DIVISION OF AGRICULTURAL SCIENCES
UNIVERSITY OF CALIFORNIA

FARM ENTERPRISE
Accounting and Management

by ARTHUR SHULTIS

CALIFORNIA AGRICULTURAL
EXPERIMENT STATION
EXTENSION SERVICE

MANUAL 31

Price: $1.00

CONTENTS

THIS MANUAL is one of a series published by the University of California Division of Agricultural Sciences and sold at a price which returns only a portion of the production cost. By this means it is possible to make available publications which, due to relatively high cost of production or limited audience, would otherwise be beyond the scope of the Division's publishing program.

FOREWORD

This manual is designed to help farmers attain greater profits through the better managerial decisions made possible by enterprise accounting. Written mainly in nontechnical language, it has been planned especially for three groups of people: commercial farmers, accountants, and students in farm accounting and management.

The first three chapters deal with general considerations of the management job and the ways in which enterprise accounting can be of value. The general principles and definitions in these chapters are basic to the use of methods which follow.

Chapter 4 presents an accurate short-cut method of enterprise accounting. This chapter is primarily intended for farmers who keep their own financial records and who also wish the benefits of enterprise accounting at the end of the year.

Chapter 5 presents enterprise accounting by double entry accounting procedures and ledger accounts. Farmers with full accounting systems, and their managers, bookkeepers, and accountants, will find this section helpful in designing and conducting a full enterprise accounting system. It gives the basic methods of enterprise accounting followed when the work is done on the farm without mechanical or electronic equipment.

Chapter 6 gives additional methods and forms for transmitting the necessary information to an off-farm office where accounting is done.

Chapter 7 briefly discusses mechanical and electronic methods and suggests how these can reduce clerical work in enterprise accounting.

This manual was not prepared as a textbook for teaching enterprise accounting. It does not teach the basic principles of accounting. But it does show how these principles may be applied in farm enterprise accounting and how one may attain some of the goals of enterprise accounting without knowing technical accounting procedures. The author has long felt, however, that a course in farm enterprise accounting is needed at the college level for students preparing for a career in farm management and in research and teaching in this field. Such a course should probably follow a basic course in accounting, and this manual could well serve as a text. For most effective teaching, it will need supplementing by assignments or a work book so that the student masters the processes by realistic practice.

THE AUTHOR

Arthur Shultis is an Extension Economist (Farm Management) and on the staff of the Giannini Foundation of Agricultural Economics, Berkeley.

AUGUST, 1961

Chapter 1 THE FARM MANAGEMENT JOB

A modern commercial farming business involves the use of considerable land, capital, equipment, supplies, and labor in the production of agricultural products to sell at a profit. Management obtains and organizes these resources in the proper proportion and makes the decisions and takes the actions to use them most effectively to attain the goals of ownership. This manual, which deals primarily with accounting aids to management, will consider mainly the important managerial functions of making decisions, evaluating results, and making changes to improve future profits. As used here, management includes all decision-making levels, from the owner or board of directors who make the important policy decisions on down to employees to whom some responsibilities are delegated.

Function of Management

A manager takes action only after a decision is made. A decision usually involves the comparison of two or more alternatives and the selection of what appears, on the basis of available information, to be the best or most profitable course. Obviously, the soundness of the decision depends on the information on which it is based. But risk and uncertainty are ever-present in farming; the vagaries of weather, plus the varying effects of pests, diseases, and market price uncertainties, make it difficult to estimate the probable effect on profit of alternative crops or actions. An adequate system of records and accounts can, however, provide much useful information on current and past yields, costs, prices, and profits on the individual farm. These data can reduce uncertainty to the point where a careful appraisal of probable yields and prices can result in a valid estimate of probable profits for alternate courses of action. The ability to look ahead, to make sound decisions, and to take forthright action, may be a personal trait possessed to varying degrees by different people but proper information will help any manager to make sounder, more profitable decisions.

Most alternatives can be compared by calculated budgets of probable income, costs, and effect on profit. Adequate recent records are indispensable in figuring probable future yields and costs. In the past, this process of testing future action by budgets has not been a widely used tool of farm management—largely because records have not been adequate to provide the information. Also, farming has changed and it is now more difficult to make a profit. In modern farming with its high cash costs and narrow profit margins few mistakes can be made if the business is to continue profitable and solvent. Listed below are a few illustrations of important decision groups where the use of budgets in the comparison of alternatives can result in better decisions.

What to Grow

Conditions and prices change. Each year, the manager must decide what to grow in each field. He can select several adapted crops and com-

Table 1. Comparison of Probable Earnings per Acre of Alternative Crops

Item	Sweet corn 1-year crop	Canning tomatoes 1-year crop	Sugar Beets 1-year crop	Alfalfa hay, average of 3 years
Probable yield per acre	300 crates	22 tons	25 tons	8 tons
Estimated price per crate or ton	$ 1.40	$ 22.50	$ 13.50	$ 26.00
Probable gross income per acre	420.00	495.00	337.50	208.00
Growing costs:				
Man labor, hour, and piece rate	55.00	70.00	72.00	17.00
Tractor and machine work, includes depreciation	23.00	29.00	24.00	5.00
Materials — seed, fertilizer, water, pest control	62.00	63.50	35.00	15.00
Subtotal, growing costs	$140.00	$162.50	$131.00	$ 37.00
Harvesting and delivery costs, includes everything	154.00	187.00	65.00	48.00
Variable cash overhead costs	21.00	26.00	15.00	8.00
Subtotal variable cash costs and depreciation	$315.00	$375.50	$211.00	$ 93.00
Fixed cash overhead costs (taxes) and estimated interest on investment involved	65.00	65.00	65.00	65.00
Total cost of production per acre	$380.00	$440.50	$276.00	$158.00
Probable income over variable costs per acre	105.00	119.50	126.50	115.00
Probable income over all costs per acre	40.00	54.50	61.50	50.00

In the above example, costs are as they would be determined by enterprise accounting by the methods suggested later so depreciation is included in the costs of machine work and irrigation water. Comparison of earnings is usually made on the basis of income over variable costs. This net income comparison would be considered along with other factors in arriving at the final decision of what to grow. In this case, sugar beets are shown to have a slightly better profit potential and also have the advantage of being a crop of low hazard and with mechanized harvest. The three-year potential income over variable costs for alfalfa would come to $345 as compared to a $351 total for one year each of the other three crops.

pare them. Where past operation costs are known, a budget of probable costs of production can be computed. After careful consideration of the market situation, prices are estimated for the several crops. Incomes are computed, using probable yields, and probable profits are figured. Production plans can then be made and tested, and profit will be improved thereby.

Costs within any farm business may be classified as fixed or variable as influenced by the proportion of the different crops or livestock grown. Fixed or overhead costs may stay about the same for the farm as a whole regardless of what is grown. But, different crop and livestock enterprises use different quantities of inputs of labor, machine work, and materials such as seed, fertilizers, and irrigation water, or feed for livestock. These are the variable costs. In budget comparisons of alternative enterprises, it is usually necessary to consider only these variable costs, since the fixed or overhead costs stay about the same in total for all enterprises. However, a new enterprise may require additional equipment or facilities and hence require consideration of the increased investment and depreciation involved. Table 1 shows a comparison of returns and costs for four summer irrigated crops, with costs as they would be calculated in the method of enterprise accounting described later. Depreciation in this case is a variable cost since it is included in the variable charges for labor, machine work and irrigation water to the different crops. In much farm accounting, however, depreciation and over-all farm administrative costs are considered fixed costs, even though they are not used at an equal level per acre for all crops.

What Equipment to Buy

Records of equipment use and costs are helpful in deciding whether, for instance, another tractor is needed, whether an old one will be cheaper than a new one, and which size and type will do the work most economically. Table 2 presents calculation of probable costs of doing heavy tillage by any one of three tractors, or by a combination of two—the old one, and a new 40 h.p. machine.

The above example is only one of many instances where a calculation of owning and operating costs will be helpful in comparing alternative methods of performing a job; in selecting the best method, time can be considered as well as cost, thanks to adequate records. Other examples are:

1. Owning or renting a grain drill.

Table 2. Comparison of Costs of Alternative Tractors

	Present 40hp tractor	New tractors		Old and new 40's
		40hp	60hp	
Present value	$2,800.00	....	....	....
Expected repairs needed	2,200.00	....	....	....
Assumed comparable investment	$5,000.00	$10,000.00	$16,000.00	$15,000.00
Hours to do heavy tillage needed	1,000	900	600	950
Expectation of doing in time available	poor	fair	good	excel.
Annual fixed costs:				Two tractors
Depreciation based on expected life	$1,000.00	$ 833.00	$ 1,333.00	$ 1,833.00
Interest on average investment at 6%	150.00	300.00	480.00	450.00
Taxes, insurance, housing, etc.	50.00	100.00	160.00	150.00
Total annual fixed costs	$1,200.00	$ 1,233.00	$ 1,973.00	$ 2,433.00
Cost per hour to do work needed:				Av. of 2
Annual fixed cost	1.20	1.37	3.29	2.56
Fuel, oil, current repairs	1.70	1.65	2.65	1.68
Equipment costs used with tractor	.30	.40	.50	.35
Operator	1.50	1.50	1.50	1.50
Total cost per hour of work	$ 4.70	$ 4.92	$ 7.94	$ 6.09
Total cost of work to be done	$4,700.00	$ 4,428.00	$ 4,764.00	$ 5,785.00

Since either old or new 40hp tractors would be of questionable adequacy to do the work in the time required, the above costs would favor the one 60hp tractor over a combination of the old and a new 40hp.

2. Owning a combine or hay baler or hiring the work done by a contract operator.
3. Sprinklers vs. surface methods of irrigation.
4. Machine vs. hand picking up of walnuts or prunes.
5. On farm grain storage vs. public warehouse or elevator.
6. A walk-through milking barn vs. the larger conventional stanchion barn.

Analysis of a Crop or Livestock Enterprise

Approaching maximum profit attainable requires selecting the most profitable things to grow or raise and growing or raising them as profitably as possible. Enterprise accounting, as explained in this manual, develops income and cost information in considerable detail on each separate crop and type of livestock. From this it is possible to prepare

an enterprise statement of labor, machine work, materials, and other costs in detail in order to analyze and compare costs with those of previous years and on other farms. This will usually disclose some opportunity to improve production, quality, and income, and to reduce costs. Enterprise-profit statements which enable such an analysis to be made are shown on pages 50, 51, 74 and 75.

Handling People

In any large farming business many people are involved—the employees within the business itself and those with whom management deals in securing credit, obtaining equipment and supplies, and marketing products. The manager must be skilled in handling people and he must keep them diligent and loyal. The development and availability of pertinent information on all dealings helps avoid misunderstandings and disputes or, if they occur, helps to settle them amicably. Thus, the "built-in" checks on performance and costs that are a part of enterprise accounting are a safeguard and aid to personnel management. Superior information is always an advantage in handling people. The discovery, recognition, and holding of superior employees through a sound system of awards and promotions is dependent on the proper allocation of responsibilities and the measuring of results by records.

Marketing Decisions

Profitable farming requires that products of good quality be sold through the best channels at the proper time. Better records and up to the minute costs on a crop are a real help to the manager in occasional decisions that must be made quickly. If he has this information he has the maximum chances of being right in deciding whether to accept an offer for the crop in the field, carry it through harvest, or abandon it. With past records and experience available he can make a better comparison of alternative marketing methods or channels, and so can place himself in a better bargaining position.

Experimentation

Every large business is usually doing some research or experimentation in order to develop better techniques or more profitable products. A progressive business should constantly be testing latest technical information and seeking to discover the highest profit point for certain inputs, such as fertilizers. Records of inputs, costs, and results obtained are essential to intelligent application of results. The use of fertilizer and the number of cultivations, irrigations, etc., can be varied in different fields and the results recorded. A range or pasture can be fertilized and the feed obtained can then be compared with a similar, but untreated, field. A brushy range can be burned and seeded and the costs compared with the recorded value of the extra feed obtained. Livestock can be fed at different levels and the resulting costs and values compared. Physical records of production and financial records of costs and returns are essential to evaluate results of experimental treatments. Table 3 shows the evaluation of three levels of fertilization of a dry-farmed barley crop.

Table 3. High Profit Point in Fertilizing Dry Farmed Barley

	Fertilizer applied			
	None	100 lbs. 16-20	200 lbs. 16-20	300 lbs. 16-20
Yield, pounds per acre	1,500	2,000	2,100	1,700
Value ready to harvest at $1.60 cwt.	$24.00	$32.00	$33.60	$27.20
Cost of fertilizer, $4.00 cwt. plus $ .50 A.	....	4.50	8.50	12.50
Income over fertilizer cost per A.	24.00	27.50	25.10	14.70

The above figures show the 100 lbs. of fertilizer to be the most profitable level although 200 lbs. produced a slight increase in yield. The 300 lb. level was less profitable than no fertilization since under the limited soil moisture, too much early vegetative growth depleted the moisture and reduced the yield below the two previous treatments.

Size of Farm Business

For greatest profit, full use must be made of all the available resources—land, labor, equipment, operating capital, and managerial abilities. Where any resource such as land is limited, consideration is given to adding more land to increase the size of the business and thereby use more fully the other resources and spread their fixed costs over more acres and products. If a farm manager in analyzing his business discovers an opportunity to improve total over-all profit by adding more land, he will seek ways of doing so. Aided by diligence and knowledge he finds one nearby piece of land he can rent and another he can buy. With adequate records and information he can calculate probable costs and returns for the future under several such alternatives as no change, renting the additional land, or buying it. All this will involve calculation of a total farm budget for each course, as well as consideration of plans for obtaining additional fixed and operating capital.

Obtaining Capital

Few farm businesses can be increased to the most profitable size or intensity of operations without additional capital. Forward-looking plans and budgets based on recent costs and results can show the increased

profit available from more capital. Individuals or partners may thus decide to invest more, or corporation directors may elect to issue additional stock. Such sound plans and budgets are also essential in obtaining the additional long term and operating credit needed.

Financial Management

Having adequate operating capital to carry on operations in a most profitable manner requires planning ahead for borrowing, expenditures, and repayments. Advance monthly budgets for a year or more and current monthly financial statements are needed in some cases, and are helpful for all farm businesses where much capital is borrowed. Budgets promote economy, show future credit needs and repayment possibilities, and minimize interest costs. The monthly financial statement or listing of all assets and liabilities can warn of a decline in financial status while there is yet time to make necessary changes. Budgets and financial statements refer to the farm business as a whole, and the farm business as a whole is the sum of all its crop and livestock enterprises. Since these separate crop and livestock enterprises vary in size and kind from year to year, advance budgets can be made more accurately as a combination of budgets for the separate enterprises.

Income Tax Management

Farm owners and operators are interested in maximizing their personal net incomes after income taxes. There are many legitimate ways in which they can affect this net income through what they do in their farm business. To begin with, they can compare the effect of reporting profit on the cash receipts and disbursements basis or on the accrual or inventory basis. They have some options in considering certain expenditures as current expense, or capital outlay, and they can time their sales and expenditures to get more, or less, net income in a certain year. They can get more of their income in the form of long-term capital gains with breeding and dairy stock and with timber sales, which are taxed at a lower rate than income. With adequate records and information they can compare in advance the effects of different plans on farm profit and on net personal income after income taxes. A taxpayer in the higher percentage brackets may find that one farming plan with long-term capital gains provides him more personal income after taxes than another one which shows a higher profit but no capital gains. Providing the valid data to make these advance plans and budgets is a valuable contribution of the more costly system of records and accounts required.

True Farm Profit

The main purpose of all farm records and accounts is to compute the profit of the farm business each year for income tax reporting and management purposes. Almost any simple system, even that of checkbook and business papers, can be made to serve the first purpose. The income tax farm schedule, 1020F, designed to compute the net farm profit according to tax regulations, seldom shows the true earnings of the farm business and provides little information which is helpful to the manager in increasing profits. Where income tax reporting is on a cash receipts and disbursements basis, a separate profit calculation on an accrual basis using inventories of products, supplies, and livestock, is essential to learning the true profit. Furthermore, differences in handling depreciation and capital gains for income tax purposes call for a different true operating profit statement. This true profit statement for the farm business as a whole is the first requirement in farm accounting and management. The better and more complete the system of records and accounts is, the more accurate will be this profit statement and the more easily it can be computed.

Tools of Management

Records and accounts are diagnostic tools of management and are useful to the farmer in three main ways: as indicators of business success; as service tools in operating the business and providing needed information; and as instruments for locating weak points.

An annual statement of income, expense, and profit or loss for the farm business as a whole is always needed. Also needed are occasional financial or net worth statements showing the economic condition of the business.

Accurate records have a variety of uses in matters such as the following:

1. Preparation of income tax farm schedule and personal returns.
2. Reporting labor costs for compensation insurance.
3. Figuring social security taxes on employees, and reporting and remitting such taxes.
4. Looking up miscellaneous information.
5. Dividing income, costs, and profit in joint operations.
6. Obtaining gasoline tax refunds.
7. Obtaining credit.

Efficient management calls for many additional records, and most of these are incorporated in enterprise accounting.

Chapter 2 BASIC PRINCIPLES IN FARM ACCOUNTING

A farmer's transactions may include four main categories: personal living, farm operation, capital items, and other business undertakings not connected with the farm. One of the first considerations is to decide what is to be covered by the accounting system—the farming business only, for instance, or all the other business and personal affairs of the owner.

Unit of Account

What the farm accounting system handles is called the accounting unit and this will vary with the ownership and organization of the farm business. With individual or single family ownership it is commonly an advantage for the accounting to handle all of the personal and business affairs of the owner. The farming business is handled in separate income, expense, and profit and loss accounts; personal and other affairs are handled in other accounts. Assets and liabilities include all of the property and debts of the owner and the balance sheet or financial statement shows his total net worth, of which the farm is usually the major part.

For a partnership, the accounting system handles the farming and business affairs of the partnership only; other business or personal affairs may be handled by the same accountant in separate accounting units or sets of books.

With a farming corporation the unit of account is the affairs of the corporation; it would not include the personal business affairs of the individual stockholders even in instances when one or more live on the farm as employees. The corporation might have business activities other than a single farm or farming business with several farms, but handling these by separate accounts or enterprises will not be difficult by enterprise accounting methods.

Personal Affairs

When an owner or manager lives on the farm some intermingling of personal and farm business affairs is unavoidable. Bills may include both personal and farm business items. The electric bill may be partly for a personal dwelling and partly for one or more farm uses of electricity. Hence, it is basic to accurate farm accounting that correct separation be made between personal or non-farm items, and farming operations. These personal non-farm items may be handled in the farm accounting system but should be segregated into different accounts or columns in the cash record. In a full accounting system, drawing accounts for owners or resident managers would be charged with payments to, or on behalf of, owners or employees, and credited for money or services furnished the farming business. For good management reasons this financial relationship of an owner to the farm business is one that should be watched carefully. This becomes even more important in the preservation of equity and harmony among the owners when more than one family is involved.

Capital Items

Capital is property and may exist in the form of cash, real estate, or equipment and livestock. A purchase of a tractor for use over the years is a capital transaction. Likewise, obtaining a loan and repayment of a debt are capital items; they do not enter directly into farming operations. A payment on a loan may be part principal or capital, while the interest is a current operating cost. Accurate separation of capital and farm operating items is essential in arriving at a true profit figure for the year's farming operation. Much has been said and written about what constitutes capital outlay and what constitutes current operating expense. When in doubt, consult the rules and options in the latest "Farmer's Tax Guide," a publication of the Internal Revenue Service.

A large expenditure for an improvement, or for a piece of equipment usable for a number of years, is termed a capital outlay. Its cost is spread over the years of use by a charge called depreciation. Some improvements, such as original land leveling to make irrigation possible, are permanent and not subject to depreciation. Small equipment having short-term usefulness may be considered as current expense in order to avoid minutiae of details in listing and depreciating minor items. Major repairs or rebuildings which increase the expected life or usefulness of machines or buildings should be considered as capital outlay and depreciated over the new remaining life of the item. Minor repairs, which merely maintain the usefulness and expected life of buildings or machines, are considered as current expense.

The cost of planting an orchard or vineyard is a capital outlay, and its subsequent care until bearing may be considered as capital or as operating cost for income tax purposes. In enterprise accounting it is possible to separate costs of orchard development from other farming

costs for consideration as a capital expenditure. A larger development cost may then be depreciated over the bearing life of the orchard.

Livestock purchased for breeding and productive purposes are usually handled as capital outlay and as depreciable assets over their productive life, and when sold or lost are figured as capital gain or loss. Breeding livestock raised may be handled in a number of ways, however. For income tax they are figured as in recent years. For management purposes they are included in inventories and handled as expenses when purchased and income when sold. Poultry would normally not be considered as capital outlay when purchased.

Where the accounting unit covers an individual there is no need to distinguish between farm capital and personal capital. The asset accounts, or capital records and inventories, will show the value of farm assets; these are included with other assets and liabilities to show the individual's net worth. The asset and liability accounts for a partnership or corporation show the net worth of the firm, with farm assets and other assets in separate accounts.

Farming Operations

The principal objective in farm accounting is to learn the true profit or loss from a year's farming operations. This requires that incomes from farming during that year, and the expenses incurred for *that* production, be accurately determined. Figuring profit for management purposes requires the inclusion of inventories, accrued expenses, and income; it also involves realistic valuations in making inventories and valid depreciation figures. Such a calculation of profit would ordinarily arrive at a different result than the net farm profit for income tax.

Income Tax Profit

Federal income tax laws and regulations give farmers some options and privileges. It is legitimate and customary to take full advantage of these to maximize income after taxes. Since long-term capital gains are taxed at a lower rate effort is made to obtain as much income as possible from this source, thus reducing the current income and calculated farm profit; there is also a general tendency to use maximum permissible depreciation rates. Farmers may figure profit for reporting on either the cash or accrual basis but may not change the basis without permission. On the cash basis, they may prepay next year's expenses and defer income to the following year. Some of these actions minimize taxes in a particular year so farm profit as figured for income tax may be lower than the true profit figured for management purposes. There

Table 4. Estimated Development Period, Probable Useful Life, and Usual Depreciation Period of California Crops and Farm Facilities for Straight-line Method of Estimating Depreciation

Item	Time usually in commercial bearing	Useful life after commercial bearing		Common rate of depreciation
		Range	Usual	
	years	years	years	per cent
Fruit trees and vines:				
Almond	7	20–40	30	3
Apple	10	30–50	40	3
Apricot	8	20–40	35	3
Boysenberry	1	5–15	10	10
Cherry	10	25–50	40	3
Date	8	15–25	20	5
Fig	8	20–40	30	3
Grape	4	30–50	40	3
Grapefruit	5	10–30	25	4
Lemon	5	20–45	33	3
Olive	8	40–80	50	2
Orange	7	25–45	35	3
Peach	5	15–25	20	5
Pear	10	20–60	40	3
Plum	8	20–35	25	4
Prune	10	20–40	30	3
Strawberry	1	2–4	2	50
Walnut	10	30–50	40	3
Field and vegetable crops:				
Alfalfa	½	3–4	3	33
Asparagus	2	8–12	10	10
Irrigated pasture	½	4–20	10	10
Livestock:				
Work stock, horses and mules	2–3	5–20	10	10
Beef cows	2–3	3–8	5	20
Dairy cows	2–3	3–6	5	20
Buildings and improvements:				
Barns and other farm buildings		20–60	30	3
Dwellings		30–50	40	3
Fences		10–30	20	5
Wells		10–30	20	5
Irrigation pumps and motors		10–25	15	7
Irrigation pipe, concrete		20–50	30	3
Irrigation pipe, portable, and sprinklers		6–12	10	10
Farm machinery and equipment:				
Tillage and similar implements		5–20	10	10
Harvesters, mowers, choppers, etc.		5–30	15	7
Ladders and lug boxes		3–10	8	15
Milking machines, refrigerators, etc.		10–20	15	7
Field power and transportation units:				
Automobiles and trucks, 60,000 to 100,000 miles		4–20	7	15
Tractors 8,000 to 12,000 hours		8–15	10	10
Trailers, wagons		10–40	20	5

may be years when income tax profit is more than the true profit. Over a period of years, however, total profit will be approximately the same. Management needs to know the true profit each year in making decisions and changes in farming plans for the years ahead.

Depreciation

Modern farming involves a considerable investment in equipment and improvements which, because of wear and obsolescence, must ultimately be replaced. For income tax purposes, several methods of handling depreciation are described and illustrated in the "Farmer's Tax Guide." For management purposes and for figuring remaining values for financial statements, a realistic estimated life and ultimate salvage value is best, and is generally satisfactory for income tax computations also. Every case is different, however, and is greatly influenced by management's future plans and goals. Fast write-off of facilities may be an advantage in some cases but a disadvantage in others. Table 4 shows some average development periods and probable useful life for farm assets. Useful life of equipment can vary widely with hours of annual use.

Pg. 152 RECORD OF EQUIPMENT AND DEPRECIATION CLASSIFICATION Automobiles, Trucks, Tractors

Identification	Description	Age when acqd.	Cost: Date of Dr. Entry	Post Ref.	Debit	Date of Cr. Entry	Post Ref.	Credit	Estimated Life: No. of Yrs.	Estimated Life: Date Determined	Deprec. Rate: %	Deprec. Rate: Amt. per year	Prior Deprec.
PU 1	'58 GM ¾T Pickup	N	5 10 58		2865				15			190	111 -
PU 2	'57 Ford ½T "	N	6 30 57		2100				15			140	210 -
PU 3	'54 Chev. ½T "	2yr	8 7 56		1200				10			120	280 -
PU 4	'49 Chev ½T "	N	1 10 49		1640				10			160	1600 -
Tk 1	'50 Ford 2T flat bed	New	8 5 50		2650				15			170	1415 -
Tk 2	'51 Ford 2½T with cattle rack	3yr	10 1 54		2100				10			200	833 -
T 6	Caterpillar D6	New	8 6 49		8300				15			540	5040 -
TA-1	Int. TO9	New	9 12 55		6877				15			450	1462 -
TA-2	Caterpillar D40	New	8 1 57		9500				15			630	840 -
WS 2-1	Ford NAA 26 hp	New	3 10 53		2060				15			135	783 -
WR 2-2	J.D 50 with loader	1yr	6 9 55		2100				12			175	610 -
WR-2	Farmall H	New	3 20 51		2100				12			175	1361 -
W-3	Farmall 350-3600- $1000 above trade in	New	5 2 59		3339				12			270	—
	Group Total				46831								14545 -

Figure 1

Depreciation Record

For accurate farm accounting and intelligent decisions on replacement of farm equipment a continuous record of individual items showing depreciation taken and remaining values is useful. This may be done in several ways, including cards for each item with an appropriate numbering or filing system. For ordinary farms with less than 30 items in each group or category, accounting sheets with columns for 5 to 10 years will probably be best. Individual items are usually grouped, with the group total handled as a single item and covered by a single asset account. Groups would vary in number and size with the nature of the farm. They would include, if necessary, the following: trees and vines, irrigation facilities, farm buildings, tractors and trucks, farm machinery, office equipment, and purchased breeding stock.

A good depreciation record would have columns showing the cost or other basis, date acquired, salvage value, amount to be depreciated, years of life, prior depreciation, remaining value, and would also have column groups for several years showing value at beginning of the year, additional capital outlay that year, remaining years of life, and

DEPRECIATION RESERVE PERIOD FROM TO CLASSIFICATION Autos, Trucks, Tractors NO.

	val 1/1/59	added '59	deprec. '59	value 1/1/60	added '60	deprec. '60	value 1/1/61			Total Deprec.	Reserve Debits Date	Post Ref.	Amount	Ref.
	2754 -			190 -	2564									
	1890 -			140 -	1750									
	920 -			120 -	800									
	40 -			-	40									
	1235 -			170 -	1065									
	1267 -			200 -	1067									
	3260 -			540 -	2720									
	5415 -			450	4965									
	8660 -			630	8030									
	1277			135 -	1142									
	1490 -			175	1315									
	139	Traded in on following:												
x		2660 -		270	3069 -									
	28947 -	2660 -		3020	28537 -									

Figure 1 (continued)

THE BOOKKEEPING FORMS . . .

shown in this publication are, for the most part, simplified adaptations of standard forms developed by manufacturers of accounting systems. Users of this book may wish to rule their own forms or purchase the manufactured products which are on sale at many office supply or stationery stores.

The names and addresses used on the forms shown are purely fictitious and are to provide examples only.

---

depreciation taken that year. Blank lines would be left above the group total for entering additional items as acquired. When facilities for additional years are exhausted a new record is started; this record should include items still in use even though fully depreciated or depreciated to salvage value. Farm account books usually contain such a record. Figure 1 presents such a record with sample entries on a commercial accounting form.

Depreciation is usually figured annually near the end of the year and charged as a farming expense at that time. It can, however, be figured and charged monthly in any farming business where monthly profit and financial statements are considered essential. When a new item is acquired, depreciation on it would begin in the same month. The value of this procedure would have to justify the additional clerical work required.

Valuation of Assets

This may be an important problem in setting up initial records or asset accounts in a farm accounting system. It is also important in acquiring and transferring property and in forming or dissolving partnerships and corporations. Assets are valued at cost when acquired and this, with some adjustments over the years, remains the basis of the property for depreciation and figuring gain or loss in a sale or casualty loss. When a farm is acquired the purchase price must be properly spread over all assets acquired, such as land, buildings, irrigation facilities, fruit trees, equipment, and, perhaps, growing crops and livestock.

The current book value on depreciable assets is this original cost, or some other basis less depreciation taken. When real estate and other facilities were acquired many years ago at lower prices, and facilities were largely depreciated, current book values may be unrealistically low. The annual balance sheet based on these asset account values might reflect a total valuation which is less than half of the current conservative market or realizable value of the land, improvements, and equipment covered. In securing credit a financial statement may need to be based on current appraised values.

Inventories

Where farm products, supplies, or livestock of substantial value are on hand at the beginning and end of the year, an inventory in which they are listed by quantity and value is essential to figuring the true profit for the year. Taking the inventory involves measuring or counting the number of tons or of animals, and this in itself furnishes useful information. A value must then be determined per unit such as the ton or the animal. Method of value determination should be consistent from year to year. The following valuation policies are recommended as resulting in the most valid profit figures over the years. Purchased feed and supplies are valued at cost delivered to the farm. Farm-produced feed held for use and not for sale is valued at "farm value" at the time it was harvested and stored. Farm products being held for sale are valued at current farm value at inventory time. Livestock almost ready for sale would be valued at current farm value. Other farm animals are valued at lower farm values in line with their market expectations. Basic breeding stock, such as beef or dairy cows, is carried at an average farm value per head at approximately the salvage value of such stock when sold. This value is kept about the same from year to year in order to avoid unrealized profits or losses due to changes in valuation.

Products in Marketing Channels

There may be a lapse in time between the delivery or consignment of a crop in a regular marketing channel and the receipt of an exact settlement. This is of little consequence unless it delays a financial statement or a necessary calculation of profit. A probable value can usually be estimated and included in the inventory or accounts receivable. Variance of final settlement from estimated value can be adjusted later, if it is of consequence.

Growing Crops

Regardless of the record year chosen, at the end of that year there may be work which has been done toward a crop to be harvested and sold the following year. This can be ignored in accounting for the farm business as a whole when acreage and work done are about the same each year. When there are big differences it is well to estimate the cost

of this work each year and handle it as prepaid expense in figuring profit on an accrual basis. In enterprise accounting these are carried from one fiscal year to the next as uncompleted enterprises.

Revolving Funds, Patronage Dividends, and Final Payments

If a farmer belongs to a cooperative he will probably have some revolving capital in the association, and will probably receive patronage dividends and final settlement in one year on a previous year's business. For income tax figures follow the suggestions in the "Farmer's Tax Guide." There may be cases in which profit for management purposes may need to be adjusted by considering the revolving fund capital withheld, patronage dividends earned, and final settlement as part of the income of that year even though the amounts may not be known until later and not actually received for several years. By the same token, such funds received in any one year may need to be considered as income from one or more previous years.

Accrual Adjustments

In figuring yearly profit on an accrual basis it is necessary to consider as income and expenses only those items that apply to that year. It is usual in simple self-kept records, however, to record a receipt or expenditure as applying to the year in which it is received or paid. At the end of each year items are examined and adjustments can be made for prepaid expense and accrued income; in a full accounting system this is handled by regular accounting procedures and ledger accounts. Expenses prepaid in a previous year are carried in, and those paid during a year toward business of the following year are carried over.

ACCOUNTING FOR THE FARM BUSINESS AS A WHOLE

An adequate set of financial and supplemental records for the farm business as a whole is basic to any commercial farming. Such records are essential in financing, managing, and operating any business; they are also the starting point for enterprise accounting.

Objectives

Accounting for the farm business as a whole should provide for the following:

1. Income tax returns—schedule 1040 F on a cash or accrual basis and sometimes material for the personal return 1040, schedule D capital gains and the reporting of self-employment income and social security taxes.

2. A true profit or loss statement for management purposes on an inventory or accrual basis.

3. Periodic net worth or financial statements as needed.

4. Accumulations of current income and expenses by desired segregations with monthly totals for use in budgeting and financial management.

5. Convenient reference records of previous transactions, production, prices, etc.

6. Records of investment, contributions and withdrawals by the owner or several owners.

7. Records for deducting and remitting Social Security Tax on employees.

8. Records for obtaining refunds on state and federal gasoline taxes.

9. Yield and production information on the main crops and livestock.

Essential Records

To achieve the above objectives the following records are needed:

1. Cash received, with segregation by columns or accounts so that the amount from each product or of each kind may be obtained readily each month and for the year.

2. Cash paid, with segregation by categories in columns or accounts so that monthly and annual totals can be readily obtained.

3. Time cards or books on individual employees for accurate payment of wages.

4. Social Security payroll records showing Social Security Tax deductions and individual employee records showing earnings and deductions to date.

5. Capital and depreciation records listing all large depreciable items individually and showing current values and depreciation for the year.

6. Inventories of livestock, feed, unsold crops, and supplies at proper valuations annually at least, and at other times as needed.

7. Harvest and yield records on all crops, preferably by fields.

8. Production and mortality records on livestock and poultry.

9. Gasoline use on the farm for obtaining refunds of gasoline taxes paid.

10. Business papers such as statements, vouchers, sales slips, cancelled checks. (These are valuable records and should be kept on file for five years.)

Accounting Period

The cycle in farming is usually a year and accordingly the profit statement for the farm as a whole is for a 12-month period. The calendar year is usually chosen as the fiscal or accounting year and is satisfactory for most farms where crops are largely produced and sold within the year. Where most of the planting is in one year and harvesting is in the next, a more useful accounting period would start after one year's harvest and before production activities for the next—on July or August first for a California grain farm, for example.

Profit statements oftener than once a year are of little value to management. An exception would be a dairy or chicken egg farm where production and feed buying are uniform through the year. Here, a monthly statement showing net income as a difference between current income and expenses would have significance to management.

On most farms a listing of monthly totals by category, and perhaps for the year to date, are helpful in current financial management and in making forward budgets and securing credit. In all farm accounting it is advisable to make entries for transactions as they occur and to check them for accuracy and completeness at the end of each month. This can be done as a preliminary to monthly totals and statements. In a full accounting system, a trial balance should be made at the end of each month—that statement is important and should be recorded for future reference.

Farm Record Books

For the single-owner farm with owner-kept records a special Farm Record Book can suffice. Many record books are available; some are provided by the State Colleges of Agriculture, or agricultural service businesses, and others are available in stationery stores. But not all of them are adequate. To be adequate, a book should contain most of the records previously mentioned. The records of cash receipts and payments are most important. Each book should have a total column and distribution columns for accumulating the desirable segregations by kind, including personal, capital, farm income, and expense items. Farm record books with no continuous cash records but with different pages or sections for entering the several categories are difficult to check for accuracy and completeness and are not recommended. Most farm record or account books contain space for monthly totals, a capital and depreciation record, inventories, and forms for financial and profit statements. When well kept they serve as a basis of enterprise accounting by means of the supplemental records and work sheets described in Chapter 4. Such books are sometimes of inadequate size and capacity for a larger farm with many transactions and are not recommended for the large farmer with other business interests. These books are not suited to joint operations involving more than one owner.

Such special farm record books are sometimes called single entry systems because an item is entered only once with no offsetting debit or credit or posting to ledger accounts in another book, as in double-entry accounting explained below. Cash records recommended above which have a total column and distribution columns involve a double entry. An item placed in the total paid column is a credit to cash or the checking account, and when also placed in the proper expense column or columns it is a debit to those accounts. Such a record is convenient for checking accuracy and completeness. The total received and paid columns are checked for completeness with the bank statement. The total of the totals of all distribution columns in the record of cash paid should equal the total of the cash paid column for the month or period checked. Most farm record books contain instructions for checking accuracy and completeness. Figure 4 illustrates some entries in the California Farm Record Book. This cash record is one in which receipts and payments are entered consecutively in a single double-page record, which could be called a cash journal.

Using Commercial Accounting Forms

A financial record system can be kept on selected commercial accounting forms in an accountant's binder. Many special forms are available and the same results can be attained as with a special farm record book. Records of cash received and of cash paid, with distribution columns or a combined cash journal adequate for the business, can be selected. Sheets for a depreciation record, payroll record, and inventory are obtainable. The 11 by 14 inch page size provides more adequate column widths and numbers of columns for a larger business than do the smaller farm record books. The small farmer will find commercial forms more difficult to use than a special farm record book because suitable forms have to be selected and labeled with many column headings, and no instructions are available.

Double-Entry Accounting

Double-entry bookkeeping is the basic procedure used in business when accuracy and honesty must be proved. Each transaction is first entered in a book of original entry, such as a cash book or journal. The amount is later posted to a ledger or book of accounts as a debit

to one account and a credit to another. There is usually a considerable number of accounts, and the total debits in all accounts equal the total credits when posting has been correctly done.

In farm bookkeeping some accounts are used to show the value of the assets, liabilities, and ownership of the farm business. Other accounts are provided as needed for different kinds of expense and income. It is suggested that records be brought up to date at the end of each month, that postings be made to the ledger accounts, and that a trial balance be made to prove the accuracy of the work and to show account balances to date.

Since this system uses technical accounting procedures and is usually done by trained accountants, standard commercial loose-leaf forms and binders are usually used; they are selected to fit the needs of the business and the preferences of the accountant or bookkeeper. Many forms and rulings are available, including supplemental forms for a depreciation record and for the payroll and social security records. Blank forms require writing in of column titles, et cetera, but some large farming companies have their own forms printed.

Double-entry accounting is recommended when more than one individual is concerned in the ownership and when the relation of each to the business must be shown accurately and the profits fairly divided. This system is also needed by the individual with a large farm and other investments and income, and it is considered necessary in any large business with hired employees involved in the management and handling of funds. It is *required* for estates and corporations.

The main advantages of a full accounting system are: (1) Many more segregations of income and expense are possible in the unlimited number of ledger accounts. (2) Credit transactions and inventories may be handled more systematically and profit for a year on the accrual basis may be more accurately determined. (3) Complete accuracy is assured. The accounting can be proven accurate and can readily be audited by a public accountant.

The disadvantages of this system are that technical training is needed and a greater amount of clerical work is required. A farmer seldom keeps his own records under this system. Accounts are usually kept by a resident bookkeeper on the farm or by a public or private accountant in a city office. The big disadvantage of keeping records off the farm is that they are not readily available for reference when making decisions.

The farmer who hires someone to keep this system of accounting may obtain better managerial help from it than has been usual in the past if he wants and is willing to pay for a better selection of ledger accounts and monthly progress reports and comparisons. In addition to income tax returns he should also obtain a true profit statement on the accrual basis for the farm operations for a particular year.

BUSINESS METHODS

Commercial farming is a business with the general objective of maximum profit over the years. Good business methods in handling funds and people facilitate accurate accounting. They also promote diligence, honesty, and better service on the part of employees and people with whom there are business transactions.

Checking Account

Most farm accounting is done in terms of cash received and paid. Receipts are usually few in number, large in amount and usually by check. Hence, it is usual to deposit all receipts in the farm checking account and to make all payments by check. Thus the farm cash account parallels the bank account and can be checked with it to assure completeness and accuracy. Duplicate deposit slips and cancelled checks furnish another set of papers or records for reference.

Cash

Occasionally, it is necessary to accept a small amount of cash for something sold, or it is convenient to make a small expenditure in cash. With most farms these events are rare and can be handled without any petty cash fund. Most people have personal pocket cash from which they can make an expenditure, receiving a sales slip, or receipt, which is turned in later for reimbursement. With this method a sales slip should be made for anything sold; it is turned in with the money to be deposited or for a charge to be made to the person pocketing the money. Where there are many cash sales at the farm, safe methods of holding the cash for accounting and deposit are essential.

Accounts Receivable and Payable

It is not usual for farmers to set up accounts for money owed, or owing, for a short time; examples are routine charge accounts that are paid monthly, or deliveries of farm products for which payment is expected soon. The first entry for such transactions is made when cash is received or paid. Where such accounts are not settled in full each month, the farm books should show each transaction as made, and should give an up to date record of debits, credits, and balances as a

check on the other party; this also enables the manager to know the balance at any time and to manage his funds accordingly. The few noncash transactions that need recording on the farm books can be handled in a cash or general journal. Even though no accounts receivable or payable are carried in the books there will usually be some debts or credits outstanding at the end of the year. Invoices or statements covering amounts owed, or receipts for products delivered, will usually be on hand. These can be taken into account in profit and financial statements.

There are some farming businesses where several individual accounts payable or receivable are needed. Where purchases are made on credit from a number of dealers and accounts with each are desired, transactions are immediately recorded in a special journal or voucher register and individual dealer accounts are also credited at once. When payments on account are made they are listed in the check record and charged to the proper accounts. When a firm has a number of regular customers and makes frequent sales it is advisable to have an accounts receivable or customer's ledger to show all transactions. Listing these purchases, sales, and payments in special journals and simultaneously posting them to accounts receivable and payable is a common machine-accounting operation, as mentioned in Chapter 7.

Business Papers

Usually, every transaction of a farm business should result in a substantiating invoice, statement, or sales slip. There are also door-delivery slips which may be checked later with settlement statements for produce. Farmers are usually inclined to trust firms with whom they deal, and while it is true that errors seldom occur it should be a rule to examine every piece of paper and to check entries pertaining to the deal and file them for future reference. Statements covering farm products sold usually contain considerable data on quality, price, and marketing cost deductions that are seldom carried into the farm books. Hence, these statements become valuable supplemental records and should be assembled by firm or product, filed, and kept for perhaps five years.

Any sale to an individual where there will be no statement received should be covered by a sales slip which carries the name of the buyer, the item sold, its quantity, quality, and unit price, and the amount of the sale. If paid for on delivery that fact is indicated and signed for by the seller. This slip is made in duplicate, with the first copy being given to the buyer and the carbon kept for proper entry. This is essential not only for correct accounting but also for accurate quantity information on production and sales.

Sales or delivery slips and bills paid also carry important quantity and price information which is seldom carried into books and accounts. These items can be assembled by kind and added to obtain information —such as the total pounds of concentrates bought annually—which aids in analyzing an enterprise. These readily available records are essential in analyzing input quantities, prices, costs, and production efficiency; regrettably, most farmers make insufficent use of them.

Office and Equipment

Despite good intentions and efforts many ventures fail because of inadequate bookkeeping facilities, and so it is necessary to mention the importance of an adequate office and of essential equipment for conducting the business and the accounting of the farm.

For the individual farm operator whose record keeping is done by himself or his wife, a small office room reserved for business affairs only is suggested. It should be well heated and lighted and should have an outside entrance. Minimum furniture should be an office-type desk and chair, an extra chair or two, and a filing cabinet for business papers and reference material. Even the simplest of record systems involve so much adding and cross-adding that an adding machine is essential to getting the job done. If enterprise accounting and analysis is to be attempted a calculating machine would be better. An extension telephone would be desirable.

For the larger farm business, a separate farm office building on the farmstead court is usually advisable and justified. If the business warrants it, a full time clerk-bookkeeper should be employed. Desks for the clerk and manager, and adequate filing cabinets are a necessity. A fireproof cabinet or safe for important record books and documents is recommended, as the cost of reconstructing and replacing such records after a fire could exceed the cost of the cabinet. A telephone, calculating machine, and typewriter will be needed. Even if the final accounting is done off the farm an office on the farm is needed to assemble and prepare the information and to pay local bills and employees.

Timeliness

Prompt handling of mail and business affairs not only facilitates better management but in the long run actually takes less time. Incom-

ing mail should be read and acted on each day by mailing replies or checks in payment of bills; entries should be made at once for all receipts and payments. This can be done at intervals during the day —or in the evening, if done by the manager or operator. Prompt handling of business affairs stimulates better performance by the farm staff, promotes better service from the firms dealt with, and eliminates the danger of getting so far behind with the work that things are forgotten and opportunities are lost. A few days after the end of each month records are checked for accuracy and completeness, the bank statement and checkbook are checked, monthly totals are made, posting is completed, and monthly trial balances and statements are made. With each month's affairs completed and checked monthly the

CONTINUOUS INVENTORY RECORD

ITEM: Baled Hay in storage Pile No.1, Trasmere Ranch Feed Lot. Est. @ 17 bales/T

Date		Quantity In	Quantity Out	Quantity Bal.	From	To	Unit	Unit Value	Total value In	Total value Out	Total value Balance
May	16	160		160	F.12, 13, 17 1st Cut	Pile 1	Ton	$21.00	3360		3360
	21	36		196	F.16 1st cut	Pile 1		20.50	738		4098
	28		48	148	Pile 1 Sold to G Emery			22.00		1056	3042
June	20	148		296	F. 12,13,17 2nd cut	Pile 1		19.50	2286		5328
	25				(2nd cut F.16 Sold in field 40 T @ $18						
	27		144	152	Pile 1 sold to W. J. Feed Lots			20.00		2880	2448

CONTINUOUS INVENTORY RECORD

Figure 2

year-end procedures and completion of annual statements and income tax returns are greatly facilitated.

Office Clerk

Having someone in the office at all times can be quite valuable for any large farm business. Few farmers and managers realize the amount of time lost by employees, callers, and deliverymen when there is no one in the office to take calls, locate the manager, convey information, and sign for deliveries. The right person for the job can do the accounting and the office secretarial work, and could also serve as an assistant manager for business affairs. He can run errands and perhaps can pinch hit on various farm jobs. He can also do enterprise accounting and keep books for the farm business as a whole.

Continuous Inventories

Keeping a continuous or running inventory on livestock, on some categories of feed, and on some supplies, is often useful. It promotes better decisions in managing livestock and supplies, shows up losses or thefts, and provides for more accurate charges for materials in enterprise accounting. In simple farm accounting for the farm business as a whole the continuous inventory need not be handled in the accounting system unless needed for monthly statements. A single sheet or card may be used for each category with units added as obtained by purchase, harvest, or transfer, and deducted as used, lost, or sold. Knowing the number of young birds and laying hens on a chicken egg farm is indispensable in figuring production and mortality. Exact knowledge of the kind of stock on a ranch and the number in each age group is essential information. Accurate figures on the bags of commercial fertilizer in a warehouse or the tons of hay in a storage pile are additional examples of useful running inventories. Occasional counts to verify the number on hand are suggested; they should be accurately made for the annual inventory used in figuring profit and in the financial statement. Figure 2 shows a sample of a continuous inventory sheet for a manager's field notebook with entries for hay in and out of a storage pile.

Chapter 3 ENTERPRISE ACCOUNTING—WHAT IT IS AND HOW IT IS DONE

Farm enterprise accounting furnishes, in detail, income, costs, and profit for each separate crop and kind of livestock in a diversified farm business. It is similar to cost accounting in manufacturing, and is sometimes called cost accounting when applied to farming. The author prefers to call it enterprise accounting because its procedures are slightly different and because it stresses profit in the individual enterprises of the farm rather than stressing the cost of processes and products. Enterprise accounting makes possible the enterprise approach in farm management, facilitates the most profitable combination of crop and livestock enterprises by size and kind, and promotes the operation of each enterprise for maximum profit.

The usual type of farm accounting for the farm business as a whole shows only the total profit or loss from all enterprises; it does not show which ones are making a profit or a loss. Without such information it is difficult to change enterprises to a more profitable combination, and it is also difficult to analyze each enterprise in order to maximize its contribution to total farm profit.

What Is an Enterprise?

An enterprise is a single crop or kind of livestock produced for a profit-making purpose. A crop enterprise starts with preparation of the land and proceeds through cultural operations, harvesting and marketing. It may be completed in a few months or two years; it may start and end at any time of a fiscal year, with the following crop being a new enterprise. Each year is a separate enterprise with perennial crops such as orchards, alfalfa, or asparagus. Livestock enterprises—dairy, beef, or poultry—may be continuous, with each year figured as a separate enterprise. A livestock-feeding enterprise may start with the purchase of feeder livestock and continue until the same animals are sold a few months to a year or more later.

Why Several Enterprises?

Large commercial farms usually operate a number of enterprises in order to make best use of available resources. A large farm commonly contains several soil and land types with differences in uses adapted

to each. On a farm there could be, for instance, some rough, hilly land suited only to grazing and timber. There could also be some tillable land suitable only to dry-farmed grain and some irrigated valley land that could be used for a wide range of high-value crops. Logically, a number of crop enterprises would be necessary to use the various soil types. Even on the good valley land it is usually necessary to grow crops in proper rotation in order to avoid damage from pests and diseases, maintain tilth and productivity, and thus obtain high yields.

Two crops a year are feasible in some climatic zones. It is seldom feasible or wise to grow a single crop only. Some crops incur less risk of loss from crop failure or low price than others do. With several crops it is possible to spread work and use of irrigation water and equipment and attain a better overall use of resources.

Natural pasture can be harvested by livestock only, and some forage crops are more profitable if marketed through a livestock enterprise than if sold off the farm. Hence, a number of enterprises are usually conducted on any large farm and enterprise accounting, which develops information on each, is a valuable aid to management.

Enterprise accounting is justified only as an aid to management and can be very detailed or rather simple. The objective is to develop information which can be used by management as simply and cheaply as possible. Careful thought should be given to what the enterprises are and how minutely they should be broken down to smaller, separate enterprises; for example, separate fields of a single crop such as alfalfa can be separate enterprises—or all alfalfa on the farm can be a single enterprise.

Consider a specialized dairy farm on which some feed is grown as pasturage, hay, and silage. This farm may be considered as a single enterprise for selling only milk and dairy cattle. But the dairy cows are really one enterprise; the feed crops and pastures are sometimes considered as a single feed-growing enterprise. The feed produced is charged to the dairy and credited to the feed-growing enterprise. Costs incurred are divided between the dairy and crops. When profit statements on the two are made they will show how much profit is contributed by each enterprise. The dairy enterprise can be analyzed and studied to improve its profit. If the feed production is not profitable, a change to other crops, and perhaps even to buying the feed is indicated. It would be much better if every feed crop—the alfalfa, the irrigated pasture, and the corn silage—were handled as a separate enterprise. Intelligent changes could then be made as indicated and trial plans and budgets could be drawn up for a more profitable future. If the dairy enterprise could not be made profitable, it could be discontinued and a change made to cash crops.

The Enterprise Cycle

An enterprise cycle from production through marketing may not fit the calendar or fiscal year of the farm business. In California, land preparation for barley usually begins in one year and the crop is harvested the next. If a fallow year is involved it takes two years to get a single crop. Accordingly, the enterprise account is opened when work begins and is carried over until the enterprise is closed the next or the following year. Thus there could be a 1960 barley enterprise and a separate 1961 barley enterprise in the books at the same time. Some enterprises continue a few months only; a fall lettuce crop can follow a spring lettuce crop, with both being completed within a year.

In a continuous livestock enterprise, a year corresponding to the fiscal year of the business is the best cycle. A dairy, beef, or swine enterprise account opens on the first day of the year with an inventory of stock and feed on hand, and is closed at the end of the year with another inventory.

It may be sometimes desirable to break a livestock enterprise into two or more phases. In a dairy enterprise, the milking herd is sometimes considered one enterprise, and the raising of heifer calves for replacement purposes is regarded as another. This involves additional detailed records and troublesome allocations of feed and other costs so seldom contribute enough valuable information to be justifiable. On a cattle ranch with a herd of beef cows a single enterprise would usually be adequate; the addition of a feed lot would justify a feed lot enterprise; the feeder cattle would be charged to this at farm value when they leave the beef enterprise to be fed for market. A feed lot enterprise might also handle additional purchased cattle in several groups, each group being considered a separate enterprise. Each account would start when the animals come in, each account would receive appropriate costs during feeding, and each would be closed when the animals are sold.

Development Costs

The development of a capital asset, such as a non-bearing orchard, should be handled as an enterprise in order to receive its share of current costs during the development period. Each year the accumulated costs are charged to an asset account as a capital investment. When the orchard reaches commercial bearing the cost of growing the

trees can be spread as depreciation over the productive life of the orchard. Handling such a development project as an enterprise is also necessary in order to absorb costs not chargeable to other enterprises.

Although enterprise accounting has as its main purpose the analysis and selection of enterprises, it also has valuable side effects on the farm business as the following list shows:

1. Procedures involved in keeping labor and machine use records as a basis of allocating costs to enterprises improve administration.
2. Honesty and diligence of employees is increased.
3. Supplies and fuel are more carefully handled and their use recorded.
4. Current production and use records can be made available in a few minutes.

Accounting for the farm business as a whole can attain some of these ends but cannot provide enough information for making the many correct decisions necessary in operating and administering a large and diversified business.

Large Business with Several Farms and Departments

Successful firms often grow and become involved in allied agricultural service businesses. A packing or processing plant may be added, farm service and contract work for others may be performed, or several farms may be operated. A farm shop may grow and manufacture special equipment for sale to others. The business may be divided into several departments while it continues to operate as one firm with one unit of account and accounting system. In such a case the techniques of enterprise accounting are absolutely essential. Full enterprise or cost accounting on each farm, and in each side line or associated business, may not be necessary or feasible, but the procedures of alloting incomes and costs to the separate farms and departments, or units of the total business, are the same as in enterprise accounting for a single large farm having several crop and livestock enterprises.

HOW ENTERPRISE ACCOUNTING IS DONE

Basically, enterprise accounting involves the allocation of all incomes and expenses to the several enterprises in the farm business. There is no single best way in which this may be done easily and with accuracy. Bcause every farm is different the methods used will be determined by the nature of the business and the factors of where, and by whom, records are kept.

In its simplest form, each income received would be credited at once to the proper enterprise in a column or a ledger account or its equivalent. Each expenditure would be allocated to an enterprise on some valid basis. This is illustrated in simple cases by a farmer who divides each expense at the time it is made and enters the amounts in enterprise columns in his record of cash paid. He has to know what use was or will be made of labor, materials, or other items for which he is paying. Such a method, laborious and of questionable accuracy at best, becomes impossible when more than a few enterprises are involved.

The best method of enterprise accounting is a combination of making some direct charges and credits to enterprises and charging many expense items to accounts for the farm business as a whole, from which they are later transferred to the enterprise expense accounts. This process will be explained here now, and again later, at which time it will be illustrated by two methods—by supplemental work sheets and by formal accounting procedures.

Income

Crediting the income received from the sale of farm products to the proper enterprise account usually presents no problem. A question might arise about an additional payment on a crop from a previous year's enterprise. A completed enterprise statement for management purposes only can always be revised. The important point is to make certain that income is credited to the correct enterprise, and for the correct year, so that it may be compared with production expenses. Where there are several fields or enterprises of a single crop, care must be taken to preserve the identity of the products marketed from each.

Expenses

In enterprise accounting, each category of expense will have its own best method of handling. It is customary for first entries of a transaction to show the expense by categories, such as labor, fuel and oil, electric power, etc. Accounting for the farm business as a whole ends with annual totals of each expense category listed in the profit statement. Enterprise accounting takes these categories and allocates them to enterprises—some currently, some monthly, and others at the end of the accounting year. Where an expense is clearly and entirely for a single enterprise it is best charged directly to that enterprise at the time.

Many recurring items, however, are best accumulated for some time and then charged in a single entry.

Labor

Keeping a record of hours worked and work done by each worker is one of the important steps in enterprise accounting. Labor and payroll records are a means of computing the wages due as well as a basis for distributing labor costs over enterprises, and perhaps operations within an enterprise. Some payments of wages are for work done in a single enterprise while others may cover work in several. It is often desirable to keep time records and to figure labor costs by operations within crop enterprises to discover opportunities for savings. Operations are single jobs: planting, hoeing, irrigating, and all work done to accomplish a single purpose, such as land preparation—which itself might be a total of disking, plowing, harrowing, etc. It is well to keep the number of operations handled separately to the minimum most helpful in analyzing costs. A saving in clerical work can be made by keeping time spent by operations in the initial records but figuring and allocating only the total labor cost for each enterprise. Then, when an analysis by operation is desired, it is possible to go back to the original labor records and compile data for a more detailed breakdown. This process may also be desirable for different fields of a single enterprise, particularly where there is an opportunity for comparing costs by different methods of performing an operation.

Time Cards

A time card on each worker is used to show time by enterprises. The card may cover a day, a week, a pay period of a half of a month or two weeks, or a month. Standard time cards have been published and sold for this purpose, but most farmers prefer to have cards or sheets designed and printed to fit the enterprises and the administrative and accounting procedures of the particular farm. A well designed time card can serve several purposes: it can provide for the calculation of wages due and the allocation of labor costs to enterprises and operations, and it can show use of equipment, irrigation water, and charges for cash advances, meals, and other perquisites.

Time cards on workers are best kept by supervisory personnel. Some trusted and unsupervised workers could be allowed to keep their own cards, although this might introduce inaccurate or dishonest reporting. At worst, poor time records can make accurate cost allocations impossible. It is advisable for supervisory personnel to keep a time card which will furnish the basis for allocation of management and supervision costs; these costs should also be charged to enterprises. Labor performed by the farmer or a working foreman must be charged to appropriate enterprises and operations as well as hired labor, so it should also be reported on time cards. A single time card can cover a large crew working at a single operation in a single enterprise. Names are written in under the job and the hours (or units of work if it is a piece rate job) are tallied each day opposite each man.

If enterprise accounting is done on the farm, daily time slips are sometimes kept during the day and the data transferred to each worker's time sheet in the evening. The best system for saving clerical time would be to use a pay-period sheet, or time card, that could be carried in a small binder by supervisory personnel. When a worker is transferred the card is also transferred; when employment is terminated the card is taken to the office for final payment. At the end of each pay period all cards are turned in for preparation of the pay checks. A twice-a-month pay period is a good compromise—it involves fewer pieces of paper than weekly pay, and meets the need of workers for pay oftener than once a month. Shown below is a sample time card that is usable for either the first or second half of the month. It is 5½ by 8½ inches in size and fits a standard three-ring binder of that size. Such a binder would also contain other field records and coding information.

Notice that on this time card each job on each field is listed on a separate line. The sample entries shown are listed as they would be on the dairy farm used as an illustration in Chapter 4. If not enough lines are available a second card can be used. At the end of the pay period the card is checked for accuracy and completeness; the total hours for all days should equal the totals for all lines. Appropriate rates are then used for figuring the amounts in the last column. When enterprise accounting is used, employees usually are paid by the hour; if pay is by the month, the amount due can be divided by hours worked to get a rate for making the extensions for that pay period. In some cases this rate is higher than the actual wage rate in order to include the cost of perquisites, compensation and social security insurance, and undistributed labor. Some road work, sick leave with pay, vacations, etc., cannot be immediately charged to enterprises and is therefore held as undistributed labor to be divided at the end of the year among enterprises and service units in proportion to labor already charged.

As workmen are paid, the expenditure is immediately entered and charged to a labor column or payroll account. Each completed time

card is listed on a work sheet, or in a payroll record, and the separate amounts for jobs and enterprises are inserted in proper columns. After the employees have been listed, totals are made and charged to enterprises. Monthly totals are suggested, in order that accounts and cost data can be kept timely and available for use.

Service Units

In modern farming, various machines are used to perform work and these require outlays for fuel, oil, and repairs. It is not possible to allocate such costs to enterprises individually as they are incurred. These machines are operated to perform work for the enterprises and

FARM WORKER'S BIMONTHLY TIME CARD — **University of California, Agricultural Extension Service**

Pay period ending 7/31/59

Name Ted Jones No. 3 Address 215 West Ave., Madera

Job or work done	Field No.	Enterprise	Equipment Kind	Equipment No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	31	Hours units	Rate	Amount
					18	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
Irrigate Alfalfa	17	A	Ir.		4	6															10	1.15	11 50
Haul in baled Alf	14	A	Tk	1	5	5	5														15		17 25
Irrigate Ir. Post	13 9	Ir P	Ir				4		6	6	4	5							4	5	34		39 10
Mow Alf.	15	A	T2						4	4	4	4									16		18 40
Help haul in hay	14	A	Tk	1									5	5		5				4	19		21 85
Irrigate corn	10	CS	Ir													4	9	9	5		27		31 05
Undistributed labor											1		4								5		5 75
Total					9	11	9	9	10	10	9	9	9	5	0	9	9	9	9	9	126		144 90

Deductions or advances

Figure 3

not, ordinarily, to earn a profit. This work should be charged to the enterprises at cost. Expenses on the machines are charged to them and they are credited for the work done. A service unit is a convenient device for keeping costs on the items covered and for transferring them later to the productive enterprises on the basis of work done. Service units can be few or many; one service unit can cover a single machine, a large group of similar machines, or even all farming machinery on the farm. This last method is usually recommended, as it saves time and simplifies procedures.

Farm Machinery

Tractors, trucks, and all farm machinery would constitute the Farm Machinery Service unit. An account, or group of accounts, would be charged with all expenses on farm machinery including shop expense, labor, depreciation, and taxes on equipment. A table of appropriate hourly rates should be developed so that the total of all hourly charges for work done will equal the total costs for fuel, repairs, depreciation, and other costs for the year. Work by each machine is charged to enterprises at an appropriate rate. This rate also will usually include the implement used; for example, the rate for a 20-horsepower wheel tractor might be estimated at $1.30 an hour, while the 40-horsepower crawler tractor could be charged at $2.10 an hour and a two-ton truck at $2. These rates do not include the operator of the machine, whose time is charged to enterprises through the labor records.

There is little chance that total charges made for all work in a year at these estimated rates would equal the total of all costs in the service unit. If any sizable adjustment is needed it can easily be made by increasing or reducing all charges by an appropriate percentage. Table 5 illustrates the method used in estimating suitable rates.

Most farms need several additional service units to receive and hold expenses until they can be allocated to enterprises on a final, valid basis. Following are a few that are common to most farms:

Irrigation Water

This is a useful service unit on an irrigated farm. It receives all costs of obtaining water and delivering it to fields, but not of applying it, which is crop labor. Water is charged to enterprises on the basis of the quantity used. As some crops use considerably more water than others it would not be logical to spread water costs over enterprises on a straight acreage basis. This procedure of recording water use by crops also promotes more efficient use of water and results in lower costs and better production.

Employee Housing

When the farm business provides housing or board for employees, a service unit is used for the purpose of accumulating costs for pro-

Table 5. Sample Rates for Charging Machine Work in Enterprise Accounting

			Wheel tractors				Diesel crawlers	
			Gasoline					
	½T pickup	2T truck	20hp	30hp	40hp	Diesel 40hp	40hp	60hp
Original cost, dollars	$2,200.00	$3,500.00	$2,800.00	$3,400.00	$5,000.00	$5,500.00	$10,000.00	$15,000.00
Fixed costs:								
Minimum depreciation, 15 years	144.00	233.00	187.00	227.00	333.00	367.00	667.00	1,000.00
Taxes, insurance, misc.	120.00	150.00	15.00	20.00	30.00	35.00	55.00	80.00
Housing shop, etc.	30.00	50.00	15.00	20.00	30.00	35.00	40.00	60.00
Subtotal—Overhead costs	$ 294.00	$ 433.00	$ 217.00	$ 267.00	$ 393.00	$ 437.00	$ 762.00	$ 1,140.00
Cost per hour, 800 hours:								
Fixed costs	0.37	0.54	0.28	0.33	0.49	0.54	0.95	1.42
Fuel and oil	.60	.80	.50	.60	.75	.65	.65	1.20
Repairs and service	.45	.65	.35	.40	.50	.55	.95	1.50
Total cost per hour	1.42	1.99	1.13	1.33	1.74	1.74	2.55	4.12
Added cost for drawn equipment	....	....	.20	.30	.40	.40	.50	.90
Total hourly rate (rounded)	$ 1.40	$ 2.00	$ 1.30	$ 1.60	$ 2.10	$ 2.10	$ 3.00	$ 5.00

The above shows how appropriate rates per hour are estimated for use in charging machine work to enterprises. Interest on investment, which is not often used in private enterprise accounting, has not been included but can be included if wanted. The above sample rates are for illustration only and calculated using actual costs and expected hours of annual use.

viding these perquisites. This unit would receive all expenses paid on behalf of the employees covered, including electricity, depreciation, and taxes and insurance on the buildings used. Information on such costs is vital to good personnel management. Accumulated costs in this unit can be allocated to enterprises along with labor costs in proportion thereto or on some other valid basis.

Management

Managerial and office expenses are best handled in a separate service unit. Costs charged to this unit would be managerial and clerical salaries, office supplies, telephone, travel expenses, association dues, and charges for use of automobiles. Total costs in this unit would usually be charged to enterprises and other service units at the end of the year on the basis of the estimated time spent, or in proportion to total enterprise costs. Some large companies allocate these costs at the end of each month.

Other Service Units

Additional service units can be included as needed. A feed mill and warehouse and a feed lot would be handled as service units where they are used on a large ranch. A large specialized machine, such as a combine or sprayer, would best be handled as a separate service unit if used for outside work and particularly if jointly owned with someone else.

Handling Service Units

In enterprise accounting, service units are charged with costs in a manner similar to enterprises. They differ from enterprises in that they are operated to perform services at cost rather than to earn a profit. All service unit costs are allocated to enterprises—some monthly and some at the end of the year. Cost allocation to enterprises is on the basis of work done, services furnished, or quantity of water or other material supplied to the enterprises. Service units are included along with enterprises in records or work sheets where labor and other costs are distributed. For example a worker's time card shows work in several enterprises and could also show work at repairing a tractor or irrigation pipe. Hence, a labor record would need columns for service units as well as enterprises. Service units may also be coded or numbered with the enterprises.

Materials

Materials such as fertilizers, weed sprays, etc., may be purchased as needed, or for future use in several enterprises. If used immediately the material is promptly charged to the enterprise. If purchased for future use the cost is charged to an inventory, and this account would be credited as the material is used, at which time it is charged to the several enterprises.

General Expense of Overhead Costs

The farm business as a whole incurs rather large occasional costs which may at first seem difficult to allocate to enterprises. In fact, some companies make no attempt to do so, and their enterprise statements show only income over direct or variable costs which are readily chargeable to enterprises. This may be misleading in comparing earnings. In some instances these charges may be allocated as a group total on an equally invalid acreage basis. In one case observed the "overhead costs" of $75 an acre were charged to all crops—intensive and extensive. This charge was more than the income of a low-cost crop such as irrigated pasture, but it was only a fraction of the total costs in an intensive crop such as lettuce. Any overhead cost has a valid basis on which it can be allocated to enterprises.

Property taxes, which are based largely on land but partly on buildings, equipment, and the owner's residence, can properly be allocated to enterprises, service units, and the owner's personal affairs in proportion to the assessed value for tax purposes of the property used by each. A more valid basis would be in proportion to the book values of the assets.

Fire insurance on buildings can be allocated on the use of the buildings and their insured values.

Interest on a loan or mortgage is more properly considered a cost of capital for the entire farm business, rather than the specific purpose or asset on which the loan is obtained. Its proper allocation would therefore be in proportion to the total capital involved in all enterprises and service units.

By using sound reasoning a valid basis of allocation can be found for any overhead expense, but it is impractical to charge such items to enterprise and service units at the time they are made. Generally, it is more convenient to charge them to suitable expense accounts for the farm as a whole as they are incurred during the year. Each kind is then allocated to enterprises and service units at the end of the accounting year. In some large companies, however, an attempt is made to make these allocations monthly on the basis of previous experience and a predetermined monthly average. This is of doubtful

validity at best, because the basis for allocation will vary with the kind of expenses paid from month to month. Also, active enterprises change during the year; some are completed and some new ones are started.

Depreciation

This is the portion of the original cost of buildings, equipment, or orchard trees, chargeable to each year of operation in order to absorb the cost of such facilities in operating costs over their useful lives. Methods of figuring depreciation and claiming it as a deductible expense in income tax reporting are quite generally known, or are available in Bureau of Internal Revenue publications. From a management standpoint these methods are probably so near to the facts that no different calculation need be made. Occasionally, previous accounting to minimize income taxes, or failure to capitalize development costs, may result in unrealistic remaining values and depreciation which might make recalculation for management purposes appropriate. This is illustrated by a case in which the development cost of an orchard was originally handled as a current expense with the result that little depreciation was allowable later. With no value or depreciation on the trees this orchard enterprise statement would show a different profit or loss than it should.

Regardless of how the calculation of depreciation is made on the many assets involved, charges should be made to enterprises in proportion to the use made of the different assets and not as a lump sum figure on a flat acreage basis. This is not difficult to do, and it will be even easier if the buildings, improvements, and equipment are grouped on an enterprise and service unit basis. Depreciation on tractors and farm machinery would be charged to the Farm Machinery service unit and would be included in the charges to enterprises for machine use. Even though depreciable assets are not grouped they can be listed individually on a work sheet and the depreciation on each can be distributed to columns for the several enterprises and service units. On a dairy farm, depreciation on special dairy buildings and equipment would be charged entirely to the dairy enterprise. Irrigation wells, pumps, pipelines, etc., would be charged to the irrigation service unit to be included in charges for irrigation water to enterprises.

In large farm businesses using a complete accounting system, depreciation may be charged at the end of each month. On smaller farms, and wherever enterprise accounting is an informal supplement, it would be more practical to charge depreciation at the end of the year just before enterprise statements are made.

Inter-enterprise Charges and Credits

In cases where one enterprise uses the product of another the product should be charged to one and credited to the other; this is best done at the end of each month when memory is fresh and data are more readily obtainable. An illustration of this is a case where the dairy herd uses pasturage on one or more fields of pasture or crops during a month. The pasturage is figured by quantity in animal unit months, credited to the several fields or enterprises, and charged to the dairy enterprise at the current rate or farm values for such pasture. The same procedure is used for hay or grain from crop enterprises.

These inter-enterprise charges and credits should always be made at current farm value. Farm value is the local market value less any marketing and hauling costs. Hay at harvest time may be worth $20 a ton at roadside or storage pile on the farm; this is the value at which it would be charged to the dairy when piled for use at the dairy. Manure with a local value of a dollar a ton in the dairy corral would be credited to the dairy and charged to a crop at this price after it is hauled to the crop. Hauling and distribution in the field would be a crop expense.

When a crop is harvested or stored it could be charged, until disposed of, to an inventory account at current farm value. Later, as it is used, it is charged to the using enterprise at the original farm value and credited to the inventory account. When part of the crop is sold it would be credited to the inventory at the original farm value and any price difference charged, or credited, to the producing enterprise.

Owners' Affairs

One or more owners' affairs are sometimes handled in the farm financial records. In such instances dwellings are involved, as well as personal withdrawals and contributions of cash. Personal bills may be paid from farm funds. Some bills paid from farm funds must be divided between the farm business and the owner's home; honest and valid accounting requires the accurate segregation of personal affairs —telephone, property taxes, etc.—from the farm business. This is usually done in any accounting system by charging personal portions or items to the owner's personal account. In enterprise accounting it is best done by listing the owner along with enterprises and service accounts on any work sheets used for allocating costs.

Timing Reports to Serve Management

Final enterprise statements can be most easily and accurately made after the close of the record year when all costs are in and properly

distributed to enterprises. However, information may be needed at any time for important decisions on marketing or crop selection. Thus it is advisable to bring all enterprise accounts up to date for direct costs and allocations of labor and service unit charges at the end of each month. Management would then know latest cost data while realizing that some overhead costs and adjustments would come later. This knowledge would be helpful in deciding on future expenditures, or on marketing or abandoning the crop. Some crop cycles will end during the year and statements can be made and analyzed at any time even though costs to be allocated at the end of the year may need to be estimated.

Monthly completion of most of the accounting facilitates it and spreads it throughout the year when data needed may be obtained and checked. In formal accounting it is customary to complete all entries and post them to ledger accounts at the end of each month, proving accuracy by a trial balance in which the sum of all debit balances in ledger accounts equals the sum of all credit balances. It is also customary for the accounting staff to furnish management with statements of charges and credits for the month, for the year to date, and, sometimes, for the previous year. In farming, where a cycle is a year and seasons and enterprises are different in different years, these monthly comparisons are of little significance or value. They may have use, however, in financial management or in obtaining operating credit. It is therefore suggested that accounting and certain cost allocations and inter-enterprise and service unit charges and credits be brought up to date and checked at the end of each month. Formal reports need not be compiled each month, but significant ones could be compiled regularly at certain specified times or stages of an enterprise, and others could be prepared only when needed by management.

The farmer doing his own bookkeeping should try and keep his records up to date and make some of the allocations on his work sheets at the end of each month while details are fresh in his mind. As soon as an enterprise cycle is complete or the crop is sold he will want to make an informal profit statement and analysis to see how he came out on that crop. He can revise this later, if need be.

Methods

Although there are many variations in enterprise accounting methods, the subject can perhaps best be considered in two ways. One method would be to use informal work sheets to supplement any record system for the farm business as a whole. The other way would be to use formal accounting methods involving debits and credits, either within the accounting system for the farm as a whole, or in a supplementary system with separate special journals and reports and a separate ledger of accounts. The first method will best serve the small business of ten enterprises or less, while the formal accounting procedures will be needed in larger businesses having many enterprises. It is also possible to apply limited enterprise accounting to part of the business by either one of the methods mentioned.

DESIGNING THE SYSTEM TO FIT THE BUSINESS

The most important step in enterprise accounting is to design the process to fit both the business and the personnel available. The objective is to develop information needed in making decisions essential to reaching maximum potential earnings. Procedures chosen must be suited to the time and ability of the persons who will employ them. The first step is to consider the farm and its enterprises and to visualize what is wanted.

The job of designing a good system usually involves the joint efforts of the owner or manager of the farm, his accounting advisor, and perhaps a third person, such as a farm management consultant, who has broad experience with the ends to be attained, the methods available, and their adaptation to the circumstances. Many farm managers do not appreciate what accounting can do, and many highly competent business accountants are not familiar enough with farming to come up with the best way to attain what is wanted. Several cases have been observed in which systems designed by accountants have been discarded because they were too detailed or costly, or did not provide the needed information in a usable form.

List the Enterprises

The first step in setting up the system is to list separate crop and livestock enterprises. It is necessary to decide whether all fields of one crop should be one enterprise or whether each field should have its own profit statement. An accurate map of the farm showing correct acreages by fields is essential. After deciding on a list of the separate enterprises, carefully record the size of each, what it includes, and when it begins and ends.

Adopt the Service Units

The next step is to consider how equipment and other facilities may be grouped into a minimum number of service units so as to facilitate

accurate calculation of costs and the allocation of these costs to enterprises.

Coding

It is suggested that a coding or numbering system be devised and used to identify enterprises, service units, equipment, fields, operations, etc. The code can be simple, using letters and figures where work is done by hand. For a large business with many enterprises where part or all the work is done by machines, a number system of several digits is needed. One digit may be needed for the farm, two for the crop or livestock enterprise, two or four for the field number, one for the operation, one or two for the expense category, etc.

Field Records

The next step is to consider the field records needed in obtaining essential information and getting it to the bookkeeper. A farm worker's time card is a good point at which to start; such cards will be needed on any farm where any degree of enterprise accounting is used. Here we must consider whether the time card should also show work done by separate operations and fields within enterprises. We must also decide whether it should show the use of machinery and irrigation water, or only the man's actual labor. If the worker's time cards can be depended upon to furnish data on machinery and irrigation water use, time cards for each piece of machinery might not be needed.

Decision must be made as to how, and by whom, the use of pasture and feed by a livestock enterprise will be kept and reported. Special forms for this will be needed particularly if the accounting is done off the farm. As a rule, the man in charge of a cattle enterprise will have to keep current counts and records on each group of animals in order that proper monthly inventory and feed use reports can be made.

Accounting System

The next step is to decide if the present accounting system should be changed to include enterprise accounting, or if it should be left "as is" and the enterprise accounting done in a supplementary way. It may frequently be best to leave the accounting system for the farm business as a whole, just as it is for continuation of uniform income tax reporting and comparable total farm earning statements over the years. When this is the case, a supplemental accounting system is designed or a set of informal work sheets may be used.

The Personnel

Now we must consider the people—from owner or board of directors, to manager, assistant manager, office clerks, bookkeeper, foremen, etc.—who will play a part in doing the job. Making a chart of staff and their responsibilities will be helpful, and it would be advisable to meet them and size up their abilities. Naturally, a head cowboy who figures or writes with difficulty will not be expected to keep time cards for the men under him or to render correct livestock counts and inventories and reports of pasture and feed use; some other staff member may have to do the job with his help. A chart of personnel responsibilities may also show a gap which has to be filled—as when there is no irrigation foreman, for example. Someone must be delegated to keep track of water use by observation and from the time cards of the irrigators. It may be discovered that the supervisory staff is overworked and can't keep the field records and make the reports needed for enterprise accounting. In this event, enterprise accounting must be given up or new personnel added.

Write It Up

After the above steps have been taken the procedures should be rediscussed and then written down. The code for enterprises and service units is first tested against the list of fields, enterprises, operations, equipment, and list of accounts in the accounting system. Then the field records and reports, time cards, etc., are drawn up, along with an explanation and set of instructions and a designation of responsible personnel. The accounting system with its chart or list of accounts is recorded and a summary made of the accounting procedures. Samples are drawn up for special journals or work sheets, such as the payroll record used in allocating labor costs. A set of suggestions for allocating overhead costs is prepared. A convenient timing for certain allocations and closing procedures is specified. The procedure of making the final enterprise statements and analysis should also be recorded.

The above are rather abstract specifications. The following are illustrations of specific cases and of decisions resulting from them.

Farmer A, intelligent, hard working, keeps his financial records in a Farmers' Income Tax Record Book. He grows several row crops on 250 acres of rented land. This year he grew 50 acres of spring spinach, and this was followed by 50 acres of fall broccoli; he also grew 75 acres of sugar beets, and 75 acres of canning tomatoes—full year crops. The other 50 acres grew a crop of spring lettuce and a fall crop of carrots.

Farmer A, whose enterprises are the above six crops, wants to know the costs and profit on each of his crops and hopes to do the calculations himself.

He pays cash rent which covers land and the irrigation system, two farm-worker cabins, and a machinery shed. He lives in town and drives out to the farm in his pickup to work and supervise. Farmer A owns a large tractor, two wheel tractors, various implements, and also hires some machinery work done. He has two regular hands who live on the ranch and he hires other labor as needed.

After discussion with his advisor it was decided that Farmer A would keep on with his cash record for the farm business as a whole. A coding system by enterprises for special work entered in the labor and contract work columns was decided upon. Farmer A will also keep monthly time cards on himself and his two men. His tractors, farm machinery, and pickup would be a Farm Machinery Service Unit, costs on which he would allocate to enterprises on the basis of hours of use shown on his three time cards. He will use a columnar work sheet to distribute all labor costs at the end of each month, and will use another distribution sheet for other total farm costs, some currently and some at the end of the year. Farmer A will allocate his rent on a per-acre basis, giving each half-year crop a half-year's rent. He will have a record sheet or account for each crop on which he would accumulate direct and allocated costs as he gets the figures; he will complete his enterprise statement at the end of the year when he figures his total farm profit. This work sheet method is further explained and illustrated by a dairy farm example in Chapter 4.

Farm B is a very large diversified farm owned by a wealthy man who has other businesses and interests. He lives in a city where the accounting for Farm B is done; the farm's records are separate from his personal and other affairs. After discussion with his manager and accountants it was decided that enterprise accounting would be used and would be done in a supplemental ledger. Time cards and about ten other field reports would be sent in monthly from the ranch. Labor, irrigation, harvestings, etc., would be entered by fields, but all fields of a single crop would be one enterprise. There would be sixteen crop enterprises, three livestock enterprises, and service units for farm machinery, irrigation water, employees housing, and management. Methods or procedures to be followed are about as illustrated in Chapter 5.

Farm C is a growing, complicated business involving a large dairy farm and a retail milk delivery. Its several owners have just decided to divide their assets and form two companies with overlapping but different ownerships. One company will be the retail milk business with its processing plant, office and delivery trucks. The other will be the dairy farm with a herd of several hundred cows and several feed crops and pastures on owned and rented land. The owners of the farming business want enterprise accounting so they can be accurately guided in feed production policy. Their enterprises will be corn silage, alfalfa hay, irrigated pasture, and the dairy. Service units will be farm machinery, management, and employee housing. It was decided that irrigation water costs would not necessitate an irrigation service unit but could be allocated directly to enterprises on an acreage basis.

Farmer D is a fruit grower with 33 acres of bearing walnuts and 22 acres of bearing French prunes who is planting 10 acres of Imperial prunes, and 7 acres of French prunes to complete his farm development. He lives on the farm and does some work on it. He hires a full-time man who is provided with a home on the place. Farmer D and his accountant, who keeps a full accounting system in town on the total farm business, have investigated the advantages of enterprise accounting and have agreed that enterprise accounts for the bearing walnuts and prunes, and for the development costs on the 17 acres of new planting would be desirable. However, they feel that keeping formal time cards and allocation sheets would be unwanted work for them. They hope to estimate a cost breakdown on an acre basis and make profit statements on prunes and walnuts. This can be done, but it will not be as accurate as full enterprise accounting.

Farm E is a fair sized dairy farm operated by a young couple. The wife is a trained bookkeeper and had been keeping separate costs and income for the dairy as one enterprise and for the feed crops of silage, alfalfa, and sudan pasture as the other. They had not found this too helpful, however, so they considered using full enterprise accounting with each feed crop a separate enterprise. This would necessitate time cards and allocation sheets. As bookkeeper, the wife will use additional ledger accounts, and will make journal entries for inter-enterprise charges and credits and for transferring allocated costs to enterprises from the total farm expense accounts where costs are accumulated by kind. The young couple will find that knowing their different crop costs will help them know how far to go in producing forage on high rent land as their herd increases. This will be full enterprise accounting within a formal accounting system; it could be done equally well with supplemental records and work sheets, as explained below.

Farm F, a large egg-producing business, has been formed and its owners are interested in the most useful records for management. Replacements are raised on the farm in a separate section and by a separate employee. To consider this a separate enterprise would be helpful to management and could be easily done. The important records on the laying flock will be the daily production and mortality records for each large unit, house, or brood of layers. This involves a count of eggs from each house daily and a running inventory of hens on hand. To avoid large errors and to learn processing losses, eggs gathered are combined for all groups and compared with those sold for delivery periods. Enterprise statements for each house would be of little value but could be estimated for comparing houses having different methods or broods.

The management of *Farm G,* a large wholesale nursery producing over 200 different kinds of ornamental plants, would like to know the production costs of some of its products. The nursery uses greenhouses, lath houses, nursery yards, and farm fields. Because of the many products in a small area and frequent shifts of work by employees full enterprise or cost accounting for all products is obviously impractical. The business is departmentalized for Administration, Production, and Selling. Service units can be used to develop standard operation and service costs and can be appropriately combined to build up the total production costs of an occasional batch of a crop or product. This system can help to produce valid cost estimates or calculations which will aid management in making decisions on how much of what to grow and what prices to charge for products.

Chapter 4 ENTERPRISE ACCOUNTING BY SUPPLEMENTAL WORK SHEETS

Valid income cost and profit figures for a small number of enterprises may be developed by supplemental work sheets and time and quantity records. These records and work sheets are used as supplements to any satisfactory system of financial records for the farm business as a whole. Such a method is designed principally for making allocations and statements at the end of the year when annual totals from the income and expense segregations become available for the purpose. Columnar work sheets are used at that time to distribute these several categories of expense to enterprises and service units. Current supplemental records must be kept during the year to provide a basis for allocating labor and farm machinery costs and for making charges and credits between enterprises.

This supplemental work-sheet method is best adapted to a small farm business where the number of enterprises and service units does not exceed the number of columns convenient to use on a columnar work sheet—not over 20. It is a method well suited to the farmer who keeps his own financial records and who wishes to make his own enterprise statements and analyses. It can be used as a supplement to a special farm record book which provides annual column totals for a number of categories of income and expense, and which also includes inventories and a depreciation record. It can also be used as a supplement to a full accounting system in which needed totals are provided by ledger income and expense accounts.

Although final allocations and the resulting statements are not made until the end of the year, some of the work, such as allocating labor costs and recording machine time by enterprises, should be done at the end of each month. If livestock are involved a continuous record of numbers and of pasture and feed use is necessary. This information must be recorded and checked monthly. As harvesting progresses, field and crop yields should also be recorded.

This method of enterprise accounting by work sheets will usually be supplementary to a farm record book in which the cash records contain some columns for segregating several kinds of income and expense for the farm business as a whole. Some changes can be made in column headings to facilitate the allocation of costs to enterprises later, but it is not feasible to have expense columns for each enterprise and service unit. Hence, entries in the cash records will be made by type of expense as previously segregated and used in the farm's income tax schedule. It is virtually impossible to divide many of the individual expense payments over enterprises at the time they are made, and even if it were possible it would involve laborious calculations each time a payment is made. Thus it is better to accumulate all the year's ex-

pense of a certain kind and to make a single allocation at the end of the year when the information needed for a valid allocation is available.

Correct annual allocation of expenses to enterprises requires separate yearly totals for each category having a different basis of allocation. These categories should be listed at the start of the year and provision made to obtain them by columns or by coding items where more than one category is placed in a single column. There seldom are enough columns for everything wanted, so it is customary to have several columns, each of which contains more than one kind of item that occurs infrequently. The different kinds are coded by letter abbreviations at the time the entry is made so that two or three separate totals may be easily made for a single column when wanted. Monthly totals are recommended for management purposes. Some books contain sections for entering monthly totals from the columns in the cash records; these facilitate the making of annual totals after the twelfth month has been entered.

The categories of farm income and expense needed for enterprise allocations at the end of the year will, of course, vary with the farm, but a fairly uniform list will be suited to many farms. A crop farm will not need provision for livestock items. A crop and livestock farm will need the most segregations.

Records

The following is a general list of segregations needed for such a farm. The number of expense segregations needed for enterprise accounting probably exceeds the number of columns available in the farm record book or other form used for recording cash paid. Hence, some categories are grouped into a single column, as usually done in a farm record book and in the farm schedule for income tax. Column headings printed in the book can be changed if needed.

1. *Total Received*—For all receipts. This will ordinarily be the same as bank deposits and the monthly total should equal the sum of the monthly totals of the distribution columns 2 to 8.

2. Capital—For receipts from capital items sold, money borrowed, etc.

3. Non-farm or Personal—For non-farm incomes or personal funds contributed or deposited in the farm bank account.

4. Livestock Sold—Different kinds wanted separately can be coded.

5. Livestock Products Sold—Milk, wool, eggs, etc.—can be coded.

6. Crops Sold—Code by enterprise if necessary.

7. Miscellaneous—For other incomes not included in 2 to 6 above.

8. *Total Paid*—All payments would be listed here and would usually be by check, so could be checked with the checkbook to insure accuracy. The total of this column should equal the total of all the following distribution columns to insure that all items were distributed.

9. Non-farm or Personal—For withdrawals from farm funds for personal or home use and family portion of all bills paid.

10. Farm Labor—For all wage payments to hired labor and for the remittance of that portion of the social security tax withheld from employees. The annual total of this column will serve as a check on the total hired labor costs allocated in the payroll record.

11. Feed—This would ordinarily include all purchased feed, but it is advisable to obtain separate totals for different types. This can be done by coding—c for concentrates, h for hay, etc.

12. Seeds and Plants—Code different items so they can readily be picked out for inclusion in crop enterprise costs.

13. Supplies—A considerable variety of items may be entered here or it can be labeled for items for a specific enterprise such as dairy supplies.

14. Repairs—This title could be modified to include mainly the repairs and supplies chargeable to the Farm Machinery Service Unit. Other repairs, if entered here, could be coded for separate handling.

15. Fertilizers and Crop Supplies—In addition to fertilizers, pest control and other materials could be included here with enough in the explanation section or in column coding to help charge items to the proper enterprises.

16. Oil and Gasoline—Include here all payments for gasoline, diesel fuel, and lubricants for both farm and personal use. Division can be estimated later. Do not include fuel for the home or a livestock or poultry enterprise.

17. Taxes, Insurance, and Interest—These and any other overhead items are placed in this column and separated later by coding.

18. Water, Electricity, Telephone—This column would include the farm expense portion of these utility bills with the home or personal portion separated at time of payment and charged in column 9. Allocation at end of year would be helped by coding.

19. Farm Automobile—This could be used for all expenses of a farm and family automobile to be divided later in proportion to use.

20. An extra column to be headed for any other category such as contract work, rent, etc.

21. Livestock Bought—Code by kind.

22. Capital Outlay—For all capital outlays, payments on debts, etc.

Supplemental Records

In addition to the financial records listed above, some records must be kept currently to provide for accurate enterprise allocations and inter-enterprise charges and credits at the end of the year. Certain of these records are important in analyzing the enterprises and for other management decisions; they should be brought up to date and checked at the end of each month. Those usually needed on a crop and livestock farm, such as a dairy farm with feed crops and pastures, are:

1. *Time Cards*—A time card showing the distribution of time by enterprises for each person who works in more than one enterprise or service unit. (See Figure 2 on page 15 for a suggested semi-monthly time card.)

2. *Payroll or Labor Record*—A multicolumnar record for entering the summary of the above time cards for each pay period. Columns should be provided to show total earnings, social security taxes withheld, and the distribution of labor cost to each enterprise and service unit affected. A few columns can be saved by using a miscellaneous column and coding service units or enterprises seldom charged. This record is illustrated in Figure 5 on page 34.

3. *Farm Machinery Use Record*—This is for recording, by enterprises, the hours of use of each tractor, truck, or other major machines. If the number of machines is not large, the hours of each for each enterprise can be figured from the equipment use shown on the workers' time cards. If a large number of machines and employees is involved, a time card similar to the worker's time card will be needed for each machine. The form of the final record, which shows hours only, can be designed to meet the needs of the farm. Figure 6 (pages 36-37) illustrates a simple form showing monthly totals for the hours of six machines for five enterprises.

4. *Record of Crops Harvested*—At the completion of each cutting or harvest, the quantity obtained should be shown by fields and the yield per acre figured. Disposition—whether sold, stored, or delivered to a livestock enterprise—would be shown in tons or units of the product; no special form is suggested for this and recording in the manager's field notebook might be adequate. This type of information is essential to crediting crops to the crop enterprises and in charging feed crops used to livestock enterprises. It is also important to management and should be recorded at the time when bales, sacks, or loads can actually be counted.

5. *Livestock and Production Records*—These may include several current records. With a livestock enterprise a running inventory, showing the number of head for each age or kind on the first of each month, and also showing additions, death losses, and sales for the month, is essential to sound management and a complete enterprise analysis. Quantity produced, such as number of eggs or pounds of milk, can be by count or measurement or may be obtained from settlement statements by periods. A dairyman can obtain individual cow production each month from a dairy herd improvement association. All livestock sales should be covered by a statement or sales slip showing number of animals, total weight, and value. Production in pounds of stock is obtained by adding these sales and using inventories of stock on hand.

6. *Record of Pasture Use by Livestock*—The pasturage obtained in animal unit months from each crop or pasture should be figured and recorded at the end of each month. Such information can be kept in a field notebook by entering the dates that each crop or field was used by each group of animals. Calculations are made at the end of the month and the totals for each enterprise are recorded on a sheet similar to that illustrated in Figure 7 (page 38). This illustration also includes harvested crops hauled to the dairy for future use.

Pasturage is best figured in animal unit months (AUM), and these units can be figured for all grazing livestock—beef cattle, dairy cattle, or sheep. An animal unit month is the monthly amount of forage, or its equivalent, required for good growth and production by a mature head of cattle. It is further defined as the equivalent to 0.4 of a ton of hay in feed value, or 400 pounds of total digestible nutrients (TDN). Different feeds contain different percentages of total digestible nutrients; these percentages, and instructions for figuring rations, are available in literature on livestock feeding.

Animals of different kinds and ages must be converted to animal units by the following conversion factors which are based on the daily feed requirement of the animal as compared to the 13.2 pounds of TDN assumed for one animal unit. These are rounded approximations but are precise enough for farm management calculations. Feed consumption may vary through the seasons but the following data (given as annual averages) are accurate enough for use at any time.

	Pounds TDN per day	Animal units per head
Cattle:		
Cow about 1,000 lbs.	13.2	1.0
Bull, mature	13.2	1.0
Calves, 3 months to 1 yr.	5.6	0.5
Yearlings, 1 to 2 years	9.0	0.7
Others, per 100 lb. live wt.	.....	0.1
Horses:		
Medium weight, light work av.	13.2	1.0
Sheep:		
Mature ewes and rams	2.5	0.2
Lambs, 4 mo. to year, average	2.0	0.15

There are many variations to be taken into account by the skilled stockman in arriving at the quantity of pasturage. It may be necessary to estimate the quantity on a hay replacement basis in which a ton of hay is considered equivalent to 2.5 animal unit months of pasturage. Milk cows on pasture are usually fed concentrates in the barn and hay in the corral, so an assumption must be made as to the percentage of forage obtained from pasture. Sometimes the animals are grazed only a short time each day, or otherwise don't get full feed from pasture. The number of days of use must also be used. Here is a quick formula for figuring animal unit months for a group of animals:

Number of head × number of days × animal units per head × per cent of forage from pasture divided by 30 = animal unit months.

Illustration: 48 cows were in a field from May 4 to 10 (6 days) and obtained all their feed from the pasture.

$$\frac{48 \times 6 \times 1.0 \times 100\%}{30} = 9.6 \text{ AUM}$$

It is necessary to figure animal unit months separately for each age group or kind of animal from field notes or memory. Animal unit months for different groups are then combined and entered by enterprises in a record from which annual totals are obtained. Values at which an animal unit month of pasturage is credited to crops and charged to livestock can be set at the end of the year at local average farm values, which are usually known by local livestock growers. Values vary from $7.50 for good irrigated pasture, through $4 for good natural range, to as low as $2 for poorer feed.

7. *Continuous Inventories*—Where crops or materials are held for future use or sale one or more continuous inventories for a category of feed or supplies on hand may sometimes be desirable. This would show quantities, values, and disposition. Figure 2 (page 15) illustrates this.

8. *Other Use Records as Needed*—Several additional records, with information recorded at the end of each month, may be needed for accurate enterprise accounting and analysis. Irrigation water use by crop enterprises, manure spread on fields by crop enterprises, and special feed lot records, are examples.

Year-End Procedures

When the above financial and supplemental records are completed, totaled, and checked, the year-end work leading to enterprise profit or loss statements and analyses can proceed. It will vary in difficulty and in the clerical work required, according to the size and nature of the job, and perhaps with the detail and accuracy desired. On a simple farm with not over ten enterprises and service units it can be done in a day or two by a skilled person using a calculating machine.

Enterprise incomes may be picked up from annual totals of cash incomes and feed use by livestock enterprises, and can be entered directly on final enterprise statements. Expenses, however, must be allocated by category on various bases to enterprises and service units. This is done on multicolumnar work sheets. Service unit costs are then allocated to enterprises on the basis of work done or service rendered, as shown by some of the supplemental records listed above. Next, a consolidated summary statement of income expense and profit or loss by enterprises is prepared. Finally, more detailed individual statements are prepared for the enterprises; these statements show per acre or per animal production as well as income, inputs, and costs per acre, per animal and per unit of product. Such data are vital in planning profit-making changes.

Work Sheets

Several of these are required for allocating expense items. Enough columns for the total and one for each enterprise and service unit are required. There should be a space to name the category and indicate the basis of the allocation. Some allocations will be made in proportion to some other item for which there is a farm total and one for each of the enterprises and service units affected. This basis is usually entered on the work sheet with the category to be allocated. These procedures can be better illustrated than explained verbally, so completed work sheets for our farm example are shown in Figures 10 to 14. The order of procedure and instructions for the several steps are given with the illustration.

FARM EXAMPLE

The Frank Smith Dairy Farm. Frank and his wife, Anne, are sole owners. They keep their financial records in the California Farm Record Book, and they have decided to do enterprise accounting by supplemental work sheets. Table 6 shows the six enterprises and five service units needed during 1959.

Cash Records

Cash incomes and expenses are recorded in the record book in accordance with instructions and suggestions. However, examination of expense columns suggests some slight changes in column titles or interpretations in order to obtain annual totals which may be more readily allocated at the end of the year. Blank columns in the income section are labeled. This same procedure would apply to other farm record books or cash records. Figure 4 shows a few entries as made in the Cash Record in the California Farm Record Book. Notice some revision of headings and small letter codes to identify categories of expense wanted as separate totals.

Table 6. Enterprises and Service Units, Frank Smith Dairy Farm, 1959

Code	Name of enterprise or service unit	Acres	What it covers
A	Alfalfa	72.0	Fields 1, 2, 3, 4 of 18 acres each in first, second, third, and fourth year of alfalfa.
B '59	Barley—1959	42.0	Field 6, 18 acres, fields 14 and 15, 12 acres each in rotation to prepare for alfalfa and irrigated pasture.
B '60	Barley—1960	42.0	Fields 5, 18 acres, fields 12 and 13, 12 acres each. Prepare after corn and irrigated pasture in fall.
C	Corn silage	18.0	Field 5 spring planted and put in silo in October.
P	Irrigated pasture	84.0	Fields 7 to 13, 12 acres each in a succession of ages, 1 to 7 years.
	Total crops	216.0	Fields 1 to 15.
D	Dairy	3.5	About 130 cows, 1 bull, 131 head heifers. Dairy lots, buildings, and equipment.
M	Farm machinery	0.5	1 2-plow and 1 3-plow tractor, 1½-ton truck, forage harvester, feed wagon, all farming equipment, shop and implement shed.
E	Employees housing	0.5	Three cottages for hired help, water furnished. They pay for own electricity and fuel.
Ir.	Irrigation system	. .	Well, pump, and pipeline. 1350 gal. per minute.
O	Overhead and management	. .	Office, farm roads, management, and general overhead costs.
H	Home and personal affairs	0.5	Owner's home, garden, personal affairs, and part of farm car.
	Total farm	221.0	Total farm business and personal dwelling.

Supplemental Records

Since Smith participates in the labor and is close to all activities, he needs the minimum of supplemental records, as listed below. With some farmers more field records might be required.

Labor Records

Time cards will be kept on farm labor and on Smith, who divides his time between labor and management. Figure 2 on page 15 shows a time card for his field hand. A payroll or labor cost distribution record is shown as Figure 5. Notice it is a "homemade" form ruled up on 8½" x 11" paper for a student's three-ring binder. Smith will use a 5½" x 8" binder for time cards and field records. All supplemental records and work sheets will be kept in the larger binder.

Machinery Work Record

The costs connected with farm machinery constitute a rather large group. Information is wanted on probable costs of each machine in order to determine more accurate costs in crop enterprises and to facilitate decisions regarding equipment. Smith will keep some informal memoranda on the fuel use and repairs of specific machines. He will get the hours of use of the major machines from the time cards of the men using them, and he will enter them in a simple record by machine and enterprise at the end of each month. Figure 6 shows this record. Note that there is only one group of columns for barley although two totals are made—one for the 1959 crop, and one for the 1960 crop which begins late in the year.

The use of water by crops is recorded along with the machinery even though irrigation water is a separate service unit. To save time and space, machines each have a code. Costs for each machine and a surcharge to cover the drawn equipment will be estimated at the end of the year when total hours of use are available. These estimated rates

DISTRIBUTION OF RECEIPTS | CASH RECORD

1 Capital Income	2 Nonfarm Income	3 Miscellaneous Farm Incomes	4 Crops sold	5 Cattle sold	6 Milk sold	7 Total Received Bank Deposits	Date 1959	EXPLANATION Who	What	Quantity	Ck. No.	8 Total Paid
							Mar. 1	Joe Silva	Wages last half of Feb.		47	152 50
							2	S.W. Power Co.	Electric bill		48	37 50
							2	Valley Feed Co.	3½T Dairy Cone @ $72.00		49	252 00
							3	M. Prod. Credit Assn.	Loan Install.		50	367 20
							3	Swanson Merc. Co.	Feb. bill in full		51	142 20
							4	A.C.S.	for house cook		52	50 –
							4	Herb Holmes,	Wages last half Feb		53	124 60
				IC 135 6 of 38 50		173 50	5	Doty Auction Co.	6 calves 1 cull cow sold			
					2320 75		8	B.B. Dairies Milk	Feb. 15-28 less			
						2303 25			17.50 for dairy supplies			
							8	Western Oil Co.	Tax exempt Gas 72.00		54	112 18
									other gas and oil - Feb. bill			
							9	Valley Breeders Assn.	AI 8 cows		55	56 –
							10	C. Farm Ins.	Auto 54.00 Truck 60.00		56	114 –

Figure 4

will be used to absorb the costs of the entire Farm Machinery Unit and charge them to the enterprises served. Here is the list of major machines with code.

Code	Machine
T2	25 hp. Wheel Tractor
T3	35 hp. Wheel Tractor
TK	1½ Ton Truck
F	Forage harvester with engine
W	Power Feeding Wagon
Ir.	Irrigation Water

Pasture and Feed Use

Feed harvested and stored at the dairy for future use will be recorded in a feed use record at the end of each month. Loads will be estimated as to weight and loads counted. Smith will keep informal notes on pasture use; at the end of each month he will compute the animal unit months obtained from each crop enterprise and enter the figures in the summary. Figure 7 shows the summary for the year. (Refer to page 30 for instructions on figuring pasturage.)

DISTRIBUTION OF EXPENDITURES

9 Family and Nonfarm Expense	10 Farm Labor	11 Feed	12 Seed, Plants	13 Supplies	14 Repairs	15 Fertilizers	16 Oil, Gasoline	17 Taxes, Insurance, Interest	18 Water, Electricity, Telephone	19 Farm Automobile	20 Contract Work	21 Livestock Bought	22 Capital Outlay
	D 152 50												
20 –				e 17 50									
		252 –											
								24 67 20					300 –
114 87				12 70	15 13								
50 –													
	D 124 60												
				17 50									
							72 –						
							40 18						
				11 56 –									
					14 60 –					54 –			

Figure 4 (continued)

Manure Used

To arrange suitable manure applications by fields and to credit the dairy and charge the crop enterprises, Smith records the quantity as shown in Figure 8.

Livestock Record

Smith keeps a running inventory of the number of his animals of each age and sex group in order to better manage and analyze his dairy enterprise. He starts with the number at the first of the year and refigures it on the first of the month by subtracting death losses and sales and by making additions and transfers. He needs these monthly figures to obtain an accurate average for the year; he uses this average to check total feed use against normal feed requirements. Smith also has cows tested for production by the Dairy Herd Improvement Association and he uses this information in his culling and breeding program. Figure 9 shows his annual summary of number of stock.

(Text continued on page 36)

Frank Smith - Labor Distribution, 1959

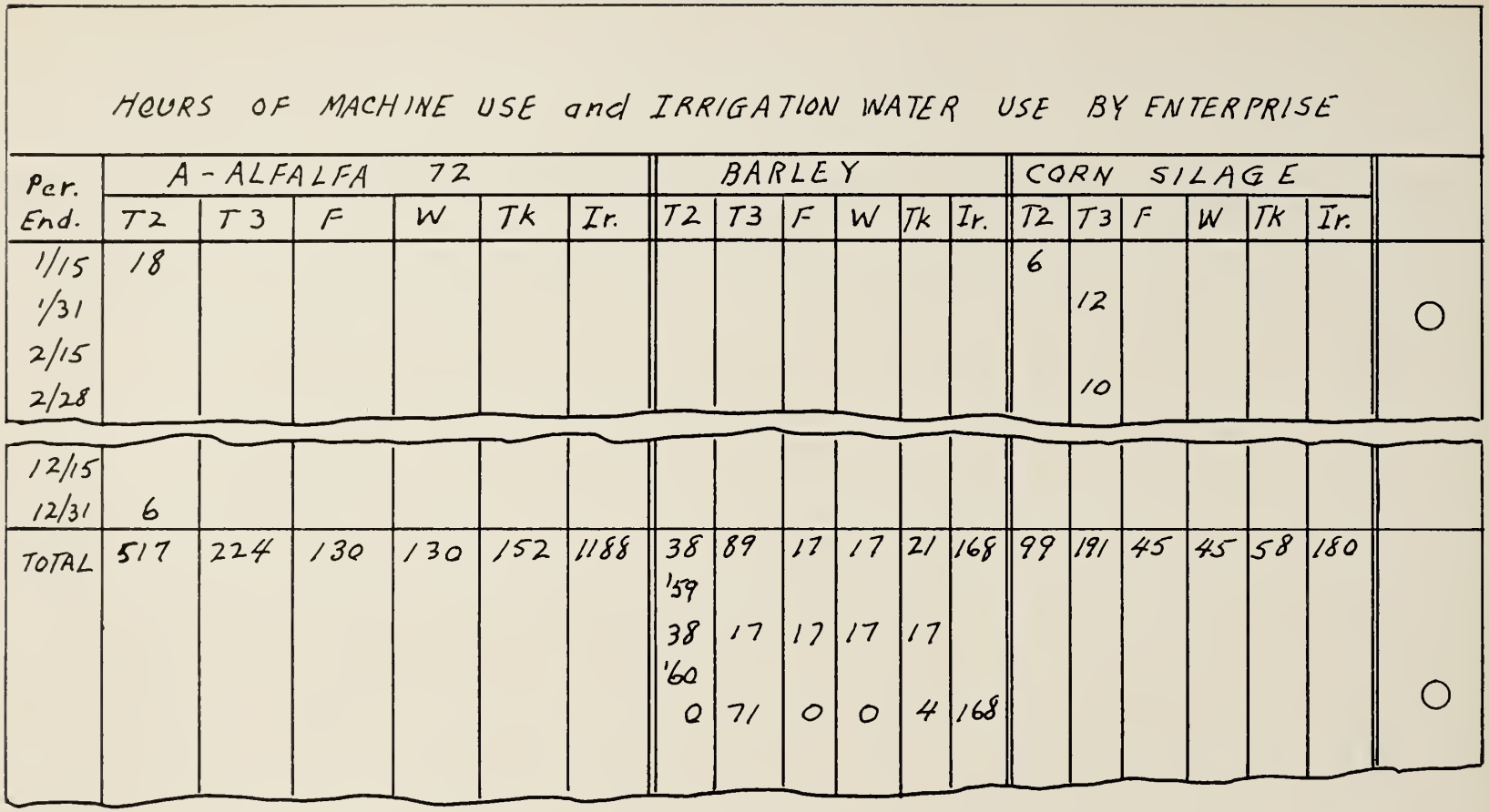
DATE	NAME	SOC. SEC. DEDUC. 2½%	TIME WORKED	RATE	TOTAL EARNINGS	A- ALFALFA	B BARLEY
8/15	Frank Smith	—	70	1.50	(105.00)	27.00	
	Joe Silva	4.00	½ mo		160.00		
	Herbert Holmes	3.63	½ mo		145.00		
	Ted Jones	3.91	136	1.15	156.00	82.80	
8/31	Frank Smith		108	1.50	(162.00)	72.00	
	Joe Silva	4.94	½ mo. +30 hr.	160.00 1.25	197.50	37.50	
	Herb Holmes	3.63	½ mo		145.00		
	Ted Jones	3.62	126	1.15	144.90	69.00	
	Rudy Silva - 15yr old	—	80 hr.	1.00	80.00	20.00	

Figure 5

Labor Distribution, continued

CORN	IRR. PASTURE	DAIRY	F. MACH.	IRRIG. SYSTEM	EMP. HOUSING	MGT. OVERHEAD	UNDIS. LABOR	HOME	
		48.00	25.50	4.50					
		160.00							
		145.00							
20.70	43.70		5.75	3.45					
	45.00	36.00	9.00						
		160.00							
		145.00							
31.05	39.10						5.75		
	40.00	20.00							

Figure 5 (continued)



HOURS OF MACHINE USE and IRRIGATION WATER USE BY ENTERPRISE

Per. End.	A-ALFALFA 72						BARLEY						CORN SILAGE						
	T2	T3	F	W	Tk	Ir.	T2	T3	F	W	Tk	Ir.	T2	T3	F	W	Tk	Ir.	
1/15	18												6						
1/31														12					○
2/15																			
2/28														10					
12/15																			
12/31	6																		
TOTAL	517	224	130	130	152	1188	38	89	17	17	21	168	99	191	45	45	58	180	
							'59												
							38	17	17	17	17								
							'60												
							0	71	0	0	4	168							○

Figure 6

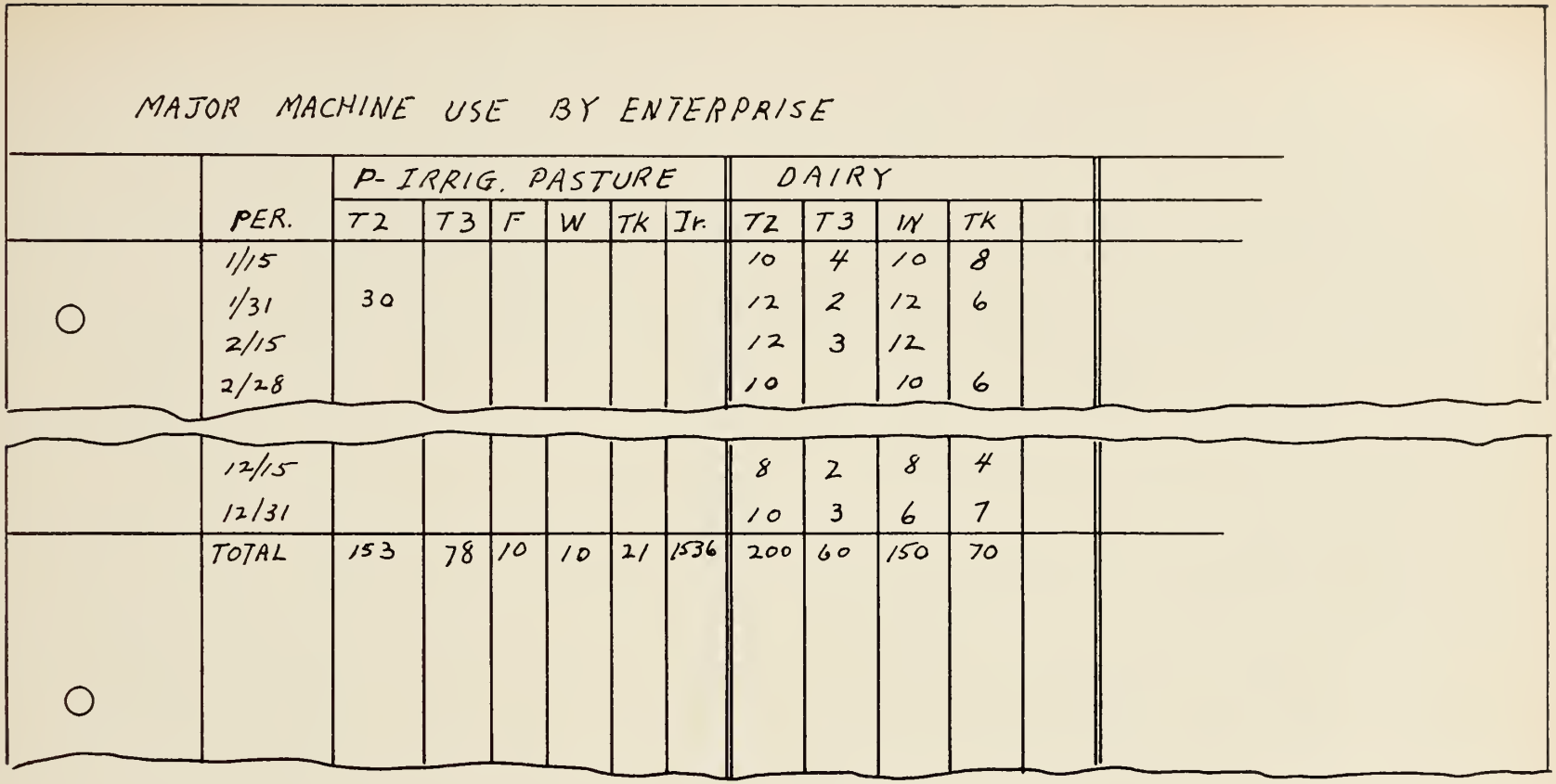
End-of-Year Work

As soon as all transactions are recorded, cash record totals are made and checked. The capital and depreciation record is brought up to date, depreciation is computed, and group totals are made. Inventories of livestock and feed on hand are made and recorded. The net worth or financial statement is made. The profit statements for the farm as a whole on both the cash and accrual basis, and the income tax farm schedule, can now be made.

Enterprise Accounting proceeds as labor cost, machine time, feed use, and other supplemental records kept during the year are completed and totals made. Allocations of income and expenses will be made on multicolumnar work sheets as illustrated in Figures 10 to 14. In making these allocations working to the nearest dollar will be sufficient, and a calculating machine will be necessary. Some of the work will be done by multiplying bases of allocation by a certain factor. As each step is completed it should be checked by adding the items and proving them equal to the total.

Order of Procedure

Some steps or allocations have to be completed before others can proceed. Order is important and there will be some working back and



MAJOR MACHINE USE BY ENTERPRISE

	PER.	P-IRRIG. PASTURE T2	T3	F	W	TK	Jr.	DAIRY T2	T3	IN	TK	
	1/15							10	4	10	8	
	1/31	30						12	2	12	6	
	2/15							12	3	12		
	2/28							10		10	6	
	12/15							8	2	8	4	
	12/31							10	3	6	7	
	TOTAL	153	78	10	10	21	1536	200	60	150	70	

Figure 6 (continued)

forth among the different work sheets. Below we show you the completed work sheets. The steps are listed by number with brief instructions and comment. Study of the work sheets will be necessary to understand the process fully.

1. Start work sheet 1 with headings for total and for the enterprises and service units.

2. Enter acres involved as shown in Figure 10. These data will be used only in figuring land value in the investment which follows.

3. Enter the investment by asset groups from the capital and depreciation record, using book values as of the beginning of the year. Total the enterprises and service unit columns and prove to the total.

4. Enter depreciation and distribute it.

5. Enter expense segregations from cash record column totals and distribute over enterprises; the basis of distribution varies with the item. Some segregations go entirely to a single service unit or enterprise and some will require referring back to the coding of the original entry—as do seed and fertilizer, for example. County taxes and interest on debt are allocated in proportion to total investment shown near the top of the sheet.

6. Totaling of the items allocated and proof of accuracy is desirable and is shown in the illustration; the total of these allocations is of no

(Text continued on page 41)

RECORD OF PASTURE and FEED USED BY DAIRY
IN ANIMAL UNIT MONTH and TONS OF FEED HARVESTED

MONTH 1959	A-ALFALFA		B-BARLEY		IRR. PAST-		CORN SILAGE		
	AUM	T. HAY	AUM	T. STR	AUM	HAY		TONS	
Jan	10		42						
Feb.	10				36				
Mar.					60				
Apr.		30			100				
May		66			160	12			
June		75			140				
July		85	21	42	130				
Aug.		80			120				
Sept.		*31			110				
Oct.	20	30			84			360	
Nov.	30				20				
Dec.	20								
TOTAL	90	397	63	42	960	12		360	
SEPT. HAY SOLD		*35							

Figure 7

RECORD OF MANURE HAULED TO FIELDS

MONTH	ALFALFA		BARLEY		IR. PAST.		CORN SILAGE		TOTAL TONS
	FIELD NO.	TONS	FIELD NO.	TONS	FIELD NO.	TONS			
Jan.					8	18			18
Feb					9	18	5	60	78
Mar.							5	90	90
Apr.							5	30	30
May					10	36			36
June					11	36			36
July					12	18			18
Aug.					12	18			18
Sept.									
Oct.	1	36							36
Nov.	2	36							36
Dec.	3	36							36
TOTAL		108				144		180	432

Figure 8

STOCK IN HERD, FIRST OF EACH MONTH

Frank Smith, Dairy Herd for 1959

MONTH	BULLS	COWS MILKING	COWS DRY	TOTAL COWS	CALVES UNDER 3 MO.	CALVES 3 Mo.-1 yr.	HEIFERS 1-2 yrs.	HEIFERS 2-3 yrs.	STEERS & OTHER	TOTAL HEAD
Jan	1	109	24	133	14	27	36	12		223
Feb.	1	114	20	134	15	28	35	12		225
Mar.	1	116	19	135	16	24	34	9		219
Apr.	1	112	21	133	8	26	33	6		207
May	1	106	23	129	6	28	35	7		205
June	1	103	26	129	5	28	36	7		206
July	1	105	25	130	4	28	37	12		212
Aug.	1	102	27	129	7	27	35	13		212
Sept.	1	103	26	129	6	28	34	15		213
Oct.	1	105	21	126	5	27	32	14		205
Nov.	1	110	15	125	10	25	31	12		204
Dec	1	112	16	128	13	26	32	11		211
TOTAL	12	1297	263	1560	109	323	410	130		2542
AV.	1	108	22	130	9	27	34	11		212
Died during year				2	4	1	1			

Figure 9

further use, however, as the separate items are to be taken for additional steps and statements.

7. Prepare work sheet 2 as in Figure 11.

8. Enter on work sheet 2 the labor cost distribution from the completed "Labor Cost Distribution" record illustrated in Figure 5. This includes charges for the operator's actual labor, so differs from the hired labor cost in Column 10.

9. Allocate undistributed labor from one of the columns of the labor record in proportion to the labor previously charged.

10. Allocate the total of workmen's compensation and social security insurance in proportion to the direct labor costs. This may not exactly follow the original determination of costs which apply to hired labor only, but it is valid enough and avoids keeping separate hired and operator labor records.

11. Start work sheet 3, part (a), as shown in Figure 12. This is a single sheet for recording total costs on the Employee's Housing Service Unit. Applicable costs are picked up from work sheet 1, totals are made, and costs per house a month are figured. This is important information for management.

12. On work sheet 2, enter the total employee's housing cost, allocating it to enterprises as shown. Since two houses are used entirely for dairy workers, ⅔ is charged to the dairy. The other third is spread over the crop enterprises in proportion to the direct labor charged above. Make totals.

13. On work sheet 3, part (b), complete the Irrigation Water Service Unit costs as shown, using costs from work sheet 1 and labor from work sheet 2. Figure costs in detail per hour of pump operation and per acre foot of water.

14. Return to work sheet 2 and enter hours of irrigation water use by enterprises from the Farm Machine use record illustrated in Figure 6. Calculate costs for each enterprise, using the hourly rate. By using this rate to four decimal points as a multiplier in the keyboard of a calculating machine, and by multiplying hours for each enterprise, this is a rapid and accurate allocation.

15. Prepare work sheet 4, section (a), as shown in Figure 13. This first part contains a total column and a column for each major machine on which separate costs and hourly rates are to be calculated or estimated. Enter the book value of the individual machines for use as a basis of allocating taxes and interest charged to the Farm Machinery Unit. The value and the depreciation shown for these machines is obtained from the listing in the depreciation record.

16. Enter the depreciation of other farm machinery and of the shop, and distribute this over major machines on the basis of usage. For example, depreciation on the mower, rake, and light tillage equipment used with Tractor 2, plus a part of the shop and implement shed depreciation, is placed in the T2 column.

17. Pick up other costs as shown from work sheet 1 and labor from work sheet 2. Allocate these totals to the different machines. This is done from memory, from repair bills, and from records or estimates of gasoline and oil use. Note that these items are shown in two sections —the fixed or overhead costs, and operating costs. Total all costs for each major machine.

18. Enter total hours of use for each major machine from the machine use record in Figure 6, and figure total cost per hour. Costs per hour may be figured in detail by item on another cost analysis sheet if desired.

19. Prepare part b in the lower section of work sheet 4 with enterprise and remaining open service unit columns as shown. Enter hours of each machine use for each enterprise and service unit from the machine use record. Figure the costs for each machine for each enterprise at the appropriate hourly rates. These charges for separate machines are totaled, although costs by machine are available here for use in detailed enterprise statements to be made later.

20. Prepare work sheet 5 as shown in Figure 14. This is a summary of incomes, expenses, and profit by enterprises. All expenses except the management unit have now been allocated to enterprises on previous work sheets. The cash record and the records of feed and manure charges and credits provide the information for the enterprise incomes or credits in the first section of this sheet 5. Figure total incomes for each enterprise.

21. Return to work sheet 2 and assemble the costs allocated to the management service unit. Smith decides that an allowance for his management should be included. He calculates that a suitable salary would be $6,000 a year, of which $1,728 is to be charged as labor. This leaves $4,272 to be charged as management. This step is optional but it tends to make enterprise profit comparisons more valid after the value of management has been charged to the enterprises on a fair basis. This could be estimated on either the basis of the time and trouble, or in proportion to total income or total costs. In work sheet 2, the total cost of overhead or administration is shown allocated in proportion to income. All expense allocations have now been completed.

(Text continued on page 47)

WORK SHEET 1

Frank Smith, Bases of Allocation, Investment

Item	Basis	Total Farm		A Alfalfa		B Barley 1959		B Barley 1960	
	Acres involved	221	0	72	0	42	0	(42	0)
Investment - Book value 1/59									
	Land @ $500 an acre	110500		36000		21000		—	
	Buildings	25100							
	Irrigation system	12500							
	Roads, fences, etc.	1900							
	Farm machinery & Dairy equipment	18150							
	Cattle, Office equip, Pers property	47400							
	Total Investment	215550	✓	36000		21000		—	
Depreciation - Farm Record Book									
	Buildings	1745							
	Irrigation system	1033							
	Roads, fences, Off. equipment	220							
	Farm machinery & Farm car	2388							
	Total Depreciation	5386	✓						
Expense Allocations Cash Record									
Col. 10	Farm labor - hired	(13170)		On Work Sheet 2					
11	Dairy feed purchased	11830							
12	Seed as coded in Cash Record	614		160				260	
13	Dairy supplies & Dairy Equip Rep	3106							
14	Repairs & supplies Farm Mach	754							
15	Fertilizers Com'l as coded	1602		578					
16	Oil and Gasoline	1360							
17	County taxes .01116 × Inv Coded	2406		402		234		—	
	Fire ins. Building use basis	351							
	Auto ins Licenses etc	220							
	Interest paid .01978 × Invest	4264		712		415		—	
	Comp ins See Sec ins	(726)		On Work Sheet 2					
18	Electricity from bills	2491							
	Telephone ½ personal	108							
19	Farm auto ½ personal	375							
20	Contract work, combining	446				446			
21	Livestock bought	550							
	Total allocated	30677		1852		1095		260	

Figure 10

W.S. 1

Depreciation, and Expense Segregation from Cash Record

C Corn Silage	P Irrig Pasture	D Dairy	M Farm Mach.	E Employee Housing	Ir Irriga System	O Overhead Mgt.	H Horse & Personal
18 0	84 0	3 5	0 5	0 5			0 5
9000	42000	1750	250	250			250
		15000	600	4500			5000
					12500		
						1900	
		6250	10900				1000
		46600				300	500
9000	42000	69600	11750	4750	12500	2200	6750
		1085	60	300			300
					1033		
						220	
		695	1493			1/2 car 100	100
		1780	1553	300	1033	320	400
		11830 ✓					
54	140						
		3106 ✓					
			754				
216	808						
			1262			Car 49	Car 49
100	469	777	131	53	140	25	75
		210	8	63			70
			130			45	45
178	831	1317	232	94	247	44	134
		360	24		1895	12	200
						54	54
						188	187
		550					
548	2248	18210	2541	210	2282	417	814

Figure 10 (continued)

WORK SHEET 2

Frank Smith - Farm Labor

Item	Basis	Total Farm		A Alfalfa		B Barley 1959		B Barley 1960	
Farm Labor									
Cost of hired labor	col. 10	13170							
Value labor labor charged		1728							
Total labor cost		14898							
Labor cost distrib.	Fig 5 (1)	14514		2103		179		215	
Undistr labor	.02646 x above	384		56		5		6	
Sub total - total labor cost		14898							
Comp. S. Sec Ins.	.05 x (1) above	726		105		9		11	
Employees Housing	WS 3a 1/3 dairy	510		76		6		8	
Total labor cost & Chgs. on labor		16134	✓	2340		199		240	
Irrigation water costs									
Hours of pump time for irrig	From Work Sheet 3 (b)	3072	✓	1188		60		108	
Water cost @ $1.0853 pr hr.		3334		1289		65		117	
Admin. and Management costs									
Depreciation	Work Sheet 1	220							
County taxes	W.S. 1	25							
Electricity	W.S. 1	12							
Interest paid	W.S. 1	44							
Telephone	W S 1	54							
Farm auto	W. S. 4	382							
Operator's Managerial allow.		4272							
Total & alloc @	.05875 x inc	5009		609		205		—	
Enterprise income	W.S 5	85502		10395		3496		—	

Figure 11

Irrigation, Water, and Misc. W S 2

C Corn Silage	P Irrig Pasture	D Dairy	M Farm Mach	E Employee Housing	Ir Irrig System	O Overhead Mgt.	H Home and Personal
704	1493	9750	52	—	18		
19	39	258	1		—		
35	75	487	3		1		
25	55	340					
783	1662	10835	56		19		
180	1536						
195	1668						
169	438	3588					
2880	7470	61279					

Figure 11 (continued)

WORK SHEET 3

(a) Employees' Housing - 3 houses for year 36 house months

Item			Total		Per House Month	
Depreciation from Work Sheet 1			300	-	8	33
Interest share of total WS 1			94		2	61
Labor - none charged						
Repairs - none in 1959						
Property taxes - W. S. 1			53		1	47
Fire ins (for 3 yrs paid in '59)			63		1	75
Total			510		14	16
Charge 2/3 to Dairy - to W. S. 2			340			
1/3 to crops			170			

(b) Irrigation System 1959 1800 gal. per min.
3072 hours pump time 1034 acre feet

		Total	Per Ac. Ft.		Per Hr.	
Depreciation, from W. S. 1		1033	1	01		34
Interest - share from W. S. 1		247		24		08
Labor - repairing, from W. S. 2		19		02		01
Repairs - none in '59		-		-		-
Property taxes, from W. S. 1		140		14		05
Subtotal		1439	1	41		48
Electric power - from W. S. 1		1895	1	85		61
Total cost of Water		3334	3	26	1	09

Figure 12

22. On sheet 5, complete the calculation of total costs and profit by enterprises. As a convenience, and because 1958 costs on the 1959 barley enterprise were not available, the 1959 costs toward the 1960 barley crop were used in total expense, acreage being the same. In continuous enterprise accounting previous year's costs on the 1959 crop would be carried in and the 1959 costs on the next year's crops would be carried on to the following year. Notice that a column for total crops and a column for the total farm business have been inserted. The total farm column is a sum of the crops and dairy for "off farm" expenses and income, but inter-enterprise charges and credits for feed, straw, and manure were omitted. Total farm profit equals the sum of the enterprise profits, as total expenses are the same and "off farm" income is the same. This statement is useful as a preliminary one and as a check on the over-all accuracy of the allocations.

23. For additional check on profit calculation, compare the total profit with the Income Tax Farm Schedule figures as shown in the last column. In this case reporting for income tax was on the same inventory basis used in figuring enterprise profits. The difference between the two profit figures is largely accounted for by the $6,000 of operator's labor and management charged in enterprise accounting. An additional small difference lies in allocations between the farm business and home. This calculation also shows how expenses appear when charged to enterprises through a service unit on the basis of use rather than as precise shares of total farm business expense segregations. The latter procedure would have required many more clerical calculations. Showing gasoline, oil, farm machinery repairs, depreciation, and other costs on farm machinery by enterprises would require going back to the cost calculations for each machine on work sheet 4, working out each item of expense on an hourly basis, and re-combining them by category. This detail would have little significance.

After Enterprise Accounting is Completed

The completion of work sheet 5 or statement 1 finishes the work of enterprise accounting. All costs and income have been allocated and are shown in summary form. Notice that profit as a per cent return on the direct investment in enterprises was inserted on the bottom of this sheet. Total investment in the farm business is greater than the total for the enterprises because of the service units.

It is immediately apparent that growing crops, particularly irrigated pasture and silage as feed for the dairy when charged to the dairy at farm value, is not as profitable a use of capital as the dairy itself at the land values assumed. Farm-grown feeds at farm values, however, make the dairy more profitable than it would be if more of the forage were purchased at market prices. This opens up a whole series of possible changes and calculated budgets designed to find a better or more profitable plan—a plan perhaps involving more cows and some purchased hay. The first step, however, is to obtain more detailed statements on enterprises, with inputs and costs per acre and per cow computed.

Enterprise Statements

The main goal in enterprise accounting is the detailed enterprise statement and the analysis of the enterprise it makes possible. Merely obtaining enterprise profits or losses, as in the summary in Figure 14, is not enough. The enterprise statement should include considerable detail on quantities and prices of both production and inputs. Income and costs should appear in total and per producing unit (acre or head, etc.) and per unit of product (hundredweight, ton, dozen, etc.). Much of this additional detail is available in vouchers, or in statements and other business papers. Obtaining such data and entering them in the statement makes for more useful records and preserves valuable information for future reference and comparison. A separate statement on each enterprise should be made. Shown here are two samples, the dairy enterprise in Figure 15 and the alfalfa enterprise in Figure 16.

Enterprise Analysis

The analysis of an enterprise is a careful examination of all the profit-determining factors which follow:

1. Yield per acre or production per animal.
2. Prices received as resulting from quality, method of sale, etc.
3. Inputs and costs as determined for individual items and categories.

All these items are displayed in the enterprise statement made possible by enterprise accounting procedures. Comparisons are made with similar statements for previous years and with all current information available from other sources. The Agricultural Extension Service of the University of California currently has available at local offices a considerable number of detailed sample schedules of inputs and costs for many enterprises. These can serve as standards of comparison, item by item. Variations from such standards will be numerous and will likely disclose profitable changes which could be made.

For example, the Dairy Enterprise Statement in Figure 15 shows sale of 9,880 pounds of milk per cow, a smaller quantity than for

(Text continued on page 52)

Sheet 4

Frank Smith – Farm Machinery, Costs and Allocations to Enterprises

(a) Costs by Machines Basic	Total	T2 Tractor	T3 Tractor	TK Truck	F Forage Harvester	W Feed Wagon	Farm Auto					
Cost value of major machines from Hebron record	8450	1425	1675	1500	1650	1200	1000					
Depreciation major machines + car	1278	200	233	210	275	160	200					
Depreciation other eqt. Bldg. as used	475	220	180	35	30	10	—					
Interest on farm debt sheet 1 Invest	232	43	52	48	51	38	—					
County taxes sheet 1 Inv. taxed mach.	131	32	37	—	36	26	—					
Fire Ins on shop - shed - sheet 1	2	2	2	2	2							
Auto + Truck Ins. + Lic. sheet 1	220			130			90					
Sub-total - Overhead Costs	2344	497	504	425	394	234	290					
Tax exempt gasoline from tags + est.	1021	460	380	100	81							
Other gasoline + oil - estimate	339	49	40	135	15	2	98					
Repairs + Supplies - bill + estimate	754	263	190	193	97	11						
Labor from sheet 2 memory	56	18	15	3	18	2						
Auto from sheet 1 all expense	375						375					
Total operating costs	2545	790	625	431	211	15	473					
Total all cost with eqt	4889	1287	1129	856	605	249	763					
Hours of mach. use - Machine Record		1007	642	322	202	352	—					
Total cost per hour with eqt		1 28	1 76	2 66	2 87	71						
(b) Calculations of costs by Enterprises												
Rate hr.	Total	A Alfalfa	B Barley '59	B Barley '60	C L. Silage	P Pasture	Dairy	O Mgt.	H Horse			
T2 25 hp. Tractor hours	1007	517	38	0	99	153	200					
Cost each enterprise @ $1.2781	1287	660	49	—	127	196	255					
T3 35 hp. Tractor hours	642	224	18	71	191	78	60					
Cost each enterprise @ $1.7586	1129	394	32	125	336	137	105					
TK – 1½T Truck hours	322	152	17	4	58	21	70					
Cost each enterprise @ $2.6584	856	404	45	11	154	56	186					
F Forage Harvester hrs.	202	130	17	—	45	10	—					
Cost each enterprise @ $2.9950	605	389	51	—	135	30	—					
W – Feeding Wagon hours	352	130	17	—	45	10	150					
Cost each enterprise @ $0.7074	249	92	12	—	32	7	106					
Farm + Family Auto Cost	763							382	381			
Total	4889	1989	189	136	784	426	652	382	381			

Figure 13

Work Sheet 5

Frank Smith – Summary of Income, Expense and Profit by Enterprises, With Comparison of Income Tax Farm Schedule

Item	A alfalfa 72A	B–'59 Barley 42A	B–'60 Barley 42A	C C. Silage 18A	P Irrig. Past. 84A	Total Crops 216A	Dairy 130 Cows	Total Farm Bus.	Income Tax Farm Sch.	Diff.	Remarks
Incomes and Credits											
Milk Sales 12840 cwt. @ $4.30							55250	55250	55250	—	
Dairy Cattle Sales							4397	4397	4397		
Increase in Dairy Stock + Feed Inventory							1200	1200	1200		
Value of Dairy Manure Hauled to Crops 432T@$1							432				
Alfalfa and Pasture Hay to Dairy 407T@$22.50	8933				270	9203					
Silage to Dairy 360T@$8				2880		2880					
Pasturage by Dairy 1113 AUM@$7.50	675	472			7200	8347					
Barley Straw to Dairy 42T@$12		504				504					
Subtotal Farm Feed and Straw to Dairy						20934					
Alfalfa Hay Sold 35T@$22.50	787					787		787	787		
Barley Sold 63T@$40		2520				2520		2520	2520		
Total Income + Credits	10395	3496	—	2880	7470	24241	61279	64154	64154		
Expenses											
Labor incl. operator, housing + bus. W.S. 2	2340	199	240	783	1662	5224	10835	16059	13170	2889	wages only
Contract combining Lired		446				446		446	446		
Farm Machinery Costs, from W.S. 4	1939	189	136	784	426	3474	652	4126	—	4126	Service Unit
Commercial Fertilizer + Seed W.S. 1	738		260	270	948	2216		2216			
Manure from Dairy to Crops	108			180	144	432					
Farm Feed + Straw to Dairy from above							20934				
Concentrates Purchased 172T@$69							11830	11830	11830		
Cows Purchased							550	550	550		
Miscel Dairy Supplies + Repairs							3106	3106	3106		
Irrig Water Costs W.S. 2	1289	65	117	195	1668	3334		3334		3334	Service Unit
County Taxes W.S. 1	402	234		100	469	1205	777	1982	2331	349	Share S. Unit to
Interest on debts W.S. 1	712	415		178	831	2136	1377	3513	4164	751	"
Insurance + Licenses							210	210	1182	972	"
Electricity + Telephone							360	360	2345	1985	"
Farm Auto									188	188	"
Farm Machinery Repairs, gas, oil, etc.									2065	2065	"
Depreciation							1780	1780	4986	3206	"
Farm Overhead + Administration	609	205	—	169	438	1421	3588	5009	—	5009	Service Unit
Total Expense	8137	1753	753	2659	6586	19898	55999	54521	48579		
'60 Barley Expense in lieu of '58 Expense on '59 crop		753									
											$6,000 per labor + mgt. + dif. Pending
Profit	2258	990		221	884	4353	5280	9633	15575	5943	
Direct Investment Involved W.S. 1	36000	21000		9000	42000	108000	69600	208800			
Percent earned on direct invest.	6.3	4.3		2.4	2.1	4.0	7.4	4.6			
								inc serv. units			

Figure 14

Frank Smith—Dairy Enterprise Statement and Analysis, 1959

130 Average Cows, 12,840 cwt. of Milk Sold

	Per cent milk	Quantity		Av. price	Total value	Per cow	Per cwt. milk
		Total	Per cow				
Milk sold, Class I	54	6,950	...	5.20	36,140	278.00	...
Milk sold, other	46	5,890	...	3.24	19,110	147.00	...
Total	100	12,840	98.8	4.30	55,250	425.00	4.30
Cows sold		30 head	.23	125	3,750	28.85	...
Dead cows sold		2	.02	1	2	.02	...
Small calves sold		65	.50	9.95	645	4.96	...
Increase stock inventory		5	.04	...	1,200	9.23	...
Manure used on farm		432 T	3.4	1.00	432	3.32	...
Total income		...	...	...	61,279	471.38	4.77
Expenses:	cwt. TDN						
Concentrates bought	2,580	172 T	1.32	69.00	11,830	91.00	...
Hay from farm	4,090	409 T	3.14	22.50	9,203	70.79	...
Silage from farm	1,296	360 T	2.77	8.00	2,880	22.15	...
Pasture on farm	4,452	1,113 AUM	8.6	7.50	8,347	64.21	...
Total feed cost	12,418	9,552 lbs.	...	...	32,260	248.15	2.51
Hired labor		7,367	56.7	1.38	10,185	78.35	.79
Operator's labor		433 hrs.	3.3	1.50	650	5.00	.05
Cows bought		2	.02	275	550	4.23	.04
Breeding fees		140	1.1	7.00	980	7.54	.08
Tractor and truck work		...	...	...	652	5.01	.05
Straw from farm		42 T	.3	12.00	504	3.88	.04
Taxes, dairy share					777	5.97	.06
Cow testing dues					430	3.31	.03
Electricity					360	2.77	.03
Fuel for sterilizer					300	2.31	.02
Fire insurance					210	1.61	.02
Miscel. other dairy supplies and vet.					1,396	10.74	.11
Management and overhead charged to dairy					3,588	27.60	.28
Depreciation, dairy bldg. and eqt.					1,780	13.69	.14
Interest paid on farm debts, dairy share					1,377	10.60	.11
Total expenses					55,999	430.76	4.36
Net profit					5,280	40.62	.41

The above statement contains much information on quantities, prices, and cost of great value to management in analyzing the dairy enterprise. Comparisons can be made to other dairies and other years. It is based on the dairy statement on work sheet 5 in figure 14, but additional information was obtained by going back to original voucher bills and entries in cash book columns.

Figure 15

Frank Smith—Alfalfa Enterprise Statement, 1959

72 Acres Total, 18A Each in 1st, 2nd, 3rd, and 4th Year, Includes Preparation and Planting Cost on 18A

Yield by fields and cuttings	Field 1 1st year 18A	Field 2 2nd year 18A	Field 3 3rd year 18A	Field 4 4th year 18A	Total alfalfa 72A
1st cutting Apr.-May	..	24	22	21	67
2nd cutting June	20	26	25	24	95
3rd cutting July	22	26	22	20	90
4th cutting Aug.	20	22	22	20	84
5th cutting Sept.-Oct.	21	20	20	19	80
6th cutting Oct.	..	16	..	..	16
Total tons	83	134	111	104	432
Yield per acre	4.6	7.4	6.2	5.8	6.0

Income Costs and Profit—72 Acres

	Quantity		Av. price	Total value	Per acre	Per ton hay
	Total	Per acre				
Hay sold to Jones, delivered	35 T	.5	22.50	787	10.93	...
Hay delivered to Dairy Ent.	397 T	5.5	22.50	8,933	124.07	...
Pasturage used by Dairy Ent.	90 AUM	..	7.50	675	9.38	1.56
Total yield and income	432 T	6 T hay	...	10,395	144.38	24.06
Expenses:						
Hired labor	1,388	19.3	1.36	1,894	26.31	4.93
Operator's labor	294	4.1	1.52	446	6.19	1.03
Total man labor	1,682	23.4	1.39	2,340	32.50	5.42
T2-Tractor—harvest, etc.	517	7.2	1.28	660	9.17	1.53
T3-Tractor—harv. & prep.	224	3.1	1.76	394	5.47	.91
Truck—harv.	152	2.1	2.66	404	5.61	.94
Forage harvester—field chop.	130	1.8	3.00	389	5.40	.90
Feed wagon—harv.	130	1.8	.70	92	1.28	.21
Total machinery cost	...	..	...	1,939	26.93	4.49
Seed for 18A	400	22	.40	160	2.22	.37
Fertilizer for 54A Super Phos.	20 T	0.37	34.00	578	8.03	1.34
Manure 36A	108 T	3.0	1.00	108	1.50	.25
Irrigation water	395 A. ft.	5.5	3.26	1,289	17.90	2.98
Total material cost	...	..	...	2,135	29.65	4.94
County taxes				402	5.58	.93
Management and overhead				609	8.46	1.41
Interest on farm debt				712	9.89	1.65
Total overhead				1,723	23.93	3.99
Total all costs				8,137	113.01	18.84
Net profit				2,258	31.37	5.22

This statement contains considerable useful quantity and cost information enabling management to make input and cost comparisons to discover opportunities to improve profit through improving yields or reducing costs. It is based largely on previous work sheets, but with some going back to other records for yields and quantities.

Figure 16

some other dairies in the area as shown by the published reports of the local dairy herd improvement association. Only 54 per cent of the milk was sold at the Class I price. A larger quota or a better contract would obviously be helpful. A comparison of the several inputs and costs of this dairy with the information and sample schedule in a recent publication (Circular 417, "California Dairy Farm Management") discloses few differences of significance. Feed use, including concentrates, is about in line and labor costs are the same. The logical deduction from this is that consideration should be given to the effects on profit of a change in size. A larger number of cows would spread fixed or overhead costs over more production and could reduce costs per cow; having fewer cows might result in higher production per cow and a higher per cent of Class I sales. Any changes contemplated, however, should be tested with a budget calculation and comparison. A change in procedure or in materials used can be reflected in a future budget which would show the effect on profit by comparing it with past profit.

Farm Business Analysis and Planning

Enterprise statements and analyses make possible better analyses of possible changes in the kind and size of enterprises. Assuming that enterprises have been analyzed and changes adopted to make each as profitable as possible, the next step is to compare earnings in the different enterprises to see which ones should be retained, and perhaps expanded, and which ones may be reduced or eliminated.

Those enterprises which offer the greatest return for the use of a scarce resource, such as land, appear logical to promote for increased profits. On the Smith Dairy Farm alfalfa showed the best return on investment in land, and irrigated pasture showed the lowest. But any shift in acreage must be considered in its effects on other enterprises and on farm profit as a whole. The pasture, figured at farm value, supplies nutrients more inexpensively than does harvested and delivered hay. An increase in alfalfa would mean a reduction in other crops—irrigated pasture, perhaps. Greater use of hay to replace pasture would probably reduce profit in the dairy, but would it increase or reduce profit for the business as a whole? To determine what would result in such a case, draw up a plan with changes in acreages, and perhaps in the number of cows; then make up a new budget for each enterprise and figure probable profit for the farm as a whole.

The whole process of reorganizing the enterprises of a farm is too involved for full presentation here, but it is the information developed by enterprise accounting that makes this process easier and more valid. To illustrate the end product we have made another plan for the Frank Smith Dairy Farm and present a summary as plan 2 in Figure 17. The assumptions are that an increase to 150 cows is feasible with present dairy facilities and feed crop acreage but will reduce Class I sales of milk to 50 per cent of the total. Alfalfa and corn silage are increased, irrigated pasture is reduced, and sudan pasture is inserted as a second crop after barley. Costs for the different sizes of enterprises are figured as they would have been in 1959. Note that charging less pasture and more hay, green chop, and silage to the larger dairy at farm values, with a slightly lower milk price, has resulted in the dairy showing a loss and total crops showing a greater profit than for 1959. Total profit stayed the same with increase in income being offset by the increased expenses of more cows and more harvesting of farm feeds. Thus plan 2 shows no greater profit potential than the present plan, and Frank Smith would no doubt try other plans.

Making such a total farm budget for a plan should not be too difficult for the person who has done enterprise accounting by work sheets. With objectives of the plan determined and with completed enterprise statements showing per acre and per cow inputs and costs, calculation of the budget should take about five hours if a calculating machine is used. It would be time well spent to make certain that a change in the size and combination of enterprises is toward greater potential total profit.

Applications of Work Sheet Method

This method of making enterprise statements at the end of the year by use of work sheets is both feasible and accurate. The additional time required over ordinary accounting for the farm as a whole is not as great as that required by accounting methods discussed in the next chapter. The extra time needed for the labor, farm machinery, and other current records, as per this illustration, need not exceed a few hours a month, perhaps not over 100 hours for the year; allocations on work sheets 1 to 5 would probably take another 20 hours. Enterprise statements can be made in 1 to 5 hours each, with a total of perhaps 12 hours for those in the illustration.

The Frank Smith Dairy Farm example is more complicated than many farm businesses. A fruit or row-crop farm involving no inter-enterprise charges and credits would involve less work. If crops were similar, more allocations could be made on an acre basis and some service units, such as irrigation water, might not be needed.

This process is not an easy one. To employ it one must have a real desire for the information, and a determination to put in extra time on the supplemental records throughout the year. However, these records are important in better farming and administration even if they are not used later for enterprise accounting. A calculating machine and ability to use it is almost a necessity, and a rudimentary knowledge of accounting would be helpful, though it is not essential.

While this work sheet method of enterprise accounting is best adapted for use by the farmer who keeps his own records, it can be done by an accountant or farm management consultant after the close of the record year, provided that the financial and supplemental records have been properly kept and completed. A public accountant serving farmers could do this for those of his clients who were interested enough to supply the information needed and pay the extra fee necessitated. Work

Budget for Plan 2. Frank Smith Dairy Farm. Based on 1959 Prices and Costs

Recalculated from Work Sheet 5

	Alfalfa 108A	Irrigated pasture 48A	Corn silage 30A	Barley 30A	Sudan P. after Bar. (30A)	Total crops 206A	Dairy 150 cows	Total farm
Milk sales 14,812 cwt. @ $4.22	....	....	....	....	....	....	$62,506	$62,506
Dairy stock sales	....	....	....	....	....	....	5,074	5,074
Manure dairy to crops 800 T @ $1	....	....	....	....	....	....	800	....
Hay to dairy 356 T @ $22.50	7,830	180	....	....	....	8,010	....	....
Green chop to dairy 1200 T @ $6	9,600	....	....	....	....	9,600	....	....
Silage to dairy 600 T @ $8	....	....	4,800	....	....	4,800	....	....
Pasture 888 AUM @ $7.50	1,013	3,960	....	338	1,350	6,661	....	....
Straw to dairy 30 T @ $40	....	....	....	360	....	360	....	....
Subtotal crops to dairy	18,443	4,140	4,800	698	1,350	29,431	....	....
Alfalfa hay sold 146 T @ $22.50	3,285	....	....	....	....	3 285	....	3,285
Barley sold 45 T @ $40	....	....	....	1,800	....	1,800	....	1,800
Total income and credits	21,728	4,140	4,800	2,498	1,350	34,516	68,380	72,665
Total labor incl. oper. ins., etc.	3,600	948	1,300	314	337	6,499	12,504	19,003
Contract combining	....	....	....	311	....	311	....	311
Farm machine work	3,000	244	1,304	232	158	4,938	800	5,738
Fertilizer and seed	1,110	542	450	186	270	2,558	....	2,558
Manure to crops from dairy	300	200	300	....	....	800	....	....
Farm feed and straw to dairy	....	....	....	....	....	....	29,431	....
Conc. bought 198 T @ $69	....	....	....	....	....	....	13,662	13,662
Cows purchased 3 @ $275	....	....	....	....	....	....	825	825
Miscel. dairy sup. and repairs	....	....	....	....	....	....	3,584	3,584
Irrig. water cost	1,920	954	324	130	300	3,628	....	3,628
County taxes	600	268	165	85*	80*	1,198	890	2,088
Interest on debts	1,070	475	296	150	146	2,137	1,430	3,567
Fire insurance	....	....	....	....	....	....	210	210
Electricity and telephone	....	....	....	....	....	....	410	410
Depreciation	....	....	....	....	....	....	2,000	2,000
Farm overhead and admin.	900	250	282	146	70	1,648	3,800	5,448
Total expense and charges	12,500	3,881	4,421	1,554	1,361	23,717	69,546	63,032
Profit	9,228	259	379	944	—11	10,799	—1,166	9,633
Investment	54,000	24,000	15,000	8,000*	7,000*	108,000	76,600	215,800
Earned on investment	17.1	1.1	2.5	11.8	—.1	10.0	—1.5	4.4

* Land costs divided between Barley and Sudan pasture which follows in same year.

Figure 17

sheets for allocating incomes and costs to enterprises at the end of the year can follow any adequate system of financial records—a special farm record and account book, for instance, or a full accounting system with a complete set of ledger accounts.

The principles of this method can also be useful in partial enterprise accounting and farm analysis. Where current supplemental records have not been kept it may still be possible to obtain enough information to make a fairly accurate analysis of the principal enterprise. For example, a statement on the dairy enterprise on the Smith Dairy Farm could be prepared by excerpting dairy income and expense items from Smith's record book. Hired milkers' wage records would be available, and Smith could estimate his own time spent on the dairy. A record of concentrates bought would also be available and Smith would have a fairly good idea of feed crop yields chargeable to the dairy. Such main enterprise analysis has been done many times by many dairymen, though usually with the help of someone such as an extension agent or management specialist.

Making enterprise analyses from work sheets as discussed in this chapter, has two main limitations when compared to accounting methods presented in the next chapter. This method is limited in capacity to approximately 20 enterprises and service units, and it does not provide enterprise incomes and expenses during the year; one must await the completion of work sheets after the end of the year for information on enterprise earnings. However, for most medium-sized businesses with few enterprises this time will usually be soon enough for analysis and planning.

Chapter 5 ENTERPRISE ACCOUNTING BY ACCOUNTING PROCEDURES

The farming business which uses a full accounting system also needs enterprise accounting as a guide to management and ownership. If several farming and business properties are involved, for example, earnings and development costs for different activities and departments are necessary. This information must be accurate and valid; following the basic principles and procedures of enterprise accounting will supply the necessary data. In a full accounting system some division of income and expenses by properties is usually provided, but without accurate allocation of expenses through payroll and service unit records the results can be inaccurate and misleading.

Enterprise accounting can be done by full accounting procedures in either of two ways—within the general ledger accounting system for the business as a whole, or by a supplementary ledger of enterprise and service unit accounts. The nature of the business, the detail and timing desired, and the desirability of continuing the same general ledger accounts and accounting methods for the business as a whole, will affect the choice.

ENTERPRISE ACCOUNTING IN GENERAL LEDGER

If the farm business is simple and has few or no inter-enterprise charges and credits, the job of enterprise accounting can be done within the general ledger accounting system by adding some enterprise and service unit expense accounts. A farm with all crop enterprises could be handled this way, with the general ledger income accounts also being the enterprise income accounts. In addition to the usual asset, liability, and ownership accounts, the chart of accounts could be somewhat as follows (the number of accounts shown is small, on the assumption that analysis ledger sheets would be used for sub-account detail):

Income Accounts

401—Navel Oranges
402—Young Valencia Oranges
403—Lima Beans
404—Yolanda Farm

Expense Accounts

501—Payroll—Labor and Services
502—Repairs and Maintenance
503—Gasoline, Oil, Fuel
504—Utilities—Electricity, Water, etc.
505—General Expenses—Taxes, Ins., etc.
506—Crop Supplies
507—Depreciation

Service Unit Accounts

601—Farm Machinery
602—Irrigation Water
603—Employees' Housing
604—Administration

Enterprise Expense Accounts

701—Navel Oranges
702—Young Valencia Oranges
703—Lima Beans
704—Yolanda Farm

Accounting would be done as before for the farm business as a whole, with incomes credited to the 400 series of income accounts. All expenses would be charged as incurred to the 500 series of expense accounts to maintain previous segregations for historical comparisons and for income tax reports. Total debits would be carried forward for use in monthly or annual statements. At the end of each month some of the expenses in the 500 series would be transferred to the service unit and enterprise expense accounts. Labor would be charged to the enterprises on the basis of time cards and credited to the payroll account, 501. Charges for farm machinery work would be made to enterprises and credited to the service unit. All direct expenses for supplies, labor, machine work, irrigation water, etc., would be in enterprise accounts as this work is brought up to date monthly, or as wanted. General expenses and depreciation could be charged at the end of the year, thus avoiding unnecessary clerical work and arbitrary allocations for which a valid basis may not previously have been available.

Monthly trial balances would contain all current ledger account balances and enterprise income and expenses. Periodic statements of income and expenses by original segregation could be made as wanted, using total debits for the 500 series of accounts. These totals could be used for the income tax reports and for figuring profit at the end of the year, as formerly for the farm business as a whole. The service unit accounts would be available for analysis of the costs of services. The enterprise income and expense accounts would furnish considerable detail for enterprise profit statements and analyses. Procedures would be approximately as illustrated later.

ENTERPRISE ACCOUNTING IN SUPPLEMENTARY LEDGER

Accounting systems involving large and varied assets have become well adapted over the years to owners' needs in handling income tax and other matters. Thus it may not be convenient or desirable to make a change in the general ledger accounts or in inventory valuations. Where livestock are involved, inter-enterprise charges and credits make general ledger income accounts unsuitable for use as enterprise income accounts. Hence, for some firms, enterprise accounting by means of special journals and a supplementary ledger of enterprise and service unit accounts is advantageous. This supplemental accounting is purely for internal management and can be done with only reasonable accuracy; it does not need to be inspected or audited for outside purposes and thus saves considerable time and expense while avoiding questions and criticism.

The use of supplemental accounts for the enterprise accounting process permits different inventory valuations as well as changes necessary in accounting methods to obtain more valid figures for operational analysis. It promotes keener business administration and management and furnishes more accurate figures on development costs or capital outlay for the business as a whole—and it does not disturb the general ledger accounts. Monthly and annual statements with standard segregations of income and expense are still readily available for comparison with those of previous years.

The accounting proceeds as it did before, using the same books of original entry and ledger accounts for the farm business as a whole. For enterprise accounting, labor, machinery, and other supplementary records are made the basis of entries in special journals for inter-enterprise and service unit charges and credits. General ledger income and expense account entries are made the basis for entries distributing the income and expenses to the different enterprise and service unit accounts. Enterprise accounting for direct expenses and services would usually be brought up to date at the end of each month. The supplementary ledger trial balance would show the current balances of all accounts and would be balanced by a controlling account for items transferred in from general ledger accounts. Procedures and records will be illustrated below by the Tramino Ranch example.

DESIGNING THE SYSTEM

An enterprise accounting system is best designed to develop in as simple and economical a manner as possible the information wanted by management for a particular business. There is no standard procedure or chart of accounts to be used; every farm is a different case. In designing the system, start with the farm business itself and the productive enterprises on which separate information and profit statements are desired. Carefully consider the service units on which cost analyses would be helpful and which are needed in enterprise accounting procedures. Several decisions should be made in advance, such as the following:

1. Method
   a. In general ledger accounts, or,
   b. In a supplementary enterprise and service unit ledger.

2. Degree of Division into Enterprises
   a. A single enterprise for all of each crop and each kind of livestock, or,
   b. Separate enterprises for different fields of each crop and each stage of livestock production.
3. Degree of Detail in Expense Segregations
   a. A minimum of operation and cost categories, or,
   b. Considerable detail, with separate operation costs in crop enterprises.
4. Timing of Enterprise Reports Wanted
   a. Nothing until end of year
   b. Largely complete for reference at end of each month, but with overhead costs included at end of year
   c. All categories allocated at end of each month.
5. Where and by Whom Will Work Be Done
   a. In farm office by private bookkeeper or staff member
   b. In a city accounting office by means of reports and information sent in from the farm.

After deliberation and decisions on the above and other questions, the following procedure will be helpful:

1. List the enterprises and groups or properties to be handled as single enterprises.

Table 7. Enterprises and Service Units, Tramino Ranch, 1960

Code No.	Enterprise or service unit	Field numbers	Acres 1960	What is covered or included
	Tramino Ranch:			
1	Range	1–12	8,061	All range on this ranch, including fences
2	Fallow land	20–24	400	Land fallowed until seeded to barley or hay
3	Barley	25–26	300	Barley and stubble grazing after harvest
4	Oat and vetch hay	27–28	210	Planted hay and aftermath pasture
5	Volunteer pasture	29	29	Unplanted previous barley land for pasture
11	Irrigated pasture	30–35	230	All fields and ages
31	Breeding herd	....	6	400 cows, bulls, replacement heifers, calves to weaning including corrals and cattle barn
32	Own stockers	....	..	250 of own weaners to yearling feeders
33	Purchased stockers	....	..	300 purchased weaners to yearling feeders
34	Own feeders	....	..	Own yearling feeders in feed lot until sold
35	Purchased feeders	....	..	About 200 purchased stockers in feed lot
51	Farm machinery	....	2	All tractors, trucks, and farm machinery including shop, implement shed and court
52	Irrigation system, Tramino Ranch	....	12	Reservoir, well, pumps, pipelines, and sprinkler pipe
53	Feed lot and mill	....	6	Building, mill equipment, storage tanks, corrals, scales, hay barn, bunker silo, etc.
54	Employee housing	....	4	Manager's house, 2 cottages, garage, etc.
55	Office and admin.	....	4	Office building, court, roads, etc.
56	Horses	....	1	Saddle horses, horse barn, and corrals
	Total Tramino Ranch		9,265	
	Valley Farm:			
21	Alfalfa 2–4 years	41–45	90	Alfalfa for hay—some winter grazing
22	Alfalfa 1st year	46–47	30	New planting—for hay
23	Sugar beets	49	60	Sugar beets sold, tops grazed in fall
24	Leased out	50–53	70	Leased to Wilson for $50 A plus $5 A. ft. water
25	Walnuts	54–61	80	Mature walnuts, for sale
26	Apricots	62–64	60	Apricots in 3rd yr.—development costs
27	Irrig. barley	65	28	Barley for grain and straw
28	New alf. for '61	65	(28)	Relevel, check and fall plant
29	Corn silage	66	30	Corn for silage—to bunker silo at Tramino Ranch
51	Farm machinery	....	1.5	Shed, shop, and farm machinery
54	Employee housing	....	3.5	Mgrs. house, cottage, labor camp
55	Office and admin.	....	1.5	Office, driveways, etc.
57	Walnut plant	....	.5	Walnut dehydrator, huller, bins, and building
58	Irrig. system V.F.	....	...	3 wells, pumps, conc. pipe, gated pipe, etc.
	Total Valley Farm	....	455.0	
	Smith Ranch:			Rented
41	Range	all	1,859	Includes fences, corral, loading chute
54	Emp. housing	....	1	Ranch house used for employee
	Total Smith Ranch.		1,860	
	Total land farmed		11,580	

2. List the service units that will be needed.

3. Study the existing chart of general ledger accounts for the business as a whole and decide if changes to facilitate the enterprise accounting would be desirable.

4. Make a complete list of the enterprise and service unit accounts for the enterprise accounting supplemental ledger.

5. Decide on supplemental journals, work sheets, field records, etc., needed to provide the information for charges and credits to service unit and enterprise accounts.

It is advisable to keep the system as simple as possible, and to limit it to useful and significant information. Reports and statements should be prepared only when they have value, but make certain that basic information for accurate and valid accounting is provided. Because the process of designing and using a suitable enterprise accounting system is easier to illustrate than to discuss fully in general terms, the following illustration is presented in some detail.

THE TRAMINO RANCH

The fictitious Tramino Ranch Company is a family farming corporation which, in addition to livestock and equipment, owns two separate properties and rents another. Ernest and Fred Smith, two principal stockholders, share management responsibilities and each lives in a home provided by the company. Table 7 shows the enterprises and service units decided upon for the company's accounting system. Note that these are grouped by crop or land use on each of the two farms. The cattle are to be handled in several enterprises in order to separate the animals purchased for further feeding (33) from those raised in the business. The raised livestock are handled in three enterprises so that the profit in each phase can be learned: the breeding herd (31), own stockers from weaner calf to yearling feeder (32), and finishing in the feed lot, (34).

The three properties are not far apart and workers and equipment are moved back and forth as needed. Consequently, a single farm machinery service unit (51) is used to receive all costs pertaining to tractors, trucks, and farm machinery. Main headquarters and office are on the Tramino Ranch but there is also a small office on the Valley Farm, which is considered a part of the office and administration service unit, (55). Employees' housing on any farm is covered by the single service unit (54), and costs thereof will be allocated at the end of the year in proportion to services of labor and administrative staff. Note

Table 8. Chart of General Ledger Accounts, Tramino Ranch, 1960

ASSET ACCOUNTS, 100

101 Cash in Checking Account
111 Accounts Receivable
121 Inventories
- Livestock
- Feed
- Crop Supplies
- Farm Machinery Supplies

131 Prepaid Expenses
- General Expenses
- Uncompleted Enterprises

141 Land, Tramino Ranch
142 Farm Buildings, Tramino Ranch
143 Irrigation System, T. R.
144 Feed Mill and Feed Lot, T. R.
151 Office Furniture and Eqt.
152 Automobiles, Trucks, Tractors
153 Other Farm Machinery
154 Shop Equipment

161 Land, Valley Farm
162 Farm Buildings, V. F.
163 Irrigation System, V. F.
164 Fruit Trees, V. F.
- Walnuts
- Apricots

165 Walnut Plant

LIABILITY ACCOUNTS 200

211 Accounts Payable
212 Notes Payable
213 Mortgages Payable
221 Social Security Taxes Payable
242-265 Reserve for Depreciation above assets

CAPITAL ACCOUNTS 300

301 Capital Stock—one sub-account for each stockholder
302 Surplus
303 Dividends
310 Drawing Accounts
351 Profit and Loss

INCOME ACCOUNTS 400

401 Sales of Livestock Raised
402 Sales of Livestock Purchased
403 Sales of Crops Raised
404 Custom Work off Farm
405 Rent Received
406 Other Farm Income

501 Labor and Services
1. Farm and Ranch Labor
2. Adm., Clerical Salaries
3. Veterinary Services
4. Professional Services
5. Contract Operations Hired

502 Repairs and Maintenance
1. Buildings
2. Irrigation System, T. R.
3. Irrigation System, H. R.
4. Autos, Trucks, Tractors
5. Shop and Miscel. Supplies
6. Other Farm Machinery

503 Oil, Gasoline, Fuel
1. Gasoline, on farm use
2. Gasoline, Highway
3. Diesel Tractor Fuel
4. Oils and Greases

504 Utilities
1. Telephone
2. Electricity

505 General Expenses
1. County Taxes
2. Insurance, Property
3. Insurance, Liability, Auto
4. Insurance, Comp. & S C Taxes
5. Interest
6. Rent
7. Auto License Fees
8. Office Supplies and Expense
9. Travel Expense
10. Farm Org. Dues, Publications

506 Crop Supplies
1. Seed
2. Nursery Stock
3. Spray & Pest Material
4. Fertilizer
5. Weed Sprays
6. Miscel. Other

507 Livestock Feed and Supplies
1. Hay Purchased
2. Concentrates Purchased
3. Salt and Minerals
4. Medicines, Vaccines
5. Other Livestock Supplies

508 Livestock Purchased

509 Depreciation

ACCOUNT GENERAL EXPENSE

COUNTY TAXES	PROPERTY INSURANCE	LIAB. COMP INS.	SOC. SEC. TAX	INTEREST	RENT PAID	OFFICE EXP.	LICENSE FEES ETC.	TRAVEL EXP.	DUES PUBLIC.	DATE 1960	POSTING REF.	CHARGES	CREDITS	BALANCE
	357 60									1/1	J 23	357 60		357 60
			248 -			18 50	375 -	113 50	76 50	1/31	CR 36	831 50		1189 10
		150 -	262 50	348 -		24 -		48 -	15 -	2/29	CR 39	847 50		2036 60
1836 70			250 -	876 20		16 -		97 60	8 50	3/31	CR 45	3085 00		5121 60
		16 50											16 50	5105 10

Figure 18

that separate service units are used for the irrigation system on the two farms (52) and (53), and also for the feed lot and mill (53) on the Tramino Ranch and the walnut plant (57) on Valley Farm. These last two service units may also do some custom work for neighbors now and then.

Decision is made to continue accounting for the business as a whole with the same general ledger accounts and original books of entry. Bookkeeping will be done by a full time clerk-bookkeeper in the main office and the books for the farm as a whole will be audited annually by a public accountant. The profit statements, as a whole and for income tax reporting, will be on the accrual basis. Inventories of livestock, crops, feed, and supplies on hand will be at "farm value," save that livestock raised are valued by the unit price method used formerly. These values are usually below the farm values needed in enterprise accounting. The chart of general ledger accounts is shown in Table 8 as slightly revised to facilitate enterprise accounting. Note that asset accounts reflect separately the two farms owned.

The number of principal accounts shown in Table 8 is kept to a minimum by the use of analysis ledger sheets or sub-accounts; these will provide the different expense segregations needed for different cost allocations in enterprise accounting. Figure 18 shows a 10-column analysis ledger sheet used for general expenses. These categories will accumulate until the end of the year, at which time they will be allocated to enterprise and service units on an appropriate basis.

SPECIAL JOURNALS

Enterprise accounting will be done by means of special journals and the supplementary enterprise and service unit ledger. Accounting will be brought up to date at the end of each month for income and most expenses, leaving general expenses, administration, and depreciation to be charged at the end of the year. Hence, enterprise account balances will show incomes and most of the expenses to date each month. Enterprise statements for a month and year to date are of no significance in these enterprises, but the data will be available for reference in ledger accounts. As harvest or selling time approaches a preliminary statement can be made for any enterprise from the income and expense accounts, including, if desirable, estimates for expenses yet to be charged.

The accounting done in the supplementary ledger must be thorough enough to assure accuracy and completeness. A skilled accountant may find several short cuts he can safely take, such as posting certain items to the enterprise and service unit accounts from the original transaction entries at the same time they are posted to the general ledger accounts. It will be safest, however, for most clerks to follow full double-entry procedures, with all postings made from special journal entries with total debits equal to total credits—these proven monthly by a trial balance. The following are the special journals from which items would be posted to enterprise and service unit accounts in the supplementary ledger:

General Ledger Transfer Journal

A four-column journal to show current incomes and expenses "transferred" from general ledger accounts to accounts in the supplementary ledger. Two columns would be for debits and credits to a general ledger controlling account posted as a net balance at the end of the month as posting is completed; the other columns would show debits and credits to the supplementary ledger accounts. Figure 19 shows a sample form with several entries.

TRANSFER JOURNAL

1960			Supplemental Ledger Dr.	Supplemental Ledger Cr.	General Ledger Dr.	General Ledger Cr.
7/10	P.G. & E. Electric Bills, May					
	Jr. System Jr. Ranch					
	8116 KW hr. plus serv. charge	52	136 —			
	Jr. System Valley Farm					
	9240 KW hr. plus serv. charge	57	232 —			
	Employee's Housing	54	56 —			
	Administration and Office	55	6 —			
	Feed Mill	53	8 —			
	Farm Machinery	51	5 —			
	Walnut Plant	57	2 —			445 —
	Utilities	504				
7/12	Sale of Cattle Raised	401			655 20	
	Breeding Herd 35 cows 3640# @ 18¢	31		655 20		

Figure 19

Inter-Enterprise and Service Unit Journal

This can be a two-column journal for recording all inter-account charges and credits which affect only supplemental ledger accounts not made from the other journals below. Typical entries would concern the charging of pasturage or hay to livestock and crediting the crop enterprise or inventory from which it came. Here is a typical entry charging pasturage for April:

		Acct. No.	Dr.	Cr.
Apr. 30	Pasturage Br. Herd 376 AUM @ $4	31x	$1,504	
	Pasturage, Own Stockers 119 AUM..	32x	476	
	Tramino Ranch Range.....	1		$1,980

Payroll Record

This special journal lists the summary of the individual time cards and shows the wages or salaries for each employee and their distribution to enterprise and service unit accounts. A multicolumnar record with adequate columns provided by short sheets would be used and would be similar in purpose to that shown as Figure 5 in the previous chapter. Monthly totals are posted to the enterprise and service unit accounts, and the total so charged is posted as a credit to the general ledger controlling account. It is likely that this record will also be used for social security tax and other deductions, and it probably will be made the basis of entries to general ledger accounts for the business as a whole.

Farm Machinery Work Charges

This record would be similar to the above but it would list the work done by machines and would distribute it to enterprise and service unit columns. Monthly totals are posted to the accounts affected, and the total is credited as a single item to the Farm Machinery Service Unit, 51. An analysis distribution sheet with 26 columns, made possible by using a short sheet, is shown in Figure 20. Since individual time cards are preserved, and hours for each machine and each enterprise are shown on these and in the record, the detail on each machine need not be carried into the enterprise account but can be referred to here if needed in a detailed enterprise analysis.

Irrigation Water Use Record

This record is similar to above, but needs only three analysis columns for the Tramino Ranch and ten for the Valley Farm. Monthly totals in acre feet and value are recorded here and charged to crops at $4.50 an acre foot for the Home Ranch and $5 for the Valley Farm. Data for entries are kept in field notebooks and turned in to the office for calculation. The rate of flow from a pump is generally known in gallons per minute; an acre inch is one hour's flow at the rate of 450 gallons per minute. Here is a convenient formula for figuring the acre feet applied.

$$\frac{\text{Hours run} \times \text{gallons per minute}}{450 \times 12} = \text{Acre Feet}$$

$$\frac{160 \text{ hours} \times 900 \text{ gal. per minute}}{450 \times 12} = \frac{1440}{54} = 26.7 \text{ Acre Feet}$$

ENTERPRISE AND SERVICE UNIT ACCOUNT LEDGER

This supplementary ledger contains all the accounts needed in enterprise accounting. It is recommended that an 11 by 14 inch form be used, and this should have enough analysis columns to provide for the segregations and quantities wanted. This minimizes the actual number of main accounts but assembles the detail wanted for that enterprise or service unit in one place. When an item is posted it is also entered in the proper analysis column. Table 9 shows the chart of accounts for this ledger. The sub-accounts, or analysis column titles, are shown for part of these accounts in order to illustrate those that would probably appear in similar accounts. In this list we used as account numbers the enterprise and service unit numbers in Table 7. Most enterprises require separate income and expense accounts, and expense accounts are indicated by an X after the number. Service unit accounts are primarily expense accounts, but are credited with the value of service provided to enterprises or other service units. To avoid confusion, a refund on an expense such as the refund of gasoline taxes would be deducted from that item of expense and not included in the total credits.

INFORMATIONAL RECORDS

Adequate quantitive information for inter-enterprise and service unit charges and credits is the most important requirement for valid enterprise or cost accounting. It is also important to good farm management. Management must know the labor, machines and materials used as well as the crop yields. Continuous inventories of livestock, products, and materials on hand are essential to prevent waste or loss, to make marketing decisions, and to do enterprise accounting. All this information must be developed by administrative and other employees and turned over to the accountant.

Table 9. Enterprise and Service Unit Ledger Accounts, Tramino Ranch, 1960

ENTERPRISE ACCOUNTS

1 Range, Tramino Ranch, Grazing
1x Range, expense
Labor, Gen'l. exp., other
2x Fallow land expense (400A)
3 Barley '60 grain, grazing
3x Barley '60 expense
1. Labor
2. Machine work
3. Seed
4. Fertilizers
5. General Expenses
6. Administration
4 Oat and Vetch Hay
1. Hay
2. Grazing
4x Oat and Vetch hay expense with subaccounts needed
5 Volunteer Pasture
5x Vol. Pasture Expense
11 Irrigated Pasture Income
11x Irrigated pasture expense with subaccounts needed

31 Breeding Herd Stock Account
Subaccounts for kinds by head, weight, and number, inventory, purchases, sales and transfers
31x Breeding Herd Expense
1. Labor
2. Machine work
3. Pasture on range
4. Irrigated pasture
5. Grain, concentrates
6. Salt and minerals
7. Veterinary serv. and med. vac.
8. Miscel. supplies small eqt.
9. General expense and admin.
32 Own stockers—stock account
32x Own stockers expense with subaccounts needed
33 Purchased stockers stock account
33x Purchased stockers expense
34 Own feeders in feed lot, stock account
34x Own feeders in feed lot, expense
35 Purchased stock on feed, stock account
35x Purchased stock on feed, expense

21 Alfalfa 2–4 years, income
21x Alfalfa 2–4 years, expense
22 Alfalfa 1st year, income
22x Alfalfa 1st year, expense
23 Sugar beets, income
23x Sugar beets, expense
24 Wilson Lease, income
24x Leased land, expense
25 Walnuts, income
25x Walnuts, expense
26x Apricots, expense
27 Irrig. Barley, income
27x Irrig. Barley, expense
28x New Alf. expense
29 Corn for silage, income
29x Corn for silage, expense
41 Range Smith Ranch, income
41x Range Smith Ranch, expense

SERVICE UNIT ACCOUNTS

51 Farm machinery
1. Labor and mechanic
2. Repairs, parts supplies
3. Gasoline
4. Diesel Fuel
5. Oils and greases
6. Electricity
7. Auto Lic. and Ins.
8. Other general expense
9. Depreciation
10. Administration

52 Irrigation System T. R.
1. Labor
2. Repairs and miscel.
3. Electric power
4. Depreciation
5. General expense
6. Admin.

53 Feed lot and mill with appropriate sub-accounts

54 Employee's housing

55 Office and admin.
1. Admin. & clerical salaries
2. Office supplies and exp.
3. General expense, travel, etc.
4. Automobile use
5. Deprec. office & eqt.

56 Horses
1. Labor
2. Machine & truck work
3. Feed—hay past., etc.
4. Vet. & miscel.
5. Deprec. stable & eqt.
6. Administration

57 Walnut plant with subaccounts as needed

58 Irrigation System V. F. with subaccounts as in 52

59 Undistributed Labor
60 Inventories

70 General Ledger Control

Most of these records must be kept current as farming proceeds. In no event should they be made up from memory for a period longer than a month. Special forms are best used for records where information is entered each day. A field notebook for each employee, containing the special records for which he is responsible, is essential. Such a book would also contain special reference information, such as field and account numbers and instructions for calculations involved. Informal notes as needed would also be kept—perhaps diary information on events, weather, etc. A 5½ by 8½-inch ring binder is suggested for this use and the forms illustrated below have been designed in this size. A pocket or receptacle for this book in each supervisory car or pickup is recommended.

These special information record forms are not commercially available and so must be specially prepared to meet the needs of the particular farm business; it is advisable that they should be on paper durable enough to stand the rigors of field use. The following is a list of record forms considered essential for the Tramino Ranch illustration:

Time Cards

Each employee, including administrative and supervisory personnel, must be covered by a time record showing the hours worked and their distribution over jobs, enterprises, and service units. Administrative and supervisory personnel will keep their own cards and those of the workers for whom they are responsible. Ordinary farm laborers should not keep their own time cards. Time cards would be transferred when workers are transferred from one foreman to another. They would best be designed to cover the pay period, a week, half month or month. The time card illustrated in Figure 3 is recommended. It covers either half of the month and can show on separate lines each job or operation for each enterprise or service unit. It contains space to show by number the equipment used.

These cards, when filled in, are turned into the office for further processing. The first step is to justify the figures by adding the hours —by jobs at the right of the card, and by days at the bottom. These hours are then extended to value at the proper hourly rate or the average cost obtained by dividing hours into the salary received, following which the bookkeeper enters each card on a line in the payroll record and makes the usual calculations of social security tax and other deductions. The total cost of the labor to each enterprise and service unit is placed in the proper column. This figure may be a sum of several field or operation costs in a single enterprise. It is well to have more detail on

FARM MACHINERY WORK CHARGES

Eqt. No	Description	Date ending	Total hours, miles	Rate Hr Mi.	Total Cost		11 Range		12 Range		15 Fallow		16 Barley	17 O&V Hay
PU1	Mgrs pick up	4/30	860m	8¢	68	80					20	1.60		
PU2	E.S. "		720	8	57	60								
PU3	Ranch pick up		1120	8	89	60	120	9.60	60	4.80				
PU4	VF pick up		620	8	52	–								
TK1	Ford 2T flat bed		20 hr.	2.20	44	–								
TK2	Chev 2½T cattle		120 hr.	2.50	300	–								
T6	Cat 60		80	5.00	400	–					80	400.-		
T4-1	Int TD9		50	3.00	150	–								
T4-2	C 40		0	3.20	—									
W2-1	Ford Field		20	1.40	28	–								
W3	Farmall cultiv.		40	2.00	80	–								
W2-2	JD with loader		20	1.60	32	–					10	16.00		
	Total for month				1302	–		9.60		4.80		417.60		
					cr FH 51									

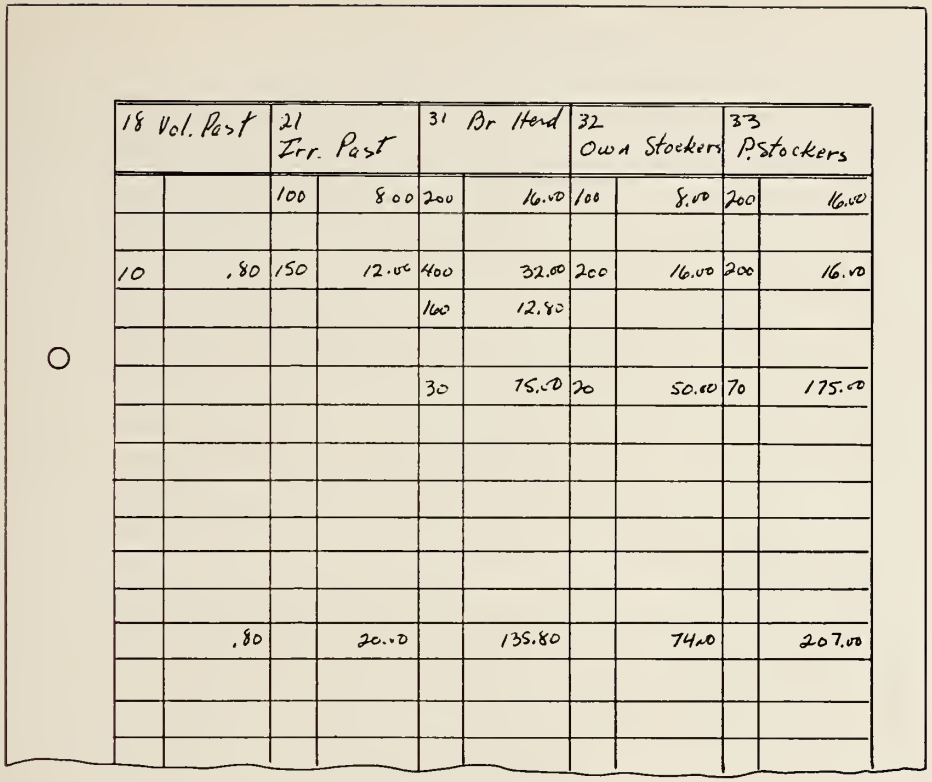
Figure 20

time cards for future reference and for special job cost analyses than are carried into enterprise accounts, which usually show only the total labor cost. The degree of fineness in enterprise or field breakdown, and job or operation breakdown of labor cost, is a matter of choice. Time cards kept on file can be sorted and tabulated later for any additional detail wanted, thus avoiding many columns and sub-accounts in the payroll record and enterprise accounts.

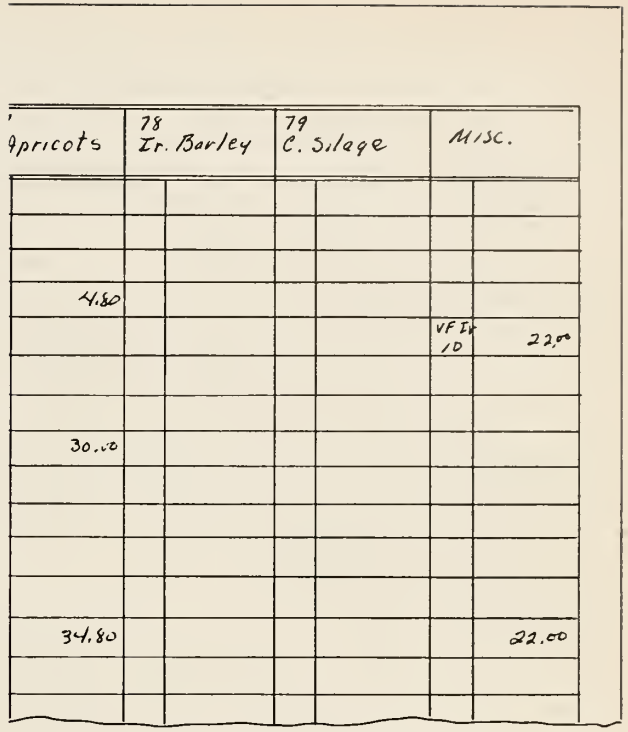
Farm Machine Time Cards

A time card for each farm pickup, truck, tractor, and self-propelled machine is needed to show hours of service or work for each enterprise and service unit. Normally, a monthly time card would be adequate. The farm worker's semi-monthly time card can be used to avoid using another form—use two for a month, or the top and bottom halves for the first and second halves of the month. These cards can have additional values to management other than the main function of enterprise accounting. They can carry memoranda on mileage, fuel use, repairs, etc. and at the end of the year, they can be sorted and added to get total hours or miles of use. This will help in estimating appropriate hourly cost rates and in making decisions regarding needs and replacements of machines.

On the Tramino Ranch the farm machinery foreman, who is also mechanic in the shop, would be responsible for these farm-machine time cards, although he could turn some over to regular truck or tractor drivers. At the end of the month he would assemble and check cards for completeness and turn them in for calculation and listing in the farm machinery work journal described above and illustrated in Figure 20. The total cost of all machine work is all that is posted to enterprise



18 Vol. Past		21 Irr. Past		31 Br Herd		32 Own Stockers		33 P. Stockers	
		100	8.00	200	16.00	100	8.00	200	16.00
10	.80	150	12.00	400	32.00	200	16.00	200	16.00
				160	12.80				
				30	75.00	20	50.00	70	175.00
	.80		20.00		135.80		74.00		207.00



Apricots		78 Ir. Barley		79 C. Silage		Misc.	
4.80							
						VF Ir 10	22.00
30.00							
34.80							22.00

Figure 20 (continued)

An analysis distribution sheet with 26 columns made possible (in a loose-leaf system) by using a short sheet between two full sheets.

ıted

ı crop is harvested the quantity in loads, bales, tons, etc. rded by fields. Yield should be figured per acre and de between fields as well as between previous years and s will serve as a guide in future cultural decisions. The ı be made the basis of reporting quantity and value to for crediting the producing enterprise and charging it ıterprise, or inventory, for future disposition. No standard e and perhaps none is needed on some farms. Figure 22 d form containing information that should be recorded o Ranch crops. Notice that farm values have been in- ıld be well known to the manager who keeps this record ook. Other memoranda may be needed to arrive at these

Livestock Records

Good livestock management and enterprise accounting require that each livestock enterprise be covered by a running record of the number of head of each age and sex group on hand. Adjustments are made and recorded for death losses, sales, additions, and transfers to other enterprises. Corrections are made as animals are counted when worked or moved. New calves are added as marked. A continuous livestock lot record for each lot or group of livestock in each enterprise would be advisable for the Tramino Ranch. Such a record is illustrated in Figure 23. Note that it shows the number on hand at all times and that it contains notes on weights obtained and feed to be charged, as well as remarks on moves.

These current livestock lot records would be kept in the field notebook of the manager or foreman in charge of that particular lot or group of cattle. At the end of each month he checks for accuracy and turns them in to the office for recording. This could be on a form similar to the one shown in Figure 9.

Most large ranches record a monthly inventory of cattle on hand. For the Tramino Ranch we show a useful combined inventory in Figure 24. This inventory would be filled in on the first of each month; extensions of total weights and values would be made only when needed. This form also provides space to show changes during the current month, with the end of the month checked to the inventory on the first of the following month. At year's end one of these forms would be used following the valuation method for the business as a whole, and another form used with the valuations needed for enterprise accounting, as shown in Figure 24.

Continuous Inventory Records

A continuous inventory for important categories of feed, products and for certain supplies on hand is helpful in managing them when using, buying, or selling. A single form can be used for each item, and a suitable form is illustrated in Figure 2. Such a form could be used for hay in each storage pile or barn. As hay is harvested and stored, it is added; as it is sold or used it is subtracted, thus showing the balance

RECORD OF IRR. WATER USE

FARM: VALLEY FARM RECORD KEPT BY: ES YEAR 1960

ENT-PRISE	FLD NO.	ACRES	MO. DAY HOUR START	MO. DAY HOUR FNSH.	TOTAL HOURS RUN	RATE OF FLOW	ACRE-INCH APPLIED TOTAL	ACRE-INCH APPLIED P or A	REMARKS - SOURCE OF WATER, Etc.	NAMES OF IRRIGATORS
21	42	24	5/1/8A	5/4/4A	60	900	120	5.0	WELL #1	Arcia
21	43	20	5/4/4A	5/6/4P	60	900	120	6.0	"	"
22	46 47	30	5/7/7A	5/10/10P	82	900	165	5.5	"	
24	—	70	5/7/7A	5/13/5P	154	1050	360	5.1	WELL #2	John's Lease
25	54-61	80	5/10/7A	6/7/6P	370	700	576	7.2	WELL #3 days only	Marvia

Figure 21

RECORD OF CROPS HARVESTED

FARM - TRAMINO RANCH KEPT BY: ES. YEAR 1960

DATE 1960		CROP OR PRODUCT	ENT.	FIELD No.	ACRES	QUANTITY TOTAL BALES TONS, ETC.	QUANTITY PER A	DISPOSITION	VALUE PER UNIT	VALUE TOTAL	
May	10	CH & Vetch hay		28E	50	65 Loads 125T	2.5T	To Hay Shed 2 Cattle 31	20	2500	—
	11	Wr. Hay		28W	50	est 100 T	2.0	Left in windrows for cattle 31	16	1600	—
	13	B. & Vetch hay		27	110	564 B 310T	2.8	To Barn #2	22	6820	—
	15	Ir. Past Hay B	11	30 31	75	222 B 120T	1.6	To shed at feed lot	22	2640	—
	18	Ir. Past. Ch. Hay	11	32	45	34 loads 68T	1.5	To Hay Shed 2 for cattle 31	20	1360	—
	19	Ir. Past & H.	11	33	28	98 & 53T	1.9	To Barn 2	22	1166	—
	21	Ir. Past ch. H	11	34	41	39 loads 78T	1.9	To Hay Shed 2	20	1560	—
	22	Ir. Past. & Hay	11	35	21	53 B 29T	1.4	20 T to Smith 9 to Barn 2	22	638	—
June	7	Barley		25	160	117 T	.73T	To tanks 2,3 at Feed mill	38	4446	—
	11			26	140	121 T	.87T	To tanks 3, 4 at Feed mill	38	4598	—

Figure 22

on hand at all times. This may partly overlap information in records of crops harvested and livestock feed used, but it is well to have this information available to check or supplement other reports. Note that there is also a space for values; it will be helpful to the bookkeeper to have these values recorded for making proper charges and credits at the time the hay is stored.

Pasture Use Records

In order to provide livestock enterprises with data on monthly pasture charges and to allot credits to the range or crop enterprise, it is necessary to do some current record keeping on pasture use. These records may be informal notes to supplement data on properly kept livestock lot records illustrated in Figure 23. A special form may be used for each enterprise, or even separate fields that are pastured, to show the dates and number "on" or "off," the age of stock and the computation of animal unit months. On the Tramino Ranch all range is one enterprise; this includes 12 fields, on each of which management may wish to know the feed obtained in order to make decisions regarding improvements or fertilization needed and to evaluate the results of such treatments. Figure 25 illustrates a suggested form for a pasture-use record for a field or crop enterprise. Examination of the calculations will show the value of such records in making inter-enterprise charges and credits, as well as their usefulness in range and grazing management.

LIVESTOCK LOT RECORD

ENTERPRISE NO. 33 LOT NO. A KIND: Stockers bought-Steer calves YEAR 1959-60

DATE 1959		NO. OF HEAD IN	OUT	BAL	WEIGHT HD.	POUNDS	REMARKS - Where to or from, sales, deaths, transfers, pastures used, etc.	HAY FED KIND	TONS	CONC. FED KIND	POUNDS
Nov	12	70		70	70	31710	Arr. from Nev. to feed lot				
	14	69		139	69	29463	"				
	15		1	138		415 est	Died - probably shipping fever				
	30						Fed to date in feed lot	Past.	12	R. Bar.	4200
Dec	1				138	61408	Weighed, reloaded 138 hd. to Smith R.				
	31			138			Est. wt. av 470#, Sup. feed to date			CSM + salt	10,000
1960 May	15		70	68	70	50400	Topped out + trans. to E 35 feed lot				
June	15			68	66	47520	Move to Dr Past. 21 Home Ranch				
							2 missing				
	30			68	2	1500	Found and moved other 2 to Dr. Past.				
July	6		1	67		800	Died in Dr Past. probably bloat				
Sep	30		67	—	67	86040	Transferred to E 36 Feed Lot				
						57620	Total out 137 hd. 108020				
							Total in 139 61173				
							Net gain -2 46847				
							av. 342				

Figure 23

Inventory 1st of Month of Jan. 1960 and Changes for Month, Tramino Ranch

Ent. or % No.		No. Head	Av. Wt.	Av. Value	Total Weight	Total Value	During Month				
							Died	Sold	Trans.	Add.	End Mo.
31	Breeding Herd:										
	Bulls	25	1,200	250	30,000	6,250	11	..	..	..	24
	Breeding cows	396	950	150	376,200	59,400	3	..	..	..	393
	2 yr. heifers	83	800	150	66,400	12,450	..	..	..	..	83
	Yearling heifers	85	550	100	46,750	8,500	1	..	..	..	84
	Calves	250	150	40	37,500	10,000	2	..	..	61	309
	Total br. herd	839	..	..	556,850	96,600	..	..	..	..	...
32	Own stockers:										
	Yearling steers	166	590	125	97,940	20,750	..	..	..	..	166
	Yearling heifers	80	550	100	44,000	8,000	..	..	..	..	80
	Total own stock	246	..	..	143,940	28,750	..	..	..	..	...
33	Purchased stockers:										
	Yearling steers	297	500	120	14,850	35,640	..	..	..	..	297
	Yearling heifers	..	..	..	....	....	..	..	..	..	...
	Total purchased	..	..	..	....	....	..	..	..	..	...
34	Feeders Lot #1	120	1,020	240	122,400	28,800	1	60	..	..	59
35	Feeders Lot #2	80	950	215	76,000	17,200	..	..	..	..	80
36	Feeders Lot #3	..	..	..	....	....	..	..	..	..	...
	Total feeders	200	..	..	....	46,000	..	..	..	..	...
58	Horses	11	..	150	....	1,660	..	..	..	..	11
	Total livestock					208,650					

		Quantity	Av. Value	Total Value	Quantity		
					Used	Added	End Mo.
	Hay	470	21	9,870	210	..	260
	Silage	316	7	2,212	180	..	136
	Barley	240	45	10,800	60	..	..
	Other conc.	12	75	900	30	30	12
	Total feed	..	..	23,782	..	..	..
	Fertilizers	118T	75	8,850	..	46	76
	Spray materials	Various	..	365	..	..	..
	Seed	Various	..	870	..	..	..
	Total crop supply	..	..	9,885	..	..	..
	Gasoline	800	21	168	..	..	..
	Diesel oil	600	15	90	..	..	..
	Oils and greases	..	..	60	..	..	..
	Other farm mach. sup.	..	..	360	..	..	..
	Total farm mach. supplies	..	..	678	..	..	..
	Grand total inventory	..	..	242,995	..	..	..

Figure 24

PASTURE USE RECORD

FARM - Ironmine Ranch ENTERPRISE 1 FIELD No. 9 ACRES 319 YEAR 1960

DATE ON	DATE OFF	No. DAYS	NO. NO.	KIND OF STOCK	NO. HEAD	AV. WT.	AU. per Hd.	TOTAL A U M	REMARKS
1/1	1/31	31	1	2 yr. Heifers	83	850	.9	75	Supl. CSM & Salt
1/10	1/31	21	0.7	Breeding Bulls	3	1300	1.1	2	"
				Total for Jan.				77	Charge to Ent. 31
2/1	2/29	29	1	2 yr Heifers	83		.9	75	No. supl. after 2/15
2/1	2/29		1	Bulls	3		1.1	3	
				Total for Feb.	86			78	
3/1	3/20	19	0.7	2 yr. Heifers	83		.9	52	Moved to field 10
3/1	3/20	19	.7	Bulls	3		1.1	2	
				Total for March				54	
4/15	4/30	15	.5	Yearling Heifers	85	650	.7	30	
5/1	5/28	28	.9	"	85		.7	54	Moved to field 27
11/4	11/30	26	.9	Purch. Steer calves	160	450	.5	72	Supl. CSM & Barley 2# hd. day
12/1	12/31	31	1.0		159		.5	79	
				Total for year				444	1.35 AUM per A good!

Figure 25

Bookkeeping Methods

The objective in this example is to bring enterprise and service unit accounts for direct costs up to date shortly after the end of each month. Certain overhead costs will be allocated at the end of the year. It would be advantageous to post some current expenditures to enterprise and service unit accounts at the same time they are posted to the general ledger expense accounts. While handling the voucher or bill make the entry in the transfer journal and post to the various accounts affected in order to carry into the supplemental ledger accounts the desired quantity and price data. When all transfer journal entries are completed and posted for the month, the net debit or credit for the general ledger controlling account is posted to that account, No. 70, in the supplemental ledger.

After all time cards for the month are entered in the payroll record or journal, columns are totaled and posted to the enterprise and service unit accounts, with the total so charged credited to the general ledger control. An undistributed labor account is needed to take occasional charges for labor paid for but not chargeable to other accounts—items such as vacations, and sick leave with pay. This accumulation will be allocated at the end of the year in proportion to labor previously charged.

When all time cards for farm machinery and truck work are entered in that record, columns are totaled and posted to the accounts affected and the total so charged credited to the farm machinery service unit account. The same thing is then done for the irrigation water charges to enterprises and a credit to the service unit. Field notes will be the basis of entries in this irrigation water use journal.

The next step is to record all inter-enterprise and other account entries in enterprise accounting journal 2 above; continuous inventory accounts will probably be needed. Hay or barley harvested and stored for the livestock enterprises will be charged to this inventory account, No. 6, and credited to the enterprise where it was harvested. When hay is withdrawn and delivered to a livestock enterprise it is charged to the proper enterprise and credited to the inventory at the farm value per ton when harvested. If some hay is sold at more or less than the value at which it was originally charged to the inventory any profit or loss is credited or debited to the crop enterprise originally producing the hay. Crop materials ordinarily would be charged directly to the using crop enterprise when acquired; where a quantity, such as fertilizer, is purchased and carried for later use in several enterprises it would have been charged to the inventory. It would be charged to enterprises as used, usually on a first in and first out price basis.

Included in these month-end entries in the enterprise journal would be all charges and credits for crops harvested that month, for pasture used, and for any animals transferred from one livestock enterprise to another. Field records on lots of livestock, crops harvested, pasture use, and ordinary debit-credit memos, are the basis of these journal entries. Proving total debits equal to total credits in these special journals is a good check against errors. Posting to the proper accounts is then completed, after which a trial balance should be made of all account balances in the supplementary enterprise and service unit ledger.

At about the same time, the physical inventory of livestock, crops, feed, and supplies should be made as illustrated in Figure 24. Ordinarily, this need not be brought into the accounts except as needed at the beginning or end of the year or the enterprise cycle.

Livestock enterprises vary as to time of beginning and ending. The breeding herd, enterprise No. 31, is an annual enterprise which coincides with the fiscal or calendar year. Multicolumnar account forms with columns for number of head, total weight, and total value for each age and sex group are recommended for recording inventories, sales and purchases. The end product or objective is shown in Figure 26. This statement is the income side of enterprise 31 and can be calculated per cow or per animal unit. Account 31x, when completed, will contain the costs in detail; these may likewise be calculated and analyzed. By analysis we mean reducing total figures to a per cow or animal unit, and per hundredweight basis, and then comparing these data to other years and standards. Monthly statements showing income and costs to date would have no significance for this enterprise.

Enterprise 32, own stockers, and 33, purchased stockers, start with the transfer in and purchase of weaned calves. They go through a period of 9 to 11 months on range and irrigated pasture until sold or transferred to a feed lot enterprise to finish for market. The enterprise goes through a year-end without completion, and at that time each enterprise receives its share of the year's overhead costs; it can be completed when finished in the following year after animals are sold or transferred to the next phase. The 1960 enterprise may be overlapped by one for the following year, which is a separate account started when another generation of calves are available.

Crop enterprises are annual affairs, although for a barley crop it

31 Breeding Herd Production and Income, 1960, Tramino Ranch

	Av. price	No. head	Av. weight	Av. value	Total weight	Total value	Per cow	Per cwt. prod.
Opening inventory 1/1/60:								
Bulls	...	25	1,200	250	30,000	6,250	....	....
Breeding cows	...	396	950	150	376,200	59,400	....	....
2-yr. heifers	...	83	800	150	66,400	12,450	....	....
Yearling heifers	...	85	550	100	46,750	8,500	....	....
Calves (1960 crop)	...	250	150	40	37,500	10,000	....	....
Total breeding herd	17.3¢	839	...	...	556,850	96,600	241.50	....
Purchases:								
Bulls	...	5	800	360	4,000	1,800	....	....
Heifer's trans. in	...	6	675	135	4,050	810	....	....
Total	324	11	...	...	8,050	2,610	6.53	....
Total stock costs or debits	...	850	...	...	564,900	99,210	248.03	....
Sales:								
Bulls	18¢	4	1,260	227	5,040	908	....	....
Cows	11.3¢	72	1,000	112.50	72,000	8,100	....	....
Veal calves	25¢	4	250	62.50	1,000	250	....	....
2-yr. heifers	20¢	2	750	150	1,500	300	....	....
Total sales	12.0¢	82	...	...	79,540	9,558	23.90	....
Transfers to 32 7/60	25¢	250	450	112.50	112,500	28,125	70.31	....
Total sales and transfers	19.6¢	332	...	...	192,040	37,683	94.21	....
Closing inventory:								
Bulls	...	25	1,200	250	30,000	6,250	....	....
Breeding cows	...	398	950	150	378,100	59,700	....	....
2-yr. heifers	...	90	800	150	72,000	13,500	....	....
Yearling heifers for repl.	...	85	540	100	45,900	8,500	....	....
Calves (1961 crop)	...	210	150	40	31,500	8,400	....	....
Total	17.3¢	808	...	...	557,500	96,350	240.88	....
Total credits	17.9¢	1,140	...	...	749,540	134,033	335.09	....
Net stock production and income	18.9¢	290	...	...	184,640	34,823	87.06	18.86
1960 calf crop*	...	339	...	...	....	....	....	....
Cows bred for calving	...	400	...	...	....	....	....	....
Calves raised per 100 cows	...	84.8	...	...	....	....	....	....

* Calves are counted as to crop. The 250 counted on Jan. 1, are those of the 1960 crop dropped before Jan. 1. Calves sold during the year or transferred to enterprise 32 and on hand as yearling heifers in the closing inventory make up the total of 339. This is more than the net stock production of 290 head because this latter includes a smaller number of 1961 calves by Jan. 1.

Figure 26

may be two years from beginning summer fallow until the crop is harvested. Uncompleted crops likewise pass through year-ends. The summer fallow, enterprise 2, is carried as an enterprise until crops are planted, at which time it would be pro-rated and transferred to the crops planted on that land. In this case the 400 acres in enterprise 2 would probably be planted in the fall to 120 acres of oat and vetch hay and 280 acres of barley. Additional enterprise accounts can be opened at any time.

Fruit crops, such as the walnuts, are annual affairs and the same operations usually are performed each year so that the walnut income

25, and walnut expense 25x, are closed and the profit is figured at the end of the year. The young apricot enterprise expense account is handled as capital outlay and charged to an asset account annually until trees come into good commercial bearing.

As an enterprise is completed a preliminary statement of incomes and expenses should be prepared for management purposes even though final adjustments and overhead charges are not charged until the end of the year. If a valid profit figure is needed, the charges yet to come can be estimated from the previous year by making appropriate adjustments. At any month's-end, costs to date in expense accounts can be obtained and compared to probable income, using estimated yield and prices, to help make decisions on further inputs or preparations for marketing. Routine monthly reports will not ordinarily be prepared.

Year-End Procedures

As the end of the fiscal year approaches, preparations and some allocations can begin. Because expense transfers must be made before clearing service unit accounts, they are best cleared in a certain order.

Depreciation

Just before the end of the year, capital outlay will have been completed so depreciation can then be figured for the year and allocated to service unit and enterprise accounts. Procedures will be similar to those explained in Chapter 4, where enterprise accounting was done on work sheets with the distribution of depreciation illustrated in Figure 10. In this case, we would have a depreciation record listing each item, but with group totals by asset accounts. In the general ledger account-

Work Sheet for Allocating General Expense to Enterprises and Service Units, Tramino Ranch, 1960

No.	Account	Total invest.	505-1 Co. taxes .01276 of invest.	505-5 Int. .01239 of invest.	505 Ins. prop. Liab. 3 Auto 4	505-7 2 Auto lic.	505-8 Office sup.	504-2 Phone & teleg.	505-9 Travel	505-10 Dues subscr.	Total general expense
1	Range, Tramino R.	240,000	3,062	2,973	...	...	...	...	...	...	6,035
2	Fallow land	20,000	255	248	...	...	...	...	...	...	503
3	Barley, 1960	15,000	191	186	...	...	...	...	...	...	377
4	Oat & vetch hay	10,500	134	130	...	...	...	...	...	...	264
5	Vol. pasture	4,500	57	56	...	...	...	...	...	...	113
11	Irrigated pasture	46,000	587	570	...	...	...	...	...	...	1,157
31	Breeding herd	106,350	1,357	1,317	150	...	...	...	...	...	2,824
32	Own stockers	34,500	440	427	20	...	...	...	...	...	887
33	Purchased stockers	36,000	459	446	20	...	...	...	150	...	1,075
34	Own feeders	29,000	370	359	10	...	...	...	...	...	739
35	Purchased feeders	20,000	255	248	10	...	...	...	...	...	513
21	Alfalfa	54,000	689	669	...	...	...	...	...	...	1,358
22	Alfalfa 1st year	16,000	204	198	...	...	...	...	...	...	402
23	Sugar beets	33,000	421	409	...	...	...	...	...	...	830
24	Wilson lease	38,500	491	477	...	...	...	...	...	...	968
25	Walnuts	72,000	919	892	...	...	...	...	...	...	1,811
26	Young apricots	45,000	574	557	...	...	...	...	...	...	1,131
27	Irrig. barley	15,000	191	186	...	...	...	...	...	...	377
29	Corn	16,500	211	204	...	...	...	...	...	...	415
51	Farm mach.	44,800	572	555	F 100 A 860	210	...	...	...	...	2,297
52	Irrig. system Tr. R.	20,400	260	253	...	...	...	...	...	...	513
53	Feed lot & mill	10,200	130	126	35	...	...	...	...	...	291
54	Empl. housing	45,000	574	557	F 220	...	...	...	...	...	1,351
55	Office & admin.	6,000	77	74	L 100 F 50	...	700	270	350	175	1,796
56	Horses	4,400	56	54	F 10	...	...	...	...	...	120
57	Walnut plant	8,500	108	105	F 45	...	...	...	...	...	258
58	Irrig. system	30,200	385	374	...	...	...	...	...	...	759
	Total	1,021,350	13,029	12,650	1,630	210	700	270	500	175	29,164

Figure 27

ing for the business as a whole, total depreciation for each asset account is charged to depreciation and credited to the appropriate depreciation reserve account. A transfer journal entry is then made in order to credit this amount to the general ledger and to charge it to the appropriate service unit and enterprise accounts.

Depreciation for asset account 142—Buildings and Improvements, Tramino Ranch, will be divided over farm machinery, 51; employees' housing, 54; office and administration, 55; horses, 56; and the breeding herd, 31x. Informal work sheets to arrive at proper journal entries may be needed. Depreciation for asset accounts 143 and 163 go entirely to service units 52 and 58 respectively. Depreciation on 152, 153, and 154 asset accounts goes to the farm machinery service unit, 51. Similar allocations are made of the remaining depreciation and these charges can be posted to the enterprise and service accounts before the end of the year.

Inventories

The next step is to take, or verify running inventories as of the end of the year. For some items two sets of valuations are involved, one for the general ledger for the business as a whole, and another for enterprise accounting. Appropriate entries are then made to the accounts affected in both the general ledger and supplementary ledger. This process includes accrual adjustments for prepaid expense and unused supplies on hand.

General Expense

At this point in the procedure it is time to make or complete the transfer of accumulated general expenses from account 505 and any other accounts or subaccounts. Work sheets for making allocations or figuring percentages may be helpful in arriving at the proper entries for the transfer journal. A tabulation of the total investment involved, by enterprises and by service units, is made for use as a basis in allocating county taxes and interest. Taxes can be appropriately and easily allocated to enterprises on the basis of book values of the land and other assets involved or on the value at which these assets were assessed for tax purposes. Interest cost is also appropriately allocated over all the investment rather than being charged to the land and other facilities offered as security for the loan. Figure 27 is a sample illustration of a brief work sheet showing the allocation of several of the general expense items. Notice the values or investment on which the allocation of taxes and interest are based. Other allocations are also made on this sheet, but on an arbitrary basis. Total general expense for each account is shown in the right-hand column. This sheet can be made the basis for a formal entry in the transfer journal, or it can be incorporated therein as part of that journal, with posting made therefrom.

Employees' Housing, 54

The employees' housing service unit account now contains most of its costs and its balance can be allocated to the other expense accounts. This is done on another work sheet along with undistributed labor, 59, and compensation insurance, and social security taxes, 505(4). Basis for allocation of these would be in proportion to the labor and salaries already charged. This total for each account could be listed in the first column and the total of the above four categories computed as a single figure in the second column and then posted to the accounts affected as an additional cost of labor.

Office and Administration, 55

This important service unit has received many small direct costs during the year as well as its share of administrative salaries and charges for use of automobiles. It has also received its share of depreciation, general expenses, and the extra large charge for employees' housing, compensation insurance, etc., as suggested above. Its accumulated costs should now be spread over enterprise accounts active during the year and over the remaining service unit accounts. There are several fairly appropriate bases for this allocation but none that are perfect. Some of the administrative salaries have already been charged to some of the enterprises; nevertheless, the total expense for this year in each enterprise and service unit account is the best starting point. The first step is to list on a work sheet the charges made up to this point during this year for all the accounts affected, omitting only employees' housing, which was cleared above. The total of these expenses is divided into the total administrative cost to obtain the percentage to use in calculating the amount for each account. After this is done the manager, assistant manager, and bookkeeper inspect and discuss the list and make a few adjustments. Entries are then made and posted.

Income is sometimes used as a basis for allocating management costs. This is appropriate where every enterprise has an income proportionate to its costs, but it would not work in this case because some enterprises had no income this year—and it is appropriate to charge management to service units as well as enterprises.

Horses, 56

This small service unit covers about 10 saddles horses used entirely for working cattle and inspecting the range and fences on the Tramino Ranch and the Smith Ranch. The unit receives direct expenses and charges for feed and pasture during the year; horses are inventoried, purchases are charged as expense, and sales are credited. At the end of the year this account receives its small share of general expense and depreciation on the horse barn. The net cost or debit balance may be considered entirely chargeable to the cattle enterprises; here, memory of actual usage is combined with judgment in charging 55 per cent to 31x and 25 per cent to 33x. It is well for management to know its total horse costs for the year in order to plan the optimum number and minimize expense. On some ranches having a single cattle enterprise, the saddle horses are considered a part of the cattle enterprise. This saves some bookkeeping but loses significant information on the horses and on the cattle enterprise.

Irrigation Systems, 52 and 58

These service units have now received all direct and overhead costs. Water has been charged to enterprises, and also has been credited to these service accounts at rates per acre foot estimated to balance costs for the year; usually these accounts will now show a small credit or debit balance. In closing, figure a percentage adjustment in the credits for water and use it to adjust water charges already made to the enterprise accounts.

Farm Machinery, 51

This large and important service unit with all its charges, depreciation, and overhead can now be cleared. It has been credited during the year for major equipment charges made to enterprises and other service units—charges which were made at hourly rates as illustrated in the farm machinery journal in Figure 20. Now, there probably will be a debit or credit balance. Before clearing it is well to examine the validity of hourly rates used for some of the machines.

The combine, we note, was used 99 hours to harvest the 328 acres of barley and was charged at $10 an hour. But a recalculation of overhead and operating costs indicates that $12 would have been more correct, so an additional charge of $2 is made to the two barley enterprises and credited to this account. Similarly, high repair bills on a tracklayer tractor and a truck indicated that an increase in hourly rates for such tractors and trucks would be appropriate. Now, if the remaining balance is less than 1 per cent it can be ignored, as it would affect enterprise accounts very little. If it is larger, adjustments to previous charges should be made to the enterprise accounts and any remaining open service unit accounts.

Feed Lot and Mill, 53

This service unit includes corrals, scales, a shelter shed, and a building containing a feed grinder, mixer, and storage bins plus some large grain storage tanks. It was used at different times by all livestock enterprises, including two batches of feeders carried in from the previous year and sold early in the year. Feed was charged to livestock as it was fed, at cost or inventory values. A milling charge was made on milled feed and charged to the cattle and credited to this service unit. Labor of feeding and mixing the feed has previously been charged to the cattle and to this service unit. A charge was currently made at 5c a head per day to animals in the lots and this was credited to this feed lot account. With depreciation and general expenses now entered, there is a considerable debit balance to be allocated to using enterprises. A storage charge not previously made to barley for storage from field to use or sale is next made and posted. The remaining balance is cleared to livestock enterprises in proportion to head days of use; this amounts to another 3c a head per day. It is decided to charge 8c a head per day next year.

Walnut Plant, 57

This building contains a huller, dehydrators, and storage bins plus storage space for the picking machine, sprayer, and other walnut equipment. Since no outside work was done this year the accumulated costs are charged entirely to walnuts, 25x. This account furnishes costs in detail on the walnuts from the time they are received from the orchard until they are loaded in bulk for hauling to market. Costs can be compared to charges at commercial plants. A showing of lower costs than outside custom rates justifies this service unit.

Enterprise Accounts

All service units and convenience clearing accounts have now been cleared to enterprise expense accounts. Enterprise income accounts were credited as income was received, or from harvesting or feed use at the end of each month, and thus are up to date. Some enterprises ended during or at the end of the year and are ready for closing. Formal clearing to an enterprise accounting profit and loss account would be appro-

priate if full accounting procedures are to be carried out. Because of the carry in and carry out of incompleted enterprises this total profit could be quite different than the profit for the business as a whole.

New crop enterprises for next year—barley, oat and vetch hay, and some land preparation for new alfalfa and sugar beets—have some of the costs accumulated, and these accounts are carried over as they are. The young apricot enterprise expenses are transferred out to the general ledger as a development cost or capital outlay. There are two lots of cattle, 34 and 35, in the feed lot and new stocker enterprises 32 and 33 on the range, and these are also carried through. Old stocker enterprises were closed when cattle were transferred to the feed lot in the fall. The breeding herd, 31, closed at the end of the year with crediting the closing inventory and debiting it to next year's enterprise, 31.

Some feed and supplies are on hand and carried over in account 60. Some of this carry-over of enterprise expense and materials may be needed or used in the general ledger accounting for the farm as a whole, but this would depend on previous policy. Even under the accrual system of accounting it is not usual to treat work done on next year's crops as prepaid expense. Costs are difficult to determine without enterprise accounting procedures, and the carry in at the beginning of the year and carry out at the end about offset one another.

Profit Statement and Analysis—Own Stockers, 32, 1959-60, Tramino Ranch

250 Head In, 244 Head Out, 2.4% Death Loss. 110,350 lb. Net Gain

	No. head	Average weight	Total weight	Average unit value	Total value	Per head out	Per cwt. gain
Animals transferred out:							
Yrlg. feeder steers to feed lot	165	950	156,750	23¢	36,052	....	...
Yrlg. heifers to br. herd 31	6	675	4,050	20¢	810	....	...
Yrlg. feeder heifers to feed lot	73	850	62,050	21¢	13,030	....	...
Total income	244	...	222,850	...	49,892	204.48	...
Less weaner calves transf. in July, 1959	250	450	112,500	25¢	28,125	115.27	...
Net stock income	—6	452 av.	110,350 gain		21,767	89.21	19.73
Expenses:		AUM	Quant.				
Range in AUM		570	...	4.00	2,280	9.34	...
Stubble & miscel.		210	...	3.00	630	2.58	...
Irrigated pasture		900	...	6.00	5,400	22.13	...
Silage		170	200T	8.00	1,600	6.56	...
Hay		250	100T	21.00	2,100	8.61	...
Concentrates & salt		172	46T	62.00	2,852	11.69	...
Total feed cost		2,272	...	...	14,862	60.91	13.47
Labor		...	1,250 hr.	1.35	1,688	6.92	...
Truck and pick up		...	180 hr.	...	356	1.46	...
Horse costs		...	...	...	200	.82	...
Miscel. supplies & repairs		...	...	...	150	.61	...
Taxes, ins., interest & gen'l. exp.		...	...	...	847	3.47	...
Depreciation on facilities used		...	...	...	50	.20	...
Feed lot use, fall of 1959		...	7,500 hd. da.	.08	600	2.46	...
Administration		...	...	...	1,200	4.92	...
Total other than feed costs					5,091	20.86	4.61
Total all costs					19,953	81.77	18.08
Net profit					1,814	7.44	1.65

Figure 28

Enterprise Statements

A detailed statement of income, expenses, and profit is now made for each enterprise completed during or at the end of the year. Each statement should be on a separate page, with income, costs, and profit in total, per producing unit, and per unit of product. The enterprise income accounts will furnish income in detail by kind and quantity in the several analysis distribution columns. The expense account will furnish the several categories of expense in its analysis columns; some of these columns can be used for quantities if so desired. Other details, such as the cost of a particular operation or job, may be obtained by referring back to the time cards for man-labor and machines. Figures 15 and 16 in Chapter 4 show dairy and alfalfa enterprise statements as arrived at by the work sheet procedures.

Figure 28 shows an enterprise statement for the Own Stocker Enterprise, 32, as derived from the above procedures. This enterprise started in the summer of the previous year with weaner calves transferred from the breeding herd in July; it closed in October of the current year when the last of the yearling feeders were transferred to feed lot enterprise 34. The form of these enterprise statements is not important as long as they show all available details. Since there are a considerable number of them each could be on a similar sheet so that they could be bound with other statements and reports. A variation to fit an orchard enterprise is shown in Figure 29 for walnuts, 26.

Enterprise Analysis

By an analysis we mean a study of all profit-determining factors—yield or production, quality, price, and costs in detail—in order to discover ways of increasing profit. A comparison of each of these with comparable figures for the same enterprise in previous years, with similar enterprises on other farms, and with any published standards or averages that are available, will help find figures that differ from normal. Such items are then analyzed to discover what can be improved. Changes in methods and costs suggested by such analysis usually result in enough increased profit to more than justify the cost and trouble of enterprise accounting.

Profit Statement and Analysis—Walnuts 29, Tramino Ranch

80 Acres, 25 Years Old, Payne Variety

Yield and income	Total pounds	Per cent	Per acre	Unit value	Total value	Per acre	Per cwt. nuts
Large, No. 1	59,117	28	739	25¢	14,779	....	....
Large, No. 2	38,005	18	475	21	7,981	....	....
Medium, No. 1	33,759	16	422	21	7,089	....	....
Medium, No. 2	27,442	13	343	19	5,219	....	....
Small	31,760	15	397	16	5,081	....	....
Total merch.	190,083	90	2,376	..	40,149	....	21.12
Culls and blows	21,123	10	264	6	1,267	....	....
Total production	211,206	100	2,640	..	41,416	517.70	19.61
Costs:							
Cultural or growing costs:							
Man labor					3,856	48.20	....
Tractor, truck and machine work					1,700	21.25	....
Irrigation water					936	11.70	....
Fertilizers					1,320	16.50	....
Spray materials					1,702	21.27	....
Subtotal cultural costs					9,514	118.92	4.50
Harvesting man labor & supervision					5,120	64.00	2.42
Harvesting machine and truck work					810	10.12	.38
Hulling, drying, & storing costs in walnut plant					3,168	39.60	1.51
Hauling plant to buyers warehouse in bulk					317	3.96	.15
Total harvest and delivery costs					9,415	117.68	4.46
Taxes, insurance, and general expense					1,811	22.64	.86
Administration costs chargeable to walnuts					1,391	17.39	.66
Depreciation on walnut trees					1,000	12.50	.47
Total overhead costs					4,202	52.53	1.99
Total all costs					$23,131	$289.13	$10.95
Net profit					$18,285	$228.57	$ 8.66

Figure 29

Chapter 6 ENTERPRISE ACCOUNTING IN A CITY OFFICE

Full enterprise accounting is sometimes done with little contact between the staff on the farm and the accountant in the city office. The accountant may be a public accountant serving other clients by standard procedures, or the city office may be the owner's business office, which also handles other businesses. The main problems are the same in either case—getting adequate information to the city office and current management information back to the farm. Obviously, a time schedule and a system of reports must be followed.

Enterprise accounting in a city can seldom be as detailed and accurate as on the farm where the bookkeeper is in frequent contact with farm personnel. But even when accounting is done off the farm, there must still be a farm office and a clerk or administrative assistant to assemble information and prepare and forward business papers and reports. Business may be transacted at the farm entirely or in part—for example, many bills may be paid there. Papers covering all transactions and identifying the specific accounts affected must be forwarded to the accounting office periodically. Information reports for inter-enterprise and service unit accounts must be prepared and forwarded on schedule. The manager of a farm business of considerable size must have someone else do this as he himself will not have the time to do it.

Accounting in the city office will probably be more or less mechanized as discussed in the following chapter; hence, the hand methods discussed in the preceding chapter are not likely to be used. The details in ledger accounts that may be referred to on the farm can be made available at the farm only through a considerable increase in current reports provided. Keeping the total number of accounts to a workable level may require some sacrifice of details, however. The processing of transactions and enterprise accounting in the city accounting office will usually be by clerical help following routine procedures. Because nothing can be left to guess work the plan and procedures followed must be carefully designed to yield desired current information in the monthly and year-end statements to management. The statements must also be kept to a number and size that management can use.

Accounting for the farm business as a whole will, presumably, be conducted within a general ledger chart of accounts. In addition to meeting the needs for historical comparison and income tax reporting for the business as a whole, the income and expense segregations should be such as to facilitate further allocations to enterprises and service units. This enterprise accounting can be done in a supplemental ledger, as discussed in the preceding chapter. Under the routine methods used in the accounting office, maintaining accuracy and balance in both ledgers and compiling reports therefrom will present no problem.

Monthly completion of accounting and monthly reports is suggested. A comparison of the monthly report on the past month and for the year to date with that of the previous year's general ledger accounts for the farm as a whole is suggested; it will be of importance in making decisions pertaining to further expenditures, obtaining credit, or operating within a budget.

It is seldom that enterprise accounts have significance every month. Total income and expense accounts covering a group of needed sub-accounts is suggested for each enterprise and service unit in the supplementary ledger. A monthly trial balance of these main accounts should be made to prove accuracy, and a copy can be provided for management. Comparison to a previous year would have little significance but it is convenient to have such statements kept on file in the farm office. Detail by sub-accounts at any month's end would be provided as needed and requested. While this need might be monthly for continuous enterprises, such as a dairy or egg flock, it would usually occur as crops approached harvesting or marketing, and for some enterprises it would not arise until completion of the enterprise or end of the year. Detailed statements on service units would be seldom requested until need for analysis or for a major decision arose. Cost analysis would be furnished at the end of the year.

DESIGNING THE ENTERPRISE ACCOUNTING

A study of the farm business, and of the significant information needed by management, is essential to a helpful and workable chart of accounts for the supplementary ledger of enterprise accounting. What can be done on the farm can also be done in a city office if essential information is provided. In practice, however, some sacrifice of detail may be made because the difficulty and cost of providing the information may be greater than the value of this additional detail. We will now discuss the formulation of chart of accounts and information for the same Tramino Ranch used as an illustration in the preceding chapter.

Assumptions

The job to be done and the division of the work between the farm and the city office are discussed by management and accountant. The following points are agreed upon:

1. The same enterprises and service units shown in Table 7 are needed to do an adequate job.

2. The chart of general ledger accounts for the farm as a whole will be about the same as in Table 8 except that sub-accounts will be accounts and will be numbered according to the system in use in the accounting office.

3. All business is to be transacted and bills paid (by check) at the farm office; a farm employee will be delegated to assist the manager in handling this business. Vouchers, statements, or memoranda covering each transaction are to be provided for the accounting office; these are to be complete for the month within a day or two after its close. Monthly statements on the business as a whole will be furnished the management by a date agreed upon.

4. Information records necessary for enterprise accounting will be prepared in duplicate at the farm office, with one copy retained there for references. Calculations will be completed on the farm with all values inserted as needed for routine charges and credits. Time cards for farm workers and farm-machine use will be completely calculated at the farm and sent in just after the end of each month.

5. Enterprise accounting will be done with a supplemental set of enterprise and service unit accounts. These will be similar to the total and sub-accounts shown in Table 9 but will be numbered in accordance with the accountant's system. A copy of the monthly trial balance showing only the "total" accounts will be returned to the farm. Detailed statements, showing sub-account detail, will be provided for each single enterprise and service unit not more than once during the accounting year, and as incorporated in the final enterprise profit statements and service unit cost statements at the end of the year. The accountant will furnish these statements in total only, with calculation of per acre, animal, and unit of product to be done by the farm.

INFORMATION REPORTS

The following information reports, with suggestions as to how they are compiled at the farm and processed by the accountant are considered essential and adequate for enterprise accounting done in the accountant's office:

Labor Use

Semi-monthly time cards will be kept as explained previously. As each pay period closes or an employee is terminated, the card is completed at the farm office. Social security insurance and other deductions are listed at the bottom of the card and paychecks are written. Extensions of amounts to be charged to each enterprise and service unit account are made, and cards are checked to make sure they are complete and that proper account numbers appear. About two days after the end of the month all time cards are sent to the accounting office; here they are made the basis for charges to enterprise, service unit, and other accounts, and for credits to appropriate accounts. The manner of recording and posting these items will fit the equipment and operating methods of the accounting office. Time cards are returned to the farm after use to be filed for possible reference.

Farm Machine Use

Time (or mileage) cards for each pickup, truck, tractor, or other major machines, are kept and completed on the farm. Extension for each charge is made at the appropriate rates determined by management. The cards are turned in to the accounting office at the end of the month; after use in the office, they are returned to the farm for reference and further use.

Irrigation Water Use

Current irrigations are recorded in field notebooks on the form illustrated in Figure 21. At the end of the month a report on irrigations completed during the month is prepared by the farm staff. This will show the acre feet of water used by each crop enterprise and will also

Report of Irrigations Completed During May, 1960, Tramino Ranch

Crop debited Name	Acct. No.	No. of acre feet	Value Per A ft.	Total value	Credit Acct. No.
Tramino Ranch:					
Irrig. Pasture	811	75	$4.50	$337.50	652
Valley Farm:					
Mature alfalfa	821	20	5.00	100.00	...
Young alfalfa	822	13.75	5.00	68.75	...
Wilson lease	824	30	5.00	150.00	...
Total Valley Farm		63.75		$318.75	658

Figure 30

indicate the service unit to be credited. The value at annual average expected cost per acre foot is shown and is extended to total value to be charged to each crop. This report, and similar reports, should be prepared in duplicate, retaining one at the farm for reference. Since there will be a line for each charge and the columns are few, a printed form is not necessary. Reports can be typed, and appropriate headings inserted each time. An 8½ by 11 sheet punched for a three-ring binder is recommended for this and other monthly information reports. Binders for each kind of report make for convenient storing and reference. Figure 30 illustrates such a report.

Crops Harvested and Pasture Use

This report also can be made up from field records and notebooks at the end of each month. Some consolidations are made at the farm and farm values are inserted per unit of product; extensions are made at this value. Hay stored for future use or sale is credited to the crop at this time and charged to inventories for the different barns and storage piles. Figure 31 illustrates such a report, and shows hay charged principally to inventories. Pasturage during the month is charged to the three livestock enterprises.

Crops Harvested and Pasture Use for May 1960, Tramino Ranch

Crop credited Name	Acct. No.	Quantity	Unit value	Total value	Debit Acct. No. name
Ir. past. baled hay.....	711	120 T	$22	$ 2,640	601 Inven.
Ir. past. ch. hay.....	711	146 T	20	2,920	602 Inven.
Ir. past. baled hay.....	711	82 T	22	1,804	601 Inven.
O. & vetch ch. hay.....	704	125 T	20	2,500	603 Inven.
O. & vetch H. windrowed	704	100 T	16	1,600	831 Breeding herd
O. & vetch baled hay....	704	310 T	22	6,820	604 Inven.
Alf. hay 1st cutting.....	721	148 T	23	3,404	605 Inven.
Total hay harv.....	...	1,031		$21,688	
Range—Tramino	701	406 AUM	4.00	1,624	831 Br. herd
	701	125 AUM	4.00	500	832 Own stockers
Range—Smith Ranch ...	741	158 AUM	4.00	632	833 P. stockers
Total pasture.....	...	689		$ 2,756	

Figure 31

Monthly Inventories

It is advisable to send in a physical inventory as of the first of each month for possible use in accounting for the farm as a whole or in enterprise accounting. Figure 24 in the previous chapter illustrates such a form. Farm values per head or per ton may be inserted; but extensions to total value would ordinarily be made only when needed for some purpose, such as the preparation of a current financial statement.

Miscellaneous Inter-enterprise, Service Unit, and Other Charges and Credits

These may be listed in a report form showing accounts debited and credited or they may be listed on individual debit-credit memo slips. An illustration of this would be where a quantity of feed previously charged to the inventory is taken out and fed to livestock enterprises; another instance would be where grain is mixed with purchased concentrates and fed to animals in the feed lot. The inventory would be credited for the "in" value of the grain and the concentrates. The feed lot service unit would be credited for the mixing charge and the head per day feed lot charge. These feed values and feed lot and mill charges would be debited to the proper livestock enterprise.

The above reports, if complete and accurate, would probably be adequate for the enterprise accounting. Other farm businesses would call for more, or fewer, or different, information reports from the farm, and it is apparent that someone on the farm must understand enterprise accounting procedures in order to know what and how to report. The clerical time involved would be considerable. The usual reasons for hiring accounting done in a city office are that the farm business is not large enough to have its own full-time accountant and that no one on the farm has the time or ability to do the job. It is possible, however, that when enterprise accounting is added to the job of accounting for the farm business as a whole a full-time bookkeeper on the farm can be justified.

It is also a possibility that as further mechanization of accounting takes place there may be more data processing on a custom basis, and this would allow management to divide the total accounting job between the farm and the accounting office.

Machine methods and other time-saving procedures have long been used for routine operations and accounting in many kinds of businesses. They replace considerable handwork in making statements, preparing paychecks, posting to ledger accounts, and consolidating similar transactions. They not only save time, but improve accuracy through the machine performance of calculations. Operations performed also include "controls," or proof of accuracy for the unit of work. In addition to business and accounting machines, electronic machines for rapid processing of data on tapes or punched cards are also available. All of these items can be helpful in farm and enterprise accounting if justified by the nature and size of the business.

Accounting for a large farm business differs basically from other businesses for which machine methods are well adapted and justified. In farming there are usually few transactions of a single type to be consolidated for single entries to general ledger accounts. In farm enterprise accounting many accounts are involved, but the entries per account are few. Accounts receivable and payable are few and sometimes are scarcely used at all. Daily or weekly totals or reports are seldom needed, and monthly statements are usually all that are justified for the farm business as a whole. Enterprise and service unit statements have significance only at certain times. Hence, machine methods are not as advantageous in farming as in business.

There are several ways in which clerical work in farm accounting can be lessened. One group of aids involves no expensive equipment. Special forms with carbon paper are used to accomplish two or three purposes in one operation. Duplicate sales slips may be sorted and com-

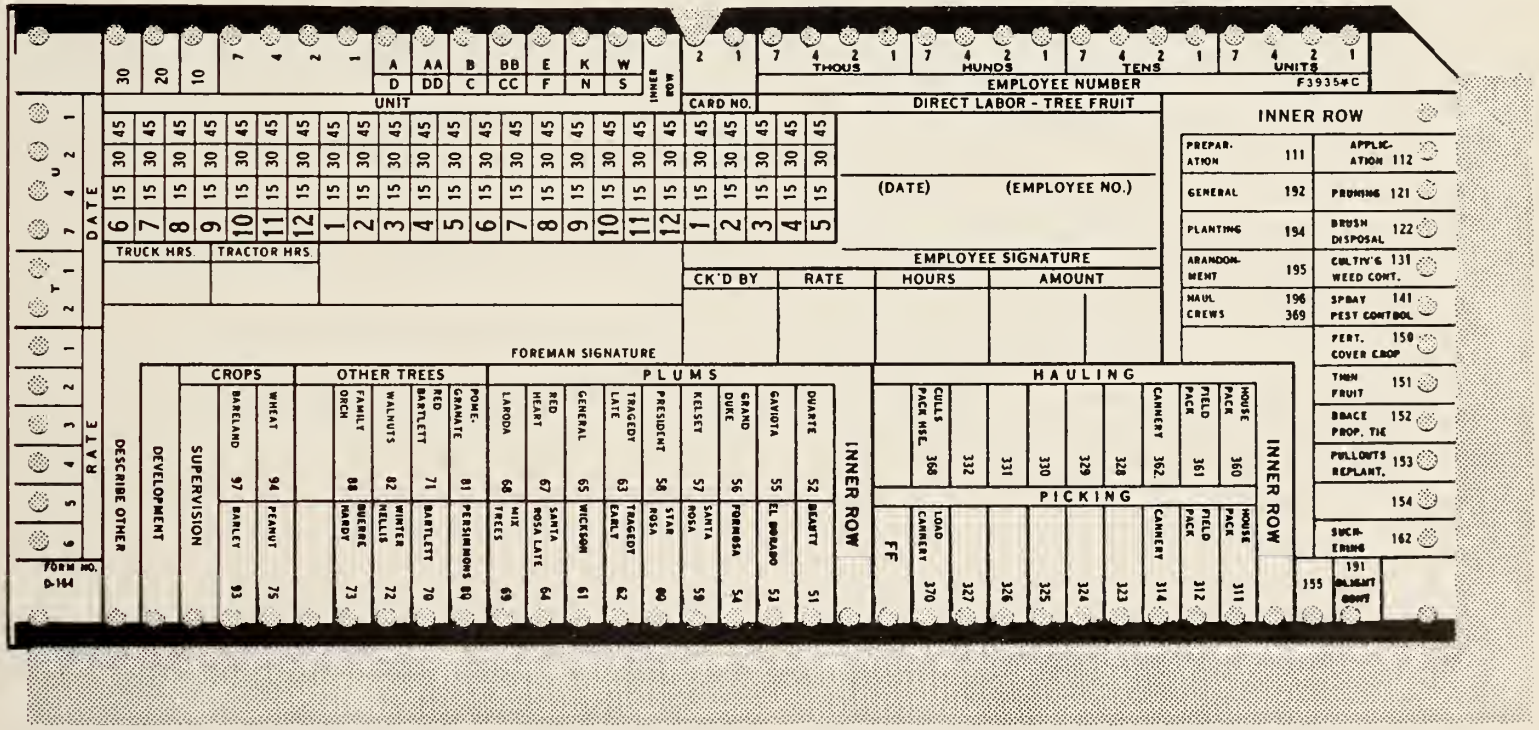


Figure 32

bined to be covered by single entries. Another example would be writing checks in which the original check (including information as to what it is for) goes to the payee, the duplicate with accounting data is detached for sorting, and the third copy appears on a line of the check record or on a payroll journal. The duplicate may be of a form which can be margin-notched for rapid sorting so as to bring all cards with a certain item together.

Margin-sort checks and cards are made to order in several sizes and have been used in farm accounting for a variety of purposes. Figure 32 illustrates such a card used for the payroll and charging labor to enterprises and jobs. A corner is cut off of all cards to insure proper positioning, and the holes are coded for different uses in different sections of the card. When a card is notched at a particular hole, it drops out when a sorting needle or ice pick is inserted through a batch of cards at that hole. This is merely a sorting device to pick out, from a large number of cards, those with a charge or credit to a particular account or those containing some information wanted. Cards so selected each contain an amount or quantity wanted and are then added manually to obtain a total for the group; the group may then be covered by a single entry and posted to the account affected. Cards usually carry only one charge or amount. To allocate labor in enterprise accounting, one card would be needed for each separate allocation to an enterprise or service unit account. When these margin-sort cards are employed for charging labor it is usual to use one every day for each employee and each job. They take the place of the farm worker's time card. The cards are carried by the foreman in charge and are turned in each night for completion in the office. At the end of the pay period, or when an employee is terminated, all his cards are sorted out by employee number and totaled for his paycheck. At appropriate intervals, usually at the end of the month, these same cards are sorted by job and enterprise to be totaled for separate charges to enterprises, service units, departments, etc.

Other special forms and devices are available to speed up clerical and accounting work by hand methods in the farm office. Representatives of publishers of such forms can suggest special forms and devices whose additional cost may be justified where the work load is up to the capacity of the present staff. More work can also be done with no increase in staff by the use of the bookkeeping machine.

Bookkeeping machines are available for a variety of purposes. A common machine operation is to make an entry on a special journal sheet, post a debit or credit to a ledger account, figure and insert the new balance in the ledger account, and at the same time accumulate several totals for accounts affected. Loose-leaf ledger sheets are inserted and removed as posting proceeds. Another common operation is the simultaneous preparation of paychecks and payroll records. Bookkeeping machines have coding keys or a typewriter keyboard for explanation, and they print account numbers as well as amounts. The journal sheets, such as voucher registers, payroll journals, sales journals, check records, etc., become original books of entry with many similar transactions combined for posting as a single item from totals of the separate registers available. Most of the accounting for the farm business as a whole may be done by such a machine and it may be used in making monthly trial balances and statements for the month and year to date.

A bookkeeping machine can be used in some of the enterprise accounting procedures. But allocating and posting costs to the many enterprise and service unit accounts and sub-accounts in the supplemental ledger may still be done by hand. A bookkeeping machine may permit the clerical and accounting work to be done by a single person at a saving as compared to the additional help needed if it were not used.

The ultimate step in mechanization is by means of data and amounts punched on tape or cards which will be handled and processed by electronic machines. Data may be punched on the tape or cards from original business papers, reports, time cards, etc. Tape or card punches may be hooked up to bookkeeping machines so that data is punched automatically as the original entries are made on the journal sheets. Tape can be fed into electronic machines for direct processing, or into automatic card punches so that punched cards can be used for sorting and several automatic operations.

A single punched card is needed for each separate charge or credit in enterprise accounting. Many columns punched for numbers from 0 to 9 can carry identification, quantity, and money data. Cards can be sorted rapidly by identification codes. Data on the cards may be extended or calculated and answers can also be inserted on them. A large quantity of cards affecting a given account may be sorted out, added, and posted to another card while a new one is automatically punched to bring that ledger account card up to date. Transactions and account cards can be listed and statements and totals printed on tabulator tape. Figure 33 illustrates one of the commonly used cards.

A minimum installation for this type of accounting involves the card punch, the sorting machine, and the electronic tabulator. The first and most important step is punching of the original data on cards and this obviously requires a skilled, accurate, operator. The transmission

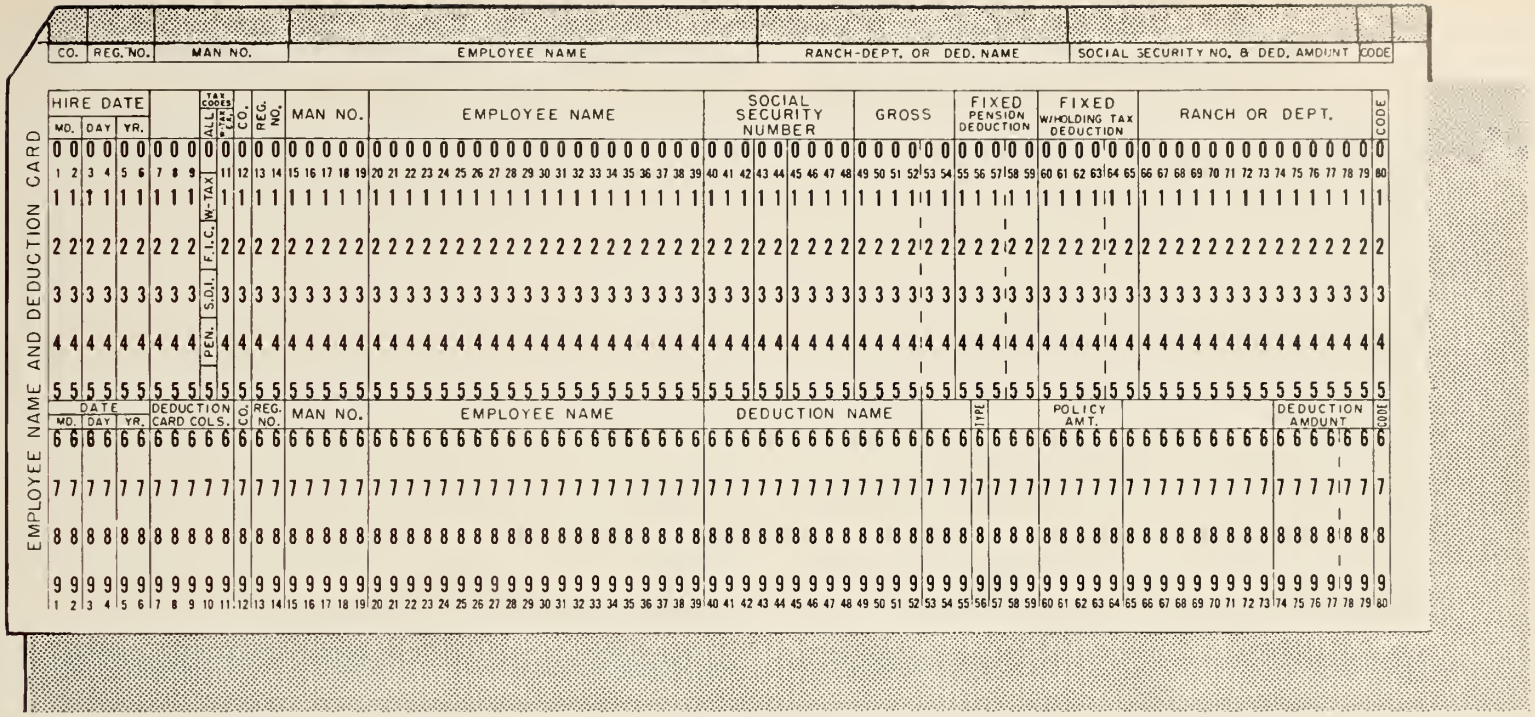


Figure 33

of the original data, in the form of vouchers, time cards, and other reports, from the farm to the accounting office must be complete and must convey correct account numbers and data. Where several businesses are served with the same card equipment a regular time schedule probably will be necessary. Bringing accounts up to date at the end of each month is generally satisfactory for most farm businesses.

The proper design of the chart of accounts and the sequence of procedures in farm accounting by punched cards is highly important. Routine operations then can be quickly performed in a few days, with the desired reports prepared for management. Because of the ease with which operations can be done once the data is on the cards there might be a tendency to have too many accounts or too great a fineness of expense and enterprise segregations, thus necessitating longer and more detailed reports. It is well to remember that management can be burdened with too many reports and too much detail having little significance.

In punch card accounting, there is danger of allocations of expense segregations being too routine and continuing by automatic calculation month after month even though activity among the enterprises changes. As enterprises are completed and new ones start during the year, the set-up for allocation of certain expense items must be changed to take care of this. A highly competent accountant is needed between the farm manager and the operator of the punch card equipment. He will check the data provided each month, give special instructions for changes in routine procedures, and indicate the reports and statements to be prepared. Then, when the results come off the machines on large tabulator sheets or tape, he will select the data wanted and prepare brief usable statements for management.

Coding

In all machine or punch card accounting a convenient numbering system for accounts is important. In handling punched cards, the sequence of numbers and what they indicate in each position may be affected by the contemplated sequence of operations; this problem would be worked out by the accountant and the advisor developing the machine or card

operations. In order to leave more of the card for data and amounts, it would seem desirable to provide the fewest possible numbers in the code or columns for identification and sorting purposes. Several types and colors of cards are usually printed for special purposes, so identification codes may be different for different types.

In enterprise accounting for a large farming business, several farms may be involved; accordingly, the first one or two code numbers would indicate the farm. All enterprises on a particular farm may then be sorted and combined in a statement for that farm. The next two or three numbers would indicate the crop or enterprise. This sorting could provide totals for all fields of that enterprise by farms and for all farms. The next two or three figures might be needed for the number of the field if data and statements for each of several fields of a certain crop are wanted. Where this occurs it takes both the crop and field numbers to cover a single separate enterprise. One or two numbers are then used to indicate jobs or operations involving man and machine work, and, lastly, there would be two columns for indicating other categories of expense. The balance of the card is available to carry quantities and amounts.

Time cards, vouchers, and all original business papers must carry correct code numbers for the accounts affected when they come to the machine operator for listing and punching of cards. Supervisory personnel who make out the supplemental records must carry a rather long list of account numbers or codes. They should refer to this list and write the correct numbers legibly to avoid errors, such as charging a job or material to the wrong enterprise. Such an error might not be discovered, and hence it would destroy the accuracy of two enterprise accounts and the validity of the final enterprise profit calculations. Some firms using this system have a special clerk to insert or check code numbers.

In punch card accounting, every ledger account is carried on a card to which a charge or credit is added or subtracted while a new card is automatically punched to show the up-to-date balance. Hence, a separate card with proper account numbers, quantitative data, and amount is needed for each charge and credit. It is usually necessary to list all transactions on a journal sheet for reference. Special machines are available to simultaneously make this listing and punch the necessary cards with account numbers, informational data and amounts. After this is done, cards are sorted and totaled and posted to the accounts affected by machine.

It is desirable for a large farming business having accounting done in this manner to have one chart of general ledger accounts for the farm business as a whole, with accounts brought up to date and reports prepared monthly. The enterprise accounting would be done with supplementary enterprise and service unit accounts as discussed in Chapter 5. It is possible to use a single card to post the debit and credit to both the general ledger and enterprise accounting ledger accounts if account identifications, quantitative data, and amounts do not exceed the capacity of the card. Otherwise, two cards would be needed—one for each set of ledger accounts. They could be made at the same time.

Enterprise accounting by punch cards differs from the hand methods described in Chapter 5 in that a separate account or card is needed for every sub-account in an enterprise or service unit account. Analysis ledger sheets which can be used to show several categories of expense where posting is done manually, are eliminated. To obtain debit and credit account balances for the main enterprise and service unit accounts requires running the sub-account cards for each main account in the supplementary enterprise accounting ledger. With punch cards this is a rapid and accurate operation. For the Tramino Ranch example in Chapter 5, the 50 or more main accounts would probably require over 300 sub-accounts. Punch cards can carry quantities as well as values, and the author has seen up to five categories of expense handled separately on a single card.

It has been suggested previously that some expenses, such as depreciation, general expenses, and administrative costs, be held in general ledger accounts until complete for the year, at which time a single more valid allocation to service units and enterprises can be made. In large businesses, however, it may be preferable to allocate such items monthly during the year. It is advisable to base such monthly charges for validity on an estimated annual total for each category. A fair allocation of these to current and expected enterprises and service units can be worked out and set up as monthly charges. This will be difficult the first year, but with a year's experience and an estimated budget for a current year the estimated monthly charges can be valid enough for management purposes. Some items can be set up to be allocated automatically on an acreage basis or percentage of other expense. This system of monthly charges for everything permits making statements and analyses as soon as the enterprise cycle ends.

Some firms do not allocate these overhead costs to enterprises. This is not recommended, because enterprise income and expense accounts then furnish only an income over direct costs and not a true profit.

These overhead costs are, as a group, seldom in proportion to total direct costs or total income in the enterprises, but even this degree of enterprise accounting is much more helpful to management than none at all.

Enterprise accounting by punch cards makes possible the rapid and accurate handling of a large volume of transactions and will reduce clerical time considerably as compared to hand methods. In a large firm embracing several farms and allied businesses, the punch card system can make enterprise accounting feasible where it would be difficult or almost impossible by hand methods. It is an expensive system, however, and requires a large business, as farms go, to justify an installation.

The minimum installation necessary to do the entire job would consist of a card punch, a sorter, and an accounting machine plus card files and supplies. These may be purchased or rented at a monthly cost about equivalent to a good accounting clerk's salary. Where the work to be done would require an accountant and three clerks using hand methods, a complete punch card installation could in all probability replace one, or perhaps two, of the clerks.

Service bureaus are now available to do the accounting and data processing at a central office serving several clients. This could be more economical than having all the equipment in the farm office if the volume of business is too small to justify it. Part of the job would be done on the farm with a machine to list the items in journals and punch the cards. The cards would be sent to the service bureau for processing and preparation of new account balances to be returned to the farm. This method would have the disadvantage of all methods where final accounting is done off the farm—namely, the difficulty of referring to the accounts between report periods. When the cards and equipment are at the farm office the cards covering the data wanted can be withdrawn from the files, brought up to date, and tabulated rather quickly. Reference to figures punched on cards can never be as convenient as looking at the actual figures in a ledger account.

Punch card accounting has some other disadvantages compared to hand methods. The ease and rapidity of routine operations is a temptation to produce too much detail in too many accounts, thus making the selection and portraying of the significant information more of a job. Operation of the equipment requires a person of training and ability that may not be locally available. Every item in the process must be listed by the proper code numbers which necessitates a long reference list of numbers and increases the chance of errors. Already mentioned is the danger of the allocation of costs to enterprises becoming too fixed or routine with these processes not changed as activities and enterprises change. Hand methods would be preferred in farm enterprise accounting until the volume of work, as measured by the number of accounts and transactions, became large enough to be more economically done by punch card methods.

There are large special businesses involving special data processing not related to accounting. A large poultry breeding farm and hatchery, for instance, can use punch cards for the production and other records needed in its breeding program; it can also use them in scheduling operations to supply its many customers on advance orders. The many customers and the resulting statements and accounts receivable of such a business further justify machine methods. Some large growers and shippers of fruits and vegetables operate several farms and packing houses and have many customers and daily shipments, the rapid handling of which is facilitated by mechanical methods. In any large firm the expeditious handling of the payroll with its various allocations and deductions and the necessary records of withholding and reporting social security taxes, and in the case of non-farm labor, the withholding of income taxes make machine methods virtually necessary.

Enterprise accounting is a worth-while supplement to accounting for the farm business as a whole for any commercial farm business where several enterprises are involved. Its value to administration from day to day and in helping management to realize more profitable methods, equipment and enterprises, will exceed the additional effort and costs involved. For any farm business, there is a way enterprise accounting may be done within the cost limitations of the potential net income available. The nature and size of the business will determine the way it can be done most economically.

For the single family farm, the person who keeps the financial records for the farm business as a whole can also keep the necessary supplemental records to attain the goals of enterprise accounting at the end of the year as explained in Chapter 4. This can be done completely and accurately by work sheets, as illustrated. It can even be done in less detail and still obtain valid and useful information to management.

For the larger farm business with a full accounting system, enterprise accounting can be done in a number of ways. If accounting is done in a city office, enterprise accounting can also be done there if supplemental records and information are supplied from the farm. If the business is large enough to justify a full-time bookkeeper on the farm, he can usually do enterprise accounting there. If the additional work is too much for the one person, additional help or time-saving methods and equipment can be used.

For the larger firm, in which many enterprises and several farms and allied departments require an office staff of two or more to handle the business and do the accounting, enterprise accounting is essential if the business is to continue successfully. More clerical help and equipment may be needed, but the additional costs can easily be exceeded by the additional profit resulting from the better decisions and administration made possible. The addition of enterprise accounting may, in some cases, bring a shift to mechanical methods and punch cards, costing more than former hand methods.

For any farm business the decision of whether or not to do enterprise accounting should be based on the appraisal of the potential increased net income as compared to the cost of obtaining the better information. Man's judgment is no better than his information.

To obtain additional copies of this manual or a catalog listing other manuals and free publications see your University of California Farm Advisor (offices located in most California counties), or write to:

AGRICULTURAL PUBLICATIONS
207 University Hall
University of California
Berkeley 4, California

Orders for 10 or more copies of any one sale publication take a discount of 20 per cent off the list price. All manuals are shipped prepaid. All bulk sales are final—no returns for cash or credit are allowed.

When ordering, send orders and payment to the above address. Make checks or money orders payable to The Regents of The University of California.

Co-operative Extension work in Agriculture and Home Economics, College of Agriculture, University of California, and United States Department of Agriculture, co-operating. Distributed in furtherance of the Acts of Congress of May 8, and June 30, 1914. George B. Alcorn, Director, California Agricultural Extension Service.

5M 8, '61 VL
33