AN EVALUATION OF THE ACTIVITIES AND RESOURCES OF THE CANYON COUNTY SOIL LABORATORY

By

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AN EVALUATION OF THE ACTIVITIES AND
EFFECTIVENESS OF THE CHOCTAW
COUNTY SOIL LABORATORY

Report Approved:

Don M. Orr
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This Volume is Affectionately

Dedicated to My Wife

Marie Williams

And Children

Richard Lee Williams

Karen Beth Williams

ACKNOWLEDGMENTS

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AN EVALUATION OF THE ACTIVITIES AND EFFECTIVENESS OF THE CHOCTAW COUNTY SOIL LABORATORY

INTRODUCTION

The need for continuous revision of educational methods is important in any type of educational program. This is particularly true in adult educational programs for farmers. The technological changes in agriculture are occurring so rapidly that individual farmers cannot keep abreast of the changes. Outside help is necessary.

The County Extension Service is designated to provide assistance and guidance in developing programs that will fulfill the educational requirements of rural and urban families. The goals of these programs are to improve the standards of living of the people.

One of the facilities used by the County Extension staff to assist in developing a sound educational program is the County Soil Laboratory.

The County Soil Laboratory is used in making tests of soils. The results of these tests are interpreted and recommendations for fertilization of specific crops are made.

Soil testing on a county level is relatively new in Oklahoma. The first county laboratory was established in Tulsa County in 1949.[1] In the years from 1949 up to 1955 all the counties in the state, with the exception of Texas and Cimarron, established soil laboratories. At the present time there are seventy-two (72) counties in the state that are operating soil laboratories. Harper, Ellis, and Roger Mills have closed their soil laboratories. These five (5) northwestern counties send soil samples to the Woodward County Laboratory for testing.

The organisation of the Choctaw County Soil Improvement Association was completed in 1954. This group chose directors from various areas of the county. The directors elected a president, vice-president and secretary to head the organisation. Funds for the establishment was provided by donations from interested persons and from appropriation by the county commissioners. This money was used to purchase equipment and supplies to begin operations. A room for the laboratory was provided by the county commissioners. The supplies and equipment were shipped from Stillwater, Oklahoma on March 1, 1950, and the laboratory was put into operation on April 19, 1950. The association set a fee of fifty cents (50¢) per sample for having soil tests made. This fee is used to pay the salary of the laboratory technician and

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[1] Harold F. Miller, An Evaluation of the Activities and Effectiveness of the Major County Soil Laboratory, (Master's Report, Oklahoma State University, 1958), p. 1.

purchase of supplies as needed.

The county Soil Laboratory is operated by and under the supervision of the local county agent who submits reports to the Board of Directors of the County Soil Improvement Association. The county board holds annual meetings to audit the books and discuss the program of the organization. The Extension Agronomist of Oklahoma State University assists the county agent by providing check samples and supervision as needed to insure uniform test results.

In 1954, a Statement of Understanding Between The Oklahoma Agricultural Extension Service and Soil Conservation Service, United States Department of Agriculture, was completed, Appendix A. This called for closing of the State Soil Conservation Service Soil Laboratory at Stillwater. All soil testing for general use was to be made in the county soil laboratory; the facilities to be available to the local work unit conservationist for making recommendations for district co-operators.

A guide for crop recommendations in Oklahoma published by the Experiment Station is used along with the information given by the farmer's Figure 1 when the sample is submitted for testing.[2] With this information the county agent can make recommendations that will fit the needs of the soil and the crop to be produced. This type of testing facilities

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[2] J. C. Lynd, R. H. Reed, B. D. Tucker, and J. J. Hicks Soil and Crop Factors for Fertilizer Recommendation (Experiment Station Bulletin B-511, Oklahoma State University, Sept., 1958), pp. 8-14.

Testing Program Form I

CO. LAB. SAMPLE NO.

Surface _____

Subsoil _____

me _____ Address _____

inty _____ Date _____

) Cooperator _____ SMC Cooperator _____ Survey Symbol _____

mer Sample Number: Surface _____ Subsoil _____

:ation of Sample on Farm _____ Acres _____

(East of barn, south of creek, S 40, etc.)

CHARACTERISTICS OF THE SOIL (Important)

cture: { Surface Soil _____ / Subsoil _____ } Depth: { Surface Soil _____ / Subsoil _____ }

:ation: Upland _____ Bench _____ Bottom _____ Degree of Slope _____ Land Class _____

CROP HISTORY AND PREVIOUS SOIL TREATMENTS* (Important)

proximate number of years farmed _____ Date of previous soil tests _____

ıe history: Date _____ Rate per acre _____

tilizer record, give dates and approximate rates used.

_____ _____

_____ _____

_____ _____

umes grown in the last six years, kind and year grown:

_____ _____

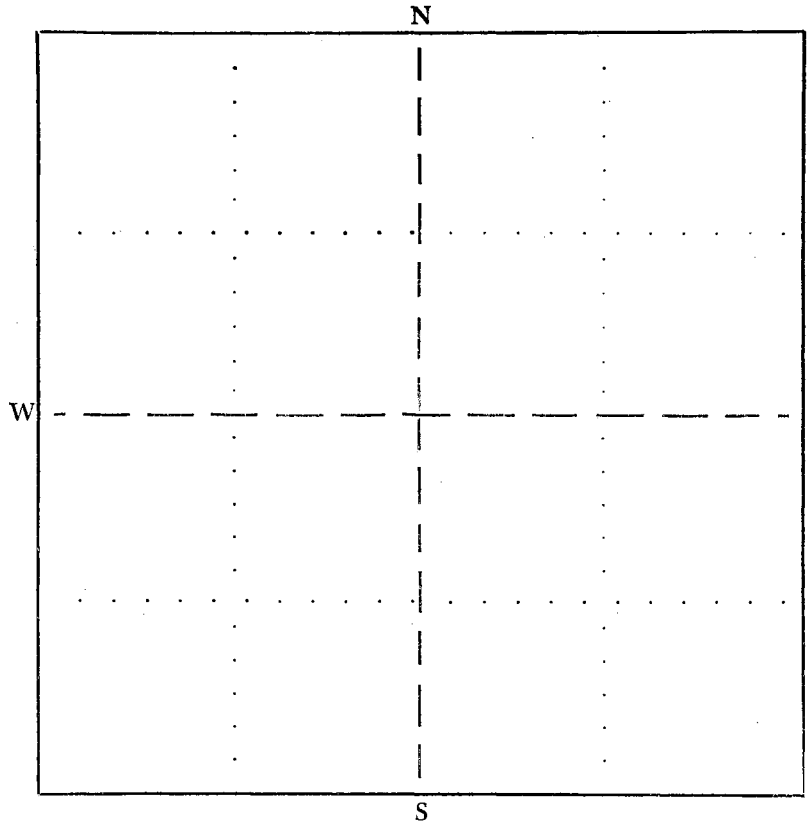
_____ _____

p grown last year _____

w used _____

LOCATION OF SAMPLE ON FARM

Sec. _____ Twp. _____ Range _____



PLANNED USE

p to be grown this year _____

_____

ll crop be irrigated? _____

ızed? _____ Harvested? _____

tilizer to be applied with:

ll _____ Planter _____ Other _____

_____

(Person submitting sample to laboratory)

_____

(Address)

commendations for soil treatment are based not only on a mical analysis of a representative sample, but also on the l of soil, previous cropping history, previous soil manage- ıt and fertilizer used and other applicable factors.

Laboratory analysis of your soil sample number _____

representing the_____ acre field_____ has been completed.
(East of house; South of creek; etc.)

Results of the analysis and recommendations for soil treatments for_____
(Crop you intended to plant)

_____ are as follows:

RESULTS OF THE ANALYSIS

Surface Soil		Subsoil	
Organic matter	_____	Organic matter	_____
Phosphorus	_____	Phosphorus	_____
Potassium	_____	Potassium	_____
Soil Reaction	_____	Soil Reaction	_____

RECOMMENDATIONS

Remarks

Nitrogen (N)	Phosphate (P_2O_5)	Potash (K_20)

Tons of Limestone per Acre_____.

Use Certified seed, plants or plant parts of the following varieties:

_____

_____

and the recommendations that are made play an important role in the soil management program of individual farmers in the county.

Purpose of the Study

The Rural Development Program was started in Choctaw County in the fall of 1955 with the organization of a county steering committee.[3] This committee instigated a plan of action to obtain the development program for Choctaw County. In the selection of pilot counties, Choctaw was included as a low income county also because the people were trying to make improvement on their own. The author started to work as Associate County Agent working with Rural Development in March, 1956. The purpose of the Rural Development Program is to assist people of rural areas to find ways and means to improve their standards of living. No set patterns or guides were provided to be followed in this program. Local people were to work together for self improvement. Advice and guidance are provided by professional workers at the county level. State and national workers could be called on for assistance as needed.

In the first meeting with the county planning group, the Extension office force was asked to work with the Agricultural Committee on the agricultural phases of the over-all program

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[3]Ezra Taft Benson, Development of Agriculture's Human Resources, (United States Department of Agriculture, Washington, D. C., 1955), p. 2.

for Choctaw County.

The first actual work was to obtain information from the people in the county to determine the situation as it existed. A group from Oklahoma State University developed a questionnaire to be used in obtaining this information.[4] The results of the survey were completed by Houston E. Ward, Associate Extension Economist, Oklahoma State University.[5] This report bore out the thinking of many who were involved in taking the survey. Size of farms is small in comparison to higher income areas of the state. Production per land unit is low in terms of livestock and all crops.

The foundation of a sound agriculture is the soil. Poor soils make poor people. Fertile soils and good farmers go together. Soil Survey information indicates that the soils of Choctaw County are subject to rapid leeching and potentially low fertility under improper care. This had occurred over wide areas of the county.

One of the basic needs of the county was to increase farm income by increasing unit yields. To do this the fertility level of the soil will have to be raised on most of the farms.

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[4] J. B. Back and L. J. R. Booth, Department of Agricultural Economics; J. B. Leflaster, Agricultural Industrial Development Service; James D. Tarver, Department of Sociology and Rural Life; Evelyn Funk, Assistant State Home Demonstration Agent, Oklahoma State University, Rural Development Survey Questionnaire for Choctaw County, (Oklahoma State University, Stillwater, Oklahoma, 1956), pp. inclusive.

[5] Houston E. Ward, Rural Development Survey of Choctaw County, Oklahoma, (Oklahoma State University, Extension Service, 1956), pp. inclusive.

The first step in determining soils fertility needs is a soil test. The testing of soils is a function of the soil laboratory. Here was one place to start. The purposes for making a study of the soils laboratory operation are to determine:

A. The number and location of farms in the county from which soil samples had been taken.

B. The deficiencies of these soils as shown by soil tests and according to soil survey information.

C. The nature and extent of the use of the soils laboratory by individual farmers.

1. Continuous use over a period of years.
2. Types of crops for which tests were made.
3. Degree of coverage over entire farm.

D. The results obtained by farmers from recommendations made.

E. Evaluation of activities and effectiveness of the program.

F. To improve services of the soils laboratory to farmers.

G. To develop an educational program that will provide the information needed by farmers to make wise decisions in soils management.

Method of Procedure

The methods used in making a study of a particular problem are many and varied. Miller, in his study of a similar

problem, used a letter and questionnaire to gather information from farmers using the soil laboratory.[6] This type of information will give answers to what people have done or are planning to do in the future.

In conference with Mr. Orr, the author decided to compile the information available on the Soil Testing Program (Form I, Figure 1). This information was obtained from the farmers at the time they submitted a soil sample to the county laboratory for testing.

A sheet for tabulation of the information was developed, Appendix B. All the useable reports were recorded for the period July 1, 1954 to June 31, 1959. This information was used to develop maps, tables, and other information of value in planning the educational program for the county.

A personal interview with twenty (20) farmers, using a short questionnaire, was conducted in 1957 to determine ways and means of carrying out the program, Appendix C.

Conferences with feed and fertilizer dealers, bankers, and other businessmen gave additional information concerning the subject.

The regular monthly meetings of county agricultural workers provide opportunity to discuss these problems with personnel of the Soil Conservation Service, Farmers Home Administration, Agricultural Stabalization Committee, and

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[6] Harold F. Miller, An Evaluation of the Activities and Effectiveness of the Major County Soil Laboratory, (Master's Thesis, Oklahoma State University, 1956) pp. 7-10.

Vocational Agriculture teachers of the county.

Results of crop fertilization demonstrations made by farmers cooperating with the County Extension office are available for several years. This information provides a guide for making recommendations.

CHAPTER II

GENERAL CHARACTERISTICS OF CHOCTAW COUNTY

Statement of Location

Choctaw County is in southeastern Oklahoma, Figure 2, bordering the State of Texas, from which it is separated by the Red River. Hugo, the county seat, is 60 miles west of the Arkansas State line and 155 miles southeast of Oklahoma City. The area of the county is 790 square miles, or 505,600 acres.

The county is in the extreme northern part of the Gulf Coastal Plain, a forested rolling sandy area with associated small prairies of heavy soils. The features of relief owe their characteristics largely to normal erosion incident to the development of the intricate drainage system of the Red River drainage basin in which the county lies, although a few high stony ridges and hills in the northeastern part of the county represent isolated outliers of the rough lands in the Ouachita province just north of the county.

The county, as a whole, consists of a high southeasterly sloping plain in which several deep and many shallow valleys have been cut by drainageways, leaving comparatively small areas having relatively smooth surfaces. The smoother areas


102°
101°
100°
99°
98°
97°
96°
95°
37°
36°
35°
34°
33°
CIMARRON
TEXAS
BEAVER
HARPER
WOODS
ALFALFA
GRANT
KAY
OSAGE
WASH
NOWATA
CRAIG
OTTAWA
ELLIS
WOODWARD
MAJOR
GARFIELD
NOBLE
PAWNEE
ROGERS
MAYES
DEL
PAYNE
DEWEY
BLAINE
KINGFISHER
LOGAN
CREEK
TULSA
WAGONER
CHERO.
ADAIR
ROGER MILLS
LINCOLN
CUSTER
OKMULGEE
MUSKOGEE
CANADIAN
OKLAHOMA
OKFUSKEE
SEQUOYAH
CADDO
McINTOSH
BECKHAM
WASHITA
GRADY
CLEVELAND
POTTAWATOMIE
SEMINOLE
HUGHES
NASKELL
PITTSBURG
GREER
KIOWA
McCLAIN
LATIMER
LE FLORE
HARMON
COMANCHE
GARVIN
PONTOTOC
COAL
JACKSON
STEPHENS
PUSHMATAHA
ATOKA
TILLMAN
COTTON
MURRAY
JOHNSTON
McCURTAIN
CARTER
JEFFERSON
MARSHALL
BRYAN
CHOCTAW
LOVE
OKLAHOMA
SCALE - STATUTE MILES
0 10 20 30 40 50

comprise strips of recent alluvium in the valleys of the Red River, Kiamichi River, and Muddy Boggy and Clear Boggy Creeks; strips on the east-west belt of isolated prairies extending through the central part of the county; and comparatively small local areas on divides between the major and minor drainageways in the different parts of the county. The rougher and more steeply sloping areas are on escarpments and along the larger valleys of local tributaries to the Red River. Such areas are more extensive in the eastern and western parts of the county, along sections of north-facing escarpments passing in an east-west direction through the south-central and north-central parts, and on the southerly outlying hills and ridges of the Ouachita province in the northeastern part.

The surface of most of the county is underlain by Cretaceous sandstones, limestones, and unconsolidated beds of sands, clays, and sandy clays. The sandstone hills of the northeastern part of the county are of Carboniferous sandstones. Some high old stream terraces are of Recent and possibly, in places, Quaternary age.

A belt of rolling sandy forested land crosses the southern part of the county from east to west and occupies approximately two-fifths of the total area. This consists chiefly of exposed beds of Woodbine sands of the Upper Cretaceous. On the southern side this gradually slopes downward, merging with the lower Quaternary and Recent terraces of the Red River Valley, although in places sections of steeply

sloping escarpments extend to the lower benches. The northern border of this belt is characterized by low but distinct steeply to moderately sloping hilly north-facing escarpment slopes leading down to the prairies below. This sandy belt constitutes the interior limit of which are generally considered formations of the Gulf Coastal Plain. The surface has a generally undulating to rolling relief caused by the dissection of numerous local tributary streams of the Red River.

The prairie belt just north of this belt comprises formations of the Lower Cretaceous, largely Caddo, Bennington, and Goodland limestones with some clays and shales of the Kiamichi and Bokchito formations. This prairie belt occupies about one-fifth of the county and is a more or less continuous area several miles wide extending in a general east-west direction through the central part of the county. It is interrupted by areas of sandy soils where dissection by stream valleys has exposed unconsolidated sandy beds of the Trinity formations, which lie just beneath the limestone beds. Therefore, some prairie areas occur in isolated small bodies. The surface is undulating to rolling, as many small streams have carved valleys deeply into or through the rocks. On the northern edge of this belt outcropping limestone slopes generally face northward and merge with the lower beds of Trinity sands.

The Trinity sands, the basal formations of the Lower Cretaceous, occupy an east-west belt across the northern part of

the county, which extends northward many miles outside the county to the hills of the Ouachita province. This is a very rolling and dissected forested sandy belt with many steep slopes and deep narrow valleys. The formations are chiefly deep soft sandy clay beds, and there is little sandstone in the upper part. This belt occupies approximately two-fifths of the county.

Most of the county is well drained, although some stream bottoms of the larger local streams are so low and flat and the soils are so heavy that they remain wet for long periods. The bottoms along the Red River, and in places along other streams, although overflowed occasionally, have sufficient natural drainage to allow successful cultivation. Most of the county is drained by tributaries of the Red River, the largest of which pass through in a general southeasterly direction. The principal tributary streams are the Kiamichi River and Muddy Boggy, Clear Boggy, Whitegrass, Gates, Long, and Bokchito Creeks. Large areas of soils are so steep and loose that normal erosion, even under the rather heavy forest growth, has been severe, and the soils in such places are rather thin.

The general elevation of the higher parts of the northern part of the county is about 650 feet above sea level, and in the southern part along the Red River it is a little less than 380 feet. The elevation is 466 feet at Hamden, 494 feet at Goodland, 466 feet at Grant, and 528 feet at Lenoir.

The sandy plains are forested, chiefly with oaks and hickory. The principal oaks are post, red, and blackjack. There is also a considerable growth of pine in the northeastern part of the county. On the prairies the native grasses are largely coarse bunchgrasses, including species of Andropogon. Some species of grama grow, also some other grasses. Osage-orange (bois d'arc), elm, and oak trees grow on some areas of prairie lands, especially in the rougher sloping positions. The bottom lands support a growth of oak, hickory, ash, elm, and hackberry trees, and in some favorable locations native pecan trees grow well. Although much of the forest growth remains, many of the larger trees have been cut for timber and firewood.[1]

Organization and Population

Choctaw County was organized in 1907 with the county seat at Hugo near the center. Other trade centers are Fort Towson, Boswell, Soper, Grant, and Swink. The rural population in 1910 was 17,330. Each census report showed an increase up to 1940 when the rural population was 22,449. Since 1940 a decline has occurred and at the present time the rural population is approximately 7,273 persons.

The rural portion of the county has relatively more children under twenty years of age than does the rural

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[1] W. H. Buckhannan, A. C. Anderson, and O. H. Brensing Soil Survey Choctaw County, Oklahoma, (U. S. Department of Agriculture in Co-operation with Oklahoma Agriculture Experiment Station, Stillwater, Oklahoma, 1937-38), pp. 3-5.

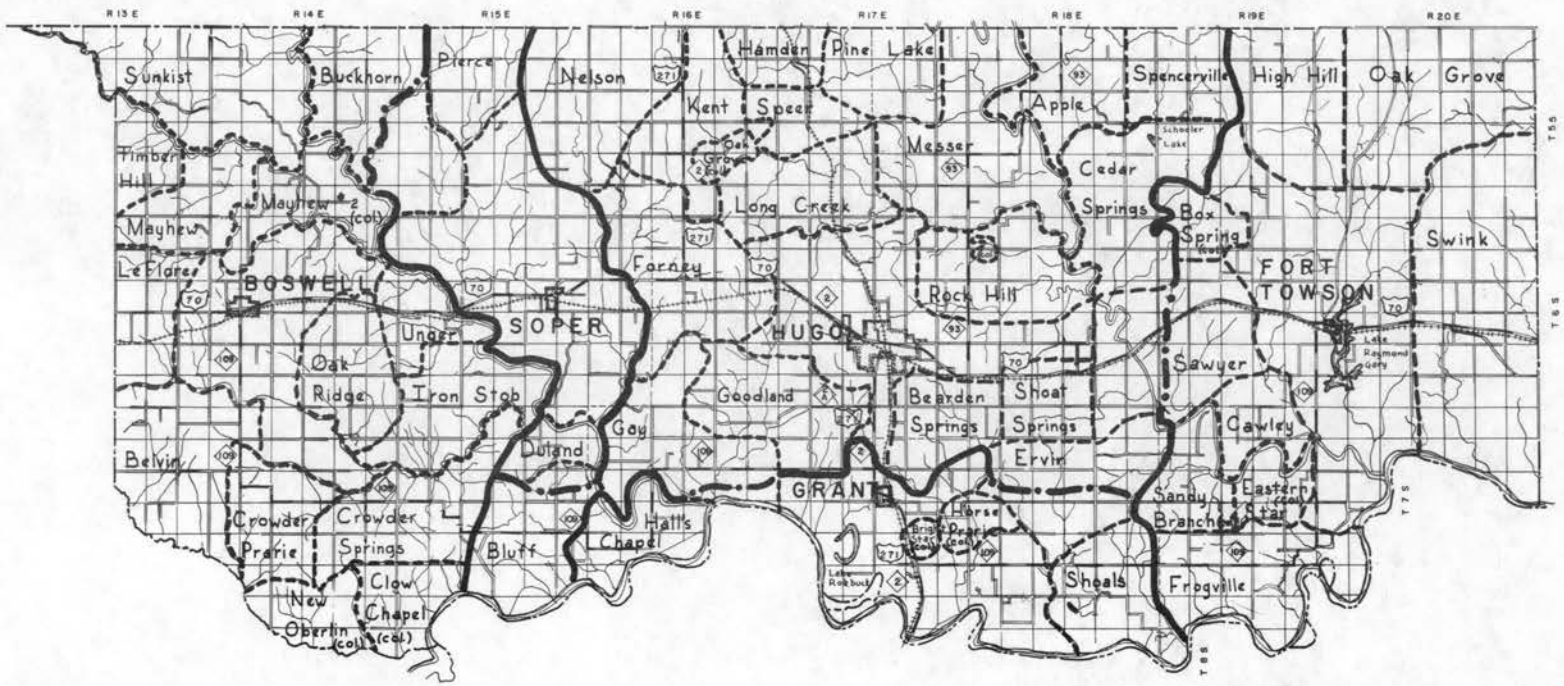
population of Oklahoma as a whole. The proportion of people over sixty-five (65) years of age is greater and the numbers in the age group twenty (20) to sixty-four (64) is less than the state average. Sixty percent of all families are older married couples without children. Only twenty percent of the families had children living at home. The age structure indicates a high rate of migration from the area, of people in the twenty (20) to sixty-four (64) age group, the more productive class.

This type of farm population poses a problem for the older age group is inclined to be slower in changing farming practices than younger operators. The type of assistance will have to be geared to the speed of acceptance of the majority group and individual planning carried out with the younger operators in order that they can progress toward higher levels of production as rapidly as possible.

Transportation in the county is provided by two railroads and paved highways that cross the county from north to south and east to west, Figure 3. Rural roads are in fair state of repair with almost all families having access to roads that are passable throughout the year except for short periods of extremely wet weather.

Almost all of the rural population has access to rural electrification for lighting and power in their homes.

The educational level of the adult rural population of



N

L E G E N D

MAJOR HIGHWAYS

COUNTY LINE

STATE LINE

COMMUNITY BOUNDRY

NEIGHBORHOOD BOUNDRY

COMMUNITY BOUNDRY CROSSING NEIGHBORHOODS

MAP BY

AGRICULTURAL EXTENSION SERVICE

OKLAHOMA STATE UNIVERSITY

FROM INFORMATION FURNISHED

BY

COUNTY EXTENSION AGENTS

DECEMBER 31, 1959 - W.H.G.

COMMUNITIES

AND

NEIGHBORHOODS

OF

CHOCTAW COUNTY

OKLAHOMA

Figure 3 - Road Map

Choctaw County is 7.2 school years.[2]

Soil Types

The three general groups of soil in Choctaw County are (1) Light colored sandy soils of the Coastal Plain. These soils are slightly to moderately acid and of low to moderate inherent fertility and make up more than half of the total area of the county. (2) Dark colored soils which are moderately to highly productive where normally developed, and (3) Soils of the bottom land which range from light to heavy and, for the most part, are inherently productive where well drained.

The light colored sandy soils lie above the bottom lands and run from southeast to northwest across the county, with the band of dark-colored prairie soils dividing them through the center of the county, Figure 4. Detailed information on the various series are available in Choctaw County Soil Survey.[3]

Crops Grown

The light colored sandy soils are largely in cultivation

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[2] Houston Ward, Rural Development Survey Choctaw County, Oklahoma, (Mimeograph Oklahoma Extension Service, Stillwater, Oklahoma, 1956), p. 4.

[3] W. H. Buckhannan, A. C. Anderson, and O. H. Brensing, Soil Survey Choctaw County, Oklahoma, (Oklahoma State University, Stillwater, Oklahoma, 1937 #6), pp. 18-73.

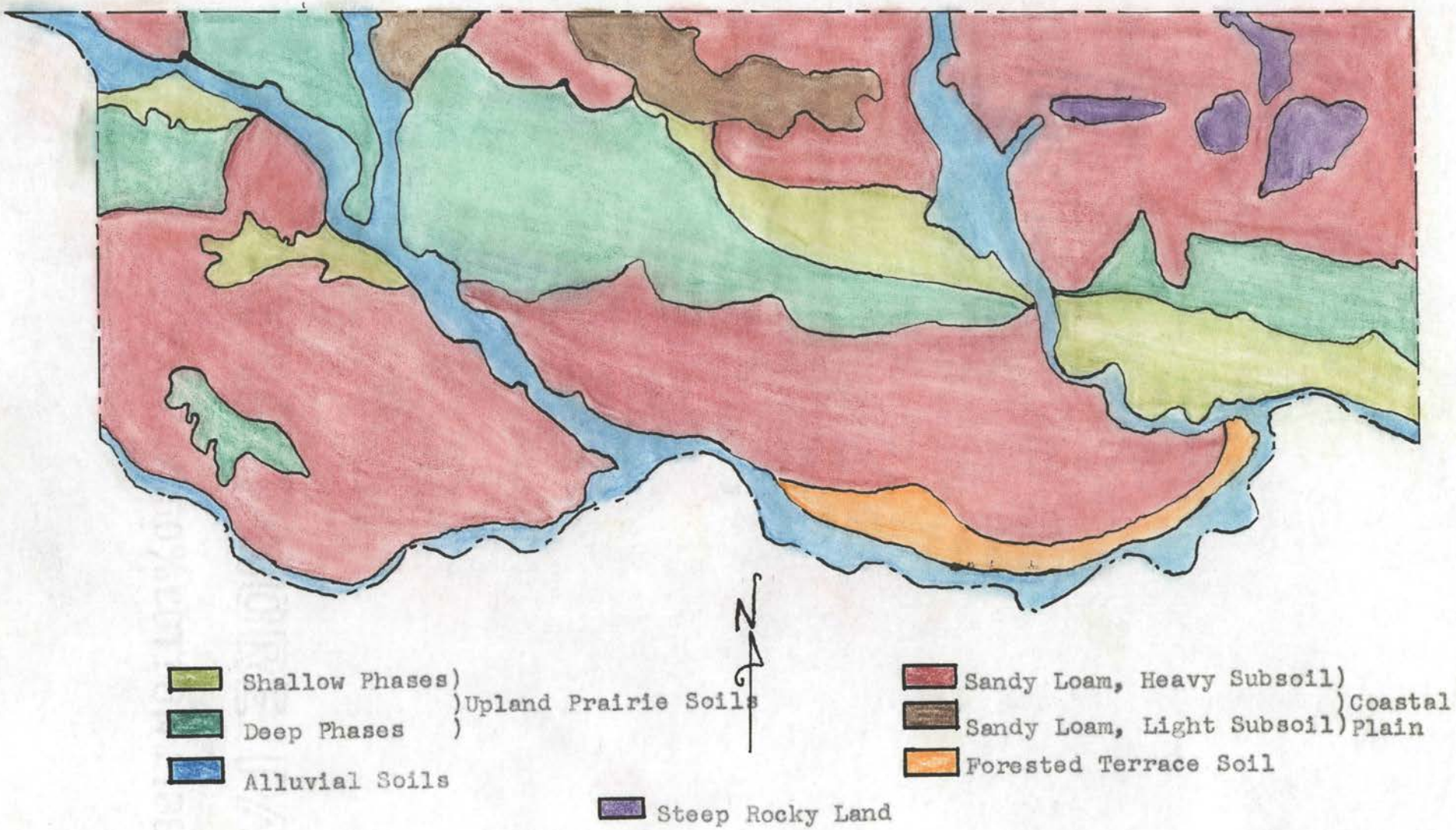

Figure 4 - Soils Map Choctaw County, Oklahoma.

on small farms. The farm operation consists of some livestock farming with small patches used to produce feedstuff for animals; cash crops consist of cotton, peanuts, and vegetables. Under this type operation, the soils have severely eroded.

In the thirties and forties, large areas of this type soil were abandoned. In more recent years this land is being reclaimed to some extent and is being put back to grass in some areas and timber in the northeastern part of the county.

The dark soils of the upland provided larger areas of level land for cultivation in corn, cotton and small grains. Hay crops, both native and tame, cover wide areas of the shallower phases of this soil group. Here we find larger farm units with more livestock. Machinery for operation of the units are in evidence and the general stability of the operators is improved.

The botton land soils were first put to cultivation under the plantation system using slaves to carry out the farming operation. Cotton, corn, and other feed crops were the principal crops. This system of operation started breaking down in the 1930's when cotton prices were low. In recent years a high percent of the botton lands have passed into the hands of cattlemen who produce alfalfa for hay and grain sorghum or corn for feed on the cultivated lands with tame pastures taking up the less desirable land of this area.

CHAPTER III

REVIEW OF LITERATURE

The literature available concerning county soil testing laboratories is limited, but it is interesting to note some of the background of soil testing as it has developed in Oklahoma.

The first soil analyses were made on the Oklahoma Experiment Station Farm by George L. Holton in 1893.[1] His statement of policy at that time is worth repeating as it is still the guiding principal of the soil testing program.

> The Oklahoma Experiment Station intends to collect as rapidly as practicable samples of all soils of the territory, analyze them, and eventually publish an exhaustive bulletin which will be of value to producers in selecting crops and fertilising them for best results. Soil analysis serves as a guide to a reasonable study of the soils; they do not prove soils fertile or otherwise.

This beginning and the studies of other soils scientists through the years proved that the ground work of soil testing was well laid.

Studies made in 1897 through 1899 furthered the knowledge of soil testing in Oklahoma Territory and included

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[1] George L. Holton, "Soils Section Report", Bulletin No. 5, Oklahoma Experiment Station, (Payne County, Oklahoma, 1893), p. 7.

many other areas of the state.[2]

The techniques of soil testing as used in the county laboratory were developed and perfected by technicians from all over the world. These were modified to fit the particular situations in Oklahoma by members of the staff of Oklahoma State University, The Experiment Station, and the Soil Conservation Soils Laboratory located on the campus at Stillwater, Oklahoma. A summarization of these methods are given in a mimeograph that is used by the county technician in making soil tests.[3]

The accumulation of knowledge concerning soil testing and fertilization as outlined by Dr. Harper and others provided a background for the present day recommendations as developed by J. Q. Lynd and others on the present staff of Oklahoma State University.[4]

The simplification of the testing techniques to give a high degree of accuracy makes it possible for the county agent

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[2]J. Hayes Bone, Oklahoma Soil Studies, Bulletins 24 and 42, (Oklahoma Experiment Station, 1897-1899), pp. inclusive.

[3]W. Max Baumann, County Soil Testing Laboratory Procedures for Oklahoma, (Oklahoma Extension Service, Mimeograph L-573, Stillwater, Oklahoma, revised 1956), pp. inclusive.

[4]H. J. Harper, H. F. Murphy, F. B. Cross and H. B. Cordner, Fertilizer Recommendations for Oklahoma, (Oklahoma Experiment Station Bulletin 305, Stillwater, Oklahoma, 1947), pp. inclusive. J. Q. Lynd, R. M. Reed, B. B. Tucker, and J. J. Micka, Soil and Crop Factors for Fertilizer Recommendations, (Bulletin B-511, Oklahoma State University, Sept., 1958), pp. inclusive.

to plan with the farmer his program of soil management. In this planning they can give consideration to the soil type, anticipated moisture condition, and previous cropping systems that have been on the land.

It is surprising that more information on county soil laboratories is not available, unless the information has been developed in the various counties and retained for their personal use. Miller, in his study, found that the various types of soils in the county had similar deficiencies and that, for the most part, these fell into groups that called for grades and ratios of fertilizer that could be handled by local merchants.[5]

Casey reported that 94.5 percent of the farmers surveyed in Logan County used the county agent and the soils laboratory for assistance on soil management problems.[6]

J. W. Fitts discussed at length the importance of using the soil testing program as an aid in the education of farmers.[7] Tests are important, but the application of recommendations

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[5] Harold F. Miller, An Evaluation of Activities and Effectiveness of the Major County Soil Laboratory, (Master's Report, Oklahoma State University, Stillwater, Oklahoma, May, 1958), p. 33.

[6] Alvin Harold Casey, A Survey of the Logan County Agricultural Agents Educational Program and Suggestions for Improvement, (Master's Thesis, Oklahoma State University, Stillwater, Oklahoma), pp. 37-38.

[7] J. W. Fitts, "The Use and Value of Soil Tests", United States Department of Agriculture Yearbook Land, (Washington, D. C., 1958), p. 333.

must consider the crop, the growing season, the anticipated yield, and the use of the crop when it is produced. More time is needed for study in the field on specific problem areas of the county in order to associate soil tests with the specific needs of individual farms.

In connection with the improvement of the soils laboratory educational program, a number of references was studied. Dr. Seaman A. Knapp has this to say about Extension education in an article appearing in the 1909 Yearbook of Agriculture.[8]

> The demonstration work may be regarded as a system of adult education given to the farmer upon his own farm by means of object lessons in the soil, prepared under his observations and generally by his own hands.

Through the years since Dr. Knapp started the demonstration method of adult education and the rise of the present Extension educational program, this form of teaching has proven to be the most successful method of training farmers in the utilization of improved methods in farming.

James W. Kyle, in his survey of the annual reports of Oklahoma County Agricultural Agents for the year 1929, arrived at this conclusion -- the dissemination of knowledge concerning farming practices was greatest in those cases where demonstrations were used as an integral part of the

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[8] Seaman A. Knapp, United States Department of Agriculture Yearbook of Agriculture, (Washington, D. C., 1909), p. 154.

Extension educational program.[9] This does not mean that other methods are not beneficial, but they should be combined in the over-all educational program in such a way as to provide a meaningful educational situation for the greatest number of farmers possible.

A discussion of the factors that influence the success of farmers includes most of the factors that affect farmers in Choctaw County. Small farms, low yields, and minimum productive man days of labor are the more important ones. Ways and means of overcoming these are the stepping stones to success. When the size of the farm is small, it is not unusual to have low fertility. It may be possible to increase crop yields by 30 percent with proper fertility. Livestock production can be increased by as much as 50 percent by improving pasture and feed along with selection of high quality breeding animals. This is one method for farmers to increase size of business and income.[10]

Stokes found it necessary to delineate the areas involved in any program in order that a starting point might be established.[11] This is especially true in developing a

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[9] James M. Kyle, The Comparative Educational Value of Extension Methods in Oklahoma, (Master's Thesis, Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma, 1926), p. 25.

[10] Oklahoma State Board for Vocational Agriculture, Major Factors of Successful Farming, (Stillwater, Okla., 1947), p. 55.

[11] George J. Stokes, Organizing and Conducting an Evening Class with Adults Interested in Soil and Moisture Conservation, (Master's Thesis, Oklahoma State University, Stillwater, Okla., 1937), p. 4.

soil and moisture conservation and improvement program.

A related study of the Rural Development Program of Avoyelles Parish, Louisiana, reveals that their goals would fit into the picture as part of the answer in Choctaw County.[12] These goals are: (1) Prepare soils map showing soils of various types in the county, (2) seek to release acreages of land tied up by old folks on welfare, (3) encourage use of more fertilizer and adapted varieties of crops, and (4) increase size of farms where requested when possible.

The review of the foregoing literature was challenging and encouraging to the workers in Choctaw County as they set about to develop a phase of the county educational program evolving around the county soil laboratory.

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[12] Joseph C. Doherty, "A New Program for Better Living," United States Department of Agriculture Yearbook of Agriculture Land, (Washington D. C., 1958), pp. 379-380.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Information from the soils laboratory file was compiled on the form developed for that purpose, Appendix B. The short survey results and other pertinent information is included for clarification where needed.

The presentation and analysis of data will be discussed under the following main divisions:

1. Number of farmers, location of farmers in the county, number of samples, and number of acres.
2. Crops and acres for which tests were made.
3. Kinds and amounts of fertilizer applied to crops.
4. Yield of crops as result of fertilization.
5. Reasons for not following recommendations.

In the period of time from July 1, 1954 to June 31, 1959 the available soil laboratory form I sheets filed were 1,362. These were submitted by 562 different farmers, Figure 5. Combining of Figure 4 and Figure 5 will show the location of farmers on the various types of soil found in the county. This type of information is important in making fertilization recommendations for a specific crop.

Table I gives the number of farmers by year and the samples and acres that were covered by the tests.

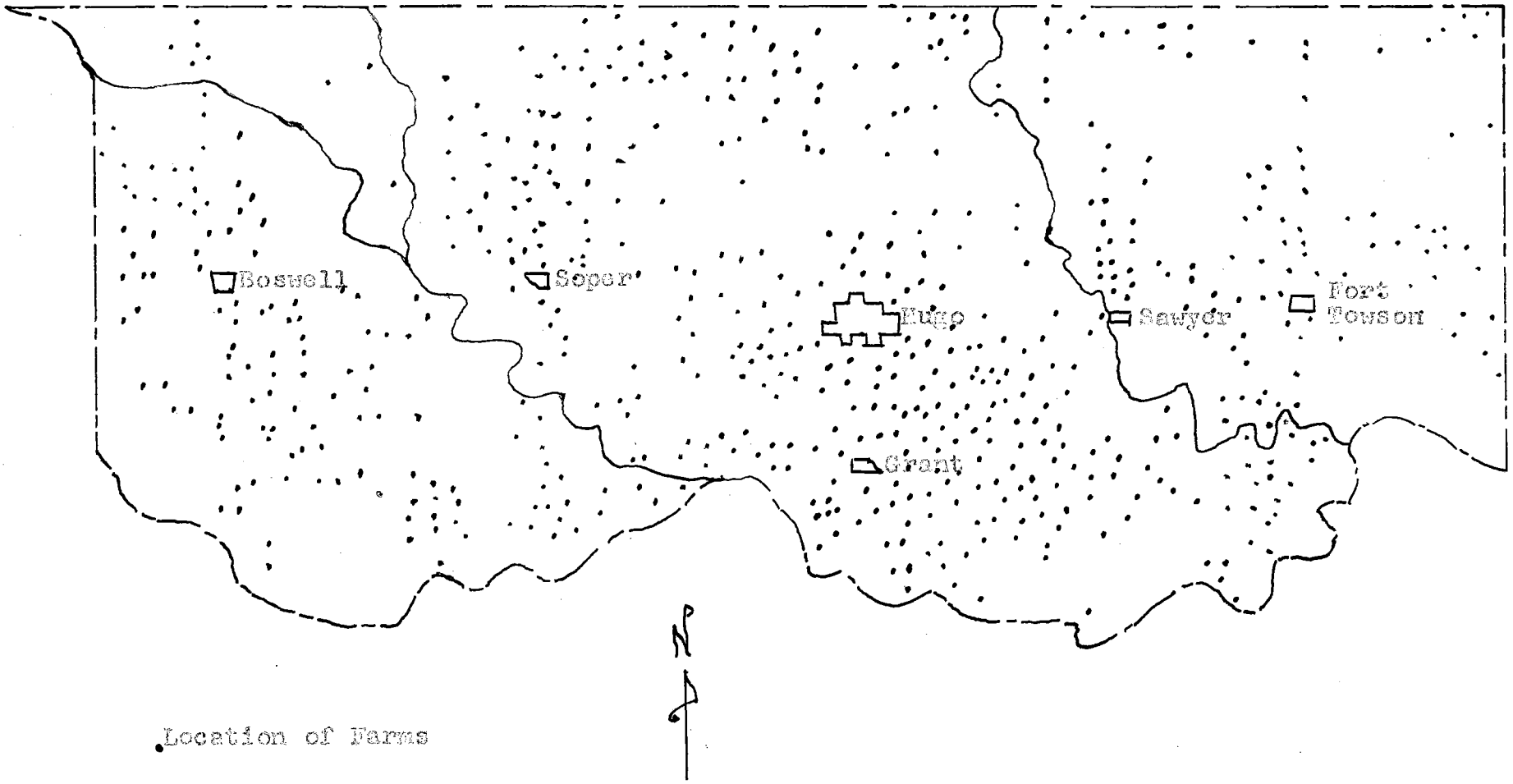

Figure 5 - Location of Farmers Using Soil Laboratory

TABLE I

NUMBER OF FARMERS USING SOILS LABORATORY
NUMBER OF SAMPLES AND ACRES INVOLVED
CRAIG COUNTY, OKLAHOMA

Fiscal Year	Number of Farmers	Number of Samples	Tons	Acres
1954-55	153	240	922	7,368
1955-56	197	250	796	6,794
1956-57	217	272	1,153	9,225
1957-58	219	331	1,053	8,782
1958-59	194	259	1,305	10,041
Total	562(1)	1,352	5,229	42,210

(1) Less duplication.

The number of different farmers using the soil laboratory was 562 for the five year period. The number of farmers who had soil tests made is low in comparison with the reported 1,617 farms in the county.

Tons of all fertilizer used by farmers varies considerably as reported by different sources.

Table I shows 153 farmers used approximately 922 tons of fertilizer on 7,368 acres or about 250 pounds per acre. The 1954 census shows, Table II, 12,814 acres or about 240 pounds per acre.

TABLE II

FERTILIZER USED BY FARMERS REPORTING
AGRICULTURE CENSUS 1954 (1)

Material	Farms Reporting	Tons Used	Acres
All Commercial Fertilizer	516	1,559	12,814
Lime and Liming Material	26	418	300

(1) Oklahoma - County and State Economic Areas 1954 Census of Agriculture Vol. 1 pt. 25 U. S. Department of Commerce Bureau of Census.

The number of farmers using fertilizer with a soil test or without a soil test is comparatively low as compared to the 1,617 farms reported in the county. Farmers are either using the results of the few soil tests made as a guide in applying fertilizer to other land, or they are doing it as they have in the past, by guess.

TABLE III

COMPARISON OF FARMS REPORTED USING FERTILIZER
BY 1954 CENSUS AND THOSE USING
SOILS LAB RATORY

Number of Farmers in County	Census Report No.	Percent	Soil Laboratory Report No.	Percent
1,617	516	31.91	153	9.46

Table III shows that approximately 32 percent of the farmers are using fertilizer according to the 1954 census. Only 10 percent are having soil tests made.

This is apparent for the low yields reported from low rates of fertilization in demonstrations, and the low yields reported in the 1954 Agriculture Census tends to bear this out.

Table IV shows the distribution of fertilizer by grade and ratio used in Choctaw County for the years included in the study.[2] This table further indicates that a high percent of the fertilizer used is being applied without soil test recommendations.

Table V gives a comparison of soil tests made by the soil survey crew and those made in the county laboratory.

In reality this is not an accurate comparison for the soil survey tests were run on virgin soils, while those made in the county laboratory were from fields which have been in cultivation for an average of thirty-eight (38) years. The significant information from this chart is the high percent of soil tests that showed slight to strongly acid indicating a need for lime. Nitrogen is low in 62.08 percent of the tests. Phosphorus is low in 73.03 percent of the tests and potash is low in 62.60 percent of the tests. These sandy textured soils through improper management have developed into a highly acid, practically sterile soils, that will require drastic management practices to bring them back to a productive level.

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[2] Oklahoma State Department of Agriculture Annual Report Fertilizer Distribution by Counties, (Capitol Building, Oklahoma City, Oklahoma, Fiscal Years 1954-55 through 1958-59).

TABLE IV

TONNAGE DISTRIBUTION OF FERTILIZER IN CHOCTAW COUNTY OKLAHOMA BY GRADES AND MATERIAL

GRADES AND MATERIALS	1954-55	1955-56	1956-57	1957-58	1958-59	TOTAL
(1-2-1)						
5-10-5	513	396	314	269	24	1516
4-12-4	12	9	3	1		25
6-12-6		1	3		48	52
7-14-7				6	27	33
10-20-10	32	181	168	384	657	1422
12-24-12	2			6	2	10
(1-1-1)						
8-8-8	46		19	11	11	87
0-12-12						
and all						
0-1-1		11	1	10	1	23
0-14-7						
and all						
0-2-1	7	40	20		18	85
3-9-18						
and all						
1-3-6	7	4				11
5-10-10						
and all						
1-2-2	77	71	53	40	15	256
8-24-8						
and all						
1-3-1		34				34
3-12-12						
and all						
1-4-4			7	20	31	58
10-20-0		83	136	31	38	288
Misc Grades	5	7		1	16	29
Ammo Phosphate 16-20-0	28	41	24	9	42	144
Ammonium Nitrate 33-1/3%	190	76	70	43	40	419
Ammonium Sulphate		5		2	21	28
Rock Phosphate	81	40		45	56	222
0-20-0	463	666	256	89	273	1747
0-45-0		4	10	4	3	21
Potash	17	11	1	23	33	85
Total	1480	1680	1085	994	1356	6595

TABLE V

A COMPARISON OF COUNTY LABORATORY TESTS AND SOIL SURVEY RESULTS ON SANDY SOILS OF CHOCTAW COUNTY

Number of Samples	pH			Nitrogen			Phosphorus			Potash		
	None to V. Slight	Slight	Mod. to Strong	High	Med.	Low	High	Med.	Low	High	Med.	Low
Soil Survey 9	2	1	6	1	11	6	1	4	4			
County Lab. Number 738	14	256	468	129	151	458	51	148	539	107	169	462
Percent of Total	1.90	34.68	63.41	17.47	20.45	62.08	6.92	20.05	73.03	14.50	22.90	62.60

The black land soils of Choctaw County have not changed as much as the sandy soils but several changes have occurred. This may be noted by comparing Table V with Table VI. The virgin soil analysis showed an acid condition to exist with a low phosphorus availability level and relatively high nitrogen content on virgin soils. Soil test results from fields cropped for thirty-five to forty years show the acid condition to be increasing. The nitrogen content is 26.24 percent in the low category. Phosphorus and potash levels are generally low.

Table VII for the botton land soils showed that a limited number of the soils were moderate to strongly acid. The number showing low in nitrogen, phosphorus and potash were less than 50 percent for any of the plant foods. These soils are alluvial soils for the most part along the Red River. They are deposits from farther west where nutrients are more plentiful in the parent material.

The discussion of various soils and fertility levels of the soils in the county soil survey show the tests run to be fairly representative of the general soil type.[3]

For the benefit of fertiliger dealers and others, the results of the tests show that the ratios of fertilizer required to meet the needs of the greatest percent of the county soils are 1-2-1, 1-2-2, or 0-1-1, with some demand for 1-1-1 ratios. Single element materials are used to a great extent.

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[3] J. M. Buckhannan, et al, Soil Survey, Choctaw County, Oklahoma, (Oklahoma State University, Stillwater, Oklahoma, 1937, 78) pp. 93-96.

TABLE VI

A COMPARISON OF COUNTY LABORATORY TESTS AND
SOIL SURVEY RESULTS ON BLACK LAND SOILS
OF CHOCTAW COUNTY

Samples	Acidity or Ph			Organic Matter or Nitrogen			Phosphorus or Available P205			Potash or Available K20		
	None to Slight	Slight	Mod. to Strong	High	Med.	Low	High	Med.	Low	High	Med.	Low
Soil Survey 7	1	2	4	3	2	2	1		6			
County Lab Number 305	87	120	98	153	72	80	42	72	191	52	93	160
Percent of Total	28.53	39.34	32.13	50.16	23.60	26.24	13.77	23.47	62.76	17.05	30.49	52.46

TABLE VII

A COMPARISON OF COUNTY LABORATORY TEST AND SOIL SURVEY RESULTS ON BOTTOM LAND SOILS OF CHOCTAW COUNTY, OKLAHOMA

Samples	Acidity or Ph			Organic Matter or Nitrogen			Phosphorus or Available P205			Potash or Available K20		
	None to Slight	Slight	Mod. to Strong	High	Med.	Low	High	Med.	Low	High	Med.	Low
Soil Survey 24	12	2	10	11	6	7	15	6	3			
County Lab. Number 207	81	109	17	41	63	103	57	74	76	48	87	72
Percent of Total	39.13	52.66	8.21	19.80	30.43	49.77	27.53	35.75	36.72	23.18	42.03	34.79

Super phosphate is used for pastures and cover crops where legumes are planted, and nitrogen of various types for side dressing of cash crops. Table V gives the grades and amounts of various materials sold in the county. This distribution is in line with soil test results to the extent that fertilizer is being used in the county.

Table VIII shows the various crops for which soil tests have been made, the number of tests made, and the acres of crops for which tests were made for a period of five years. The consistently large number of soil tests made for several of the crops is for Agricultural Stabilization Committee assistance. Vetch and small grains were planted as cover crops on cash cropland in the fall with 17,690 acres being treated in this way. This practice has carry-over benefits for the following crop. Many of the farmers are utilizing it as a means of fertilizing for the cash crop to be planted in the spring. It can also be used for winter pasture.

The seeding of various types of annual lespedeza and Sericia Lespedeza for a cover crop and for improvement of pastures is another practice that requires soil tests to fulfill requirements of the Agricultural Stabilization Committee.

Establishment of permanent pastures by seeding or sodding of improved grasses has grown rapidly in recent years. Various strains of Bermuda grass are the most important of these improved grasses. Seeding was practiced extensively up until the spring of 1957. From 1954 through 1957, severe weather conditions have prevented establishment of adequate stands where seeding was used. The dry years of 1954 and

TABLE VIII

SOIL TESTS FOR SPECIFIC CROPS CHOCTAW
COUNTY SOILS LABORATORY

Crop	1954-55		1955-56		1956-57		1957-58		1958-59		Total	
	No.	Acres	No.	Acres	No.	Acres	No.	Acres	No.	Acres	No.	Acres
Corn	9	75	11	97	7	294	9	143	10	168	46	777
Cotton	3	31	4	93	3	200	2	121	6	159	18	604
Peanuts	2	17	5	66	7	159	10	171	5	141	29	554
Truck Crop	12	35	4	19	7	10	10	11	4	15	37	90
Pecans			1	5					1	50	2	55
Alfalfa	32	1218	16	432	7	249	10	611	7	321	72	2831
Annual Lespedeza	15	358	48	1193	15	385	27	722	15	837	120	3495
Serecia Lespedeza	17	188	22	292	22	411	11	225	5	78	77	1194
Clovers	4	63	3	117	10	404	10	119	9	232	36	935
Vetch and Small Grain	59	3051	58	2094	104	3694	123	3738	87	5113	431	17690
Small Grain	8	153	3	90	3	210	7	171	1	10	22	634
Fertilizer Pastures	14	310	10	398	15	952	13	603	20	1000	72	3263
Seed Bermuda	44	1576	36	1365	31	1268	14	545	7	261	132	5015
Sprig Bermuda	18	207	29	533	37	764	83	1591	78	1617	245	4712
All Sorghums	3	86			4	225	2	11	4	39	13	361
Total	240	7368	250	6794	272	9225	331	8782	259	10041	1352	42210

again in 1956 killed large acreages of seeded plantings. Little damage occurred to sodded areas in comparison to seeded plots. Severe cold winter weather also killed out seedling stands more easily than sodded areas.

From 1957 on, the shift to establishment by sprigging has grown rapidly with fewer acres being seeded.

The number of samples tested for direct use on cash crops is low. This is not as serious as it appears in Table VIII however. The utilization of tests made for cover crops increases the numbers on these soils to a high figure in the over-all picture.

The tests run on alfalfa land is one situation where farmers were willing to pay for their fertilizer on their own. They have found, through trial and error, that alfalfa will not grow on acid soils or soils low in fertility. Practically all of the areas seeded to alfalfa in the county were tested and recommendations followed for lime as well as other plant nutrients.

The number of acres involved for any given year is relatively small compared to total cropland harvested in the county. The economic losses from improper fertilization or no fertilization is high. Demonstrations of various kinds on most soil types in the county show that there are optimum rates of fertilization that will give economically sound increases in yields.

Table IX gives the results of fertilizer demonstrations on various crops in Choctaw County for the year 1955. In

most cases, there is an increase in yields on the fertilized plots compared to the check plot. The soil tests and recommended rates of fertilization gave the greatest increase in all but one demonstration. The peanut demonstration on the Scott farm yielded more with 100 pounds 10-20-10 then the recommended plot with 200 pounds 10-20-20. The stand on the higher fertilized plots was skippy. This could have caused the reduction in yield. In other demonstrations, placing heavy rates of high analysis fertiliser too close to the seed has destroyed the young seedlings.

Different rates and grades of fertilizer gave varied results in all the demonstrations. The wrong kind, too little or too much fertiliser is just as serious a mistake in farming as not using any fertilizer. The expense is even greater for the cost of materials and their application is added to the cost of production, with no increase in yield.

TABLE IX

FERTILIZER DEMONSTRATIONS
CHOCTAW COUNTY OKLAHOMA
1955

Rye and Vetch Demonstrations
(Sandy Loam, Upland)

Treatment	Gorell Farm Yields per acre	Jink Farm (Dry Weight)
Check	1250#	2500#
200# - 0-20-0	3125#	2812#
200# - 4-16-0	3750#	3125#
*200#- 3-12-12	4062#	3750#

*Fertilizer recommendation according to soil test for the field.

TABLE IX (Continued)

Peanut Demonstration
(Sandy Loam, Upland)

Morrison Farm

Treatment	Pounds nuts per acre	Pounds hay per acre
*200# - 0-16-8	1782#	4000#
200# - 0-20-0	1333#	3367#
200# - 10-20-10	1683#	4107#
Check	891#	2410#

Peanut Demonstration
(Sandy Loam, Second Bottom Creek)

Scott Farm

Treatment	Pounds nuts per acre	Pounds hay per acre
*100# - 10-20-10	1856#	2997#
Check	1600#	2643#
200# - 10-20-10	1826#	3916#
300# - 10-20-20	1745#	3620#

Corn Demonstration
(Sandy Loam, Upland)

Kellery Farm

Treatment	Yield bushels per acre
Check	5 bu.
*200# - 4-12-4	26 bu.

Corn Demonstration
(Sandy Clay Loam, Red River Bottom)

Palmer Farm

Treatment		Yield bushels per acre
Check	300# A.S.(1)	55.0 bu.
*200# - 10-20-10	300# A.S.	64.8 bu.
100# - 10-20-10	300# A.S.	55.0 bu.
300# - 10-20-10	300# A.S.	57.0 bu.

*Fertilizer recommendation according to soil tests for the field.

(1) Ammonium Sulfate - Approximately 16 percent nitrogen used for side-dressing. Two weeks delay due to weather conditions.

TABLE IX (Continued)

Check	Check	29.5 bu.
100# - 10-20-0	300# A.S.	55.0 bu.
200# - 7-14-7	300# A.S.	45.5 bu.
200# - 10-20-10	Check	49.1 bu.

Planted March 15, 1955. Side-dressed June 1, 1955.

Table X gives the results of fertilizer demonstrations for 1958. These demonstrations were on farms that are on the Test Demonstration Program. Yields are for a number of acres with the check plot consisting of three (3) to eight (8) rows with no treatment in the field.

The importance of an over-all management program using a combination of recommended production practices is emphasized by the results of John Vandiver's peanut demonstration, as compared to John Massengale's. The difference in methods of application and placement of materials is the main reason for differences in yields.

Soils along the Red River that are medium to high in plant food nutrients show little response to applications of phosphorus and potash and not a great amount to nitrogen. The demonstrations on Wilkins' farm for cotton showed no increase. The corn demonstration showed an eight (8) bushel increase but this is not sufficient to justify the use of fertilizer. Response on this type of soil may vary with different types and rates of fertilizer applications but, to date, results have not been consistent. Knowing the history of the land is important in making recommendations.

TABLE X

FERTILIZER DEMONSTRATIONS 1958
CHOCTAW COUNTY OKLAHOMA

Peanut Demonstration
(Sandy Loam Upland)

John Vandiver Farm

Treatment	Yield bushels per acre
Check	21 bu.
150# - 5-10-5	27 bu.
*(100# - 20-52-0)(1) (100# - 0-0-60)	23 bu.

(1) High analysis material placed too close to seed seedlings damaged reduced stand.

Peanut Demonstration
(Grey Loamy Fine Sand Upland)

John Massengale Farm

Treatment	Yield bushels per acre
Check	25 bu.
100# - 0-63-0(1)	
*100# - 0-0-60	60 bu.
100# -20-52-0	

(1) The 0-63-0 and 0-0-60 were bedded down in late winter ten to twelve inches deep. The 20-52-0 used as a starter fertilizer at planting time.

Corn Demonstration
(Sandy Loam Upland)

O'Neal Ashley Farm

Treatment	Yield bushels per acre
Check	37 bu.

*Fertilizer recommendation according to soil test for the field.

TABLE X (Continued)

Check S.D. - 100# A.S.(1)	46 bu.
200# - 12-24-12 *S.D. 100# A.S.	58 bu.
100# - 20-52-0 *100# - 0-0-60 S.D. - 100# A.S.	63 bu.

(1) Side-dressed at second cultivation with 100# Ammonium Sulfate 16 percent nitrogen.

Corn Demonstration
(Sandy Clay Loam Red River Bottom)

Wilbur Wilkins Farm

Treatment	Yield bushels per acre
Check	60 bu.
100# - 20-52-0 80# - 0-0-60	63 bu.
100# - 20-52-0 80# - 0-0-60 S.D. 100# - 30-10-0(1)	68 bu.

(1) Side-dressed at second cultivation.

Cotton Demonstration
(Sandy Clay Loam Red River Botton)
Wilbur Wilkins Farm

Treatment	Yield bales per acre
Check	3/4 bale
100# - 20-52-0 80# - 0-0-60	3/4 bale

*Fertilizer recommendation according to soil tests for the field.

TABLE X (Continued)

Cotton Demonstration
(Grey Loamy Fine Sand)

John Massengale Farm

Treatment	Yield bales per acre
Check	1/2 Bale
200# - 20-52-0[1] 100# - 0-0-60 30# - 30-10-0	2 Bales[2]

[1]The 20-52-0 and 0-0-60 bedded down in the winter. The 30-10-0 applied at planting time.

[2]Heavy growth and wet weather prevented insect control on both plots. Estimated loss from insect damage one (1) bale per acre on fertilized plot. Loss on check plot approximately 1/2 bale.

The method, time, and placement of fertilizer applications become increasingly important as rates increase. Table XI shows the results of demonstrations where all of these factors were considered in the establishment of the demonstration.[4] John Vandiver's results with peanuts over the check plot shows that yields can be increased profitably with fertilizer. The changes he made in time of application and placement of materials, from his 1958 demonstration, Table I, on the same field, show that placement is highly important.

The results of these demonstrations and many others show the great need for soil testing. Recommendations for

[4]Wesley Chaffin and Gaylord Hanes, Better Methods of Applying Fertilizer (Extension Circular 613, Oklahoma State University, Stillwater, Oklahoma, 1958), pp. 2-7.

rates of fertilizer application, however, is just one of the many practices that assists in increasing production in modern farming.

TABLE XI

CROP DEMONSTRATIONS 1959
CHOCTAW COUNTY OKLAHOMA

Corn Demonstration
(Sandy Loam Upland)

J. M. Rhoades Farm

Treatment	Yield bushels per acre
Check	26.3 bu.
80# - 20-52-0 50# - 0-0-60 S.D. 100# - 30-10-0(1)	51 bu.

(1) Side-dressed at second cultivation.

Peanut Demonstration
(Sandy Loam Upland)

John Vandiver Farm

Treatment	Yield bushels per acre
Check	24.3 bu.
200# - 20-52-0 60# - 0-0-60	40 bu.

Table XII is a comparison of crop yields as given in the Agriculture Census for the years indicated. During this period of time agriculture in Choctaw County has changed considerably. The acres of crops have decreased but yield per acre has increased. Various government programs have caused some of the changes. The poorer soils have been returned to

pastures or timber. Increased fertilization has helped to increase yields on part of the cropland.

TABLE XII

CROP YIELDS REPORTED BY AGRICULTURE CENSUS FOR THE YEARS SHOWN

CROPS	1950	1954	1959
Corn	10.9	9.1 bu.	35.7
Grain Sorghum	9.79	6.2 bu.	27 bu.
Wheat	6 bu.	15.8 bu.	26 bu.
Oats	12.85	25.5 bu.	21.5 bu.
Alfalfa	2.2	2.1 Tons	3 Ton
Lespedeza	1.33	1.7 Tons	1.8 Ton
Wild Hay	1 ½ Tons	1.09 Tons	1 ½ Tons
Pecans	1.94	9.1 lbs. per tree	14 lbs. per tree
Peanuts	269	417 lbs.	620 lbs.
Cotton	0.297 bales	0.322 bales	0.417 bales

Some variations may be due to weather but, for the most part, an increase in production has occurred which can be attributed to improved farming methods.

Survey Information

The purpose of using a personal interview and recording results on a questionnaire type form was to obtain information that could be used as a guide in making changes in the Extension program that would benefit a greater number of farmers,

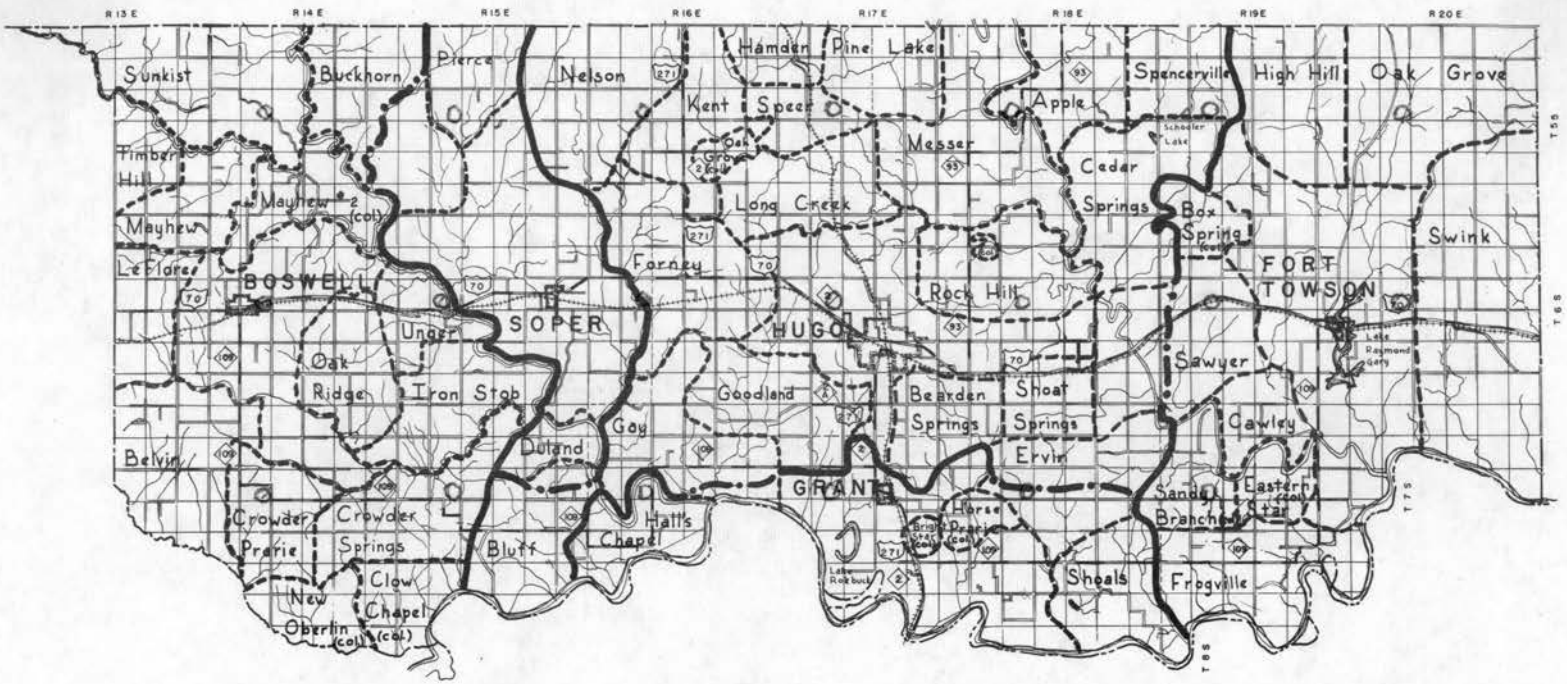
Appendix C. This type of survey helped to clarify a number of questions that arose in making summarizations of the results of soil tests data in the county file. Selection of the twenty (20) farmers to be used was made by drawing of a quarter section legal description and section number from a hat. The land owner was determined by using the county treasurer's tax list. The owner was contacted and, if he was considered a farmer, the information was obtained. In cases where absentee land owners or idle land was found, the nearest neighbor was used as an alternate. The quarter section and township section numbers were drawn separately. The SE¼ of Section 17 was the combination drawn. These locations were plotted on the county map in the township and range as shown, Figure 6.

TABLE XIII

USE OF CHOCTAW COUNTY SOILS LABORATORY
AS REPORTED BY TWENTY FARMERS

	Yes		No	
	Number	Percent	Number	Percent
Farmers answering	17	85	3	15

One comment of a person giving a no answer to the question, "Have you had a soil test made in the county soils laboratory?", was, "No, and I never will!" Further discussion brought this additional information, "I don't want any damn help from any government handout scheme." Explanation of what the soils laboratory was used for and that he would pay for services rendered brought about a change of



CHOCTAW COUNTY

OKLAHOMA

Figure 6 - Location of Farmers used in Survey.

attitude and the information on the remainder of the questionnaire was obtained. Fifteen percent of the twenty (20) giving a no answer is in line with the percent of farmers who have had no soil tests made as compared to total farmers in the county, Table XIII.

"I use it for tests on cover crops and put on maximum allowed. This provides a well developed vetch crop that is plowed down and then the land is put in peanuts or cotton," commented another of the farmers interviewed.

TABLE XIV

USE OF SOIL TESTS BY FARMERS

Use of Soil Tests	Number(1)	Percent
ASC Assistance Program for:		
1. Pastures	17	100.0
2. Cover Crops	14	82.35
Cash Crops	9	52.91
Pastures No ASC Assistance	3	17.64

(1)The number reporting some use of laboratory is used for total in this table.

Table XIV and Table VIII clearly point out that a major portion of soil tests made are for Agricultural Stabilization Committee assistance of some type. This is good up to a certain point; however, it brings up another question. How effective is the educational program used in connection with the soils laboratory? The purpose of soil testing and recommendations is to increase the acceptance of economically

sound agronomic practices, not to provide a service for completion of requirements for Agricultural Stabilization Committee assistance.

TABLE XV

FARMERS FOLLOWING RECOMMENDATIONS FOR FERTILIZER APPLICATIONS

Farmers[1]	Following Recommendations		Did Not Follow Recommendations	
	Number	Percent	Number	Percent
17	13	76.47	4	23.53

[1]Number of farmers out of twenty (20) who had used the soils laboratory.

There were a number of reasons for using the recommendations as they were given. "Confidence in the results that could be obtained," was given quite often.

The four not using recommendations as given gave: "Could not afford the high cost for a corn crop." His yield per acre in 1957 was nineteen (19) bushels. Result demonstrations on similar soils, Table IX, indicate that fertilizer will return considerable over the cost of materials.

"Weather conditions prevented proper preparation in time to put down fertilizer." "Did not have equipment for applying fertilizer." These were given as reasons for not following recommendations.

TABLE XVI

WHY CHOCTAW COUNTY FARMERS DO NOT USE THE SOILS LABORATORY

Reasons	Number	Percent
Not aware of facilities being available	1	5
Cost of Testing	1	5
Soil Test not Important	3	15
Production Plans not complete in time to have test made	15	75
Total	20	100

The number and percent indicating a lack of planning as reason for not having more soil tests made is in keeping with the usual rush that occurs each spring and fall just at the time when planting should be done. This is a major weakness of farmers in general and especially of the low income group. It may be one of the reasons why they have not increased in size and production. Farming cannot be treated in a haphazard way if a person intends to maintain a standard of living comparable with other areas of the state. Table XVI shows a comparison of various reasons for not using the soil laboratory.

TABLE XVII

HOW CAN FARMERS BE ENCOURAGED TO USE THE CHOCTAW COUNTY SOIL LABORATORY

Methods of Encouragement	Number	Percent
Personal visits by agents	2	10
Publicity, Radio	1	5
Publicity, Newspaper	2	10
Circular News Letter	1	5
Visits to neighbors' demonstrations who are using Soils Laboratory	7	35
Discussion at Community Meetings	2	10
Soil test as part of Rural Development Contest score sheet	3	15
Field Trips to Experiment Stations	2	10
Total	20	100

Table XVII shows that the farmers who had visited neighbors' demonstrations were inclined to think if he can do it on his land it will work on mine. "I have this same type soil and weather conditions are similar." Seeing is believing and the closer to home it is the more apt a person is to try it out for himself. It was interesting to note that the three (3) persons checking soil tests as a part of Rural Development Contest were from neighborhoods that were organized and working with the county group toward an improved neighborhood.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

This study is one phase of the over-all Rural Development Program for Choctaw County. In helping rural families solve their economic problems, the basic source of production must be considered. In Choctaw County agricultural products are the basic source of wealth. The plant for production must be kept at a high level in order to obtain the kinds and amounts of products desired. In order to maintain this production, it is necessary to have a way to check the productive level of the soil. The County Soil Laboratory has been developed to do this work.

The main purpose of the study was to determine the major soil needs, location of farmers using the laboratory, and how effectively the laboratory was serving the needs of farmers in the county.

The more important tests run in the county laboratory are acidity test, phosphorus level, organic matter content or nitrogen, and available potash. Recommendation for fertilization is made from results of the test and information given by the farmer. The Oklahoma Experiment Station

furnishes a guide to use in making recommendations.

The study is composed of three (3) segments: A compilation of information from the soils file data sheets; a personal interview type survey; work in the laboratory and in the field on various phases of the program.

There are three (3) major soil groups in Choctaw County: (1) Sandy soils of the Coastal Plain that are acid in nature and low in fertility due to excessive rainfall and continuous cropping; (2) The Grand Prairie or black belt that crosses the county from southeast to northwest. This soil is a little better soil than the sandy soils, but mismanagement has caused severe damage; (3) The bottomland soils are inherently more productive because they are alluvial deposits that have been brought in by the Red River from farther west where plant food elements are more abundant in the parent material.

The type of crops are cotton, peanuts, and feed crops for the most part. The methods of farming of these crops are the reasons for soil depletion to a great extent. In recent years, the change from row crops to pasture and livestock has been rapid. With this change there has been a demand for soil improvement.

In the summarization of information, it was found that well over seventy (70) percent of the soil tests made were for crops and pasture development using Agricultural Stabilization Committee assistance.

The use of the soil laboratory as an educational tool has been limited. It is being used as a service which is required for compliance with the Agricultural Stabilization Committee program.

A small percent of farmers using the soil laboratory do so with full knowledge of the economic importance proper fertiliser application plays in their farming program.

Demonstrations established on county farms are gradually showing the way for more and more farmers but the progress is slow.

A number of studies have been made on the problem of soil testing and soil management. The results of this information is valuable in preparing an educational program for Choctaw County.

Evaluation of the Program

The requirements of the Agricultural Stabilization Committee for cost sharing assistance has caused a large number of farmers to make use of the soil laboratory facilities. Increased yields from recommended application of fertilizer is causing farmers to use the facilities for other crops. Demonstrations on the major soil types put in by co-operating farmers are showing the way to more efficient crop production.

Improvement in soil testing is important. New equipment and techniques are adapted for use in the laboratory as rapidly as they prove to be practical and funds are available

to obtain the equipment.

Soil testing as an educational program must show that results will enable farmers to put more dollars in their pocket. This is the only reason farmers have for changing their methods of operation.

To encourage greater numbers of farmers in the use of the soil testing program, results of its use must be made available for study and discussion by all people who are interested in agriculture in the county. This means that every person in Choctaw County should be interested because all are dependent on agriculture.

The extent to which this program and others are utilized will determine how rapidly agriculture advances in the county.

Recommendations

Before the completion of the study in 1959, a stepped-up program of work for soil improvement in the county was initiated.

A summarization of activities of the data available pointed out several areas where additional work was necessary in order to make the soil testing program more effective.

1. A mutual understanding of problem areas; agreement of methods to use in solving these problems was necessary among all agricultural workers in the county.

2. Available resource materials to carry on the program.

   a. Personnel available.

b. Fertilizer materials were obtained through State Extension program in conjunction with Oklahoma Plant Food Institute.

c. Tennessee Valley Authority program was made available in fall of 1957 for a Test Demonstration Program, Appendix D.

The County Soil Improvement Committee working with the Extension office and representatives of other agencies worked out this program:

1. Publicity for Newspaper, Radio, and Individual

A. Series of articles on history and use of the Soils Laboratory

1. Explanation of the various tests

a. How they are made

b. Equipment needed

c. Why they are important

2. Short news articles on

a. How to take a soil sample

b. Leaflets to be mailed direct to the farmers

c. When to take samples

3. Local fertilizer dealers were furnished educational materials for release to farmers

a. Leaflets

b. Wall charts

4. Bankers were ask to explain importance of soil testing to farmers who obtained loans for crop and

livestock production.

5. Signs designating demonstrations to be put up, and maintained.

II. The committee selected farmers who were ask to establish demonstrations on their farms. They were to agree to the plans as outlined in the recommendations for co-operating with the program.

A. Farmers were selected in six areas of the county to obtain wide-spread coverage of various soil types and community representation.

B. Test demonstration material furnished by Tennessee Valley Authority is to be used on entire farm over a period of seven years.

III. Fertilizer furnished by Oklahoma Plant Food Institute through the Extension Service is to be used on farms:

A. On various soil types of county.

B. On important crops of county.

C. Adjacent to main roads when possible.

D. To be a continuous program for several years on same field.

E. Signs designating the location to be erected and maintained.

1. Signs for the various rates and methods of application to be put up at the demonstration for visitors information.

2. Information about location of demonstrations to be publicized.

IV. Field Days and Guided Tours

A. Planned field day at least once a year.

1. To visit demonstrations.

2. Farmers and agriculture workers to discuss various aspects of the program.

3. Complete records to be kept and information on fertiliser used, methods of application, yield, and cost to be made available.

B. Individual visits whenever a person wanted to go by to see the demonstration.

Six (6) farmers were selected to start on the Tennessee Valley Authority Test Demonstration Program in the fall of 1957. They were given personal assistance in preparing farm records required as a part of the program.

The farmer signed an agreement of operation to be carried out while on the program. Soil tests were made on all fields that were to come under the program.

Meetings for the purpose of giving training to the farmers selected were set up to be held as the need arose. Individual visits to the farm for counseling were to be made at least once a month.

In 1958 seven (7) additional farms were added to the number already on the Test Demonstration Program.

Tennessee Valley Authority provided five tons of fertilizer materials for neighborhood demonstrations. These demonstrations were set up for one (1) acre plots with over fifty (50) different farmers participating in the program. A

maximum of five (5) farmers from each of the fourteen (14) organized Rural Development Neighborhoods were selected by their members to carry on the demonstrations. Material was furnished and supervision in establishing the demonstration given where possible.

The results of the over-all program is incomplete at the present time, but there are several guideposts to indicate that the program is showing desirable results.

The Agricultural Census reports an increase in unit yields for most of the major crops of the county, Table XIII.

This gives some indication of the improvement county wide. Results of records on the test demonstration farms show a steady rise in the total farm income.

The acceptance of new methods is slow, but in the past two years a steady increase in the demand for higher rates of fertilization has occurred. Farmers are requesting to be included in the Test Demonstration Program as soon as possible.

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Appendix A

Corrected -

STATEMENT OF UNDERSTANDING

BETWEEN

The Oklahoma Agricultural Extension Service and Soil Conservation Service, United States Department of Agriculture, Relative to Soil Testing and Fertilizer Recommendation Work in Oklahoma.

The purpose of this Statement of Understanding is to bring about a closer working relationship of all personnel, and to avoid any misunderstanding as to soil testing and fertilizer recommendation work in Oklahoma.

Following the discussion at the State Agency meeting February 25, and later discussions, the sub-committee on policy submits the following suggestions relative to the soil testing program in Oklahoma.

I. In line with the discussion of Mr. Ray Walker, State Conservationist, it is suggested that the Cooperative State Soil Conservation Service Laboratory at Stillwater discontinue making regular soil tests for individual farms as soon as:

A. Local Soil Conservation Service district personnd are trained and ready to assume responsibility for making fertilizer recommendations.

B. County labs are ready to assume responsibility for making tests for Soil Conservation District cooperators. This work is to be taken care of in the regular county soil testing laboratory operated by the County Agent under the general direction of the County Soil Testing Laboratory Committee and the technical supervision of the Extension Agronomy Specialist of Oklahoma A. & M. College. The County Soil Testing Committee is to determine policies and procedures for financing the laboratory, including the price to be charged for soil tests and the method of collecting fees for testing soil samples.

II. Procedure to be Followed:

A. Soil samples needed in connection with establishment of soil and moisture conservation crops of

grasses and legumes are to be collected by a representative of the Soil Conservation Service or Soil Conservation District from farms on which there is a cooperative agreement with the Soil Conservation District.

B. Agency or individual taking soil sample will secure for the area represented by the sample the following information:

1. Previous crop history, including yields.

2. Previous fertilizer and lime history.

3. Kind of soil - texture - depth of surface - etc.

4. Soil moisture relationships.

5. Planned use.

6. Farm organization set up.

C. When approval is given, after necessary training, the sample will be turned to county labs for analysis.

D. Results of analysis will be turned back to Soil Conservation Service representative who will make recommendations for fertilizer and lime needs on areas represented by such samples.

E. In order that representatives of each Agency will have all information possible when consulting with an individual farmer on his farm problem, the following will be done:

1. A copy of the recommendations made by the Soil Conservation Service representative will be returned to the County Agent for his file.

2. A list of Soil Conservation District cooperators will be furnished to the County Agent and kept current.

3. On these farms, the County Agent will check to be sure any samples submitted by the farmer are not duplicates of samples submitted through Soil Conservation District personnel.

4. On other samples from Soil Conservation District cooperator's farms, collected and turned to the County Agent by the farmer, the Soil Conservation District will be furnished a copy of the tests and recommendations made by the County Agent, with appropriate locations on the farm shown.

III. As a service to the Experiment Station and Oklahoma A. & M. College, the Cooperative State Soil Conservation Service Laboratory is to be made available.

A. To assist in maintenance of tests in the county laboratory in line with procedures approved by the Extension Service and the Experiment Station.

B. Work on special problems that develop in counties and districts in the state. This is to be worked out on a cooperative basis.

C. Work on development of improved or new testing procedures.

D. Maintain high quality of recommendation made to the farmer after all information is secured and tests are made.

In order to make the work outlined in Section III of greatest value, it will be necessary for Mr. R. D. Woodward of the Extension Service and Mr. Elmo Bauman of the Soil Conservation service to work very close together in this field.

IV. There will be no other changes in the procedure now being used for supervising the county laboratories or in the procedures of handling soils and making recommendations to the individual farmers on the samples they submit to the County Agent's laboratory.

V. Area meetings to be held for County Agents and Soil Conservation Service representatives and other agency representatives as soon as possible. All policies and procedures will be discussed at these meetings. It is suggested that these meetings be held during the first part of April of this year. (1954)

Form corrected and mimeographed
1/22/55 - R. D. Woodward

51-118

Appendix B

Name-Address	Legal Description	Year	No. Years Farmed	Acres	Crop	Test Results				Recommendations				Soil Type	ASC	SCD
						pH	N	P	K	Co.	N	P	K			

Appendix C

QUESTIONNAIRE USED IN PERSONAL INTERVIEW WITH FARMERS CONCERNING USE OF CHOCTAW COUNTY SOILS LABORATORY

1. Have you had soil tests made in the County Laboratory?
   Check one: Yes _____ No _____

2. For what purpose did you have the tests made?
   ASC Assistance, Pastures _____ Cover Crops _____
   Cash Crops _____ Pastures where ASC Assistance
   was not used _____.

3. Did you follow the Fertilization Recommendations that were made from the tests? Yes _____ or No _____.
   Obtain reasons for answers.

4. What are the reasons for farmers not using the Soils Laboratory?
   Not aware that facilities were available _____.
   Cost of having the tests made _____.
   Soil tests are not important _____.
   Using fertilizer is a waste of time and money _____.
   Production plans not worked out long enough ahead of time for tests to be made and results obtained to use _____.

5. How can farmers be encouraged to use the Soils Laboratory?
   Publicity through radio _____. Newspaper _____.
   Circular Newsletter from Extension Office _____.
   Visits to farmers who are satisfied with results of recommendations. (Local Demonstrations) _____.
   Field trips to Experiment Stations _____.
   Discussion at neighborhood meetings _____.
   A part of Rural Neighborhood Development Contest Score Sheet _____.

Appendix D

PROJECT AGREEMENT NO. OKLA.-511.1
Under
CONTRACT NO. TV-07231

Between
OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE
and
TENNESSEE VALLEY AUTHORITY

This project shall be conducted by OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE, hereinafter called "Institution", and TENNESSEE VALLEY AUTHORITY, hereinafter called "TVA".

I. TITLE

Test-Demonstration Farms in the Fertilizer Program

II. BACKGROUND

This Institution has conducted research and educational work with farmers as part of its Agricultural Experiment Station and Agricultural Extension Service programs for many years. The TVA has been engaged in conducting fertilizer testing and test-demonstration work in cooperation with the land-grant colleges in states outside the Tennessee Valley area since 1936. The TVA produces experimental fertilizers for greenhouse and field plot testing, test-demonstration work, and for sale to farmers for broad-scale introduction through the distributor demonstration program. The TVA and the Institution cooperated in conducting test-demonstration work in Oklahoma from 1945 through 1955, at which time the project became inactive. The Institution has cooperated in the distributor demonstration program for the use of TVA fertilizers by recommending selected uses for these fertilizers in Oklahoma. The TVA and the Institution believe that the reactivation of test-demonstration work in Oklahoma at this time will be mutually beneficial. This should assist the TVA in evaluating its experimental fertilizers under practical farm conditions and in operating its experimental fertilizer plants. It should assist the Institution in carrying on its educational work with fertilizers in its farm and home development program. It should also assist in projecting experiment station recommendations to complete farm units.

III. PURPOSES

The purposes of this project are:

A. To introduce TVA's experimental fertilizers to farmers and to demonstrate and evaluate their uses in selected farming systems.

B. To develop and demonstrate improved fertiliser use on practical farms using the whole farm as a unit.

C. To promote on Oklahoma farms the integration of adjustments in fertilizer use and other management practices which will contribute to the fullest development of both farm and home.

IV. PROGRAM

The Institution will establish and supervise, as a part of this program, the number of test-demonstration farms required to carry out the purposes of the project consistent with the availability of funds and adequate supervision. The number of farms to be established and supervised each year will be mutually agreed upon in annual plans of work. The farms will be selected in accordance with procedures designed to provide representation of major soil associations, communities, farm sizes, types of farming and economic position of farmers in the state; however, a limited number of farms may be selected which present new, unusual, or special characteristics which need attention. Each farm selected may participate in the program for a period not to exceed seven years.

For each test-demonstration farm, the Institution will recommend and review the adoption of the farm and home system and practices which are in keeping with the best information available from the land-grant college. The system and practices will be embodied in a plan which will be developed by each test-demonstration family with the assistance of the Institution. The Institution will ask each test-demonstration family to agree to keep the standard state farm record book and such other special records as may be agreed upon by the Institution and the TVA and specified in the annual plan of work.

Fertilizers supplied by TVA will be used in accordance with the rates of application recommended by the Agricultural Extension Service and as determined by soil tests, experimental results, and individual management programs, and subject to such specific variations as may be provided in the annual plan of work. As new or modified products from TVA's

fertilizer plants become available in sufficient quantity, they will be introduced in the test-demonstration program.

The Institution will use the test-demonstration farms as educational devices to demonstrate to other farmers that the proper use of fertilizer in improved systems of farming will foster desirable land-use adjustments and result in improvements in rural family living.

In order to make maximum use of test-demonstration farms for educational purposes, the Institution will conduct tours, sponsor meetings, and prepare and distribute educational material on the progress and results of the activities. The Institution will also use these farms as guides to farm leaders in planning community and county agricultural programs and will afford an opportunity to other federal, state, and local agencies to observe and study the general program and individual farm activities.

V. ADMINISTRATIVE METHODS AND PROCEDURES

The general administrative responsibilities and methods to be used in carrying out the program shall be as follows:

A. Farm Family Responsibility--subject to the provisions of this agreement, the Institution will rely heavily on the initiative of the test-demonstration families, individually and through their community organizations, for the conduct of the program. Test-demonstration families will be asked by the Institution to agree to carry out the program on their farms and in their homes in accordance with the standards established by the Institution consistent with this agreement and plan of work.

B. Institution Responsibility--the Institution is responsible for supervising, planning, and executing this project, reporting results to the TVA, interpreting the results to farmers, promoting widespread adoption of successful test-demonstration practices, and providing advice and assistance to farmers and farm organizations participating in this program.

C. TVA Responsibility--TVA, through its Division of Agricultural Relations, reviews and approves the applications for establishing test-demonstration farms, work plans and budgets and requisitions for fertilizers and assists in interpretation of the results and analyses of the program submitted by the Institution.

VI. WORK PLANS AND BUDGETS

The Institution and the TVA will prepare, on or before January 1, 1957, a work plan for the 1957 calendar year and, on or before January 1 of each year thereafter, a plan of work for the ensuing year. The Institution and the TVA will also prepare, on or before January 1, 1957, a budget for the period January 1 through June 30, 1957, and, on or before July 1 and January 1 of each year thereafter, a budget for the ensuing six months.

A. The plan of work shall contain a description of the type, number, and location of all test-demonstrations to be conducted throughout the state; a summary of the nature and scope of any analytical studies under way or to be undertaken with respect to the test-demonstration program; the operating procedures to be followed during the ensuing year; and a statement as to the specific program activities that will be carried out during the year.

B. The budget shall contain an estimate of the amounts and types of fertilizer required and of the total expenditures needed to carry out the work plan, together with the contributions to be made by TVA and the Institution in financing the project.

Upon approval by Institution and TVA the work plan and budget will constitute the operating agreement for the conduct of the test-demonstration program during the period covered.

VII. REPORTS

The Institution shall provide the TVA with reports and records with respect to the work undertaken pursuant to this project, including the following:

A. An annual report to be submitted to TVA on or before February 15 of each year reporting and evaluating the results and accomplishments during the preceding calendar year and identifying problems encountered. This report will follow an outline prepared by the Institution and TVA jointly, so that information needed by each will be recorded.

B. Special reports specified in the work plans with reference to the storage, handling, and application characteristics of the new or modified fertilizers under practical farm conditions, the acceptability of the new or modified fertilizers to farmers, and statements of the characteristics affecting the farmers' attitudes toward the material.

C. Other special reports mutually agreed upon from time to time and provided for in the work plans. These reports may include reports on particular administrative, fiscal, or subject matter aspects of work conducted under the project or long-term reports at significant stages of the project evaluating the results, accomplishments, and progress of the program over the period in terms of the objectives of the project.

VIII. PUBLICATIONS

Any publication of the results of this project will be made after joint approval of the parties and with appropriate recognition of the contributions of each of the parties. In case of failure to agree as to manner of publication or interpretation of results, either party may publish the data, giving due credit to the participation of the other party in the work, but assuming full responsibility for any statements on which there is a difference of opinion.

IX. CONTRIBUTION OF PARTIES AND FISCAL ARRANGEMENTS

The Institution and the TVA will each bear a portion of the total cost of conducting the program. The TVA will contribute to the program by providing (1) the services of TVA staff members to the extent necessary to keep the Institution informed on TVA agricultural policies and objectives, and to assist in formulating and evaluating the program; (2) fertilizer materials at prices established by the TVA Board from time to time; and (3) funds to reimburse the Institution for the portion provided in the semi-annual budgets of its expenses in carrying out the test-demonstration program. The Institution will contribute such other facilities and services as are necessary to carry out the program.

The amount and method of payments of funds and providing fertilizers will be governed by and made in accordance with the budgets described above. Payments by TVA shall be made upon receipt of properly certified invoice in duplicate submitted by the Institution covering expenses for which TVA has agreed in the budget to reimburse the Institution. TVA shall pay such invoices promptly upon receipt and approval thereof. TVA shall have the right at any time during usual business hours to examine the records of the Institution for the purpose of determining expenditures made and evaluating the work performed. All commitments beyond June 30 of each year shall be subject to the availability of funds adequate to each of the parties for the purposes of the program.

X. DELEGATIONS

In all matters relating to the performance of the project, including execution of work plans and budgets, the Director of Agricultural Relations or his designated representative shall act for TVA, and the Director of Agricultural Extension Service or his designated representative shall act for the Institution.

XI. CONGRESSIONAL INTEREST

No member of or delegate to Congress or resident commissioner or employee of TVA shall be admitted to any share or part of this agreement or to any benefit to arise therefrom.

XII. DURATION

This project agreement shall become effective January 1, 1957, and shall continue in effect until June 30, 1957, and thereafter from year to year unless and until terminated by either party upon not less than thirty days' written notice to the other before the end of any federal fiscal year. Cancellation of this agreement shall not relieve the parties from the performance of obligations then accrued hereunder.

This project agreement supersedes Project Agreement No. 1, effective January 1, 1945.

OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE

_____
Date

/S/ L. H. Brannon
Director, Agricultural Extension Service

TENNESSEE VALLEY AUTHORITY

May 1, 1957
Date

/S/ A. J. Wagner
General Manager

VITA

Harold Gene Williams

Candidate for the Degree of

Master of Science

Report: AN EVALUATION OF THE ACTIVITIES AND EFFECTIVENESS OF THE CHOCTAW COUNTY SOIL LABORATORY.

Major Field: Agricultural Education

Biographical:

Personal data: Born at Hatfield, Arkansas, March 3, 1921, the son of Mr. and Mrs. W. P. Williams. Married October 11, 1942, to Miss Marie Lehmen.

Education: Attended grade school at Two-Mile Rural School, Hatfield Grade School, at Hatfield, Arkansas, Wolf Flat Rural School and Turkey Grade School at Turkey, Texas; two years of High School and on the job training in the Civilian Conservation Corps, Jacksonville, Arkansas; graduated from Hatfield High School, Hatfield, Arkansas, in 1941; attended Oklahoma State University, 1947 through 1950, graduating with Bachelor of Science Degree in Agricultural Education.

Military: Enlisted in United States Navy, June, 1942; Naval Aviation Ordnance School graduate October, 1942, Norman, Oklahoma; Instructor, Naval Aviation Ordnance School, 1943-1944, Norman, Oklahoma; Instructor, Naval Aviation Training School, Barbers Point, Oahu T.H.; 1945; Instructor, Naval Aviation Training School, Hilo Hawaii T. H. 1946. Discharged January, 1946.

Professional experience: Raised on farm near Hatfield, Arkansas, and Turkey, Texas; two years experience with work crew and engineer crew in Civilian Conservation Corps at a Soil Conservation Camp, Jacksonville, Arkansas; Instructor, four years, various types of Aviation Ordnance equipment, United

States Navy, 1942-46; Graduate Assistant, Agricultural Education Department, Oklahoma State University, 1950-51; taught Vocational Agriculture, Helena High School, Helena, Oklahoma, 1951-53; Instructor, Jimma Agricultural School, Jimma, Ethiopia, 1953-55; Associate County Agent, Rural Development, Choctaw County, Oklahoma, 1956 to 1959; Associate County Agent, Okfuskee County, Oklahoma, 1959 to present time.

Organizations: Phi Kappi Phi; Phi Delta Kappa; National and Oklahoma Association of County Agricultural Agents.