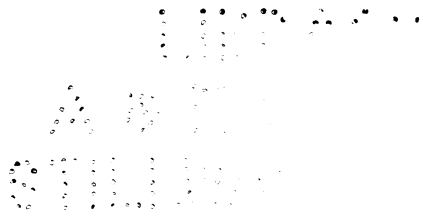


THESIS

A STUDY OF THE MOST PROFITABLE TYPES OF
FARMING FOR THE WESTERN HALF OF OKLAHOMA

by
Charles Edward Hoke
"



A thesis presented in partial fulfillment of the requirements for the degree
of Master of Science in Agriculture in the Agronomy Department of the Oklahoma
Agricultural and Mechanical College.

Stillwater, 1918

Handwritten:
A. W. H.
1918

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May 27, 1918.

To the Committee on Graduate Work
Oklahoma A. & M. College:

Gentlemen:

I am submitting herewith a thesis as one of the requirements for the degree of Master of Science in Agriculture, properly approved by the Professor of Agronomy and Farm Management and the Dean of the School of Agriculture. I am also submitting an outline for graduate work, showing the amount of work completed in connection therewith. It will be noted that but twenty-five of the thirty-one credits scheduled have been completed, and in lieu of the balance required for the degree of Master of Science in Agriculture, I wish to present credits from the graduate school of the University of Illinois to the number that will be required for the degree. A statement of such credits from the Registrar of the University of Illinois is presented herewith. A complete outline of all work completed, together with grades and amount of credit received will be found on Page 28 of the thesis.

Respectfully submitted,

Chas. E. Woke.

INTRODUCTORY

In presenting this thesis as a partial fulfillment of the requirements for the degree of Master of Science in Agriculture, the author realizes that he presents a subject that is practically new to the curriculum of the Oklahoma Agricultural and Mechanical College. Such being the case, it is thought that considerable space should be allotted to an explanation of the general development and nature of the work presented.

The subject of farm management is as old as farming itself, but the newer developments along this line have taken place principally within the past ten years. It is strange, but nevertheless true, that our agricultural workers failed, until within the last decade, to recognize that there is such a thing as business management in connection with the farming industry.

Farm management, briefly, is the business side of farming and the development of those underlying principles which have to do with success in farming in any country or locality. The Agricultural and Mechanical Colleges, following the lead of the United States Department of Agriculture, Office of Farm Management, have taken this subject up within the past few years and such work is now generally recognized as a proper course of study for institutions of this character.

The author of this thesis claims no credit for the discovery of the science of farm management, but has had something to do with its development during the past ten years, as an employee of the Office of Farm Management, U. S. Department of Agriculture. Principal credit for the development of this work should go to Prof. W. J. Spillman, Chief of the Office of Farm Management, Washington, D.C., for he was the first to call to the attention of other scientists the possibilities

along this line.

The origin of the present work in farm management came about in a peculiar manner. * Some twelve years ago, Prof. Spillman, then Director and Dean of Agriculture in the Washington State Agricultural College, visited over night with a farmer of considerable experience in that and other states. During the course of the visit, Prof. Spillman mentioned the fact that they had but recently completed an interesting experiment in the feeding of hogs, and the results of this experiment were detailed for the benefit of the farmer. At the end of the recital, the latter remarked: "I fully agree with your findings for that is substantially the method that I have been following for the past twenty-five years". The realization came to Prof. Spillman at that time that other farmers must also have a great store of information relative to practical farming which would be of untold value if collected and properly presented to such farmers as had not had the benefit of such experiences. His conclusions at that time were still further verified a short time later when one of his investigators in connection with farm crops discovered that there were a few farmers who had much better success in summer fallowing for wheat than did the Experiment Station or the larger per cent of the farmers in the region affected. This was true, too, in spite of the fact that the Station had worked ten years upon this particular problem and had never felt justified in publishing its findings.

The method followed in securing farm management data is to go direct to the farmer and get his actual experience along the line upon which information is desired. It has been found that by thus getting the combined experiences of a large number of farmers in the same or similar localities that it is often easy to determine what is the best practice for that particular section.

*Information secured from lecture by Prof. Spillman to employees in 1909 at Washington, D.C.

One of the questions which has come up in connection with the development of this work is whether the data secured from farmers by the farm survey method can be relied upon from the standpoint of accuracy. It is possible to state that such data ^{are} is more accurate than the usual statistical data gathered by other means, this being especially true when a large number of farms enter into the calculations. In fact, such data are coming to be considered just as accurate as are those secured by the ordinary experiment station worker. **

Farm management has now developed to the point where it may be called a science. This statement, however, is still more or less open to dispute, and this brings up the question of what really constitutes a science. A science may be, and often is in the case of those not exact, merely a mass of systematized or methodized information; or a collection of laws, principles, and generalizations with their proper explanations, all of which may be logically reasonable but not susceptible of mathematical proof. Under such a definition of science, we may recognize such sciences as sociology, politics, and economics, and it would hardly seem consistent if at the same time, we should fail to recognize the sciences of agriculture.

Farm management differs from other agricultural sciences in that it is broad enough to cover all, and may be described as the woof which binds all the fabrics together into a complete whole. Generally speaking, however, the field of agriculture may be divided into three great divisions:* The technique of production, involving such sciences as agronomy, animal husbandry, horticulture, soils, and genetics; the economics of production; and the economics of marketing. The economics of production is especially the field of farm management, although it may have more or less to do with either of the other two divisions. Farm management usually decides the what and the when while other agricultural sciences decide the

how.

* W.J.Spillman, Pub. Amer. Acad. Pol. & Soc. Science, May, 1915. Pg. 1, No.869.

** Bulletin 529, U.S.D.A.

The aim of farm management investigational work, such as is presented in this thesis, is that of practicality. It has been found by the author that after a farmer really becomes interested in the business side of his farm operations that it is not long before he is seeking information in connection with the various enterprises that he may be conducting on his farm. It is much easier to talk to a farmer about better live stock after he has been convinced through the agency of an analysis of his farm business that he really is in need of better live stock; it is much easier to talk to him of better crop yields after he has been convinced that an increase in crop yields will mean more income to him at the end of the year, and that his yields are lower than they should be. In other words, it is much easier to make better farmers after they are convinced that they are not already good farmers. The peculiar field of farm management, then, is to analyze the business of large groups of farms, with the end in view of being able to analyze the individual farm business after such general studies have been made. The principles which underlie successful farm management are not unlike those which underlie the profitable conduct of any other business, the difference being merely in the application.

One method of development of better business methods among farmers is to induce them to keep farm accounts; but a farmer may keep a complete set of farm accounts and yet accomplish very little by it. In other words, the farmer must have some sort of a standard by which to measure his business before he can really tell where he stands. To measure a bin of wheat, we use a measure called the bushel; to determine the area of a certain tract of land, we use a chain of standard length; to measure the success of a farm, we may use a standard of measurement made up from the study of large numbers of other farms. The thesis herewith presented has been designed for this particular purpose - that is to be used as a

standard of comparison for the farms of the various localities represented and for the western half of Oklahoma in general.* This is the first standard of its kind to be worked out to fit Oklahoma conditions and probably one of the first of its kind to be worked out for any section of the United States.

The author makes no claim that this standard is perfect. Farm management, as already indicated, is not an exact science and a standard of this kind can, therefore, never be exact. Such standards will be modified from year to year, as the number of farms included grows larger and new conditions bring about new changes. The final aim is to have a standard of this kind for each and every county in the state, but because of the time and money required to do such work, the more general standards will have to answer for those sections which have not yet been reached. As a part of the detail in this standardization of farm practice and farm business will come the determination of the cost of farm products. Cost accounting is always of value, not as an end in itself, but as a guide to the selection of the proper farm enterprises.

It is frequently asserted that the success of a farm depends upon the man rather than upon any of the various factors or underlying principles of business management. Speaking upon this point in a lecture to the employees of the Office of Farm Management, Washington, D. C., 1909, Prof. W. J. Spillman said: "It is frequently stated that success depends upon the farmer, and to some persons this seems a full and satisfactory answer. But it explains nothing. It merely dodges the issue. Success cannot come from merely being a genius. Success comes from doing certain things. The farmer does not sell himself. He sells butter, milk, hay, and potatoes. It is such things as amount sold, cost of production, price

*See Table No. 24.

received, etc. that determine his profits. The only way that a farmer can express himself is by doing things and these things are fairly easy of analysis."

In concluding these introductory remarks, the author wishes to state that whenever the state of Oklahoma gets to the point where it can, through the Oklahoma Agricultural and Mechanical College and its representatives, give to each farmer who desires it an analysis of his farm business for the year, showing the strong and weak points in his organization; and supplying information, coming either from the College and Experiment Station or the farmer himself, that will enable him to overcome any defects, it will have gone far toward putting the farm on a business basis and thus making of the farming industry a more remunerative and attractive occupation. As one of the beginnings toward this ideal, the following thesis is presented:

A STUDY OF THE MOST PROFITABLE TYPES OF FARMING FOR
THE WESTERN HALF OF OKLAHOMA

by
Charles Edward Hoke

Object of the Study

The object of this study of agricultural conditions in the western half of Oklahoma was to determine what type, or types, of farming should be followed in order that the most profit might be made; and such details in connection with this type, or types, as would enable a proper analysis of the farm business.

Method Followed

Before the study of agriculture in a given region can be intelligently made, it is necessary to visit a large number of farms and to secure from each of those farms information which will bring out the farm management methods already in use. Such a study has come to be known as the farm survey.

The information thus collected from the farmer may cover his complete farm business or it may be only a report in connection with some one enterprise conducted on the farm. In the present instance, the information secured covered the entire business of the farm for a period of one year. A personal visit was made to each farm and the answers to the various questions were noted in a specially prepared blank. From thirty minutes to two hours was consumed in securing the information called for in connection with each farm, this depending upon the size of the farm business, the memory of the farmer, and his ability and willingness to answer questions. Such questions relate to the amount of live stock on hand at the beginning and end of the year, and any sales or purchases during the year; the amount, kind and value of machinery on the farm at the beginning of the year; the

amount, kind, and value of feed, seed, and other miscellaneous supplies on hand at the beginning and end of the year; the number, kind and value of all buildings both at the beginning and end of the year; the value of all land; a detailed record of all receipts and expenses during the year; and such other miscellaneous information as may be necessary to properly analyze the business of that particular farm. The farmer is asked to supply this information from memory or from any records which he may have kept bearing upon the points enumerated above. There are many checks throughout the record, however, against possible misstatements on the part of the farmer*, and the skilled investigator knows how to take advantage of this fact. On the whole, the answers given by farmers to the various questions are very satisfactory and little difficulty is experienced in securing the data required.

Four sections are represented in the data presented in this thesis. These sections are Kay county, 120 farms; Payne county, 238 farms; Canadian county, 197 farms; and Washita-Custer counties, 140 farms. A total of 695 farms thus enter into the various tables and diagrams presented.

The Kay county survey was made in the spring of 1915; the Payne county survey in the spring of 1916; the Washita-Custer county survey in the spring of 1916; and the Canadian county survey in the spring of 1917. The data in each case represents the year previous to that in which the survey was made. All of the data represented herein has, therefore, been secured within a comparatively short space of time.

The field work in connection with these various surveys has all been done under the direct supervision of the author in his capacity as field investigator in farm management for the Office of Farm Management, U. S. Department of Agriculture, and the actual field work in gathering the data has been done by the author, hired

* For example the number of mature cattle on hand at the beginning of the year, plus the number purchased during the year, should be equal to the number on hand at the end of the year plus the number which died or were sold during the year.

assistants*, and such students ** as the author has trained especially for this kind of work. Acknowledgement is hereby given for all such assistance.

The matter of checking, tabulating and presenting the data is entirely the work of the author.

The seasons represented in this study constitute about an average for the western half of Oklahoma. The season of 1914 in Kay county was partly good and partly bad. The wheat and oat crops were good while the kafir and corn crops were below the average. The alfalfa crop was about normal. 1915 was a good season in practically all parts of the state. In 1916, the crop year represented in the Canadian county survey, the corn and kafir crops were fair while the small grain crops were comparatively poor, thus equalizing the conditions relative to these four crops in 1914 and 1916. The prices received for farm products during this period were not far from normal, as the war had not reached sufficient proportions to reflect to any great extent upon the prices of farm products in this country. Taking everything into consideration, the three years represented in this study were about as near an average as one could hope to cover with a study of the kind.

THE REGION

Western Oklahoma has been settled at different times and in different manners, but most of the sections represented have been settled for twenty years and more. Parts of Kay, Payne, and Canadian counties were among the first sections in western Oklahoma to be settled, and the other areas included were settled not long after that time. The agriculture has undergone many changes during that time and a great

*Roy Hoke, Glenn Briggs, Ray Bryant, H. R. Naylor.

**J. W. Bridges, Fred McCarrel, Roy Hoke, Glenn Briggs, Ray Bryant, H. R. Naylor, J. B. Hurst, Louis Geren, Earl Horton, John Baker, Chester Kenworthy, Myron Andrew, Alden Loomis, Joe Robinson, Cyril Sullivan, John Waters, Geo. Ransom, - - Pearson, Chas. Carpenter, W. J. Green, Bertha Rogers, Andy Forsyth, Chas. Kilpatrick, Elro Mathieu, Harry Ransom, E. J. Booth, A. P. Brodell, Ed Buddrus, James Kimball, James Black, Howard Finnell.

many experiments have been tried out. The farmers in western Oklahoma probably represent every state in the Union and most of the countries in the world, and so it has been but natural that all kinds of experiments should be tried; and, for years, practically every farm in western Oklahoma was an experiment station on a small scale. Many of these experiments proved successful, and probably the larger part of the successful practices in use today may be traced to this source. At the present time farming methods in this section are becoming more stabilized, and while no definite cropping systems are usually followed, and probably never will be on account of the varying climatic conditions, the farmers know pretty well what enterprises are adapted, and something of the successful practice in connection with each one. The science of farm management has been but little developed but there is a new interest and much progress should be made along this line during the next few years.

The people living in this section are principally American born, but here and there a foreign settlement may be found. Most of this foreign element, however, is made up of loyal American citizens and they are generally industrious and efficient farmers.

TOPOGRAPHY, DRAINAGE, AND SOILS.

The topography of western Oklahoma is level to rolling, with some rough lands found here and there over the area. The Wichita Mountains in the southwestern part of the state are the largest in western Oklahoma. The elevation gradually increases toward the western line, the elevation on the east side being near 1000 feet and in the extreme west as much as 4000 feet at the highest point. The section is well drained by numerous streams and their tributaries, and there is usually a plentiful ^{supply} of good drinking water. Exception to the latter statement might be made in the Gyp

Hill region of the central part of western Oklahoma.

Most of this area is prairie, but in the eastern part some timbered areas may be found; and it is a common thing, except in the extreme west, to find a good growth of timber along the streams. Other natural vegetation consists of the native prairie grass, the usual wild flowers, and other wild plants of the western prairies. Trees are comparatively easy to produce and many fine groves may be found that have been set out and grown to a good size since the country was settled. The pastures are usually of the native grass, and since this native grass is fast disappearing, one of the pressing problems is for the stockman to find a reliable and suitable substitute.

The soils of western Oklahoma are of many kinds, both as to general classification and the different varieties of soils within these classes. In the absence of specific soil surveys for the greater part of this section, the author must draw upon personal observation for such knowledge as he may possess.

The predominating soil of western Oklahoma is reddish in color and usually contains a high percentage of clay. It is derived from what is geologically known as the permian red beds deposit. In many cases, this reddish soil is covered over with other kinds and in such cases may be said to act as a subsoil. A gray silt loam, black when wet, is a common soil on much of the upland. A considerable amount of light sandy soil is found in the timbered areas of eastern western Oklahoma and this same type of soil is usually present on the north side of the streams of this section back for a distance of from one to five miles. A chocolate colored, sandy loam found principally in the southwestern part of this area is one of the most fertile soils to be found in the state. And then in addition to the upland soils, we find the soils of the valleys and along the streams. Such soil is usually a mixture of all the different soils found on the uplands, however, and is usually much superior in

fertility. In fact, there are so many different kinds of soil that it would not be possible to name them all without an exhaustive soil survey for the entire region. The varied soil and climatic conditions make of this section one of the most highly diversified of any in the United States.

CLIMATIC CONDITIONS

The climatic conditions of a section are always of interest and importance to the farmer, as the success or failure of many of the various farm enterprises is more or less dependent upon that factor.

The rainfall per year in this section varies from as low as twenty inches in the extreme western part to as high as thirty-three inches in the extreme eastern part, these figures representing the average annual rainfall over a period of years ranging from fifteen to forty. The extremes in rainfall from year to year are very great and this is one of the things that makes of farming in western Oklahoma one of the most hazardous of undertakings. The rainfall one year may be as low as twelve to fifteen inches and the next year reach as much as fifty inches.* The successful farmer knows what to do under such conditions, and he always plays safe in the conservation of his moisture in the soil.

TRANSPORTATION AND MARKETS

This section of the state is well supplied with transportation lines and markets. The main line of the Atchison, Topeka and Santa Fe skirts the eastern edge, while the Rock Island and Frisco systems have important lines both east and west and north and south. Other railways represented are the Wichita Falls and Northwestern, the Kansas City, Mexico and Orient, and several smaller roads serving local territory. El Reno, Woodward, Enid, Blackwell, Ponca City, Guthrie, Ardmore, Altus, and Oklahoma City are all important trade centers.

* Information secured from reports of the U. S. Weather Bureau.

The country roads of this section are naturally good, and need only a small amount of grading and care to keep them in excellent shape; and many of the more progressive communities are taking this matter in charge.

LAND VALUES

The average acre value of farm land, as determined by this study, was \$46.00 for the Crop type of farm; \$46.00 for the Mixed type; and \$39.00 for the Stock type. The general average for all farms taken together was \$43.00. Such value is based upon the total number of acres in the farm and the total value of the real estate as estimated either by the owner or the operator.

It will be noted in connection with Table No.1 that the values of land are shown in connection with the different types of farming, and that there is but a small variation as between the three types. We should hardly expect a great variation in similar types, however, and there were not enough farms of truck or horticultural type found to show a reliable comparison.

Generally speaking, the author believes that much of the land in this section of the state is now held at too high a price to be consistent with what the land will produce one year after another; and yet, one may find sections where the values have not yet reached this high point.

TYPES OF FARMING

In order that an intelligent study might be made of the business management of the farms included in this survey, it was necessary to take up the study from the standpoint of type of farming. In other words, there are certain types of farming represented in each and every section. The first question, then, is to determine what types are to be found, the relative efficiency of each one, and something of the business principles in each connection.

Such being the basis upon which it was determined to make the study represented

TABLE NO. 1

Table showing the number of farms of each type, land values, total farm area, the percentage of the total farm area occupied by crops, pasture, and miscellaneous acreage, and the average farm income for each type and for all farms.

Type of Farm	Number of Farms	Value Land per acre	Total Farm Area	Per cent total area occupied by			Average Farm Income*
				Crops	Pasture	Miscellaneous	
Crops	324	46	201	66	26	8	\$1250
Mixed	207	46	185	61	32	6	1070
Stock	164	39	183	56	38	6	780
All Farms	695	43	192	62	31	7	1085

* The difference between total farm receipts and total farm expenses. Used as a standard in measuring the efficiency of different types of farming, or in a comparison of individual farms within a type.

in this thesis, it became necessary to devise some plan whereby this division of type might be made. Other investigators in farm management have worked out various plans but none of them seemed to fit the particular conditions to be found in this state. After a considerable amount of study, it was decided to use the following classification: If sixty per cent or more of the total farm receipts came from the sale of crops, the farm was to be classed as a Crop farm; if sixty per cent or more of the total farm receipts came from the sale of live stock or live stock products, the farm was to be classified as a Stock farm; if the farm fell into neither of these two classes, it was put in the Mixed or diversified class. All special farms, such as truck, garden, or fruit were discarded.

It was found that of the total of 695 farms represented, 324 were finally classified as Crop farms; 207 as Mixed farms; and 164 as Stock farms.

Again going back to Table No. 1, it is interesting to note some of the points in common in connection with the three types named above. The land values have already been mentioned, but it will be noted that there is also very little variation in the size of farms. The Crop farm is the largest of all but not much larger than the average for all types. There is a considerable amount of difference as to the use to which this acreage is put, however. The Stock farm, as would be expected, devoted a larger per cent of the total farm area to pasture than either of the other types. This means a corresponding decrease in the per cent of total acres devoted to crops. But perhaps the most interesting part of this Table is the column in which the farm income is shown. The farm income is that which is left of the gross receipts after all expenses have been paid. The Crop farm leads in this respect and the Mixed farm comes second. This is against the general opinion that the Crop farmer is making less money than his neighbor who produces live stock, but

many matters of public opinion fail to pan out well when the facts become known. The author does not wish to infer that the "stock type of farm is not successful and should not be followed in the western half of Oklahoma, but is merely pointing out the condition at this point. The question of type will be discussed in more detail in other parts of this paper.

SYSTEM OF TENURE

The farmers of this section represent three classes with respect to system of tenure: Owners, Owners-Additional, that is those who own some land and rent other additional, and Tenants. The latter class includes those who pay cash, part cash and part care, or all share. Those tenants who pay their rent with a part of the crops produced are most commonly found. Although farms of all systems of tenure are represented in this study, they are all treated alike. This is entirely possible as the tenant farms are considered from the standpoint of the tenant and landlord operating the farm together, thus putting the farm on what is known to farm management investigators as the ownership basis. No tabulations have been made relative to farms of the different classes of tenure, but later it is hoped to present data along this line.

MAGNITUDE OF BUSINESS

The magnitude of the farm business may be measured in a number of ways, such as the total amount of capital invested, the amount of working capital, the size of the farm in total acres, the area in crops, amount of receipts or expenses, the number of man days put in during the year, etc. Several of these measures are used in the tabulations which follow, but all are used under the classification of type as already explained.

Although the economist recognizes three factors of production - land, labor, and capital - in this study, land and capital have largely been considered together.

It is interesting to note in connection with the different types of farms, and the average for all farms taken together, just what is the amount of capital in use on the average farm of the different classes and the percentage distribution of this capital. Just how does the Crop farmer, for example, employ his capital.

In connection with Table No. 2 it is shown that the average total amount of capital for all farms is \$11606 and that of this amount, 71.5 per cent is in land; 10.9 per cent in buildings; 12.4 per cent in live stock; 3.1 per cent in machinery equipment; 1.7 per cent in feed and supplies, and the balance of the capital in the item of cash to run the farm. Taking up the amount and percentage distribution of capital on the farms of different type, Table No. 3, we find that, as compared with the average of all farms, more of the total capital on Crop farms is in land, less in buildings, and less in live stock. On the Stock type of farm, we find a much greater per cent of the total capital in live stock than on the Crop farm, a corresponding decrease in the amount in land and a slightly larger amount in buildings, and feed and supplies. The other items given are not far different.

It must be borne in mind that these figures represent only an average. Such figures give a basis for comparison with the individual farm, however, and that is their aim and purpose.

FARM ENTERPRISES

By a farm enterprise is meant any crop, kind of live stock, manufacturing process, etc. which constitutes a part of the farm business. One of the most responsible tasks that the farmer is called upon to perform is the selection of those enterprises that are best suited to his farm and to determine to just what extent each should have a place on the farm. Many agricultural educators are able to tell

TABLE NO. 2

Table showing the amount and percentage distribution of the various items of capital for the average of all farms included in the survey.

Item of capital	Amount	Per cent of total amount
Land	\$ 8300	71.5
Buildings	1271	10.9
Live stock	1441	12.4
Machinery	350	3.1
Feed and supplies	200	1.7
Cash to run farm*	44	.4
Total capital	\$11606	

* Might be called a checking account kept on hand to pay current expenses from time to time. Usually small where there is some income coming in at all times through the year, and considerably larger than the amount shown above in cotton or other one-crop sections.

TABLE NO. 3

Table showing the amount and the percentage distribution of the various items of capital on farms of different type.

Item of Capital	TYPE OF FARM					
	Crops		Mixed		Stock	
	Amount	Per cent	Amount	Per cent	Amount	Per cent
Land	\$8721	74.6	\$8152	69.7	\$7190	65.0
Buildings	1170	10.0	1300	11.1	1437	13.1
Live stock	1217	10.4	1506	13.9	1804	16.4
Machinery	351	3.1	370	3.2	320	2.9
Feed and Supplies	174	1.6	199	1.7	233	2.1
Cash to run farm	38	.3	47	.4	51	.5
Total capital	\$11671		\$11574		\$11035	

the farmer how to produce a thing, but few of them are able to tell him to what extent it should be produced. That, however, is the part that will finally come to be played by the science of farm management - when such educators realize their incapacity along this line.

CROPS

As shown in the accompanying Diagram, No. 1, the leading crops of this section are corn, wheat, oats, kafir, alfalfa, cotton, and sorghum hay. There are many other kinds of crops produced, but these are the crops from which most receipts are secured. Corn and wheat, both from the standpoint of acreage and receipts, are the most important of these various crops.

Diagrams No. 2, 3, and 4 show the same thing in connection with farms of different type. It will be noted that wheat is an important crop on all of the types but is surpassed by corn in acreage on Stock farms. The oat crop bears about the same relation on all types, the same being true of kafir and alfalfa. The acreage devoted to sorghum hay increases on the Stock farm. Cotton is the least important on the Stock farm.

The average amount of cultivated or crop land on Crop farms is 132 acres. Of this acreage, corn occupies 23 per cent; wheat, 33 per cent; oats, 11 per cent; kafir, 10 per cent; alfalfa, 8 per cent; cotton, 5 per cent; sorghum hay, 1 per cent; and miscellaneous crops, 9 per cent.

The average amount of land in crops on Mixed farms is 114 acres. Corn occupies 24 per cent of this area; wheat, 31 per cent; oats, 12 per cent; kafir, 12 per cent; alfalfa, 11 per cent; cotton, 2 per cent; sorghum hay, 3 per cent; and miscellaneous crops, 5 per cent.

The average amount of crop land on Stock farms is 101 acres. This is divided as follows: Corn, 24 per cent; wheat, 16 per cent; oats, 15 per cent; kafir, 11 per

DIAGRAM NO. 1

Diagram showing the comparative acreage of the most important crops on all farms of the survey.

Corn	19237 acres
Wheat	24749
Oats	9877
Kafir	8762
Alfalfa	7834
Cotton	2877
Sorghum	
Hay	1607

The following diagrams will show the comparative acreage of the most important crops in connection with each type. See descriptive matter, Page 17, for information relative to the per cent of the total crop area occupied by each crop under the different types, and on the average farm for this type.

DIAGRAM NO. 2
Crops

Corn	<u>30 acres</u>
Wheat	<u>45</u>
Oats	<u>14</u>
Kafir	<u>13</u>
Alfalfa	<u>10</u>
Cotton	<u>7</u>
Sorghum	<u>1</u>

DIAGRAM NO. 3
Mixed

Corn	<u>28</u>
Wheat	<u>36</u>
Oats	<u>14</u>
Kafir	<u>13</u>
Alfalfa	<u>12</u>
Cotton	<u>2</u>
Sorghum	<u>3</u>

DIAGRAM NO. 4
Stock

Corn	<u>24</u>
Wheat	<u>16</u>
Oats	<u>15</u>
Kafir	<u>11</u>
Alfalfa	<u>12</u>
Cotton	<u>1</u>
Sorghum	<u>4</u>

cent; alfalfa, 12 per cent; cotton, 1 per cent; sorghum hay, 4 per cent; and miscellaneous crops, 17 per cent.

It will be noted that cotton is not grown to any great extent on any of these farms. This may be explained by the fact that none of the areas included in the survey were in typical cotton sections, and that at least two of the areas were in exceptionally good wheat producing regions. Broomcorn and milo also are not shown as important crops, although of considerable importance in the extreme northwest of the area under discussion. Very little fruit or truck is sold by the average farmer, the amount being so small as to be almost ignored in the general farm business.

Table No. 4 shows the average yield of the most important crops for the period covered by this investigation. None of these yields are very high, but it is believed that they represent a fair average for this section of the state.

Table No. 5 shows the yield of the most important crops on the farms of different type. Somewhat of a surprise is shown in this Table when it becomes known that the average yield of crops on Crop farms is considerably higher than the yield of crops on Stock farms. One of the leading arguments for the increased production ^{of live stock} is that live stock farming is vitally important in retaining the fertility of our soils. Theoretically, this should be true, but it has failed to work out that way in a good many cases under actual practice. Data in connection with the individual surveys represented in this study show that the Crop type of farm is considerably in the lead in the matter of crop yields and that as a farm develops toward the Stock type, the crop yields gradually decrease. Two possible explanations of this decrease in yield occur to the author. One of these is that the Stock farmer probably taken more from the land in the way of stalks, straw, etc. than does the Crop farmer and that he then fails to return the manure produced. Or it may be that the Crop farmer is a specialist in the production of crops, while the Stock farmer knows more of live stock production.

TABLE NO. 4

Table showing the yield per acre of some of the more important crops over the period covered in this investigation.*

Kind of Crop	Average Yield per Acre
Corn	21.4 bushels.
Wheat	13.6 "
Oats	22.9 "
Kafir	19.1 "
Alfalfa	2.2 tons.
Sorghum hay	2.3 "
Cotton	534 pounds seed cotton.

* Crop years of 1914, 1915, 1916.

TABLE NO. 5

Table showing the comparative yield of the most important crops in connection with the farms of different type.

Type of Farm	Kind of Crops						Average Crop Index*
	Corn	Wheat	Oats	Kafir	Alfalfa	Sorghum	
Crop	22.6 bu.	16.3 bu.	26.1 bu.	20.4 bu.	2.3 tons	2.3 tons	106
Mixed	21.4	10.1	22.4	18.4	2.2	2.2	99
Stock	18.6	8.9	17.8	16.4	2.1	2.3	92

* A figure which expresses the yield of crops on one farm as compared with the average yield of such crops on all farms of the survey. The crop index for the community would thus be 100.

The farmers of western Oklahoma are following no definite rotations or cropping systems, although often criticized for not doing so. The climatic conditions, however, render the following of a definite plan practically impossible; and then, too, a rotation in any section to be successful must be based upon the crops that are most successful for that particular locality. With a given type of farming, there is a way of dividing the acreage among the several crop enterprises of the farm which is more profitable than any other way; and, similarly, there is a most profitable proportion of income from each source. If the acreage devoted to a certain crop be above or below this optimum, the income of the farm is lowered. Only a farm survey, and a detailed study of the business on a large number of farms in a given locality will enable the definite determination of what should be the correct cropping system to follow for that locality.

LIVE STOCK

The production of live stock is confined principally to that of cattle, horses and mules, hogs, and poultry. Only a few sheep were found although there does not seem to be any well defined reason why this should be true. It will be noted from Diagram No. 5 that cattle are far in the lead in the total number of productive units, that hogs make a poor second, and that horses and mules and poultry run close for third place. Keeping this Diagram in mind, we shall presently be in position to know something of the reason for the low incomes on the farms of Stock type. Diagrams 6, 7, and 8 show the comparative number of productive animal units of the different classes of live stock on farms of different type. As was the case in the average for all farms, cattle lead in each case, while there is not a great deal of difference in the proportion of the other classes. Hogs, it will be noted, show to be of more importance, that is the number of units are larger in comparison with live stock of other kinds on Stock farms than on Crop farms.

Diagram No. 9 shows the comparative amount of receipts obtained from the different classes of live stock on the average of all farms in the survey. Here we find that the receipts from cattle do not stand out as prominently in comparison with the other classes as did the number of productive units shown in Diagram No. 5. The reason for this is shown in Table No. 6, where it is shown that the average gross return per head of mature cattle in western Oklahoma is only \$26.00. The same Table shows the unit receipt from hogs to be \$70.00; horses and mules, \$54.00; and poultry, \$64.00. This means, without possible doubt, that the receipts per head of cattle are not sufficient to pay cost of production and that, therefore, the larger the number of cattle on a given farm, the smaller the income.

In connection with live stock sales or receipts, it is somewhat surprising that the poultry class is on a par with that of horses and mules, a fact that would give strength to the belief of many that instead of letting this industry look after itself, some aid might be given with good results.

Diagrams 10, 11, and 12 show the comparative amount of receipts obtained from the different kinds of live stock on farms of different type. The total amount of receipts increase from the Crop type to the Stock type but the proportion between the different classes remains about the same. In connection with Mixed farms, however, the poultry receipts exceed those from horses and mules. Table No. 8 shows the gross return per productive unit for each kind of live stock on the different types of farms; while Table No. 7 shows the comparative number of productive units for each type. Also, in connection with Table No. 7, the average stock index is shown. This index indicates pretty clearly that the quality of live stock found on the Crop type of farm is much inferior to that found on Stock farms, but that in neither case was the quality of very high order.

TABLE NO. 6

Table showing the average number of productive animal units of the four important classes of live stock, and the gross receipts for each productive unit on the average of all farms in the survey.

Class of Live stock	Average Number Units	Gross Return per Unit
Cattle	10.6	\$26.00
Horses and mules	1.7	54.00
Hogs	3.0	70.00
Poultry	1.3	64.00
Total units	16.6	

TABLE NO. 7

Table showing the average number of productive animal units of the four important classes of live stock on the different types of farms. The comparative Stock Index* is also shown.

Type of Farm	Kind of Live Stock				Average Stock Index
	Cattle	Horses and mules	Hogs	Poultry	
Crops	7.9	1.3	1.9	1.2	79
Mixed	11.8	1.9	3.4	1.4	103
Stock	14.6	2.2	4.6	1.4	124

* A figure which measures the quality of live stock on one farm with that found on the average of all farms in the survey. Corresponds to crop index in connection with crops. The average stock index for a locality is 100.

TABLE NO. 8

Table showing the comparative gross returns per productive animal unit of the four important classes of live stock on farms of different type. Figures given refer to dollars.

Type of Farm	Kind of Stock			
	Cattle	Horses and Mules	Hogs	Poultry
Crops	\$20	\$44	\$50	\$56
Mixed	25	54	79	76
Stock	25	54	79	76

DIAGRAM NO. 5

Diagram showing the comparative number of productive*animal units** for all farms in the survey.

Cattle	<u>7376</u>	<hr/>
Horses and Mules	<u>1180</u>	
Hogs	<u>2080</u>	
Poultry	<u>938</u>	

*Work stock not included.

**An animal unit is a mature horse or cow. It is considered that it takes 2 calves, colts, or heifers to make one unit; 5 mature hogs, 10 pigs, 7 mature sheep, 10 lambs, and 100 poultry. This comparison was worked out by W.J. Spillman on the basis of amount of feed consumed.

The following diagrams show the comparative number of animal units on farms of different type. See Table No. 7 for the actual number of units of each kind on the average farm for each type.

DIAGRAM NO. 6

Crops

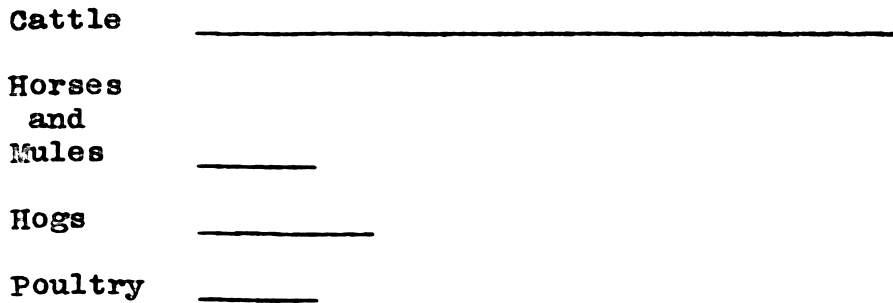


DIAGRAM NO. 7
Mixed

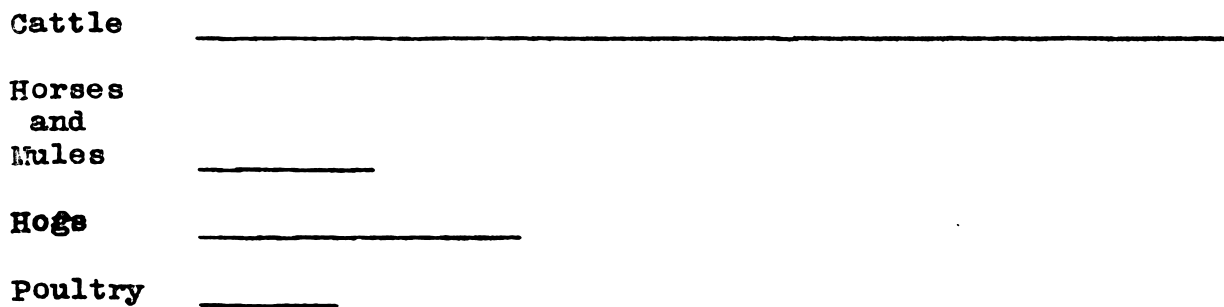


DIAGRAM NO. 8

Stock

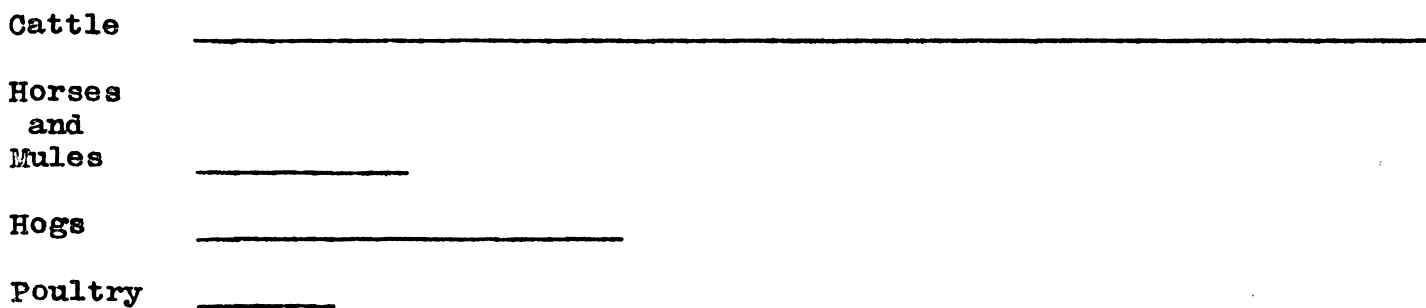


DIAGRAM NO. 9

Diagram showing the comparative amount of receipts from the four important classes of live stock on all farms of the survey.

Cattle	<u>\$189920</u>
Horses and Mules	<u>63959</u>
Hogs	<u>146540</u>
Poultry	<u>60230</u>

The following Diagrams show the comparative amount of receipts obtained from the four leading kinds of live stock on farms of different type. See Table No. 9 for the actual amounts received on the average farm for each of the types.

DIAGRAM NO. 10

Crops

Cattle _____
Horses
and
Mules _____
Hogs _____
Poultry _____

DIAGRAM NO. 11

Mixed

Cattle _____
Horses
and
Mules _____
Hogs _____
Poultry _____

DIAGRAM NO. 12

Stock

Cattle _____
Horses
and
Mules _____
Hogs _____
Poultry _____

RECEIPTS AND EXPENSES

It is important that the farmer not only know the source of his receipts but that he also know what becomes of them during the year. In the following pages, therefore, will be shown the principal sources of receipts on the farms of western Oklahoma, both the average for all farms and for the different types, and the percentage distribution of those receipts; the amount and percentage distribution of the various items of expense of the total expense; and thus what is left to the farmer, that is the farm income, after all such expenses have been deducted from the receipts.

RECEIPTS

Table No. 9 shows the amount, kind, and percentage distribution of the various items of receipt on the farms of different type. The amount in each case refers to dollars. The same for all farms is shown in Table No. 10. It will be noted in connection with Stock farms that the receipts from live stock overshadow those from crops, as would naturally be expected as that is the basis for the determination of the type. The Crop farm, on the other hand should and does get the larger part of its receipts from the various crops. The principal sources of receipt on the Crop farm are corn, wheat, alfalfa, cotton, cattle, and hogs. The Stock farmer also gets a considerable revenue from the sale of corn and wheat, but the receipts from other crops are not of special importance.

EXPENSES

Table No. 11 shows the total amount of expense per farm and the amount and per cent that the various items are of the total. This Table also shows the proportion of the entire farm expense that is borne by depreciation of buildings, fences, and machinery, and current expenses. Taking this Table as a guide, we note that in connection with the Crop type of farm that the principal items of expense are for

TABLE NO. 9

Table showing the average amount per farm and the percentage distribution of the various items of receipt in connection with farms of different type.

Number of farms in each type	Type of Farm					
	Crops 324		Mixed 207		Stock 164	
Kind of receipts	Amount	Per cent total farm receipts	Amount	Per cent total farm receipts	Amount	Per cent total farm receipts
Corn	\$ 284	14.7	\$ 166	9.5	\$ 76	5.2
Wheat	699	36.3	364	20.9	121	8.3
Oats	67	3.5	36	2.1	5	.3
Kafir	61	3.2	56	3.2	17	1.2
Alfalfa	117	6.1	124	7.0	32	2.2
Cotton	148	7.7	44	2.6	19	1.3
Misc. crops	121	6.3	65	3.8	42	2.8
Cattle	160	8.3	290	16.7	476	32.4
Horses and mules	59	3.1	101	5.9	145	9.8
Hogs	96	5.0	269	15.5	364	24.9
Poultry	71	3.7	107	6.1	92	6.3
Misc. farm receipts	40	2.1	117	6.7	77	5.3
Total farm receipts	\$ 1923		\$ 1739		\$ 1466	

TABLE NO. 10

Table showing the average amount per farm and the percentage distribution of the various items of receipt on all farms of the survey.

Receipts	Number of Farms	
	Amount	Percent total farm receipts
Corn	\$ 200	11.4
Wheat	463	26.3
Oats	43	2.4
Kafir	49	2.8
Alfalfa	99	5.6
Cotton	87	5.0
Misc. Crops	86	4.9
Cattle	273	15.5
Horses and mules	92	5.2
Hogs	211	11.9
Poultry	87	5.0
Misc. Farm Rects.	70	4.0

TABLE NO. 11

Table showing the total farm expense and the percentage amount of this borne by current and depreciation expense; and the amount of current expenses per farm and the percentage of the various items of current expense of this amount. Shown in connection with the different types of farms.

	Crops	Mixed	Stock
Total farm expense	\$673	\$669	\$586
Per cent total current expense of farm expense	82.7	78.2	82.3
Per cent depreciation expense of farm expense	17.3	21.8	17.7
Total current expense per farm	\$557	\$523	\$565
Labor	39.5	38.5	34.4
Machinery repairs	3.1	3.2	3.0
House, barn, fence repairs	5.2	4.8	4.7
Feed	7.2	12.6	24.3
Breeding fees	1.3	2.1	2.0
Veterinary fees	.7	.8	1.3
Seeds, plants, etc.	2.3	2.3	1.8
Twine	2.5	2.1	1.4
Thrashing	15.1	9.1	4.7
Baling	2.2	2.7	1.4
Fuel and oil	.9	1.5	1.1
Insurance on farm property	1.3	1.7	1.4
Taxes	16.2	16.1	13.5
Misc. Current expense	2.5	2.5	5.0

TABLE NO. 12

Table showing the amount and percentage distribution of the various items of expense on the average of all farms in the survey.

Total Farm Expense		\$ 675	
Per cent current expense of total farm expense			81.3
Per cent depreciation ex- pense of total farm expense			18.7
Average total current expense per farm		549	
Items of current expense	Amount		Per cent total current expense
Labor	\$ 209		38.1
Machinery repairs	17		3.1
House, barn, and fence repairs	27		4.9
Feed	71		13.0
Breeding fees	9		1.6
Veterinary fees	5		.9
Seeds, plants, etc.	12		2.2
Twine	12		2.2
Thrashing	60		11.0
Baling	12		2.2
Fuel and oil	6		1.1
Insurance on farm property	8		1.4
Taxes	88		16.0
Misc. Current expense*	13		2.3

* Includes all expense of farm operation except depreciation on buildings and machinery.

labor; house, barn, and fence repairs; feed; thrashing; and taxes. On Mixed farms, the expense for repairs is a little less, as is the percentage cost of thrashing, while the feed cost has increased to a considerable extent. The item of taxes remains important in connection with all types of farms.

GENERAL FARM EFFICIENCY

Under this heading will be discussed something of the efficiency of man and horse labor, and the general efficiency of farm operation. The question of efficiency on the farm in the matter of handling labor and in the returns secured from certain operations is a very important one just at this time when the farmers are straining every nerve to make up the deficiency in farm labor. The matter is also very important when considered only from the standpoint of farm income, as will be shown in Tables which follow.

EFFICIENCY OF MAN AND HORSE LABOR

In Table No. 13 is shown something of the efficiency of man and horse labor on the farms of differing type. It will be noted that in the matter of productive man days per man put in during the year that there is very little difference. In the matter of horse labor, however, the Crop farmer gets twenty-one more days work per animal than does the Stock farmer. This is probably due to the fact that the number of work animals kept on the average farm of each type is practically the same, what little difference there is being in favor of the Stock farm, and this in spite of the fact that the Crop farmer handled a considerably larger acreage in crops. Here, then, is a place where the Stock farmer is less efficient than his neighbor who does crop farming. In the matter of crop acres per man, the Crop farmer again leads, and the same is true in connection with crop acres per horse. In net receipts per man and per work animal, the Crop farmer is also most efficient.

TABLE NO. 13

Table showing the number of productive days man labor per year, number of productive days horse labor per year, crop acres per man, crop acres per horse, net annual receipts per man, net annual receipts per horse. Shown for each of the different types of farming discussed herein.

Type of Farm	Productive Man Days	Productive Horse Days	Crop Acres per Man	Crop acres per horse	Net receipts per man	Net receipts per horse
Crops	175	81	82	27	\$774	\$246
Mixed	181	75	74	23	694	211
Stock	173	60	63	19	505	147

EFFICIENCY OF OPERATION

The efficiency of operation for the three types of farms is shown in Table No. 14. Generally speaking, the Crop type of farm shows most efficiency in the matter of operation, while the Mixed farmer stands second. Take the matter of returns per crop acre, for example. The Stock farmer compares favorably with the Crop farmer in gross returns, but falls down seriously when it becomes a question of net returns. One of the most interesting features shown in connection with this Table is that of the value of the operator's labor for the year. One of the questions asked of every farmer is what value he thinks should be placed on his labor for the year. Note the closeness of the averages for the different types. In the column next to this is shown the labor income for the different types of farms, the labor income representing what the farmer actually gets for his own labor during the year. In the case of the Stock farmer, it will be noted, his estimate of what he thought he was worth was considerably higher than what he actually got. In other words, the Stock farmers could have worked out for their crop farming neighbors at their estimate of labor value, put the capital invested in their farms out at five per cent interest and have come out nearly two hundred dollars better off at the end of the year than they actually did.

SOME FACTORS WHICH HAVE A DETERMINING INFLUENCE UPON
THE FARM INCOME

Successful farming in any section is primarily dependent upon four important factors - that is a type of farming that is suited to the locality, a business of sufficient magnitude, high quality in farm products, and the proper amount of diversification. In connection with the latter, it might be well to mention efficiency of labor and farm operation. The question of type in relation to the income has already been discussed so need not be repeated here. Something of the

TABLE NO. 14

Table showing gross receipts per crop acre, expenses per crop acre, net receipts per crop acre, rate of interest on capital invested, value of operator's labor per year, average labor income*, net receipts per productive man day,** net receipts per productive horse day. Shown in connection with the different types.

Type of Farm	Receipts per Crop acre	Expense per crop acre	Net receipts per crop acre	Rate Interest on capital	Value Operator Labor	Labor Income	Net receipts per man day	Net receipt per hor day
Crops	\$14.50	\$3.35	\$11.50	10.7	406	666	\$3.81	\$0.82
Mixed	15.23	5.85	9.38	9.0	407	473	2.61	.63
Stock	14.50	6.80	7.70	7.1	406	228	1.32	.38

* By labor income is meant that income which is left of the farm income after interest on the total capital has been deducted.

** A productive man or horse day means a days work of ten hours at some work which yields a direct revenue.

influence of the other factors will be shown in the following tables:

Table No. 15 shows the relation of the total amount of capital per farm to the farm income. It will be noted that as the amount of capital increases so does the farm income. This does not necessarily mean that a farmer with a smaller amount of capital cannot make a good income, but that his chances for doing so are less than those of the farmer with plenty of capital at his command. Although no limit to the amount of capital which can be used by the average farmer with increasing success is shown in the Table, such a limit is bound to exist for the ability of man is not such that he is able to utilize capital in an unlimited amount. Sometime, with a still larger number of farms for comparison, it is hoped to work out this question to a final conclusion.

Table No. 16 shows the relation of the amount of working capital per farm to the farm income. This Table also shows an increase in the farm income as the capital grows larger, which would be more or less expected after a study of the preceding Table. Here, again, we cannot say that the farmer with a smaller amount of working capital cannot make a good income for the quality of his products or other advantages may be so great as to overcome the disadvantages of such capital.

Table No. 17 shows the effect of the size of farm upon the farm income. The farm income shows a gradual increase from the smallest to the largest group. This is similar in effect to the preceding tables relative to capital, and in-as-much as the greater amount of total capital is in land, we should expect the results shown.

In connection with the Table showing the yields of the most important crops in connection with the different types of farming, it was shown that the crop index was highest in connection with the Crop type of farm. Bearing this in mind, an inspection of Table No. 18 showing the relation of the crop index to the farm income is of interest. It will be noted that as the crop index increases so does the farm income, and this means, of course, that the farmer who gets the highest yield, other things being equal, stands the best chance to have the largest income at the end of the year.

TABLE NO. 15

Table showing the relation of total capital per farm to the farm income.

Amount of Capital	Number of Farms	Average Capital	Average Farm Income
5000 and less	109	3486	384
5001 - 10000	255	7469	738
10001 - 15000	167	12091	1095
15001 - 20000	79	17558	1578
20001 and more	85	27110	2570

TABLE NO. 16

Table showing the relation of the average amount of working capital* per farm to the farm income .

Working Capital	No. Farms	Average working capital	Average Farm Income
1000 and less	156	668	512
1001 - 2000	253	1458	836
2001 - 3000	162	2408	1214
3001 - 4000	73	3461	1784
4000 and more	50	5804	2764

TABLE NO. 17

Table showing the relation of the size of the farm to the farm income.

Size of Farm	Number of Farms	Average Size	Average Farm Income
100 and less	98	72	553
101 - 159	99	135	706
160	258	160	888
161 - 200	56	184	1304
201 and more	184	325	1783

TABLE NO. 18

Table showing the relation of the size of the crop index to the farm income.

Crop Index	Number of Farms	Average Index	Average Farm Income
50 and less	37	36	354
50.1 - 75	112	64	621
75.1 -100	209	88	931
100.1 -125	184	112	1228
125.1 and more	153	152	1648

Table No. 19 shows the relation of the size of the stock index to the farm income. As is true of crop yields, the farmer with a superior quality of live stock is most apt to end up his year's business with a good income. The Stock type of farmers included in this study compared more than favorably with the other two types in quality of live stock, but the actual receipts per productive unit were so poor as to make the returns from this source inconsistent with a good income.

We have now noted the effect of the total amount of capital per farm, the working capital per farm, size of farm, crop index, and stock index upon the farm income, so we shall next consider the effect of the differing degrees of man and horse labor efficiency upon the farm income. We have already indicated that effect to some extent in Tables 13 and 14, but a little clearer conception of this influence may be had by inspection of Tables 20, 21, 22, 25.

Efficiency of labor, both for man and horse, is very important, as shown in these Tables. This is true for at least two reasons: First, the fact that it means a larger income; and, second, the fact that an increase in labor efficiency at this time means a greater production at less cost, not only of money but of labor. And the latter is one of the most important problems before the farmer today.

The statement is often made that the farmers of the United States, and especially in those states lying west of the Allegheny mountains, handle too many acres per man and that their incomes would be larger if they confined their efforts to smaller farms. The data presented in this study of western Oklahoma does not indicate this to be true; and, in fact, it is very doubtful if such a statement is true in any part of the United States for one of the things that distinguishes the American farmer from the European is the fact that he is much more efficient from the standpoint of production per man, and the fact that he is so is responsible in large measure for the higher income that he enjoys.

Table No. 19

Table showing the relation of size of stock index to the farm income.

Stock Index	Number of Farms	Average Index	Average Farm Income
50 and less	115	27	636
51 - 75	130	64	922
76 - 100	171	88	970
101 - 125	100	113	1297
126 and more	179	174	1489

TABLE NO. 20

Table showing the relation of number of productive man days per year to the farm income

Number of days	Number of Farms	Average Days	Average Farm Income
100 and less	71	81	273
101 - 150	201	127	775
151 - 200	221	176	1157
201 - 250	100	225	1349
250 and more	102	300	1883

TABLE NO. 21

Table showing the relation of the number of crop acres handled per man to the farm income.

Crop Acres	Number of Farms	Average Acres	Average Farm Income
50 and less	160	37	556
50.1 - 75	209	63	929
75.1 - 100	169	88	1201
100.1 - 125	87	111	1289
125.1 and more	68	152	2017

TABLE NO. 22

Table showing the relation of the number of productive days horse labor per horse per year to the farm income.

Number of Days	Number of Farms	Average Days	Average Farm Income
50 and less	141	38	709
51 - 75	243	63	966
76 - 100	166	87	1216
101 - 125	79	112	1381
126 and more	66	155	1845

TABLE NO. 23

Table showing the relation of number of crop acres per work animal to the farm income.

Crop Acres	Number of Farms	Average Acres	Average Farm Income
15 and less	125	12	677
15.1 - 20	157	18	978
20.1 - 25	145	23	983
25.1 - 30	111	27	1282
30.1 and more	157	39	1486

As a final conclusion and a sort of summarization of all preceding Tables and Diagrams, the author wishes to present Table No. 24.

This Table shows in summarized form some of the more important items of data outlined in the preceding pages, and which may be used as standards of efficiency with which to measure the success of other farms of the same type. It must be borne in mind, however, that such a standard represents only an average, and that the individual farm will necessarily vary somewhat from this standard, and that in making such comparisons this fact should be kept constantly in mind. Other standards of this character might also be made, the basis of classification with a given type being a group of the best farms of the group of farms studied; or, similarly, a standard based upon groupings of some of the poorer farms. Such standards are guideposts to better farm management on the individual farm, but do not always constitute the ideal toward which the individual farmer should work.

One of the principal criticisms usually directed toward a standard of this kind is the fact that it may fit the condition in a given state or locality this year, but another year it would be entirely inadequate. Such criticism would be well founded, provided the same standard were used year after year. No such practice is contemplated, however, as such standards will be constantly modified by further studies from year to year as the work progresses. Not only will the various factors probably vary from year to year, but the number of farms upon which such standards are based will be greatly increased as it becomes possible to make a study of the business upon larger and larger numbers of farms. Nor will such standards cover as broad a field as in the present instance. As this work in the state grows, such standards will be worked out in connection with certain localities in cooperation with local officials, thus giving a local effect which is indispensable to the proper carrying on of any kind of agricultural work.

TABLE NO. 24

Table showing in summarized form some of the more important items of data contained in this manuscript and which may be used as standards of efficiency by which to measure other farms of the same type.

Factor	Type of Farm		
	Crops	Mixed	Stock
Average farm income	1250	1070	780
Magnitude of Business -			
Total capital invested	11671	11574	11035
Total working capital	1779	2121	2408
Total acres in the farm	201	185	183
Per cent total area in crops	66	61	56
" " " " pasture	26	32	38
Total farm receipts	1923	1739	1466
Total farm expenses	673	669	686
Total number productive man days	283	279	267
Total number productive horse days	416	383	315
Number of work animals per farm	5.1	5.1	5.3
Number of men per farm	1.61	1.54	1.54
Total number productive animal units	12.3	18.5	22.8
Quality of Business -			
Number and kind of productive animal units			
Cattle	7.9	11.8	14.6
Horses and mules	1.3	1.9	2.2
Hogs	1.9	3.4	4.6
Poultry	1.2	1.4	1.4
Gross return per productive animal unit			
Cattle	20	25	33
Horses and mules	44	54	66
Hogs	50	79	79
Poultry	56	76	63
Average stock index	79	103	124

TABLE NO. 24 (concluded)

Factor	Crops	Type of Farm Mixed	Stock
Kind and acreage of most important crops			
Corn	30	28	24
Wheat	45	36	16
Oats	14	14	15
Kafir	13	13	11
Alfalfa	10	12	12
Cotton	7	2	1
Sorghum hay	1	3	4
Yield of important crops			
Corn	22.6	21.4	18.6
Wheat	16.3	10.1	8.9
Oats	26.1	22.4	17.8
Kafir	20.4	18.4	16.4
Alfalfa	2.3	2.2	2.1
Sorghum hay	2.3	2.2	2.3
Average crop index	106	99	92
General Farm Efficiency -			
Productive days work per man	175	181	173
Productive days work per horse	81	75	60
Crop acres per man	82	74	63
Receipts per man day	3.81	2.61	1.32
Receipts per horse day	.82	.63	.38
Net total receipts per man	774	694	505
Net total receipts per horse	246	211	147
Net receipts per crop acre	11.50	9.38	7.70
Interest made on total capital	10.7	9.0	7.1

APPROVED :

Date M. A. Beeson
May 27, 1918
Professor of Agronomy and Farm Management

APPROVED:

Date May 27, 1918
Henry G. Knight
Dean of School of Agriculture

APPROVED:

Date _____

For Committee on Graduate Courses

MAJOR SUBJECTS:

	First Semester					
	Hours			Credit	Grade	
	Theory	Practice	Theory		Practice	
Thesis		15	5		90	
Advanced Farm Management	1	4	2/3	95	98	
Second Semester						
Thesis		15	5		90	
Advanced Farm Management	1	6	3	95	98	
Agronomy 304	1	2	1/3	92	98	

MINOR SUBJECTS:

First Semester					
Social Science 301	2		2	95	
Social Science 401	2		2	95	
Second Semester					
Education 307	2		2	95	
Social Science 304	2		2	95	

Supplementary credits submitted:

University of Illinois -					
Thremmatology 1	5		5	98	
Agronomy 112	2		2	95	
Agronomy 111	3		3	96	