for farmers, according to cost estimates of the accounting firm cooperating in the project and predictions by others in the data processing business. At the cost which some service centers have estimated for various types of monthly management reports, this service should be attractive to a wide range of farmers.

Linear programming (commonly known as farm budgeting) will likely be one of the most important farm manage-

ELECTRONIC DATA PROCESSING MONTHLY FARM COST ANALYSIS

DAIRY CODE 5821123		MONTHLY COST ANALYSIS		DATE 06/30/61	YIELD 4,544.	PAGE 1	DAIRY CODE 5821123		PAGE 1		
ENTER-PRICE	CODE DESCRIPTION	QUANTITY	CURRENT AMOUNT	MONTH PER CWT	YEAR-TO-DATE AMOUNT	PER CWT	ENT	A/C# CODE	MONTH..... QUANTITY	AMOUNT	G R
1	DAIRY INCOME										
141	4146 MILK SALES	4544	20,012.29	4.40	128,762.70	4.64	141	4146			1
	TOTAL DAIRY INCOME		20,012.29	4.40*	128,762.70	4.64*					
2	DAIRY FEED EXPENSE										
141	6101 ALFALFA HAY	59 TONS	1,829.00	.40	18,527.40	.67	141	6101			2
	6107 CONCENTRATE MIX-GRAIN	80 TONS	4,320.00	.95	25,285.00	.91		6107			2
	6123 PASTURE, IRRIG		1,179.50	.26	3,409.75	.18		6123			2
	TOTAL DAIRY FEED EXPENSE		7,328.50	1.61*	47,222.15	1.76*					
3	LABOR										
141	6010 LABOR		3,493.10	.77	21,868.58	.79	141	6010			3
	TOTAL LABOR		3,493.10	.77*	21,868.58	.79*					
4	OTHER EXPENSES										
141	6037 CLIP COWS				173.80	.01	141	6037			4
	6050 BUSINESS		200.00	.04	200.00	.04		6050			4
	6055 DUES		188.91	.04	188.91	.04		6055			4
	6161 BUTANE		26.67	.01	245.81	.01		6161			4
	6212 BREEDING		129.50	.03	784.00	.03		6212			4
	6214 DHIA TESTING		140.62	.03	812.85	.03		6214			4
	6221 MEDICINE		354.65	.08	594.44	.06		6221			4
	6228 VETERINARY		356.00	.08	767.50	.06		6228			4
	6253 EQUIPMENT		168.85	.04	783.74	.03		6253			4
	6270 SUPPLIES		179.00	.04	349.72	.05		6270			4
	6335 LICENSES				59.00			6335			4
	6338 TRACTOR EXPENSE		93.00	.02	306.00	.01		6338			4
	TOTAL OTHER EXPENSES		1,837.20	.41*	10,140.70	.37*					
5	MISC. EXPENSES-CONSTANT										
141	6252 BUILDINGS		250.00	.06	1,500.00	.05	141	6252		250.00	5
	6320 UTILITIES		189.17	.04	765.02	.03		6320		189.17	5
	TOTAL MISC. EXPENSES-CONSTANT		651.05	.15*	3,536.36	.13*					
6	LIVE STK PURCHASES										
	TOTAL LIVE STK PURCHASES										
TOTAL ALL COSTS OF PRODUCTION			13,309.85		82,767.79						
GROSS INCOME			20,012.29		128,762.70						
NET FARM INCOME			6,702.44		45,994.91						

ment "tools" on the farm in the future. However, it does call for some years of records—accurate records—of farm costs. These will be the natural outgrowth of the farm enterprise accounting records many farmers are collecting now. With accurate

records of past years, the computer can tell tomorrow's farmer which combination of enterprises will be economically safe, and which offer the best chance to use all the farm's resources for the highest total return. Since water is a relatively

scarce resource in many parts of the West, the possibilities of using linear programming to assist growers in making profitable water management decisions are practically unlimited. Linear programming also can materially aid growers in selecting the most economical machinery component. Feeding cattle in California is big business. Some feed lot operators in the San Joaquin Valley have already taken the step to the computer to work out quickly such complex problems as least-cost combinations of feeds.

Edward A. Libra, Jr., is Area Farm Advisor, University of California, Agricultural Extension Service, Madera; and Robert O. Leonard is Farm Advisor, Monterey County. Carlos Carlidge, Farm Advisor, cooperated with the project in Tulare County.

FARM ENTERPRISE ACCOUNTING BUDGET CONTROL SAMPLE

Code	Description	Current		Year to date		Budget	
		Total	Unit	Total	Unit	Total	Unit
020	COTTON						
6010	Labor	\$1200	\$12	\$5000	\$50	\$6000	\$60
6140	Fertilizer	800	8	900	9
6050	Office	100	1	200	2	300	3
051	ALFALFA						
6095	Harvest	1050	7	6300	42	9000	60
6324	Electricity	450	3	2400	16	3150	21

Incorporated into the California electronic record research project is a BUDGET CONTROL and UNIT COST phase that was designed specifically for growers who want to know the inputs and costs for each enterprise combined with the credit budget. The cash flow in this instance is not only on an enterprise breakdown basis, but is also on a detailed item basis, as shown above.