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# TEXAS AGRICULTURAL EXPERIMENT STATION

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS

W. B. BIZZELL, President

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Indexed

## FARM RECORDS AND ACCOUNTS

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†As of April 1, 1920.

‡In cooperation with School of Agriculture, A. & M. College of Texas.

\*In cooperation with the School of Veterinary Medicine, A. & M. College of Texas.

\*\*In cooperation with the United States Department of Agriculture.

## FOREWORD

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This bulletin is written for a large and increasing class of farmers and tenants who wish to know more definitely about the business side of their farms.

It is divided into five parts, four of which discuss as many divisions of farm accounts and the fifth of which gives a few simple rules that will be useful in the farm arithmetic that is necessarily a part of farm accounting.

Each division is a unit in itself. If one is interested only in taking an inventory, Part I will give full directions and the rest of the bulletin may be disregarded. Similarly, Part II deals with records of sales and expenses. Part III gives a few helpful suggestions about income tax returns, and Part IV deals with balancing the farm business so as to secure the greatest possible profits.

As a book in which to keep the necessary records and accounts, the farmer will need only to purchase a small journal, or a single-entry ledger, or an order book. This may be bought at prices ranging from ten cents to a dollar.

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# CONTENTS

## INTRODUCTION

	PAGE
I. Why Keep Accounts.....	5

## PART I

### INVENTORIES

I. What Inventories Will Show.....	7
II. Outline of an Inventory.....	8

## PART II

### A RECORD OF SALES AND PURCHASES

I. A Record of Purchases.....	14
II. A Record of Sales.....	15
III. A Sample Financial Account.....	16

## PART III

### INCOME TAX RETURNS

I. How to Decide Whether You Must Make a Return.....	18
II. Personal Exemptions .....	18
III. When and Where Returns Are Sent.....	19
IV. When and to Whom Tax Must be Paid.....	19
V. Inventories Simplify Returns.....	19

## PART IV

### RECORDS OF CROPS AND LIVE STOCK

I. Returns from Crops and Live Stock.....	20
1. Figuring returns from cotton.....	21
2. A permanent record of yields, prices and returns.....	22
3. Figuring returns from hogs.....	25
4. Feed records .....	28
5. Production records .....	29
6. A summary of returns on crop and live stock enterprises .....	30
II. Seasonal Labor Requirements.....	31
III. Profits and Labor Requirements.....	34
1. Evening up labor requirements.....	34
2. Determining the amount to grow of each crop and of each kind of live stock.....	36
3. When overhead remains the same, any added returns yield net profits.....	37
IV. Planning in Regard to Overhead.....	37
V. Summary of Three Steps in Farm Planning.....	37

## PART V

Useful Rules in Figuring.....	38
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## FARM RECORDS AND ACCOUNTS

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H. M. ELIOT\*  
H. B. KILLOUGH\*\*

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### WHY KEEP ACCOUNTS?

A farmer has four important reasons for keeping accounts:

1. He should know how much he has actually saved during the past year, and if possible during a series of years. Inventories properly taken will tell him this. Pages 8 to 14.
  2. He should know how his accounts stand with his neighbors and others with whom he has dealings on credit. A record of sales and purchases will tell him this. Pages 14 to 18.
  3. Many farmers will need to make out income tax reports. This can be done with less trouble in the long run if an inventory and a record of sales and purchases are kept. Pages 18 and 19.
  4. A farm business to be most successful must be carefully planned from year to year. This planning can be done only when feed and production records are kept and are used with inventory and financial records. Pages 19 to 38.
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### PART I

#### INVENTORIES.

A series of inventories will show:

- (1) Amount saved from year to year.
- (2) Depreciation of farm property.
- (3) Increases in property from growth, investment, or changes in value.

A series of inventories showing an increase in the amount of property owned is extremely gratifying, especially to a young farmer who is bending every effort in making a start in farming. Complete inventories taken at the beginning and at the end of a year are a simple and accurate measure of the progress made. They are also highly valuable in making an income tax return and are absolutely necessary in determining returns from live stock.

A suggestive outline for such an inventory follows on the next page:

\*Resigned July 1, 1920.

\*\*Formerly Farm Management Specialist, Extension Service, A. & M. College of Texas.

## INVENTORY.

December 31, 1918.

<b>BUILDINGS</b>			
1	Residence.....	\$3,500 00	
1	Tenant house.....	300 00	
1	Barn.....	100 00	
1	Barn.....	400 00	
1	Poultry house.....	20 00	
1	Garage.....	30 00	
1	Smoke house.....	70 00	
1	Tool Shed.....	75 00	
	Subtotal.....		\$4,495 00
<b>WATERING SYSTEM</b>			
	Watering troughs.....	\$ 22 00	
	Piping and troughs.....	45 00	
	Windmill.....	150 00	
	Subtotal.....		217 00
<b>LAND</b>			
	120 acres at \$75.00.....	\$9,000 00	
	Subtotal.....		9,000 00
<b>HORSES</b>			
1	Horse colt.....	\$ 35 00	
6	Work horses.....	580 00	
	Subtotal.....		615 00
<b>CATTLE</b>			
2	Cows at \$30.00.....	\$ 60 00	
2	Cows.....	135 00	
4	Cows at \$65.00.....	260 00	
	Subtotal.....		455 00
<b>HOGS</b>			
2	Brood sows at \$50.00.....	\$ 100 00	
	Subtotal.....		100 00



INVENTORY.

December 31, 1919.

<b>BUILDINGS</b>		
1	Residence .....	\$3,500 00
1	Tenant house .....	275 00
1	Barn .....	650 00
1	Barn .....	380 00
1	Poultry house .....	15 00
1	Garage .....	75 00
1	Smoke house .....	60 00
1	Tool shed .....	70 00
	Subtotal .....	\$5,025 00
<b>WATERING SYSTEM</b>		
	Watering trough .....	\$ 20 00
	Pipe and tanks .....	40 00
	Windmill .....	125 00
	Subtotal .....	185 00
<b>LAND</b>		
120	Acres at \$75.00 .....	\$9,000 00
	Subtotal .....	9,000 00
<b>HORSES</b>		
3	Horse colts at \$50.00 .....	\$ 150 00
6	Work animals .....	580 00
	Subtotal .....	730 00
<b>CATTLE</b>		
2	Cows at \$30.00 .....	\$ 60 00
2	Cows .....	135 00
4	Cows at \$65.00 .....	260 00
3	Heifers at \$25.00 .....	75 00
	Subtotal .....	530 00
<b>HOGS</b>		
2	Brood sows at \$45.00 .....	\$ 90 00
1	Young sow at \$25.00 .....	25 00
	Subtotal .....	115 00

## INVENTORY

December 31, 1918 (Continued).

<b>POULTRY</b>			
60	Hens at \$0.60 .....	\$	36 00
	Subtotal .....		\$ 36 00
<b>MACHINERY AND TOOLS</b>			
1	Buggy .....	\$	40 00
1	Car .....		500 00
2	Planters .....		30 00
1	Cultivator .....		10 00
1	Corn sheller .....		3 00
1	Grain drill .....		36 00
1	Spike-tooth harrow .....		5 00
1	Grain binder .....		80 00
1	Disc harrow .....		10 00
1	Turning plow .....		16 00
2	Sulky plows .....		70 00
1	Wagon .....		75 00
1	Mowing machine .....		25 00
1	Rake .....		15 00
1	Stalk cutter .....		10 00
	Shop outfit .....		100 00
	Harness .....		75 00
	Sub total .....		1,100 00
<b>LIVE STOCK EQUIPMENT</b>			
1	Milk separator .....	\$	50 00
4	Hog crates .....		20 00
1	Incubator .....		30 00
	Subtotal .....		\$ 100 00

INVENTORY

December 31, 1919 (Continued).

POULTRY			
100	Hens at \$0.60.....	\$ 60 00	
	Subtotal.....		\$ 60 00
MACHINERY AND TOOLS			
1	Buggy.....	\$ 35 00	
1	Car.....	410 00	
2	Planters.....	25 00	
1	Cultivator.....	8 00	
1	Corn sheller.....	3 00	
1	Grain drill.....	30 00	
1	Grain binder.....	60 00	
1	Spike-tooth harrow.....	5 00	
1	Disc harrow.....	9 00	
1	Turning plow.....	12 00	
1	Wagon.....	60 00	
2	Sulky plows.....	60 00	
1	Mowing machine.....	20 00	
1	Rake.....	12 00	
1	Stalk cutter.....	8 00	
	Shop outfit.....	125 00	
	Harness.....	100 00	
	Subtotal.....		982 00
LIVE STOCK EQUIPMENT			
1	Milk separator.....	\$ 40 00	
6	Hog crates.....	25 00	
1	Incubator.....	25 00	
	Subtotal.....		90 00

## INVENTORY.

December 31, 1918 (Continued).

	<b>PRODUCE ON HAND</b>		
100	Bushels corn at 70c—2 bu. at \$2.50.....	\$ 75 00	
22	Bushels cotton seed at \$1.00.....	22 00	
2	Bushels cotton seed at \$2.00.....	4 00	
40	Bushels oats at \$0.40.....	16 00	
3	Tons baled oat straw.....	33 00	
1	Bushel cowpeas.....	3 00	
	Subtotal.....		\$ 153 00
	<b>SUPPLIES ON HAND</b>		
	Bolts, nails, etc.....	\$ 10 00	
	Hog wire.....	20 00	
	Lumber.....	15 00	
	Subtotal.....		45 00
	<b>BILLS OTHERS OWE ME</b>		
	J. G. Crouder note—cattle.....	\$ 100 00	
	R. S. Lindsey—drill for oats.....	25 00	
	Subtotal.....		125 00
	<b>GROWING CROPS</b>		
20	Acres oats at \$10.00.....	\$ 200 00	
	Subtotal.....		200 00
	<b>CASH ON HAND</b>		
	Bank balance.....	\$ 125 00	
	Cash not in bank.....	30 00	
	Subtotal.....		155 00
A	<b>TOTAL INVESTMENT</b> .....		\$16,796 00
	<b>LIABILITIES</b>		
	Bill due Dorr Merc. Co., December.....	\$ 75 00	
	Note to First National, due Mar. 1, 1919.....	50 00	
B	Total liabilities.....		\$ 125 00
	A. less B. equals net investment.....		\$16,671 00

INVENTORY.

December 31, 1919 (Continued).

	<b>PRODUCE ON HAND</b>		
150	Bushels corn at \$0.80.....	\$ 120 00	
50	Bushels cotton seed at \$1.00.....	50 00	
60	Bushels oats at \$0.50.....	30 00	
5	Tons baled oat straw at \$15.00.....	75 00	
2	Tons fetereta heads at \$30.00.....	60 00	
	Subtotal.....		\$ 335 00
	<b>SUPPLIES ON HAND</b>		
	Bolts, nails, etc.....	\$ 10 00	
	Subtotal.....		10 00
	<b>BILLS OTHERS OWE ME</b>		
	N. L. Odare—for hogs.....	\$ 65 00	
	Subtotal.....		65 00
	<b>GROWING CROPS</b>		
20	Acres oats at \$10.00.....	\$ 200 00	
	Subtotal.....		200 00
	<b>IMPROVEMENTS DURING YEAR</b>		
	Terracing.....	\$ 200 00	
	Hog fence.....	80 00	
	Young orchard.....	45 00	
	Subtotal.....		325 00
	<b>CASH ON HAND</b>		
	Bank balance.....	\$ 95 00	
	Cash not in bank.....	55 00	
	Subtotal.....		150 00
A	<b>TOTAL INVESTMENT</b> .....		\$17,802 00
B	<b>LIABILITIES</b>		
	A. less B. equals net investment.....		\$17,802 00
	<b>SUMMARY A—INCREASE IN NET INVESTMENT</b>		
	Net investment 1919 less net investment 1918 equals Increase of Net Farm Investment.....		\$ 1,131 00

## SUGGESTIONS ON TAKING AN INVENTORY.

How an inventory should be taken is well illustrated by the above sample. It is well to list everything separately and to place a careful valuation upon each separate item. Each horse and each cow should best be listed by name or number with a valuation placed on each head. As one of the purposes of an inventory is to show how much property one is accumulating, it is well to list household goods, Liberty bonds and other securities.

Depreciation should be carefully considered in each inventory. It can best be figured by estimating the length of life of each piece of property and by reducing the valuation of each piece accordingly; for instance, if a binder can reasonably be expected to last ten years, one-tenth of its original valuation should be deducted each year, and so on with all other items. On the other hand, growing stock, such as colts and calves, will increase in value up to a certain age, and these increases in value should be carefully considered.

The date of taking an inventory is important. An inventory may be taken at any time of the year, but it should be taken at the natural end of the year's business, and the second inventory should be taken exactly twelve months later. As the United States Treasury Department prefers to have the inventory for income tax returns taken on the thirty-first of December it is well to choose this date. Therefore, if you are not already taking an inventory on another date, you should take an inventory on December thirty-first next, and should take another each year following.

An inventory is valuable even if no other records are kept, but it is good business to keep at least a record of sales and purchases made on credit. Such a record will be discussed in Part II.

---

**PART II****A RECORD OF SALES AND PURCHASES.**

Most farmers keep a record of the sales and purchases made on credit. When such purchases are finally paid for, a receipt is taken, or if the payment is by check, the check is kept as evidence of settlement. When this is done careful business methods are followed and debts are never paid twice. To the adage, "Money saved is money earned," might be added, "Take a receipt and save money," or, "Pay by check and save money." Such business methods not only pay in money saved, as careful farmers will testify, but what is more valuable, they often prevent misunderstandings, which otherwise would lead to loss of friendship and its attendant unhappiness.

**A RECORD OF PURCHASES.**

A record of purchases may be kept with almost no bookkeeping by the use of a checking account at a bank. It is a good practice to pay by check all bills of one dollar or over and to write in the lower left-hand corner of each check what bill or bills it is drawn to pay. When

the check comes back through the bank it should be kept both as evidence that the account has been paid and as a record of what the money was spent for. The most convenient way to file returned checks is in the order in which they were written.

Moreover, the checking method lends itself to the practices of the business world. Business men consider a sale to be a cash sale if it is settled for within thirty days, and in carrying out this policy they mail to each of their customers on the first of each month a statement of the balance due on his account. The farmer, upon receiving such a statement, should check it with the memorandum the merchant gave him at the time of purchase, and if it is correct, mail a check to settle it.

If he has not the money in the bank he should go to his banker and arrange for a loan. By thus borrowing of a banker instead of requiring the merchant to carry the account, a farmer will increase his total borrowing capacity, as well as his credit rating in the community. He will save also by being able to buy at cash instead of at credit prices.

There is still another strong reason for carrying a checking account with a bank and depositing all cash there. A banker makes up and maintains a good part of his cash reserve from the bank balance of his customers. He, therefore, appreciates a farmer's balance, small as it may be, and thus becomes a financial friend.

Furthermore, it is a business rule to confine all borrowing to a single bank.

#### A RECORD OF SALES.

While it is possible to keep a complete and accurate record of all expense by the simple device of paying all bills by check, it is quite impossible to use the same method in case of sales. However, as the number of sales on the ordinary farm is not large it will not be a serious task to record each sale. It goes without question that a record should be kept of all sales made on credit. To do otherwise would be careless, and if we add to the necessity of keeping a record of sales made on credit the desirability of a record of all sales for reference in making an income tax report, and then to this add the value of knowing how total sales compare with total expenses, there is sufficient reason for a complete record of all sales.

Illustrations showing a convenient method for keeping a record of purchases and sales follow:

## FINANCIAL ACCOUNT FOR JUNE

		Sales.	Farm.	Personal.
June 6		129 bu. wheat at \$2.00.....	\$ 258 00	
7		203 bu. oats at \$0.60.....	121 80	
		960 lbs. potatoes.....	28 20	
		140 bu. wheat at \$2.00.....	298 00	
			\$ 706 00	



## FINANCIAL ACCOUNT FOR JUNE.

	Purchases.	Farm.	Personal.
June 6	Dry goods. ....		\$ 5 00
	Labor threshing \$7.25, gas for same \$6.70	\$ 13 95	
7	Labor on wheat. ....	15 00	
	Repairs on binder. ....	14 50	
	Oats for horses. ....	12 50	
	Medical fee, family. ....		9 00
8	American Sheep Breeder, 2 years. ....	2 00	
9	Blacksmithing for binder. ....	2 00	
	Life insurance. ....		51 04
	Labor on oats. ....	3 15	
11	Dentist. ....		2 00
	Labor on cotton. ....	10 00	
	Gasoline for automobile (part personal) ..	6 38	6 00
12	Labor chopping cotton. ....	5 00	
13	Sundries. ....		1 25
	Labor on oats. ....	10 00	
14	Dry goods. ....		3 28
	Wrench. ....	1 75	
18	Poultry feed. ....	8 00	
21	Labor on wheat. ....	3 50	
23	Poultry feed. ....	3 00	
27	Groceries. ....		12 45
	Labor on wheat. ....	10 00	
28	Sundries. ....		15 00
	Labor on wheat. ....	6 00	
28	Kerosene for house. ....		8 22
	Sundries. ....		2 00
	Feed for horses. ....	16 60	
	Balance. ....	512 57	
		\$ 706 00	\$ 110 24

## SUMMARY B—FARM INCOME.

The difference between the total farm sales for the year and total farm purchases, plus the increase or minus the decrease in net farm investment (Inventory, page 12) will be Net Farm Income. (Do not include personal items or household inventory in summary B.)

The above is a sample record of sales and purchases for the month of June. Farm expenses are listed in the left-hand column and personal expenses in the right-hand column. Keep a similar record for each of the twelve months of the year and at the end of the year summarize them in accordance with summary B noted on page 16.

For income tax purposes great care should be exercised in keeping a list of all expenses, as well as of all sales. Careful records of sales and purchases will materially reduce the time and cost of making out income tax returns, a brief discussion of which follows in Part III.

---

## PART III

### INCOME TAX RETURNS.

The time and cost of making income tax returns will be greatly reduced if inventories and records of sales and purchases are kept in such a shape as to enable them to be used readily for that purpose. This bulletin will not attempt to discuss in detail the rulings of the United States Treasury Department upon the question of income tax returns. And there are two reasons for this: First, the Treasury Department gets out full information in condensed form answering all the questions that could possibly be raised by farmers in regard to making returns. This information may be had by writing the internal revenue office at Austin, Texas. And, second, these rulings are changed from time to time so that any information given in a bulletin would be true only for the year in which the bulletin was published. Enough information may be given here, however, to enable one to know in a general way whether he needs to make a return, and if so when it must be made. Upon these points we quote the 1919 rulings of the United States Treasury Department:

#### HOW TO DECIDE WHETHER YOU MUST MAKE A RETURN.

"If you are a citizen or resident of the United States and your net income equals or exceeds \$2000 if you are married and live with your wife (or husband) you must make a return."

"If your net income plus the net income of your wife (or husband) and dependent children (if any) amounted to \$2000 or more, all such income must be reported. Income of wife (or husband) and children should be classified in the same manner as your own income."

"Income of dependent children must be included in their father's or mother's return unless such income was derived from a separate estate under control of a guardian, trustee, or other fiduciary. Income of a minor or incompetent, derived from a separate estate, must be reported by his legal representative."

#### PERSONAL EXEMPTION.

"If you are married and live with your wife (or husband) or are head of a family, you are entitled to a personal exemption of \$2000 plus \$200 for each dependent child under eighteen (or mentally or physically incapacitated for self-control). If husband and wife make

separate returns, this exemption may be claimed by either (but not by both) or may be divided between them.

"If you are not married or do not live with wife (or husband) or are not head of a family, you are entitled to a personal exemption of \$1000 only.

"A head of family is a person who, in accordance with some moral or legal obligation actually supports and maintains one or more individuals closely related to him or her by blood, marriage or adoption.

#### WHEN AND WHERE THE RETURN SHOULD BE SENT.

"Returns are for the period of the calendar year (ending December 31) and are sent to the collector of internal revenue for the district in which you live so that it will reach him on or before March 15. If you do not know the address of the collector of internal revenue, ask at the postoffice or a bank."

#### TWO METHODS OF MAKING RETURNS.

There are two methods of making income tax returns. The first may be called the sales and expense method, and is the method followed where no records are kept. The second may be called the inventory method, and is used where a record of sales and purchases is kept and where an inventory is taken at the beginning and at the end of the year.

The first method has the following objectionable features: First, where an income tax report is filled out from memory one is able to remember or estimate very well his sales for the year, as sales from live stock products come at fairly regular intervals and as it is also easy to remember sales of live stock and of farm crops. But when it comes to remembering expenses it is quite a different matter. Expenses come in irregular amounts and at irregular intervals distributed over the year, and it is utterly impossible to remember all of them. One is, therefore, in the position of reporting his full income and only part of his expenses, and, therefore, of paying income tax on the greater amount than he would if careful records were kept.

Again, when markets are bad, produce is often carried over from the one year to another with the result that the sale of two seasons' crops come within one year. This doubles the sales but not the expenses and because of this a farmer might be lifted into the income tax class on a given year when otherwise he would have been out of it.

Turning to an income tax report made out where complete records are kept and where an inventory is taken at the beginning and at the end of the year, we have these two difficulties removed. One will be able to report all of his expenses and in case he has carried over a crop from one year to another it will be shown in his beginning inventory and will thus offset the sale.

Another difficulty confronting one where no records are kept is the labor of making out the income report. Upon receiving an income tax blank he starts out to figure his expenses and receipts. After spending a couple of weeks on the problem a lawyer is often consulted and paid

for making out the report. Where records are kept no one needs to be hired.

On the income tax blank which the Treasury Department supplied are spaces for making the report by either method.

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## PART IV

### RECORDS OF CROPS AND LIVE STOCK.

The city business man believes that his farmer friend should keep accounts, and reproves him for not doing so. The farmer agrees with his city friend, buys an account book, and on January 1, next, begins to keep a systematic record of all purchases and sales. He is now able to know by referring to his records how his accounts stand with each one with whom he has business dealings. He takes an inventory at the beginning and at the end of the year and knows how much he has saved during the year. And from the inventory and from the record of sales and purchases, he is able to answer the questions asked of him on the income tax blanks. This is all highly valuable and the farmer at the end of the year feels amply repaid for his trouble.

But there is still another question confronting him. It is the question the business man really had in mind. What is the farmer making money on, what is he losing money on, and what changes can he make in his farm business that will increase his annual net income? To make his accounts answer this most important of all farm problems the farmer must in addition to the inventory and to the record of sales and purchases, keep a record of crop yields, of live stock products, and of feeds consumed, and he must summarize the results.

The task is not so difficult as at first it seems. And the accounting problems involved fall under three heads: First, he must figure carefully the returns he is receiving from each crop and from each class of live stock; second, he should carefully consider the seasonal labor requirements of each crop and of each kind of live stock he is growing, and how the amount he is growing of each affects the amount he can handle of the others; and, third, he should carefully figure the annual amount that each piece of overhead\* is bringing in, and whether it is bringing in more or less than it is costing. We will first discuss returns from crops and live stock.

#### 1. RETURNS FROM CROPS AND LIVE STOCK.

In every farmer's mind are figures which he calls returns. Returns from cotton, returns from corn, returns from peanuts, returns from hogs, returns from cattle, or, in talking to a neighbor, he may say that he made forty, fifty, or maybe sixty dollars an acre on cotton, and twenty dollars an acre on corn. But whichever phrase he uses, he means the same thing. By returns from a crop, he means the amount it would bring if all of it were sold, less any actual cash paid out in growing it. When he needs to be exact, he speaks of returns per acre,

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\*See page 37 for discussion of overhead.

and for use in farm planning, acre returns are sufficiently accurate. To know acre returns and returns from live stock, then, is to have taken the first step in farm business planning, and there are only two other steps necessary.

#### FIGURING RETURNS FROM COTTON.

Cotton will be used to illustrate the method of figuring returns from crops. Acre returns from cotton, or what one makes from cotton, as the term is ordinarily used, may be arrived at in a very simple way, as Account I, page 22, will show. The figures given in Account I are for illustrative purposes only, and will not fit any particular farm, and, therefore, each farmer should substitute the yields, the market prices, and the cash costs that his experience or his crop records leads him to expect on the coming season's crop.

A yield of one-third of a bale sold at 30 cents a pound would give \$50. One-sixth of a ton of seed sold at \$48 a ton would give \$8 from seed, a total yield of \$58 from an acre of cotton. After subtracting such cash items of expense as are given in Account I below, we have an estimated cash return of \$47.33 an acre. This assumes that the farmer does all the work on his own cotton. If he hires for chopping or picking, he will charge cotton with the labor hired. There will be other expenses on cotton which must be charged, but each farmer must get them from his own records.

## ACCOUNT I.—RETURNS FROM AN ACRE OF COTTON.

## Special Expense Per Acre.

Seed, two-thirds bushel.....	\$	2 00
Ginning one-third bale.....		2 00
Bagging and ties at \$2.00 a bale.....		67
Cash rental value of one acre at \$5.00.....		5 00
Poison for insects.....		1 00
Acre returns.....	\$	47 33
	\$	58 00

ACCOUNT I.—RETURNS FROM AN ACRE OF COTTON.

Yields.

Lint, one-third bale at \$0.30.....	\$ 50 00
Seed, one-sixth ton at \$48.00.....	8 00
	\$ 58 00

In a similar manner the acre returns from other crops may be arrived at. Let it be assumed for the purpose of this discussion, that they are as follows: corn, \$20 an acre; wheat, \$13; grain sorghum, \$30, as stated in Form 1, which follows:

Form 1.—Summary of Returns on Certain Crop Enterprises.

Enterprise.	Returns per acre
Cotton.....	\$ 47 00
Corn.....	20 00
Wheat.....	13 00
Grain sorghum.....	30 00

It is not necessary to keep a complete set of double-entry books, and such a plan is not advised, but a farmer with considerable experience as a bookkeeper may do so if he chooses. By such a method he would post, for example, to the cotton account all the cotton items contained in the inventory, in the purchase and sales account, and in the feed records, and then he would balance the account and divide the balance by the number of acres planted to cotton. The result obtained in this way, while following bookkeeping methods, will be no more accurate from a practical standpoint than those obtained by the first method described; but either is sufficiently accurate for all the practical purposes of a farmer and is fully as accurate as accounting ever can be.

By whichever method returns from crops and from live stock are figured the results should be kept in a permanent record. This is necessary as an average of several years' records is better than any one year's record, which may not have been typical. A farmer, then, should begin to keep yearly records of yields, prices, and returns. After he has kept such records for a term of years he will have average figures that will be a true guide as to what he may expect from each crop he is growing. Form 2 is suggested for this purpose.

Form 2.—The following form is suggested for the purpose of keeping a record of yields, prices, and acre returns, covering a period of years.

#### COTTON

Year	Yield	Price	Acre return	Average yearly returns
1920	.....	.....	.....	.....
1921	.....	.....	.....	.....
1922	.....	.....	.....	.....
1923	.....	.....	.....	.....
1924	.....	.....	.....	.....



## RETURNS FROM LIVE STOCK.

For figuring returns from live stock, let us use hogs as an illustration. In addition to the cash cost of keeping hogs, there are feed costs and equipment costs. The cash costs, as on crops, will be any cash that is paid out directly for hogs, such as feed purchased or veterinary fees. In addition to the feeds purchased, will be the feeds grown on the farm and fed direct to the hogs. Such feed is a direct charge to hogs, as it could be sold if not fed. Also special hog equipment will be required. The expenses due to this equipment should be carefully figured and charged against the hogs.

## FIGURING RETURNS FROM HOGS.

In Account II, page —, are estimates for the cost of keeping two brood sows one year and of raising four litters of pigs for market. Let us assume that the sows are registered, and, therefore, of a very good type and that they are valued at \$100 each. Interest at 8 per cent. upon this valuation is \$16. After four years the sows will have to be sold at pork prices; therefore, depreciation on the two sows is estimated at \$15 a year. Service for four litters of pigs at \$5 each would cost \$20 a year. The cost of two A-shaped hog houses, valued at \$40, assuming they will last ten years, will be, depreciation \$4 a year, and interest \$1.60.

A shelter will need to be provided for the growing pigs and probably can be provided at a cost of \$25. Depreciation over a period of ten years will be \$2.50 a year, and interest \$1.

Feed requirements to maintain the two sows for one year is estimated as follows: concentrates, \$80; forage, \$10; total, \$90.

It may be assumed that the four litters will average six and one-half pigs to the litter, or a total of twenty-six pigs. Concentrates for feeding these pigs may be estimated at 800 pounds of corn at 2 cents per pound, and 100 pounds of tankage at  $5\frac{1}{2}$  cents per pound, a total of \$279.50, and forage for the growing pigs is estimated at \$36.

Thus the total estimated cost of keeping two brood sows and four litters of pigs one year would be \$465.60.

The first two litters will be ready for sale when eight months old and with a weight estimated at 225 pounds each and a sales price of 15 cents net, will bring \$438.75. The thirteen pigs of the second two litters will be two months old at the end of the year and their inventory value at \$8 each will be \$104, making a total income from the hog account of \$542.75. Subtract from this amount \$465.60, the cost of growing the hogs, and the net return is \$77.15. These figures are tabulated in Account II.

ACCOUNT II.—HOW TO FIGURE RETURNS FROM HOGS.  
COSTS.

Interest at 8% on two brood sows valued at \$100.00 each.....	\$ 16 00
Depreciation of sows to pork prices over a period of four years....	15 00
Service, 4 litters at \$5.00.....	20 00
Cost of two A-shaped hog houses, valued at \$40.00:	
1. Annual depreciation.....	4 00
2. Interest at 8%.....	1 60
A shelter for growing hogs, value 25 00:	
1. Depreciation over 10 years.....	2 50
2. Interest at 8% for 6 months.....	1 00
Feed maintenance:	
1. For two sows one year:	
a Concentrates.....	80 00
b Forage.....	10 00
2. For 13 pigs until sold:	
a Concentrates, 800 lbs. corn each at 2c and 100 lbs. tankage each at 5½c.....	279 50
b Forage.....	36 00
Return from hogs.....	\$ 77 15
	<hr/>
	\$ 542 75

## ACCOUNT II.—HOW TO FIGURE RETURNS FROM HOGS.

## RECEIPTS.

Sales 13 hogs weighing 225 pounds each at 15c net.....	\$ 438 75
Inventory 13 pigs two months old at \$8.00.....	104 00
	<hr/>
	\$542 75

Brood sows are the farmer's original investments in his hog enterprise, and may be regarded as the units in hog raising and, therefore, as the unit in thinking about hog returns. The returns from the hog account, then, when divided by the number of brood sows kept, will give the returns per sow, a figure used in Form 4, page 31.

FEED RECORDS.

In addition to cash cost, sales, and inventories, feed records are essential in determining returns from live stock. As cash costs, sales, and inventories have already been discussed it remains to consider feed records. There are several ways of keeping feed records. The important thing is to have an accurate account of the money value of the feed fed to each kind of live stock. Form 3, below, is suggested as one of the ways of keeping feed records. On this form the kind, amount, and cost of the feed fed to each kind of live stock is recorded each month. These charges are then used in figuring returns from live stock.

FORM 3.—FEEDING RECORD FOR MONTH OF ....., 19..

Kind of stock	No. of animals	Feed			Total cost
		Kind	Amount	Cost	
Horses .....					
.....					
.....					
Cows .....					
.....					
.....					
Sheep .....					
.....					
.....					
Hogs .....					
.....					
.....					
Poultry .....					
.....					
.....					

PRODUCTION RECORDS.

Dairy cattle and hens require a production record in addition to feed and other records. This is because their production comes in small amounts covering most of the year. The amount of milk each cow gives varies throughout the year and the percentage of butter fat varies with different cows. It is necessary, therefore, to weigh the milk of each cow daily or at least once in two weeks or certainly as often as once a month. Butter fat tests should also be made for each cow at intervals of at least once a month. The following form is a sample of a weekly milk record:

MILK RECORD

Herd of \_\_\_\_\_ From \_\_\_\_\_ 192 To \_\_\_\_\_ 192

Cow Name and Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Remarks	
Date																						
AM																						
PM																						
AM																						
PM																						
AM																						
PM																						
AM																						
PM																						
AM																						
PM																						
AM																						
PM																						
Total Milk																						
% Butterfat																						
lbs. Butter																						

The average farmer regards his flock of poultry as a losing enterprise. This is because eggs are gathered in small quantities each day and no record is made of them. Further than this, chickens are killed and used in the home on Sundays and other days and no record is kept. The egg sales are usually made once a week and the egg money is used to buy groceries. A great many eggs are also used for cooking, and poultry is sold at frequent intervals during the year. Eggs and poultry equal to a bale of cotton may be produced and consumed during the year and yet not attract the farmer's attention. It is, therefore, important that both production records and feed records be kept on poultry. The following is a form of daily egg record, but a record of eggs laid one day each week will serve the purpose as well as records for each day of the year. Record also should be kept of poultry sold and used in the home.

## Poultry Production Records, 192

No. of hens													Remarks—	
Date	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
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18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														
31														
Total														
Average per Hen														

## A SUMMARY OF RETURNS FROM CROPS AND LIVE STOCK.

Form 4 gives a sample summary of returns from crops and live stock. With returns carefully worked out a farmer is able to make accurate comparisons as to the relative profitableness of his various crops and kinds of live stock. He will probably not find it most profitable to grow any one crop to the exclusion of all others, but will probably find his farm business paying best when he grows several crops. The amounts of each crop and kind of live stock he will find it most profitable to grow will be determined by two factors: first, returns, which have been discussed; and, second, seasonal labor requirements, which will be discussed on the pages immediately following.

Form 4.—Summary of Returns on Certain Crop and Live Stock Enterprises.

Enterprise	Returns per acre	Returns per animal
Cotton.....	\$ 47 00	
Corn.....	20 00	
Wheat.....	13 00	
Grain sorghum.....	30 00	
Hogs (per brood sow).....		\$ 39 00
Cows (per dairy cow).....		50 00
Poultry flock.....		150 00

## 2. SEASONAL LABOR REQUIREMENTS.

Let us now consider seasonal labor requirements, the second step in farm business planning.\* Each crop has a period when it requires a great deal more attention than it requires for the remainder of the year. For example: the time of greatest requirements for labor on cotton is picking time, the time of greatest requirements for labor on corn is at the gathering of the corn, which comes just before cotton picking or during cotton picking time, the time of greatest requirements on wheat and oats is the harvesting and threshing period, which comes in June, July, and August, and similarly grain sorghums require the greatest amount of attention at the harvesting and threshing season, which comes in August.

Again, the greatest labor requirements for a crop, such as Sudan grass sown for hog pasture, occur in the early part of the year, before the chopping and cultivating season begins. This unevenness in labor requirements is shown in a graphic way for eight important crops on pages 32 and 33.

The farmer then by being judicious about the amount of each crop he plants, will be able to arrange his crop so as to be able to take care of each crop at the time of its greatest labor requirement. If he plants no more cotton than he can pick during the picking season, he will not lose money on high-priced and uncertain transient labor.

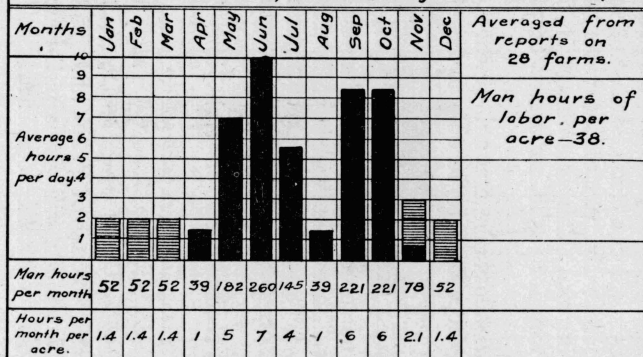
And if the wheat that he sows is no more than he can harvest and thresh by exchanging work with his neighbors, he will have no trouble about the scarcity of labor; nor will he lose part of his crop through lack of attention. A careful regard for seasonal labor requirements is the A B C's of farm planning.

Charts 1 to 8 give seasonal labor requirements on eight important Texas crops.

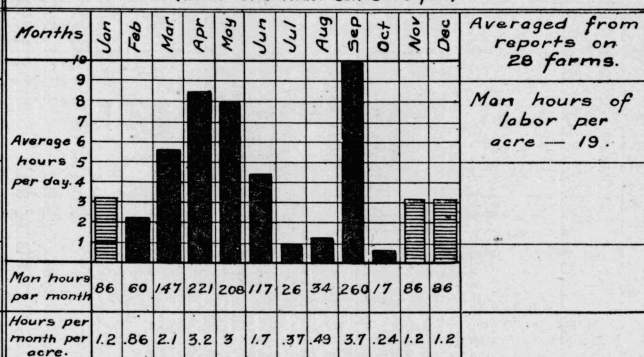
The plowing of land in the winter time, the planting of crops in March and April, the cultivating and chopping of crops in April, May, and June, the harvesting and threshing of small grain in June, July, and August, the gathering of corn, and sowing of grain, and picking of cotton in September, October, and November, will give a well-rounded program so far as seasonal labor requirements are concerned.

\*For a more complete discussion of seasonal labor requirements and seasonal labor distribution, see Extension Service Bulletin B-46.

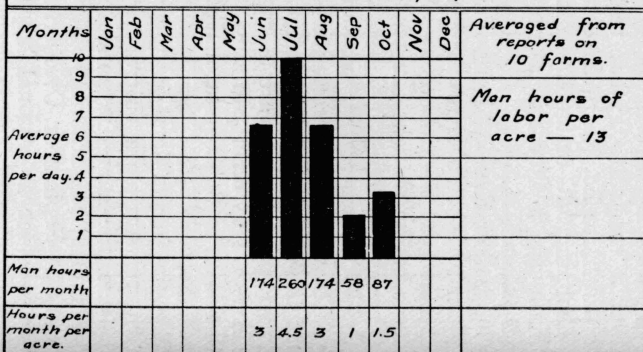
**Chart No. 1 Peanuts.** Distribution of Man Labor on 37 acres  
(What one man can care for—threshing not included.)



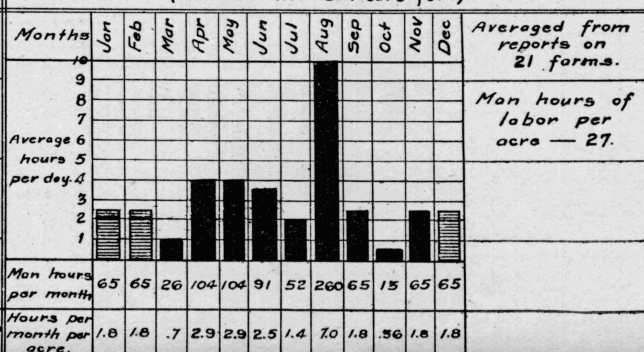
**Chart No. 2 Corn.** Distribution of Man Labor on 70 Acres  
(What one man can care for.)



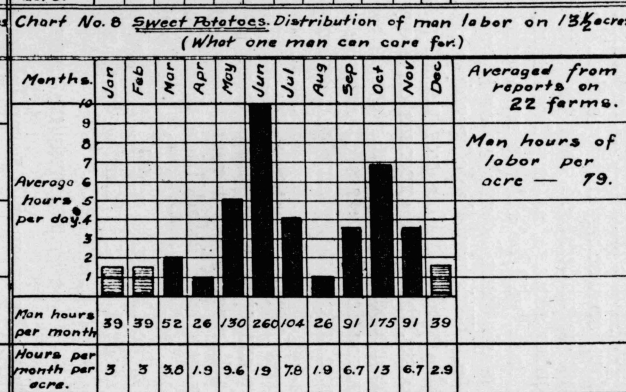
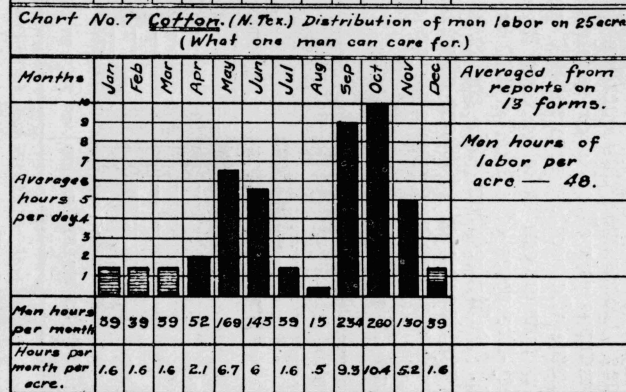
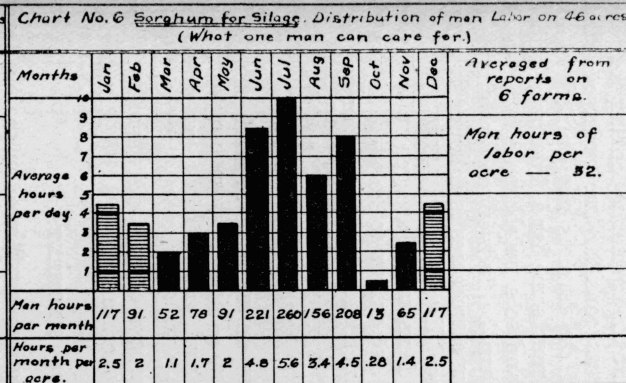
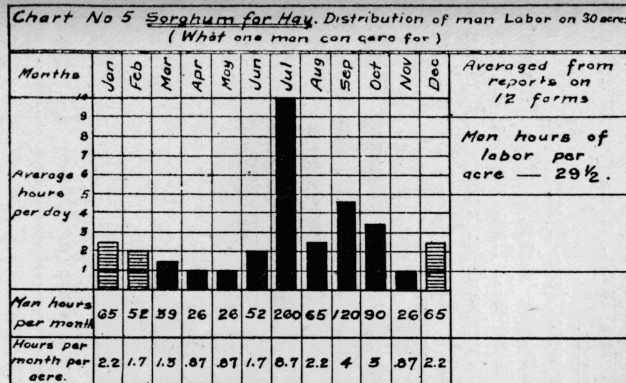
**Chart No. 3 Small Grains.** Distribution of Man Labor on 58 acres  
(What one man can care for.)



**Chart No. 4 Grain Sorghum.** Distribution of Man Labor on 36 acres  
(What one man can care for.)







Labor fixed as to season

Labor not fixed as to season

## 3. PROFITS AND LABOR REQUIREMENTS.

Will such a program yield a profitable yearly return? For it is more net profits and not more work that the farmer is looking for.

Before answering this question, let us consider two points: First, it must be understood that the size of the farm is not limited to any particular acreage, as any farmer can rent some land from a neighbor, or in turn, will be able to rent some land to a neighbor or to a tenant, in case his farm is smaller or larger than he finds it most profitable to operate. This practice of renting a few extra acres is followed in every neighborhood and does not need further discussion.

Second, there are expenses on every farm which are generally known as "overhead." The term "overhead" is coming to be used as a general name for that class of expense which is caused by the business as a whole and not by any particular part of the business. Horses and mules, equipment and tools, and a certain amount of general farm expenses fall under this heading.

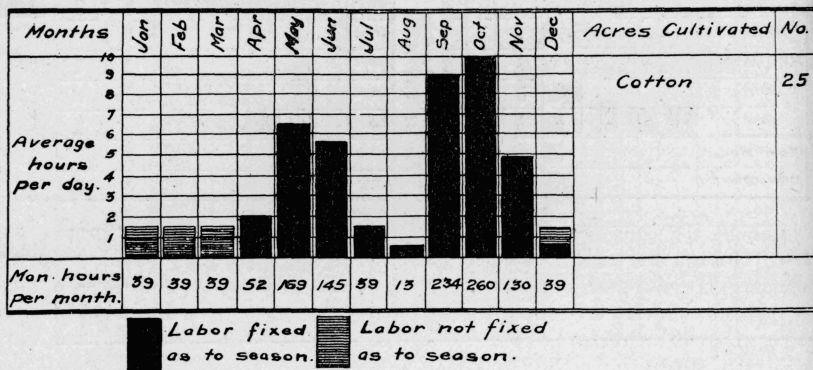
For example, three mules kept at an annual cost of \$100 each will cost a farmer \$300 a year. Tools and equipment cost him, possibly, \$75 a year, and in addition there is a multitude of little expenses that amount on the average farm to something like \$300 to \$400. This gives a total figure which, for the purpose of this discussion, will be estimated at \$725. This we will call overhead.

## EVENING UP LABOR REQUIREMENTS.

What effect then will "even labor requirements" have on the net farm income? To answer this question for his farm, a farmer must consider returns as well as labor requirements.

Assume that cotton returns \$47 an acre (see Form 4, p. 31) and that a farmer can take care of twenty-five acres. (See Chart 9.) Twenty-five acres of cotton at \$47 an acre will then yield a return of \$1175. Subtract from this the \$725 overhead expense, and there is left a net income of \$450 out of which the farmer must live and save. But such a return will give a very meager living.

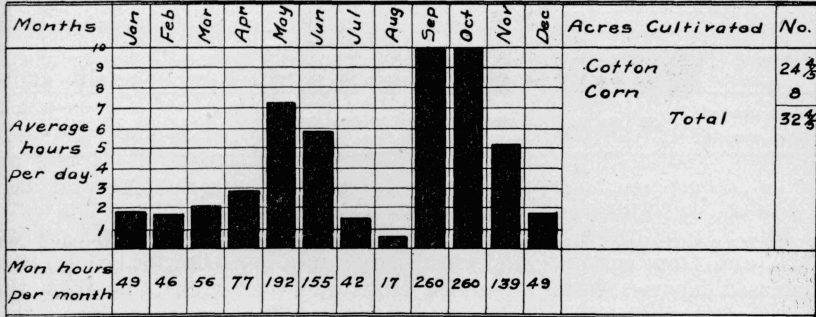
Chart No. 9—One-Crop Farms Have Much Unproductive Time.



\*In the charts used in this bulletin white space represents unproductive time, and black space represents productive time.

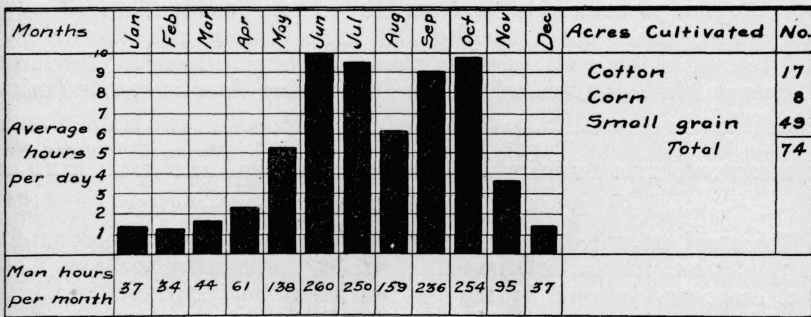
If the farmer adds to the twenty-five acres of cotton, eight acres of corn with a return of \$20 (see Form 4, p. 31) he will add \$160 net return and will increase his yearly earning to \$610. This is some better but not enough to give him a very good living, and enable him to save.

Chart No. 10—Earnings Are Increased by the Addition of a Second Crop.



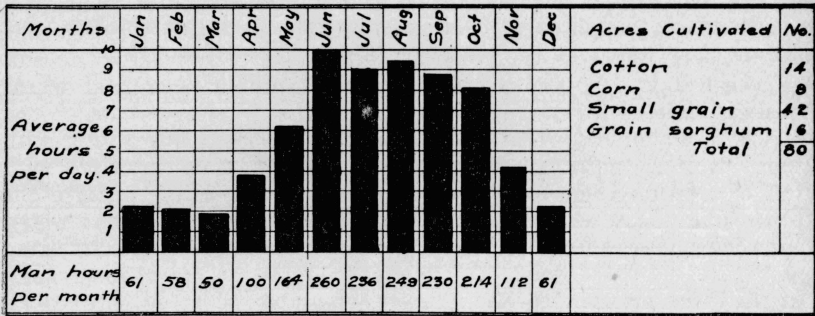
There will still be left a considerable period in the summer when he could harvest a certain amount of wheat, but as wheat must be sown in October, he must necessarily reduce his cotton acreage. Assuming that he can harvest forty-nine acres of wheat with a return of \$13 an acre (see Form 4, p. 31), he will gain a net income from it of \$637. This will require a reduction of cotton of about seven acres, but will add about \$260 to his yearly net income over what he would get for cotton and corn alone.

Chart No. 11—It Pays to Take Time Out of Cotton Picking to Sow Some Wheat.



Let us assume now that he adds grain sorghum as a fourth crop. (See Chart 12.) This will require some reduction in both cotton and wheat. He will still, however, be able to take care of fourteen acres of cotton, which will return \$658; the eight acres of corn with a return of \$160; the forty-two acres of wheat, \$546, and the sixteen acres of grain sorghum, \$480, a total of \$1844. This, less the same overhead expense of \$725, will leave \$1119 net from which to live and save. This may be added to by keeping some hogs, cows, and chickens.

Chart No. 12—By Reducing Cotton 3 Acres and Wheat 5 There Is Time to Handle 11 Acres of Sorghum.



Under the terms of this illustration the net return from cotton alone is \$450; from cotton and corn, \$610; from cotton, corn, and wheat, \$870, and from cotton, corn, wheat, and grain sorghum, \$1119. These increased incomes from the added crops and live stock come from the fact that they are grown without any increase in overhead costs.

Table I.—When overhead remains the same, any added returns yield net profits.

Crop combination	Total acres	Returns	Overhead	Net Returns
Cotton (25a).....	25	\$ 1,175	\$ 725	\$ 450
Cotton (25a) and corn (8a).....	33	1,335	725	610
Cotton (17a), corn (8a) and wheat* (49a).....	74	1,595	725	870
Cotton (14a), corn (8a), wheat (42a) and grain sorghum (16a).....	80	1,844	725	1,119

Each farmer should, therefore, at the beginning of each year, carefully estimate the probable returns from the various combinations of crops and live stock that can be handled with the equipment and labor he has, and he can, in this way, carefully plan the year's business for his farm. Time spent in doing this will be the best paying time he spends during the year.

#### DETERMINING THE AMOUNT TO GROW OF EACH CROP AND EACH KIND OF LIVE STOCK.

The exact amount of each crop that a farmer will find it most profitable to grow will be determined; first, by the returns per acre from that crop; and, second, by the way its labor requirements fit in with the labor requirements of other crops. Let us use wheat and cotton to illustrate the method of determining the amount of each crop. Assume that wheat returns \$13 per acre and that cotton returns \$47 per acre. (See Form 4, p. 31.) Assume also that the ground for seven acres of wheat can be prepared and the wheat sown in the time that is required to pick one acre of cotton, and that the work must be done

\*Grain binder costs, along with cash costs, have been charged against wheat in estimating net returns.

during the cotton picking season. The seven acres of wheat at \$13 an acre will add 7 times \$13, or \$91, to the yearly net income of the farm and the acre of cotton thus displaced will add \$47. Then, on the basis of acre returns and labor requirements at cotton picking time wheat is nearly twice as profitable as cotton. It will then pay to sow some wheat if it does not crowd out a more profitable crop at wheat harvesting time.

A certain amount of wheat can be harvested without interfering with cotton, but if so much wheat is to be harvested as to interfere with cotton cultivation then it will be necessary to carefully compare the returns from the wheat with the returns from the cotton that would be crowded out because of conflicting labor requirements at harvesting time.

In the same manner, careful comparisons must be made between all the different crops and all the different classes of live stock, first, as to their returns, and, second, as to how their labor requirements fit in with each other, and finally, as to how different combinations affect the total income of the farm. This is illustrated in Table I, page 36.

#### 4. PLANNING IN REGARD TO OVERHEAD.

The fourth and last step in farm planning has to do with the equipment a farmer should have and the number of horses he can best afford to keep, and may be illustrated by the use of horses as follows: Suppose a farmer has three horses and wishes to decide whether the number should be increased to four, and suppose the annual cost of keeping a horse and the accompanying equipment is \$100. A fourth horse, then, will add \$100 to the general costs of the farm. Let it now be assumed that the extra horse, if added, will enable the farmer to grow two acres more corn with an acre return of \$20; eight acres more wheat at \$13 an acre, and release the farmer for enough time to care for two extra cows with a return of \$50 a head. (See Form 4, p. 31.) The extra returns directly due to the added horse would be: corn, \$40; wheat, \$104; cows, \$100; total, \$244. This, less \$100, the cost of the horse, leaves \$144, the amount the horse earns net for the farmer. The same reasoning will apply to any other piece of equipment either in its increase or reduction.

#### SUMMARY OF THE FOUR STEPS IN FARM PLANNING.

To conclude: A farm owner or a tenant starts into the year with a team of two to four mules. He has equipment and tools to go with them. He has his own labor and in most cases some labor from other members of his family. He has to make a living for his family and he wants to save something. These are definite overhead costs of running his farm, of living, and of raising a family.

He is not only a laborer, but a manager. There is no question but that he will work hard enough, but how will he plan his farm business? In planning, there are four steps that should be considered:

1. An estimate must be made as to what return may be expected from each crop and each class of live stock. This estimate should be based upon records kept by the farmer upon his farm, and the records should cover as many years as possible. If a farmer has not kept such

records, he will have to use his memory as to yields and costs, and should begin at once to keep records.

2. Seasonal labor requirements must be carefully considered. Any farmer with any experience at all with a crop knows how much of it he can handle at its time of greatest labor requirements, and still do the necessary work on other crops. If he over-plants in any crop, he will have trouble in getting satisfactory labor. He must know his labor supply and plan accordingly.

3. Where increasing one crop requires that others be decreased he must balance what the increase of the one will bring against what he will lose by the decrease of others.

4. The consideration of overhead is important. Careful estimates must be made as to whether a particular item of overhead is paying its way. It may be costing more than it is bringing in, or, on the other hand, it may be returning handsome profits. It must be considered on its merits.

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## PART V

### USEFUL RULES IN FIGURING.

#### CORN.

Length times width times average depth in feet gives cubic contents of bin or crib. Divide the result by the number of cubic feet in one bushel to give the number of bushels:

1 bu. ear corn in shuck (best corn, well packed), 3 cu. feet.

1 bu. ear corn shucked,  $2\frac{1}{2}$  cu. feet.

1 bu. shelled corn (small grains also),  $1\frac{1}{4}$  cu. feet.

Where corn is sold by the barrel the standard flour or lime barrel is the unit of measure. A barrel of average corn in the husk is regarded as equivalent to a bushel of shelled corn.

#### HAY.

Length times width times average height gives contents in cubic feet. Unless kind of hay is known definitely, divide by 500, the number of cubic feet usually taken for one ton.

#### MILK.

(From "Feeds and Feeding" by Henry and Morrison.)

The value of 100 pounds of skim milk when fed along with corn to fatten hogs is half the market price of corn per bushel.

Whole milk is worth only about twice as much as skim milk for pigs.

Table II.—Estimated Weight of Settled Corn Silage.

Depth of Silage, Ft.	10 ft. diameter	12 ft. diameter	14 ft. diameter	16 ft. diameter	18 ft. diameter	20 ft. diameter
1	1.26	1.81	2.46	3.22	4.07	5.03
2	2.54	3.66	4.98	6.51	8.23	10.17
3	3.85	5.54	7.55	9.86	12.46	15.40
4	5.19	7.48	10.19	13.31	16.81	20.79
5	6.55	9.45	12.85	16.78	21.21	26.22
6	7.94	11.44	15.56	20.32	25.68	31.75
7	9.37	13.50	18.37	23.99	30.31	37.48
8	10.80	15.56	21.19	27.66	34.95	43.21
9	12.26	17.66	24.04	31.39	39.66	49.03
10	13.74	19.79	26.95	35.18	44.45	54.95
11	15.25	21.95	29.89	39.02	49.31	60.96
12	16.77	24.15	32.89	42.93	54.25	67.07
13	18.32	26.38	35.93	46.90	59.27	73.27
14	19.90	28.65	39.02	50.93	64.36	79.57
15	21.44	30.88	42.04	54.87	69.34	85.72
16	23.05	33.21	45.21	59.01	74.57	92.19
17	24.63	35.47	48.30	63.04	79.67	89.49
18	26.22	37.76	51.42	67.11	84.81	104.84
19	27.83	40.07	54.56	71.22	90.00	111.27
20	29.45	42.41	57.75	75.38	95.25	117.75
21	31.00	44.65	60.79	79.35	100.28	123.97
22	32.65	47.02	64.03	83.58	105.61	130.56
23	34.32	49.41	67.29	87.84	110.50	137.22
24	35.90	51.70	70.40	91.90	116.13	143.56
25	37.60	54.15	73.72	96.23	121.60	150.33
26	39.20	56.46	76.87	100.34	126.80	156.75
27	40.92	58.94	80.24	104.74	132.36	163.63
28	42.55	61.28	83.43	108.90	137.62	170.13
29	44.30	63.79	86.86	113.37	143.27	177.11
30	45.94	66.08	90.09	117.59	148.59	183.69

This table is taken from bulletin 164 of the Missouri Agricultural Experiment Station, and is designed for use when it is desirable to make an estimation of the weight of settled silage from the volume. "This table should be used only for silage that has settled at least one month and may be used to estimate the amount of silage remaining when a portion has been removed from the silo. When no silage has been removed the depth of the silage is found and the estimated weight of silage readily determined from the table. For example, twenty-five feet of silage in a silo sixteen feet in diameter is estimated by the table to weigh 96.2 tons.

"If a portion of the silage has been removed the best plan is to estimate by use of the table the tonnage before any was removed, and the amount removed. The difference will be the amount on hand. In case the original depth of the settled silage is uncertain, the best plan will be to make the closest estimate possible as to the original depth."

## LAND MEASURE.

(From "Farm Arithmetic" by Burkett and Swartzel.)

1. For a square or rectilinear field: Multiply the length in rods by width in rods and divide by 160, the number of square rods in an acre. The result is the number of acres in the field.

2. For a triangular field: From half the sum of the three sides in rods subtract each side separately. Find the continued product of the half sum and the three remainders. Divide the square root of the product by 160. The result is the number of acres. If the field is a right triangle, that is, one having two sides that are perpendicular

to each other, take one-half of the product of these two sides in rods and divide by 160. The result is the number of acres.

3. For a field irregular in shape: Divide up into triangles and rectangles by means of straight lines and proceed as in No. 2 and No. 1.

9 square feet equal 1 square yard.

30 $\frac{1}{4}$  square yards equal 1 square rod, equals 272 $\frac{1}{4}$  square feet.

360 square rods equal 1 acre equals 4840 square yards equal 43,560 square feet.