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ACCOUNTS FOR KANSAS FARMS[1]

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TABLE OF CONTENTS

REASONS FOR KEEPING FARM ACCOUNTS

Modern farming is a business and to be successful it must be conducted in a businesslike manner. Farming has developed to the point where it may be likened to merchandising, mining, banking, or other commercial enterprises, in which the character of the management largely determines income and profit. It involves the production and sale of commodities the same as do most other kinds of business.

The farmer is, or should be, constantly asking himself two questions: First, How much profit is my farm making? and second, How can I increase the profit? The second question cannot be adequately answered until the answer to the first is known. There cannot be an accurate answer to either question unless there is a record of some kind to give the information.

Present conditions in farming emphasize the importance to the farmer of having a record of his business transactions to which he

1. Contribution No. 47 from the Department of Agricultural Economics.

can readily refer. He wants to know whether his wheat, cows, hogs, or steers pay. There is reason to believe that many farmers, owing to a lack of proper records, do not know what returns they actually receive. Nor do they know how the returns they get compare with what they should receive for their work and the use of their investment.

Many men operate their farms according to the most efficient business methods. This includes the keeping of farm records. Many other farmers are, through self-education or economic necessity, gradually but surely putting into practice better business methods. Poor accounting in city business is credited with being the source of more failures than almost any other business shortcoming. Similarly, many cases of failure or of mediocre success in farming result from the same cause.

The problem of the farmer is to meet conditions in such a way that his farm will give him the most satisfactory net returns, year in and year out, for the use of his investment, his labor, and his managerial ability. Many farmers realize that some change or adjustment in their combination of enterprises or their methods of management might increase the farm income. They are unable, however, to determine what changes to make owing to a lack of records on which to base any changes in enterprises or methods.

No recommendations for improving the business in a community or on the individual farm can be made until the facts are known. The farm account book, properly kept and analyzed, is the fact finder for the farm. The account book points out the weak spots in the business and locates the hole through which farm profits have leaked.

The farmer who has a well-kept record is in a more favorable position to borrow needed funds than is one who has no record. Income-tax returns must be made by farmers making sufficient money. It is a benefit to the farmer to have at income reporting time, a clear statement of his receipts and expenses for the year, together with an inventory of his farm property. The farm operations of one year are based largely on previous experience and expectations for the future. Farm accounts provide a record of the past upon which to base future operations.

Many farmers wonder where all the money taken in from sales of crops, live stock and live-stock products went to, what for, and why? The farm account tells the story. An honest attempt to keep careful records results in at least one good; namely, the farmer pays

closer attention to details of the farm business than he ever did before. Properly used these records will lead eventually to a better understanding of and insight into the business affairs of the farm, and therefore to constant improvement and a more profitable business.

Many farmers desire to keep accounts of some kind, or if keeping some kind now, they desire to know how to keep accounts that will more nearly tell the condition of their business. There is no doubt that many farmers do not start accounts because they believe they do not know enough about bookkeeping or that they lack the training necessary to handle a record. It is partly the purpose of this circular to show that special training and expensive material are not required in the keeping of simple farm accounts.

TYPES OF FARM RECORDS

There are numerous types of farm records offered to farmers. Most of them are built around a complicated accounting system. Experience proves that the simpler the system the more likely it is to be kept. Complete cost accounts have no place on the usual farm. For general use two types of accounts may be kept, both of which may be combined into one. The inventory record is necessary, and it is highly desirable that a record of cash receipts and expenses be kept.

A "single enterprise account" may also be kept for those who desire detailed information on some particular enterprise. In addition there are miscellaneous records which under certain circumstances are desirable or necessary. Breeding records, for example, are necessary for the producer of pure-bred live stock. A record of debts owed by and to the business is desirable. Production records such as milk sheets are needed by the dairyman and detailed production records are of value to the owners of certified poultry flocks.

MATERIAL REQUIRED FOR SIMPLE ACCOUNTS

It is not necessary that expensive books be purchased for keeping simple farm accounts. For an inventory account a simple two-column sheet is sufficient. This should show the inventory at the beginning and end of the year. If several years' inventories are to be kept under one cover, a 10- or 15-cent book sufficient for several years can be purchased at any bookstore. All that will then be necessary will be to rule it as shown in figure 1. If both the inventory and an account of cash receipts and expenses are kept they may be included in one book.

INVENTORY OF BUILDINGS AND IMPROVEMENTS

Date Erected	Rate of Dep.		Original Cost	Jan. 1, 1926	Jan. 1, 1927	Jan. 1, 1928	Jan. 1, 1929	Jan. 1, 1930	Jan. 1, 1931
1912	2½	Horse Barn	$3000	1950	1875	1800			
1924	3	Hen House	600	564	546	528			
1924	8	Delco Light Plant	$500	375	$312.50	250			

FIG. 1.—A sample inventory record sheet.

For keeping an account of cash receipts and expenses (hereafter referred to as the *cash account)* many good books are available. These may be simple or difficult and range in price from free distribution up to a cost of several dollars. The one discussed in this circular is printed at the state printing plant at Topeka, Kan.[2] When single enterprise accounts are kept a simple book with journal ruling is sufficient for several accounts. This type of book costs from 10 to 20 cents.

There are two types of farm account books in use at the present time. They are the column type and the page type. In the column type, illustrated in figure 2, the ruling of the pages resembles that of an eight-column journal. The item purchased or sold is entered at the left side of the page and the amount received or expended in the proper column at the right. One column is used for each of the various enterprises.

The page type is being used in the coöperative work between Kansas farmers and the Kansas State Agricultural College at the present time. Each of the various enterprises of the farm business has a page, or part of a page, in which are entered the transactions with which it is concerned. The page occupied by the crop record shows the acreage and the yield of each crop raised. Following this are pages showing the sales of crops and the purchases and sales of live stock and live-stock products. The pages for farm expenses follow those showing receipts. Each major expense has one or more pages for its entries, with subdivisions if such are necessary.

The page type of book gives a set of classified accounts. There is little chance for an error in entry and it makes possible a more rapid and accurate estimate of the status of the receipts and expenses than by any other type.

KEEPING SIMPLE ACCOUNTS

The time actually required to keep farm accounts is usually overestimated. On many days there will not be anything to put down unless production records are being kept. On many farms there will not be an average of one item a day to put in the cash account. Farm sales and purchases are relatively few in number and often many occur on the same day. A few minutes each day will usually suffice to record all transactions.

Most simple account books have page or column headings to show where the items of receipt and expense are to be entered. No spe-

2. This "Farm Account Book" may be secured from Kansas bookstores handling school supplies, or from the State School Book Commission, Topeka, Kan.

FARM RECEIPTS

Date	Description	Amount	Crops (Corn, Wheat, Oats, etc.)	Livestock (Cattle, Horses, Hogs, etc.)	Stock Products (Butter, Eggs, Milk, Honey, etc.	Miscellaneous (Posts, Wood, Labor, etc.
	Totals					

FARM EXPENSES

Date	Description	Labor	Feed	Seeds Plants Trees	New Bldgs. and Bldg. Repairs	New Mach. and Mach. Repairs	Stock Purchased	Vet. Fees	Miscellaneous Expenses
	Totals								

FIG. 2.—A page from the column type of account book.

cific knowledge of bookkeeping is necessary, neither is any special training required other than to train one's self to enter each item promptly when the transaction occurs. However, to make a correct summary and analysis, it is necessary that correct addition, subtraction, multiplication, and division be done.

There is usually no one best time to start the inventory account. January 1 is a desirable date, March 1 is preferable for the tenant farmer, and August 1 may be satisfactory in the western part of the wheat belt. A good time to start is when feed supplies are at their lowest point before the spring work starts. Whatever date is chosen, all succeeding inventories should be taken on the same date.

It is preferable to start the cash account on January 1 as this is the beginning of the calendar year. If the inventory is combined with the cash account it should also be taken on January 1. This date is preferable for starting the cash account as it is customary to check up on one's business at the end of the year so as to know where one stands at the beginning of the new year. If the account is to be used for making an income tax return January 1 is the date usually required.

The time of starting a single enterprise account will depend upon the account itself. If it is a dairy account January 1 is satisfactory. The wheat account should start with the preparation of the ground for the new crop and end when the wheat is sold. The account kept on a carload of purchased feeder steers will start with the purchase of the steers and end when the steers are sold. If the account deals with combined harvester-thresher costs it should cover one year's time either from date of purchase or from January 1.

The time of starting an account is less important than keeping it up to date and making the entries when transactions occur.

THE INVENTORY

A farm inventory is a detailed list of farm property and debts with a value assigned to each item. It is the starting point in most farm accounts and is a valuable record in itself. It is useful when summarizing and analyzing the year's business and is an indicator of the financial progress of the farm business.

The inventory reveals many things about the farm business that no other account shows. It tells the total investment in the business; the total liabilities and the net worth, or the investment in the business. A comparison of the inventories at the beginning and the end of the year shows the increase or decrease in resources, liabilities, or net worth.

The inventory also shows the investment in land compared with that in live stock, machinery, etc., and enables one to determine whether the ratio is a desirable one. It shows the working capital, the investment in each kind of live stock, the proportion that the debts are of the total resources, and the proportion that the real-estate mortgage is of the real-estate value.

There are many things, however, that the inventory cannot show. It does not show purchases or sales, why any transaction occurred, or the profit of the farm for the year. There is no place to include the value of home-used products. It does not show why money was borrowed, when any debts were paid, or what enterprises were profitable. The analysis of the inventory cannot be used to any great extent in planning the future operations of the business.

Most inventory forms and account books provide for a classification of the items but do not indicate methods of valuation. This is sometimes troublesome. The farmer's resources are classed as physical or tangible property, and as financial or intangible property. The value of physical property must be estimated or appraised. Financial or intangible property, of which the farm has little, is valued at its "face value." However, with a little practice—in connection with his knowledge—the farmer can arrive at a figure close to the actual value of his property.

Valuation of Land.—The value of land may be determined in one of two ways: (1) actual cost, and (2) local market value. The actual cost of the land is satisfactory if it has been purchased recently. If it has been purchased at a high price or at a low price, or if many years ago, the cost may not be an indication of its present value. Land that was inherited, homesteaded, or received as a gift cost the present owner little or nothing and in such cases cost cannot be used.

Market value of the land is based upon what land of similar quality and location, in the community, is selling for. Care must be taken not to base this value on forced sales or on the high prices paid under exceptional conditions. Voluntary sales should be used as the basis. If there is no land of that kind selling the owner must estimate what it would sell for. It is advisable to make the estimate conservative.

Where there are several grades of land on the farm it is desirable to value each separately. To give bottom land, tillable upland and rough pasture land a blanket valuation is all right if only a total value is wanted, but in determining crop costs, each kind should be

given its correct value. In taking the inventory for the first time it is desirable to include some description of each grade and of each separate piece of land.

Valuation of Buildings and Improvements.—It is, often difficult, the first time an inventory is taken, to determine what the buildings and other improvements are worth. There are two methods which may be used in valuing this kind of property. The first and preferable one, where it can be used, is the original cost less depreciation for the years it has been used. The other and less desirable method is replacement cost less depreciation for the years of use.

Depreciation of buildings and improvements depends largely on the type of construction and the care which they receive. Well-built frame buildings given good care should last at least 40 to 50 years. Stone or concrete structures should last longer. Depreciation is usually expressed in per cent of original cost. A barn built in the fall of 1900 and good for 50 years should be charged depreciation at the rate of 2 per cent per year. If it cost $2,000, the depreciation would be $40 a year. Its value on January 1, 1928, allowing for 27 years of use would be determined as follows: 27 x $40 = $1,080 depreciation; $2,000 minus $1,080 = $920, the value on January 1, 1928.

Replacement cost means what the building as originally built would cost with present prices of materials and labor. Assuming that the barn in the above illustration would cost $3,500 on January 1, 1928, at present material and labor costs, the annual depreciation would be $70 per year. Twenty-seven years at $70 would be $1,890 depreciation to date; $3,500 minus $1,890 would give $1,610 as the value of the barn under this method. During periods of rising costs for material and labor the value of the barn by this method would always be higher than by the first method.

Classification of Live Stock.—It is desirable from the inventory standpoint to make a definite classification of live stock. The basis should be type, kind, and use. The following outline shows one classification that may be used.

1. Horses and mules.
   1. Work stock.
      (a) Brood mares.
      (b) Other horses.
      (c) Mules.
   2. Others.
      (a) Horse colts.
      (b) Mule colts.
      (c) Stallion.
      (d) Jack.

II. Cattle.
  1. Beef cattle.
    (a) Breeding stock.
      (1) Cows.
      (2) Heifers.
      (3) Bulls.
    (b) Market stock.
      (1) Discarded breeding stock.
      (2) Steers.
      (3) Surplus heifers.
      (4) Calves.
  2. Dairy cattle.
    (a) Production stock.
      (1) Cows.
      (2) Bulls.
  3. Other dairy cattle.
    (a) Two-year heifers.
    (b) One-year heifers.
    (c) Calves.
    (d) Young bulls.

III. Hogs.
  1. Breeding stock.
    (a) Sows.
    (b) Gilts.
    (c) Boars.
  2. Market stock.
    (a) Fat hogs.
    (b) Shoats.
    (c) Pigs.

IV. Sheep.
  1. Breeding stock.
    (a) Ewes.
    (b) Rams.
  2. Market stock.
    (a) Fattening sheep.
    (b) Fattening lambs.
    (c) Lambs.

V. Poultry.
  1. Hens.
  2. Roosters.
  3. Young chickens.
  4. Other poultry.
    (a) Turkeys.
    (b) Ducks.
    (c) Geese.

Valuation of Live Stock.—The methods of valuing live stock depend largely upon the purposes for which the live stock are kept. Market price on the farm is usually satisfactory. By this is meant what the stock would sell for at some market, less the cost of getting them to the market, Local market price refers to the price paid for live stock at the local market. Local sale price is the price which would be paid in the community.

Market price on the farm is a desirable method for valuing all market live stock—whether fa or thin—such as steers, hogs, lambs, old cows and sows, and surplus breeding stock. Local market price is satisfactory for poultry. Local sale price is perhaps best for breeding stock such as cows, sows, ewes, and hens, and bulls, boars, and rams. The value of milk cows is determined by their producing ability. Local sale price usually considers this factor. Live stock purchased just prior to inventory taking time may be valued at purchase price.

Work horses can be valued either at their value as work stock or at local sale price. Colts may be valued at local sale price, Mules will usually be valued higher than horses, and there is more often some sale price which can be used as a basis.

Any additional value of an animal because of its breeding should be carefully considered in arriving at an inventory value. During years of declining prices the pure-bred animal, as such, carries no premium in value other than is shown in the local sale price.

Valuation of market live stock is difficult where no scales to determine weights are available, as is usual on most farms. However, long practice has enabled the majority of farmers to estimate weight and value with a fair degree of accuracy.

Valuation of Machinery. — The valuation of machinery presents a somewhat different problem in that market values have little influence in determining the actual value of the machine. All farm machinery after once being used becomes secondhand equipment and will not sell for so much as it is worth to the farm.

One method of valuing machinery is to subtract from the value one year previous the amount of the annual depreciation. In determining depreciation the original cost of the machine must be known and the years of use must be estimated. The cost divided by the years of life gives the annual depreciation. Thus a binder purchased in 1923 for $220 and lasting 11 years would have a yearly depreciation of $20 per season or per year. On January 1, 1928. *i.e.,* after five seasons, it would be worth $220 less $100 depreciation, or $120.

Machinery on the farm may have been purchased secondhand. The cost of the machine divided by the years of use left will give the annual depreciation. The amount of depreciation to date subtracted from the cost will give the present value. Where the cost of the machine is not known, or has been forgotten, another method may be used. This method is to value the machine at what it would sell for at a public sale.

Valuation of Home-grown Feeds. — Home-grown feeds may be divided into two classes for inventory purposes. The first is the readily marketable feed such as corn, wheat, and good hay. The other is composed of nonmarketable or not easily marketed feeds such as cane hay, fodder, silage and damaged hay. Perhaps the greatest difficulty in valuing home-grown feeds is to determine the quantity of the product. Grain in bins may be readily measured, but stacks of hay and shocks of fodder are more difficult. Rules for measuring hay and grain are given in the appendix.

For the readily marketable feeds, market price on the farm is the best method of valuation. There is always a quoted market price for this type of feeds and the cost of marketing can be easily de-

termined. For the nonmarketable feeds, one of two methods may be used. Usually there is a current local price for fodder, discolored hay, and silage that can be used. The other method is to value it at what it is worth to displace marketable feeds. Thus if three tons of damaged hay replace two tons of good hay valued at $20 the damaged hay would be worth $6.67 per ton less the cost of feeding the extra ton.

Valuation of Purchased Feeds. — Purchased feeds such as bran, shorts and cottonseed cake or meal should be valued at cost plus the expense of getting them to the farm. Corn, hay and other similar feeds delivered at the farm that are purchased should be inventoried at cost. If hauled to the farm by the purchaser value them at the cost of the feed plus the expense of bringing them to the farm.

Valuation of Farm Supplies. — Purchased supplies, such as gasoline, fertilizer, twine, etc., should be valued at their cost plus the expense of getting them to the farm. Seeds purchased may be included under this head. Supplies produced on the farm, such as wood and posts, can best be valued at the local sale price.

Valuation of Growing Crops. — In some sections of the country growing crops represent a considerable investment when the inventory is taken. This item is often overlooked. The best measure of the value of the growing crop is the cost of preparing the ground, seeding the crop, and the value of seeds used.

Another but less desirable method is to value the crop on the basis of prospective yield. This is determined by estimating the probable yield and the cost of harvesting and the market price of the harvested crop. Wheat crops are sometimes sold on this basis.

General Notes on Valuation. — The greatest success in the valuation of farm property results from a combination of good judgment and experience. If the farmer has both of these he should come fairly close to the correct valuation. It is better to be conservative rather than too high in estimating values. Valuations entirely out of line may lead to false conclusions and undesirable plans for the farm business. Wherever possible market values should be used, adding the expense of getting to the farm all the things purchased and subtracting marketing expense for all things that can be sold on the market.

Whatever financial property the farmer has, such as cash in the bank or in the pocket and debts owed to the farm business, should

be entered at its face value. Other forms of financial property, such as stocks, bonds, life insurance policies, etc., may be entered if desirable. However, this form of property usually is not considered a part of the farm business.

Liabilities. — The inventory is not complete unless it contains a list of the business debts or liabilities. These represent the part of the farm business financed by some one other than the operator. They may consist of a loan on the real estate, live stock notes, bills at the elevator or store, personal notes at the bank or elsewhere, or any other debt which was incurred to carry on the business. Each liability should be listed separately and should indicate the amount, to what firm or person the money is owed, what the money was borrowed for, and when payment is due. Debts contracted for household and personal reasons should not be listed with the farm liabilities.

After the Inventory Is Taken. — The first step after valuing all the individual items is to find out what the whole business is worth. This value is known as the total resources. The debts are then added up. The total resources, minus the liabilities, leaves the net worth, or the amount that the farmer has invested in the business. After the first inventory has been taken it will not be much of a job to take the succeeding inventories. Prices of products and numbers of live stock will change, but with a previous value fixed and practice acquired in determining values no serious difficulties should be encountered.

When completed the inventory should be carefully put away until wanted a year later or for other purposes during the year. It should be kept where fire or careless hands cannot reach it and shouid not be shown to anyone who has no business seeing it.

CASH RECEIPTS AND CASH EXPENSE ACCOUNT

From many standpoints this account is the most important one that a farmer can keep. It is, or should be, a classified record of all receipts and expenses throughout the year. The date of sale or purchase is shown together with the quantity of product or number of units bought or sold, the price per unit, and the total value.

A well-classified cash account, shows the amount of money received from each enterprise and the cost of each enterprise for the year. The expenses are not usually so well classified as are the receipts, but the record is there to show all the money spent on the farm business. It is possible from a well-kept account to figure

the cash costs and cash receipts of the more important enterprises on the farm.

Receipts may be shown according to the individual enterprise or by groups of similar enterprises. The Kansas "Farm Account Book," previously referred to, footnote No. 2, has the following classification of receipts: Corn, wheat, other crops (may be subdivided), cattle, dairy products, hogs, horses, sheep, poultry, eggs, miscellaneous (wool, hides, wood, labor off farm, etc.). A page from this account book showing how dairy receipts are entered is shown in figure 3.

SALES OF DAIRY PRODUCTS

Date, 19..27	Product	Quantity	Test	Unit price	Amount received	
		lbs.			$	
Jan. 16	Milk	8231	3.7	$2.20	182	73
Feb 15	"	7211	3.8	2.32½	167	84
Mar 15	"	9266	3.8	2.04½	189	24
		Amount carried forward			$	

FIG. 3.—A page from the Kansas Farm Account Book, showing how dairy receipts are entered.

The cash expenses of the farm business are somewhat more difficult to classify than are the cash receipts. One reason is that sometimes money is spent for things that will be used on several enterprises. Feed purchased may be fed to all classes of live stock, and a new wagon may be used for all enterprises. However, there are places provided in the account book for most of these items so they should not cause difficulty. Figure 4 shows how the expenses for new machinery and machinery repairs are entered in the Kansas Farm Account Book.

The following classification of cash expenses is used in the Kansas Farm Account Book: Purchased cattle, hogs, horses, sheep, poultry; feed bought for hogs, cattle, poultry, horses; labor hired; machinery—new and repairs; auto expense—gas, oil, repairs; other

MACHINERY EXPENSE

Expenses for blacksmithing and small tools, such as hammers, spades, etc., should be entered in column 2. New machinery should be entered in column 1.

Date, 19..27	DETAILS OF TRANSACTION	New machinery		Repairs, oil and grease	
Jan. 22	Bought halter ropes	$		$ 1	30
Mar 24	Bought 2 ax handles @ 75¢			1	50
Apr. 30	Bought harness oil			1	95
May 12	Repairs for corn planter			3	00
June 2	Bought 2 collar pads @ $1.25			2	50
June 5	Bought 6-foot mower	80	00		
June 11	Wagon repairs			5	25
[illegible] 26	[illegible]			3	[illegible]
	Totals	$ 230	00	$ 41	45
		Column 1		Column 2	

FIG. 4.—A page from the Kansas Farm Account Book, showing entry of expenses for new machinery and machinery repairs.

farm expense—rent, interest, taxes, insurance, seed, etc.; permanent improvements—new and repairs.

Aside from the cash received from the sale of farm products and cash paid out for the various enterprises of the farm business, there are other cash receipts and expenses that should be cared for in the farm record. It is frequently necessary to borrow funds with which to carry on the farm business. Such funds should not be entered with the other cash receipts since the money received from the sale of property purchased with borrowed funds should balance the amount of money borrowed. In the account book discussed here there is a place provided for a record of money borrowed throughout the year.

Money spent in paying off notes or mortgages should not be included with the cash expenses of the business. If the money was borrowed for the purchase of feed, live stock, or other farm expense it has already been entered once. If the money was paid on a real-estate loan the increased net worth will balance the payment. However, a record should be kept of all notes and mortgages paid. This will be in the nature of a memorandum and should be kept separate from other transactions. Interest paid on notes should be included as a farm business expense.

The farm business record should not include money given as donations, contributions to religious work, or income received from outside investments. However, a record of these receipts and expenses is desirable, since they may be needed in the income-tax return. The Kansas Farm Account Book provides places for such receipts and expenses.

Where purchased feed is fed to several classes of live stock it is a difficult matter to divide the cost. It is usually preferable to enter it against the kind of live stock which will use most of it, rather than to try to divide the cost among all live stock. While this is not entirely accurate, the primary purpose is to get the total cost recorded rather than the feed cost for each class of live stock.

There are some items of expense which are chargeable partly to the farm business and partly to the personal account. Expenses on the auto which is used partly for business and partly for pleasure illustrate this point. Such expenses should be entered at their total amount rather than divided. The divisions, required in making income-tax returns and in computing farm profits, can best be made at the end of the year. The cash receipts which are to be in-

cluded in the farm accounts for income-tax purposes are given in a publication of the United States Treasury Department.[3]

The gross income for the year should include "(1) the amount of cash or the value of merchandise or other property received from the sale of live stock and produce which were raised during the taxable year or prior years, (2) the profits from the sale of any live stock or other items which were purchased, and (3) gross income from all other sources." This other income may be from the sale of crops received as rent, insurance on crops damaged, sale of machinery, pay received for labor off the farm, and similar items.

The same regulations give the cash expense which may be included in the income-tax returns, "A farmer who operates a farm for profit is entitled to deduct from gross income as necessary expenses all amounts actually expended in the carrying on of the business of farming, The cost of ordinary tools of short life or small cost, such as hand tools, including shovels, rakes, etc., may be included."[4] Actual cash paid out in feeding and raising live stock may be treated as an expense deduction. Repairs on buildings and machinery may be deducted, but not the cost of new buildings or machinery. The cost of the automobile operation shall be divided according to the proportion of use for business and pleasure purposes.

The account book discussed in this circular provides places to record expenses for new improvements and new machinery so as to keep them separate from the other farm expenses. A well-kept cash receipts and cash expense account, if kept in an account book approved by the Internal Revenue Bureau, can be used in making an income-tax return by the "cash receipts and cash disbursements? method.

Cash Receipts and Cash Expense Account Combined With Inventory.—Combining the inventory with the cash account provides the best account that ordinarily can be kep. Such an account gives a more accurate picture of the farm business and shows definitely whether or not the business has made a profit for the year. It is much better for purposes of analysis than either record by itsel. Many farm account books are of this type and may be analyzed with little difficulty. The combined accounts also provide a record which may be used in reporting income-tax returns by the accrual method.

3. Treasury Department, United States internal revenue regulations 69, income tax, revenue act of 1926. Article 38, page 14.

4. *Ibid.* Article 111, page 44.

The Summary. — At the end of the year, the farm account book should be totaled, summarized, and analyzed. The addition of all columns of the accounts comes first. This should be carefully done. Small errors in addition are apt to occur unless special care is exercised. An adding machine is a great convenience in Summarizing accounts. After the columns have been totaled, the next step is the completion of the depreciation accounts of buildings and machinery. A discussion of depreciation, its meaning, use, and the method of obtaining it, is given elsewhere in this circular.

After the inventory is completed, all the columns added and checked for accuracy, the next step is the completion of the summary. A summary page from the Kansas Farm Account Book is shown in Table I. There are detailed instructions on the summary page showing from which account and column each amount is to be taken. No amounts should be entered except as directed.

The summary of any farm account book should be a statement of totals combined under the proper headings in such a way that the final result will show the net profit or loss. This summary should show the returns from each enterprise and the increase or decrease in inventory value. In other words, it is a finished picture of the business under consideration.

The summary shown in Table I includes all of the important items excepting the value of unpaid family labor and interest on the investment. An outline of a full and complete analysis of the condition of the business is shown in Table II. It includes many of the items which should be considered in making an analysis. To fill it out completely and correctly, information as to the value of home-produced products and unpaid family labor is necessary. If this information is furnished and the detailed instructions followed as given, a complete and accurate statement of the business is secured. The labor income as shown by this analysis is the true net profit. The interest earned by the investment as shown by the analysis is the true return earned by the investment in the business.

The Analysis. — As a fitting climax to well-kept accounts nothing is more important than a constructive analysis of the various parts of the farm business. The year's work may be finished, the net profit, labor income, and interest earned determined, but if each enterprise is not separated from the rest, and thoroughly analyzed to find the cause of its strength or weakness, and then reconstructed so as to produce higher returns the next year, the full and complete benefits of the work will not have been secured.

TABLE I.—SUMMARY PAGE FROM THE KANSAS FARM ACCOUNT BOOK.

	Inventory at beginning of year.	Total purchases.	Total sales.	Inventory at end of year.
Farm Business Summary				
CROPS:				
Corn	$	$	$	$
Oats				
Wheat				
Other grain, hay, etc.				
LIVE STOCK:				
Cattle				
Dairy products				
Hogs				
Horses				
Sheep				
Poultry				
Eggs				
MISCELLANEOUS RECEIPTS				
Totals	$	$	$	$

Summary of Receipts and Expense Computed on Accrual Basis

CREDITS.

1. Inventory of live stock, crops, etc., at end of year (col. 4 above) ..... $
2. Sales of live stock, crops, etc., during year (col. 3 above) .....
3. Total ..... $

DEBITS.

4. Inventory of live stock, crops, etc., at beginning of year (col. 1 above) .. $
5. Cost of live stock, crops, etc., purchased during year (col. 2 above) .....
6. Total ..... $
7. Gross profits (item 3 minus item 6) ..... $

DEDUCTIONS.

8. Feed purchased ..... $
9. Labor hired .....
10. .....
11. Other farm expenses .....
12. Repairs on permanent improvements .....
13. Repairs on machinery .....
14. Depreciation on farm property .....
15. Depreciation on farm machinery .....
16. Total ..... $
17. Net farm profit (item 7 minus item 16) ..... $

TABLE II.—AN ANALYSIS OF THE FARM BUSINESS SUCH AS CAN BE MADE FROM A WELL-KEPT KANSAS FARM ACCOUNT BOOK

			Inventory at beginning of year.
	Investment in the Farm Business		
1.	Land, including buildings		$.....
2.	Machinery		.....
3.	Live stock		.....
4.	*Miscellaneous inventory*		.....
5.	Total capital invested		$.....
	Summary of Farm Business		
6.	Net farm profits	$.....	
7.	Interest paid on farm mortgages	.....	
8.	Increased value of developing orchards or woodlands	.....	
9.	Estimated value of food, fuel, and house rent furnished family	.....	
10.	Total farm credits	———	$.....
	Other Expenses Not Yet Deducted		
11.	Value of unpaid labor of farmer's family	$.....	
12.	Decreased value of old orchards or cutoff woodland	.....	
13.	Cost of repairs put on your dwelling during the year	.....	
14.	Depreciation on dwelling during the year	.....	
15.	Total expenses not deducted from net farm profits	———	$.....
16.	Earnings on operator's own labor and investment		.....
17.	Interest on investment at.....per cent		.....
18.	Total labor earnings of operator		$.....
19.	Value of living secured from farm		.....
20.	Labor income		$.....
21.	Earnings on operator's own labor and investment		.....
22.	Value of operator's own labor		.....
23.	Earnings on operator's investment		$.....
24.	Interest earned on investment		.....%

All the material shown by the summary and the accounts will come into play in this analysis. The production and returns of every enterprise must be computed on a unit basis. Then by the use of labor estimates, or better, labor records from one's own farm in crop production and feed and labor records in live-stock production, the profit per unit may be found.

Table III shows how such an analysis will assist materially in suggesting improvements for the future in a live-stock enterprise.

TABLE III.-SUGGESTED FORM FOR ANALYSIS OF LIVE-STOCK ENTERPRISES

CLASS OF LIVE STOCK.	Number of head.	Total returns.	Average returns per head.	Feed costs per year.	Suggested changes in management.
Milk cows....	8	$328	$41	$40 per cow...	Find better grain ration.
Brood sows. ..	5	525	105	$45 per sow...	More care at farrowing time. Raise litter on worm-free ground.

The comparison of the average returns per head with the cost of feed will give ample food for thought. The suggested changes will give the plan to be followed the succeeding year and a comparison of the analysis charts at the end of that year will show how successful the suggested changes were in terms of returns.

As a final entry on this table the returns per $100 invested in live stock may be shown. This will result from a comparison of the sum of the feed and labor costs plus the first inventory value, with the total returns from the sale of live stock and live-stock products plus the second inventory value.

The efficiency of operation should also be subjected to a careful analysis. Table IV is a suggested form for the study of this part of the year's business.

The cropping system should also be carefully checked and analyzed. This analysis should show the sequence of the crops, yields, the application of manure, and the acreage in legumes. A table

TABLE IV.—FORM FOR ANALYZING THE EFFICIENCY OF OPERATION OF THE FARM BUSINESS

ENTERPRISE	Number or amount.	Suggested changes.
Number crop acres (a).....	180	Increase acreage.
Number work animals.	10	Reduce number.
Tractor	1,15-30	Reduce cost of operation.
Crop acres per work horae..	18	Increase acres per horae.
Number months operator's labor..	12	.....
Number months hired labor.	12	Reduce amount.
Crop acres per man.	90	Increase acres per man.

(a) Including crop land and hay land.

similar to those shown for the other analyses may be used for this study.

Unit production compared with unit costs is essential in the analysis. These are the calculations which show the need of changes in organization or management, and form the basis for a progressive program of agricultural improvement.

SINGLE ENTERPRISE ACCOUNTS

Single enterprise accounts are used when it is desired to make a more careful study of some particular enterprise than can be made from the cash account. They may be used in determining costs on some part of the farm business or to study the factors which influence costs, They usually deal with the productive phases of the farm business, i.e., crops and live stock. They may also be used in studying some new feature of the business such as a tractor or a combined harvester-thresher.

Single enterprise accounts are not so accurate as complete cost accounts but they are much easier to keep and take much less time. They give much more information about the enterprise being studied than can be obtained from the cash and inventory accounts. Keeping an enterprise account also gives one experience in determining the value of the use of land, labor, machinery, buildings, etc. Usually, where accounts have not been kept, it is better to keep the inventory and cash accounts for a year or two before keeping single enterprise accounts.

In keeping enterprise accounts several things are essential. They are: An inventory at the beginning and end of the year or period of time included; all cash receipts and cash expenses directly connected with the enterprise; an estimate of the value of the labor done on the enterprise by the operator and his family; and all transactions, other than labor, between the enterprise and other parts of the business which do not involve any cash payment. These transactions are grouped under the headings of noncash receipts and noncash expense.[5]

In the enterprise account the first inventory is always entered as the first item of expense. This is because the account assumes the responsibility of the investment during the period of time covered. The second inventory is entered as a receipt and relieves the account of the responsibility assumed. Tables V and VI show how single enterprise accounts with a wheat crop and a hog enterprise are worked out.

5. By noncash is meant a transaction involving articles of value but in which no money changes hands.

TABLE V.—SINGLE ENTERPRISE ACCOUNT WITH WHEAT

219 acres

1927.	Expenses.	1927.	Receipts.
Jan. 1, 1927, inventory: 280 bus. seed (home-grown) @ $1,	$280.00	Wheat fall pastured	$30.50
Man labor, 812 hrs. @ 21c	170.52	Wheat sold in July, 1,952 bus. @ $1.25	2,440.00
Horse work, 2,084 hrs. @ 12c	250.08	Wheat sold to pay rent, 185 bus. @ $1.25	231.25
Use of soil preparation machinery @ 10c per acre	21.90	Wheat sold in October, 444 bus. @ $1.25	555.00
Twine, 420 lbs. @ 10c	42.00	Seed wheat used for 1928 crop— 200 bus. @ $1.25	250.00
Hired labor in June	50.50	Wheat sold in November, 165 bus. @ $1.23	202.95
Hired labor in July	89.25	Wheat sold in December, 375 bus. @ $1.22	457.50
Hauling wheat	88.75	Jan. 1, 1928 inventory: 400 bus. @ $1.25	500.00
Operator's labor, harvesting and threshing, 580 hrs. @ 21c	121.80	Total receipts	$4,667.20
Horse work, harvesting and threshing, 378 hrs. @ 12c	45.36		
Use of seeding and harvesting machinery @ 60c per acre	131.40		
Use of miscellaneous machinery @ 50c per acre	109.50		
Use of tractor and tractor-drawn equipt., @ $1.18 per acre	258.42		
Use of land:			
178 a. owned @ 7% of value	1,104.50		
41 a. rented @ ⅛ crop @ July price	231.25		
Use of threshing machine	226.92		
Use of buildings	25.00		
Total expense	$3,247.15		
Profit	1,420.05		
	$4.667.20		

Analysis of Account

1. Total yield, 3,721 bus. Yield per acre, 17 bus.
2. Wheat sold, 3,121 bus. Average sale price, $1.25 per bu.
3. Average cost per bu., 87.2c. Margin over cost, 37.8c.
4. Average cost per acre, $14.83. Profit per acre, $6.48.
5. Direct cash expense, $270.50.
6. Value of operator's labor used, $292.32.
7. Horse work cost, $295.44. Use of machinery, $748.14.
8. Profit on the enterprise, $1,420.05.

TABLE VI.—SINGLE ENTERPRISE ACCOUNT WITH HOGS

1927.	Expenses.	1927.	Receipts
Jan. 1, 1927, inventory: 4 sows, wt. 350 lbs. ea. @ $35	$140.00	Mar. 10, sold 4 hogs, wt. 977 lbs. @ $11.75 per cwt	$108.20
1 boar, wt. 500 lbs	40.00	Nov. 4, sold 4 hogs, wt. 1,067 lbs. @ $10 per cwt	106.70
3 fattening hogs, wt. 540 lbs., @ 11c	59.40	Dec. 1, sold 14 hogs, wt. 2,702 lbs. @ $8.50 per cwt	229.67
Mar. 3, bought 300 lbs. tankage	11.55	Dec. 28, sold 15 hogs, wt. 3,210 lbs. @ $8.55 per cwt	274.45
April 16, bought 400 lbs. shorts	6.80	Jan. 1, 1928, inventory: 3 brood sows, wt. 375 lbs. ea. @ $30,	90.00
April 20, bought boar, 200 lbs.	22.00	1 boar, wt. 450 lbs	35.00
May 2, bought 1,000 lbs. tankage	32.50	19 pigs, wt. 50 lbs. ea., @ $5	95.00
June 4, bought 100 lbs. linseed meal	3.00		$939.02
July 15, bought 500 lbs. shorts	8.25		
Nov. 9, bought 300 lbs. tankage	9.45		
Nov. 19, bought 500 lbs. shorts	8.75		
Dec. 3, paid shipping expense	14.36		
Dec. 31, paid shipping expense	16.60		
Home-grown feeds: Corn, 535 bus. @ 70c	374.50		
Skimmilk, 950 gal. @ 2c	19.00		
Alfalfa pasture	15.00		
Man labor, 250 hours @ 22c	55.00		
Horse work, 10 hrs. @ 12c	1.20		
Use of buildings	5.00		
Interest @ 6% on $229.70, average investment	13.78		
Total expenses	$856.14		
Gain or profit	82.88		
	$939.02		

Analysis of Account

1. Profit, $82.88.
2. Lbs. of pork produced, 8,041.
3. Lbs. of pork sold, 7,956.
4. Cost of pork produced, $594.74.
5. Cost per 100 lbs. of pork produced $7.39.
6. Av. price of pork sold, $9.16 per cwt.
7. Total feed cost, $488.80.
8. Feed cost per 100 lbs. pork produced, $6.08.
9. Feed required per 100 lbs. gain: 372 lbs. corn, 20 lbs. tankage, 80 lbs. shorts and linseed meal, and 102 lbs. skimmilk.
10. Cash paid out, $133.26 = 21.6% of operating expenses.

One of the most important things in the enterprise account is the determination of the value of the use of land, labor, machinery, and other items. The following methods may be used.

Use of Land. — The value of use of land may be determined by *(a)* estimating the market value of land and multiplying this value by the current mortgage rate;[6] (b) estimating the value of land and multiplying by 7 per cent[7] (5 per cent for interest plus 1¼ per cent for taxes plus ¾ per cent for upkeep); and (c) by using the current cash rent paid for that kind of land. Under most conditions the current cash rent paid will be the lowest of the three. The average mortgage rate, as determined by the United States Department of Agriculture in the study of cost of producing wheat, is about 6 per cent.

Cost of Man Labor. — The determination of man labor cost is not difficult. There are four factors to consider. These are the operator's labor, unpaid family labor, hired labor, and cost of board and other perquisites furnished the hired help. The value of the operator's labor may be determined by current wages. The value of unpaid family labor may be estimated, usually at current wages for the kind of work done. The hired labor cost is known as it is a cash cost. The value of board and other perquisites furnished the hired help must be estimated. The sum of these four items is the total man labor cost.

Where no labor record is kept, as is the case on most farms, it is advisable to make an estimate of the time required in producing the crops and live stock and distribute the man labor cost on this basis. It is not difficult to estimate the time required to care for the different enterprises when one has available the usual time required in performing certain operations. Table VII shows the usual time required to perform certain farm operations in three Kansas counties.[8]

Jackson county is in northeastern Kansas where corn, alfalfa, hogs, and beef cattle are the principal enterprises. McPherson is in the eastern half of the wheat belt where wheat is the major enterprise and other fairly important enterprises are corn, alfalfa, and cattle. Bourbon county is in the southeast Kansas dairy section

6. Method used by United States Department of Agriculture in U. S. D. A. Bulletin 948, "Cost of Producing Wheat," p. 132.

7. Method used by Kansas State Board of Agriculture in studying cost of producing wheat. "Wheat in Kansas." Sept. 1920 quarterly report, Kansas State Board of Agriculture, p. 124.

8. Figures from Cost of Production Studies, United States Department of Agriculture and Department of Agricultural Economics, Kansas Agricultural Experiment Station, cooperating.

TABLE VII.—HOURS OF MAN LABOR AND HORSE WORK REQUIRED PER ACRE TO PERFORM CERTAIN FARM OPERATIONS

Operation.	Size of machine and number of horses required.	McPherson county.		Jackson county.		Bourbon county.	
		Man.	Horse.	Man.	Horse.	Man.	Horse.
Plowing	16-in. sulky, 3 horses	3.00	9.00	3.50	10.50	3.50	10.50
Plowing	2, 14-in. gang, 5 horses	1.80	9.00	2.00	10.00	2.50	12.50
Disking	8-ft., 4 horses	.60	2.40	.60	2.40	.75	3.00
Harrowing	3-section, 4 horses	.30	1.20	.40	1.60	.....	.....
Listing	1-row, 4 horses	1.10	4.40	1.35	5.40	.40	1.60
Listing	2-row, 6 horses	.....	.....	.....	.....	.....	.....
Planting	2-row, 2 horses	.....	.....	.67	2.68	.80	1.60
Curling or monitoring	1-row, 2 horses	.....	.....	1.35	2.70	.....	.....
Curling or monitoring	2-row, 4 horses	.70	2.80	.80	3.20	.....	.....
Cultivating	1-row, 2 horses	1.30	2.60	1.35	2.70	1.50	3.00
Cultivating	2-row, 4 horses	.....	.....	.80	3.20	.83	3.33
Drilling small grain	12-hole, 4 horses	.60	2.40	.50	2.00	1.00	4.00
Drilling small grain	14-hole, 4 horses	.50	2.00	.40	1.60	.80	3.20
Binding small grain	7-foot, 4 horses	.75	3.00	.80	3.20	.80	3.20
Shocking small grain	.....	.75	.....	1.00	.....	.80	.....
Stacking	3 men, 2 wagons	1.50	2.00	.....	.....	(a) 2.00	(a) 2.00
Threshing, from shock	6 wagons, 10 men	.....	.....	(b) 3.00	(b) 3.60	1.75	2.00
Threshing, from stack	2 grain wagons, 4 pitchers	.....	.....	.....	.....	.75	.50
Binding corn	1-row, 3 horses	1.50	4.50	1.70	5.10	1.70	5.10
Mowing	6-foot, 2 horses	.80	1.60	.80	1.60	.80	1.60
Raking	10-foot, 2 horses	.50	1.00	.67	1.34	.67	1.34
Stacking hay	3 men, 2 teams	2.10	2.80	(c) 3.00	(c) 3.00	2.40	3.20
Husking corn (20 bu.)	1 wagon, 2 horses	4.00	8.00	(d) 5.00	(d) 10.00	5.00	10.00

(a) 1 wagon, 2 men. (b) 15 men, 9 wagons. (c) Put in barn. (d) 30-bu. corn.

with dairying as the principal enterprise and corn and hay as minor enterprises.

In keeping a single enterprise record the complete labor cost is not always determined. To determine the man labor cost of a 30-bushel corn crop in Jackson county, for example, using figures in Table VII, the procedure would be as follows: The total man labor required for the operations of disking, plowing with gang plow, harrowing, planting, sledding once, and cultivating twice with two-row machines and husking from standing stalks would be 11.07 hours. At an estimated cost of 25 cents per hour, the labor cost of the corn crop would be $2.77 per acre.

Table VIII,[9] shows the man labor and horse work required in caring for live stock on the farm. In determining the man labor cost of keeping 10 cows, using the figures given in Table VIII, the procedure would be as follows: Ten cows at 120 hours man labor would require 1,200 hours; 1,200 hours at an estimated value of 25 cents per hour would cost $300.

Horse Work Costs. — The total horse work cost is determined by adding the value of feed, man labor, interest, cash, and other items to the first inventory. From this total is subtracted the sum of cash receipts, value of manure used, and second inventory. The remainder is the actual cost of horse work to crops and live stock. The distribution of this cost can be made on the same basis as that of man labor by estimating the time required for the performing of certain operations. Table VII shows the usual horse work required for certain operations on the farm.

From Tables VII and VIII one can determine the cost of horse work used in crop and live-stock production. Using the same illustrations as used for man labor, the total time worked by horses per acre of corn would be 36.28 hours, and for 10 milk cows, 100 hours, At an estimated cost of 12 cents per hour the horse work on corn would cost $4.35, and on the 10 cows $12.

Field Machinery Cost. — The cost of use of machinery is a large item of expense in crop production. The total expense of machinery includes the first inventory, all cash costs for new machines, repairs, fuel, oil, etc., and the noncash expenses of man labor, interest, and use of buildings. The receipts include any cash for machinery sold or hired out and the second inventory. The difference between the receipts and expenses is the cost of the use of machinery. It is best

9. Figures from Cost of Production Studies, United States Department of Agriculture and Department of Agricultural Economics, Kansas Agricultural Experiment Station, cooperating.

TABLE VIII.—HOURS OF MAN LABOR AND HORSE WORK REQUIRED FOR THE CARE AND PRODUCTION OF LIVE STOCK AND LIVE-STOCK PRODUCTS.

KIND OF LIVE STOCK.	McPherson county.		Jackson county.		Bourbon county.	
	Man.	Horse.	Man.	Horse.	Man.	Horse.
Work horses	50.0	15.0	60.0	6.0	70.0	10.0
Young horses; per unit	30.0	4.0	33.0	5.0	35.0	5.0
Hogs; per 100 lbs. pork produced	4.0	1.0	2.5	.5	4.0	1.0
Dairy cows; per cow producing 200 lbs. butter fat	120.0	10.0	120.0	10.0	120.0	10.0
Beef cattle; for 500 lbs. beef produced	*50.0	*15.0	30.0	6.0	25.0	7.0
Poultry; per 100 hens	†160.0	†6.0	‡200.0	‡10.0	**350.0	**16.0

* 800 lbs. beef produced. † 80 eggs, 4 lbs. meat per hen.
‡ 100 eggs, 5 lbs. meat per hen. ** 100 eggs, 5 lbs. meat per hen.

to keep horse-drawn machinery separate from the tractor and tractor-drawn equipment.

The easiest and most simple way of distributing the field machinery cost is on the acre basis. Divide the cost of use of machinery by the number of crop acres. Tractor and tractor equipment cost can be distributed on the time basis if desirable. If an enterprise record is kept on a combined harvester-thresher the cost should be figured on the basis of number of bushels of grain threshed.

Use of Buildings.—The buildings on the farm are erected for the storage and handling of crops and live stock. The value of this use should be distributed on the basis of the time and space each enterprise uses the building. The cost of the use of a dairy barn should be borne by the dairy cows. The wheat enterprise pays for the use of the steel grain bin if no other crop is stored there. If several enterprises use one building the cost of the use will be distributed according to the use each makes of the building.

The total building charge for the year is the sum of cash costs for repairs, including hired labor, and the noncash costs of depreciation, interest, and the value of operator's time in maintaining the buildings.

The Interest Charge.—Money invested in sound securities returns an income each year. Money invested in the farm business should also return an income for its use. The farmer has his money invested in land, buildings, livestock, machinery, etc. To determine the net profit from any enterprise this interest charge must first be deducted. The rate of interest depends upon several conditions.

Land is a good risk and the rate on real-estate loans is lower than on live stock, for example. The rate used should not be higher than the net return would be for that type of investment if the farmer were the lender and not the owner or borrower.

Live-stock Accounts. — In a single enterprise live-stock account the largest item of expense is for feed. If the home-grown feed can be marketed market price on the farm should be used in determining its cost If it is nonmarketable, except locally, local sale price should be used. If not marketable but still feedable it should be valued at its worth in replacing marketable feed. Pastures can usually be charged to live stock at current rates for the kind of live stock and pasture. Pasture crops (rape, Sudan, rye, and sweet clover) can be charged at the cost of use of land plus seed cost and soil preparation and seeding expense.

Live stock products used in the house represent a large part of the living costs on the farm, and a large part of the receipts to live-stock enterprises. Milk, butter, eggs, and poultry can be valued at the local market price. Hogs, beef animals, and lambs butchered for home use should be valued at the market price on the farm.

Closing the Single Enterprise Account. — After all the expenses have been entered, and all receipts figured in, the total expenses and receipts should be determined. If the receipts are greater than the expenses the enterprise made a profit. If a small loss is shown it means that the operator did not really receive as much for his labor as was charged the enterprise. If a large loss is shown the operator probably received nothing for his labor and also did not fully pay for the use of the land or other investment.

Analysis of Single Enterprise Accounts. — The real value of the single enterprise account has not been reached until the account is carefully analyzed. The analysis of a crop account should show the yield, cost, returns, and profit per acre; the cost, return, and profit per bushel or ton; the profit for man labor employed, and much other interesting and valuable information. The analysis of the live-stock account should show the production per cow, hen, or other unit; the cost, returns, and profits per unit; the quantities of feeds used, the return for feeds used, and the returns for man labor employed.

In drawing conclusions from the analysis of crop accounts one must remember that the account covers one year only. This one year may be normal, subnormal, or above normal as to yield or price

of products. Also one must be cautious in making plans for changes based upon the analysis of a single-crop enterprise because it covers but one phase of the business.

In drawing conclusions from live-stock accounts one must be more careful than with crop accounts. The factors of unmarketable feed and otherwise unemployed labor enter into affect the results. Often an enterprise which from a strict accounting standpoint may not appear profitable may still be contributing a material sum to the total profit of the farm. All the factors involved must be given consideration, and the real purpose of the account should be to better the live-stock enterprise as a whole.

DEPRECIATION

One of the largest items of expense in the farm business is the decrease in the value of buildings and machinery. This expense is continuous from the time the investment is made until it is gone and must be considered before profits can be determined. Depreciation has been defined in many terms. Depreciation may be defined as decreased value of farm property due to wear, increased age, decreased serviceability, deaths in live stock, or a decrease in value or usefulness from any cause. "Depreciation is the loss in value of fixed assets due to exhaustion, wear and tear, and obsolescence which cannot be made good by repairs." [10]

Depreciation is always figured on buildings and machinery and tools. It may also be calculated for live stock, particularly for breeding herds. However, with most classes of live stock the depreciation is offset by the appreciation.

There are two important general methods of calculating depreciation. The first of these is the revaluation method. This method involves the fixing of values at each inventory time. It is suitable for live stock where market values are constantly changing. It also is suitable in the case of equipment which undergoes excessive depreciation during the year or is used but little. The other method is known as the percentage method. There are two kinds of percentage depreciation — straight-line and diminishing value.

The percentage method is based upon three important factors: (1) Original value, (2) probable life in years, and (3) the residual scrap value. The difference between the original cost and the scrap value is the total depreciation The annual depreciation is usually

10. McMurry, Karl F. and McNall, Preston E. Farm accounting, principles and problems. 320 pages. 12 illus. A. W. Shaw Company, Chicago and New York. 1926. Reference, p. 59.

given in per cent of original cost as the scrap value is small. Straight-line depreciation is a fixed annual charge, expressed in per cent, based on original cost. Diminishing-value depreciation is a fixed annual per cent deducted from the value at the beginning of the year. Straight-line depreciation is preferable to the diminishing-value method.

THE VALUE OF FARM ACCOUNTS

One of the reasons commonly given for keeping accounts is that they serve as a basis for constructive criticism. This is one of the greatest benefits to be derived from the keeping of the record. It takes time and patience to keep good accounts. Unless some intelligent use is made of the accounts kept the time might almost be considered wasted. If the records are carefully studied, analyzed, and used, the time spent in keeping them is profitably spent.

Another reason frequently given is that farm accounts serve as a guide for future farm plans. In general it may be said that accounts and cost records of various sorts, including the analysis, present facts which cause the farmer to alter or change his present methods of operation or to start new projects. This should not be interpreted that every account analyzed will cause a change in policy. It means, in connection with present methods, that a careful examination of the farm accounts might show where a change would be desirable. It means that care must be used in starting new projects without a careful examination of the present enterprises to see if there is a possibility of success with the new ones.

When a certain group of figures indicates some unfavorable condition no important change should be made without first studying all factors involved. If the first impulse is to abandon a certain operation because of the excessive cost one must not overlook the fact that some enterprises are secondary or supplementary to the main business. Cane hay and silage crops are not grown for profit but for feed. As supplementary enterprises they really help reduce the cost of the main enterprises because they help bear the cost of man labor, horse work, use of machinery, etc.

Accounts should show the facts as they exist. Policies formed from these facts may and should be formed only after using the facts, in a more or less flexible manner, in connection with one's general knowledge of the peculiarities of his business.

APPENDIX

MISCELLANEOUS DATA

One bushel=2150.42 cu. in. or 1.2444 cu. ft.
One cubic foot or one sack of cement weighs about 94 lbs.
One ton of hay occupies from 350 to 512 cu. ft., depending on how well it has settled.
One ton of straw occupies 600 to 800 cu. ft.
One gallon contains 231 cu. in.
One barrel of flour weighs 196 lbs.
One barrel of pork weighs 200 lbs.
One barrel of salt weighs 280 lbs.

GRAIN MEASUREMENTS

To find the number of bushels of grain or shelled corn in a bin, multiply the length by the width by the depth (all in feet) and multiply by 8 .

To find the number of bushel of ear corn in a crib, multiply the length by the width by the average depth (all in feet) and multiply by .4. If the crib is round, multiply by the distance around the crib by the diameter by the depth of the corn (all in feet) and divide by 10.

HAY MEASUREMENTS

To measure hay in the mow, multiply the length, width, and depth in feet together and divide by 405, if the hay is well settled and the mow deep. If the mow is shallow and recently filled allow 512 cubic feet to the ton.

Alfalfa hay that has been stacked 30 days will require 512 cubic feet for a ton. When the hay has been stacked 5 or 6 months, usually 422 cubic feet is calculated for a ton. In old, fully settled stacks, about 350 cubic feet will be about right.

To find the number of tons of hay in a rick: Multiply the length times the width times one-third the overthrow. This will give the number of cubic feet in the rick. Divide this number by 512, 422, or 350 cubic feet, according to length of time the rick has settled. The formula for this rule is

$$\text{Tons} = \frac{\text{L} \times \text{W} \times \frac{1}{3} \text{ of O}}{512, 422, \text{ or } 350}$$

L = length; W = width; O = overthrow (distance from ground on one side over the top of stack to ground on other side).

To find the number of tons of hay in a round stack: A rule which will give fairly close figures for average-shaped stacks is to measure the vertical distance from the ground to the bulge, and add to this figure three-fourths of the vertical distance from the bulge to the top; multiply this sum by the circumference of the stack at the bulge, and multiply the resulting product by the circumference at the ground. Dividing this last product by 12 will give the number of cubic feet, approximately.[10]

10. Ball, J. S. Farm inventories. U. S. Farmers' Bul. 1182:1-31. Figs. 3. 1920.

POUNDS TO THE BUSHEL AND SEED TABLE FOR KANSAS FIELD CROPS

For use in inventories and single enterprise accounts (a).

CROP.	Amount of seed to plant to the acre.	Pounds to the bushel.
Alfalfa (broadcast)	10–20 lbs.	60
Alfalfa (drilled)	8–16 lbs.	60
Barley	4–10 pks.	48
Beans, field (small)	2–3 pks.	60
Beans, field (large)	5–6 pks.	60
Beets	4–6 lbs.	56
Blue grass, Kentucky	25–40 lbs.	14
Brome grass (alone, for hay)	12–15 lbs.	14
Brome grass (alone, for pasture)	15–20 lbs.	14
Broom corn	3–5 lbs.	30
Buckwheat	3–5 pks.	50
Clover, alsike (alone)	8–15 lbs.	90
Clover, red (on small grains in spring)	8–12 lbs.	90
Clover, sweet	10–20 lbs.	60
Corn	5–9 lbs.	56
Cotton	4–2 pks.	32
Cowpeas (broadcast)	4–6 pks.	60
Cowpeas (drilled)	1–2 pks.	60
Cowpeas (for seed)	3 pks.	60
Emmer (miscalled spelt)	4–8 pks.	43
Field peas (small)	10 pks.	60
Field peas (large)	12–14 pks.	60
Flax (for seed)	2–3 pks.	56
Feterita	4–6 lbs.	56
Kafir (in rows)	4–8 lbs.	56
Kafir (broadcast)	50–80 lbs.	56
Mangels	5–8 lbs.	.....
Meadow fescue	50 lbs.	22
Millet, barnyard (in drills)	1–2 pks.	35
Millet, foxtail (in drills)	2–3 pks.	50
Millet, German (in drills)	2–3 pks.	50
Millet, German (for seed)	1 pk.	50
Millet, Hungarian (for hay)	2 pks.	50

(a) Call, L. E. and Kent, H. L. Agriculture for the Kansas common schools. Second edition. 47 pages. Illus. 8 color plates. Published by Kansas State School Book Commission, Topeka. 1923. Reference, pp. 466-467.

CROP.	Amount of seed to plant to the acre.	Pounds to the bushel.
Millet, pearl (for hay)	8–10 lbs.	50
Millet, Hungarian (for seed)	1 pk.	50
Millet, broom corn or proso	2–3 pks.	.....
Milo	4–6 lbs.	56
Oat grass, tall	30 lbs.	14
Oats	8–12 pks.	32
Orchard grass	12–15 lbs.	14
Parsnips	4–8 lbs.	50
Peanuts (in pod)	8 pks.	22
Pop corn	3 lbs.	70
Potatoes, Irish	40–60 pks.	60
Potatoes (cut to one or two eyes)	24–36 pks.	.....
Potatoes, sweet	6–16 pks.	50
Rape (in drills)	2–4 lbs.	50
Rape (broadcast)	4–8 lbs.	50
Red Top (recleaned)	12–15 lbs.	35
Red Top (in chaff)	50–60 lbs.	12
Rye	3–4 pks.	56
Rye grass	8–12 pks.	20
Sorghum (broadcast for forage)	25–75 lbs.	50
Sorghum (for seed or syrup)	4–8 lbs.	50
Sorghum (drilled for silage)	6–15 lbs.	50
Soybeans (broadcast)	4–6 pks.	60
Soybeans (drilled)	2–3 pks.	60
Sudan grass (for hay)	20–25 lbs.	40
Sudan grass (for seed)	3–4 lbs.	40
Sugar beets	15–20 lbs.	.....
Sunflower	10–15 lbs.	.....
Timothy	12–15 lbs.	45
Timothy and clover:		
Timothy	10 lbs.	.....
Clover	4 lbs.	.....
Turnips (broadcast)	2–4 lbs.	55
Velvet beans	1–4 pks.	.....
Vetch, hairy (broadcast)	6 pks.	60
Vetch, hairy (drilled)	4 pks.	60
Wheat	2–8 pks.	60

LEGAL WEIGHTS PER BUSHEL OF FRUIT

Apples	48 lbs.
Cherries, without stems	64 lbs.
Cherries, with stems	56 lbs.
Grapes, with stems	48 lbs.
Peaches	48 lbs.
Pears	50 lbs.
Plums	52 lbs.