

FARM MECHANICS AS A PART OF THE INSTRUCTION  
IN VOCATIONAL AGRICULTURE IN  
OKLAHOMA HIGH SCHOOLS

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FARM MECHANICS AS A PART OF THE INSTRUCTION  
IN VOCATIONAL AGRICULTURE IN  
OKLAHOMA HIGH SCHOOLS

By

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Bachelor of Science

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## INTRODUCTION

The development of complicated farm machinery and tools in the last fifty years has brought about a need for definite training of those who use the machinery and tools. It was, however, not until vocational education in agriculture became established in the public schools of America, as a result of the passage of the Smith-Hughes law in 1917, that farm mechanics was offered a definite place in the school curriculum. The Federal Board of Vocational Education in its bulletin No. 85, published in June, 1923, made the following comment:

"Farm mechanics or farm shop work is rapidly becoming a definite part of vocational education in agriculture. There is, of course, some correlation between farm shop or mechanical work and crop production or livestock production, although the courses given are being developed more generally in relation to the work of the farm as a whole rather than to any one phase of farming. If the project method of teaching is to be followed in the farm shop or farm mechanics course, as it is in the crops course, then the pupils should assume a definite responsibility in the conduct of certain farm shop jobs at their homes. As far as possible, these farm shop jobs should be related to the subject of the course, although they are not necessarily so related. This phase of the State program for supervised practice contemplates such things as, for example, building a wagon box, repairing a barn door, building a fence, laying a concrete floor, repairing harness, installing a lighting or sewage system, or any one of the numerous mechanical jobs that have to be done on every up-to-date farm."

FARM MECHANICS IS NOT A NEW PROBLEM. Although farm mechanics was given a definite place in the school program only about twenty years ago, it is by no means a



new problem. Slight,<sup>1</sup> in his book published in England in 1858, elucidates on the scientific principles which regulate the choice of materials and construction along with the adaptation to the particular purpose to which the agriculture machines and implements were employed.

#### REACTION OF TEACHERS TOWARD THE NEED OF FARM MECHANICS.

Seventy-two per cent of the teachers replying to the questionnaires in this study, indicated, as shown in Table No. VIII, that farm mechanics was crowded out of the vocational agriculture courses while one hundred per cent of them think it should be a definite part of the educational program of a student planning to become a farmer.

#### PROGRAMS OF VOCATIONAL AGRICULTURE MAY INCLUDE FARM MECHANICS.

At the present time there are one-hundred-thirty-three high schools in Oklahoma which offer vocational agriculture to approximately 5,500 white farm boys. The teacher of vocational agriculture in each school makes a program of work for his department. This program of work is planned to directly fit the needs of the pupils in his classes. The teacher is privileged to use his own judgment in determining the amount of time to devote to any part of his program. This makes vocational agriculture a flexible course that can be adapted to the need of any group of farm boys.

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<sup>1</sup> Slight, James, *The Book of Farm Implements and Machinery*, p. 648.

### THE PRIMARY AIM IN VOCATIONAL AGRICULTURE.

"The primary aim in vocational education in agriculture is: To train present and prospective farmers for proficiency in farming."<sup>2</sup>

Since the ability to successfully do farm mechanic jobs is generally recognized as one of the qualifications of a proficient farmer, then surely each boy preparing to become a farmer should be trained in this line of work.

**FARM MECHANICS DEFINED.** The terms "Farm Shop Work" and "Farm Mechanics" as herein used, refer to all forms of unspecialized farm mechanical activities in which farmers commonly engage and which should commonly be made a basis of instruction in vocational agriculture training courses.<sup>3</sup>

The instruction given in farm mechanics in our secondary schools has no common name. In some places it is called farm shop work; in other places it is called farm mechanics, agricultural mechanics, or farm repair and construction work. Sometimes, also, such names as farm shop, farm machinery, farm engineering, farm motors and tractors and various other terms are employed to designate certain phases or units of instruction in farm mechanics. The term, "Farm Mechanics" seems to convey the most accurate impression or description of this work; therefore, this term has been used throughout this paper.

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<sup>2</sup> Federal Board of Vocational Education, Training Objectives in Vocational Education in Agriculture, Bul. 153, p.1.

<sup>3</sup> Schmidt, G. A., Ross, W. A., & Sharp, M. A., Teaching Farm Shop Work and Farm Mechanics, p. 1.

**SIMILAR STUDIES.** The writer has found no record of any previous study on farm mechanics in Oklahoma. However, twenty-four similar studies have been made in other states. A bibliography of these studies, giving their purposes, is given in Appendix B.

#### PURPOSE OF THE STUDY

This study was undertaken with the purpose of assembling material that would help in planning the farm mechanics phase of vocational agriculture courses. The following problems were given particular attention in this study:

1. To determine the unit of instruction in farm mechanics in Oklahoma high schools.
2. To determine the farm mechanics units teachers and students of vocational agriculture think should be included in their programs.
3. To determine what tools are found on the farms of students of vocational agriculture and in vocational agriculture school shops.
4. To determine the farm mechanic units in which teachers of vocational agriculture think more college training should be given.
5. To determine the farm mechanic units that have been done by students of vocational agriculture, and to determine the farm mechanics units that have been done on the home farms of these students.



6. To determine what equipment and conveniences are found on the home farms and home improvements of students of vocational agriculture.

7. To determine the farm and home improvements of students of vocational agriculture.

8. To secure information relative to the communities where vocational agriculture is taught.

9. To get the opinions of teachers on the amount of time that should be devoted to farm mechanics.

10. To make a comparative study of farm mechanics in the four supervisory districts and to compare these districts with the state as a whole.

11. To give the relative importance of the more common farm mechanic units in a vocational agriculture teaching program.

#### METHOD OF PROCEDURE.

The writer made an intensive study of methods of technique used in securing data. The questionnaire method was decided upon for this study since other types of research would not give the needed information. Questionnaires of similar studies were reviewed, and using as a guide the one suggested in Div. Bulletin II<sup>4</sup> a similar questionnaire, as shown on pages 7 and 8, was prepared for use in securing

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<sup>4</sup> Div. Bul. II, Farm Mechanics for California Schools, Div. of Voc. Edu., University of California.



information from students of vocational agriculture. The questionnaire on pages 9 and 10 was formulated for securing information from teachers of vocational agriculture.

TESTING THE QUESTIONNAIRE. The preliminary questionnaire was presented to a group of graduate students enrolled in an Education Research Course under Professor DeWitt Hunt. From the suggestions offered by that group of teachers and from other teachers and students contacted individually, the questionnaire was improved. It was then given to thirty students of vocational agriculture in the Perkins school to determine any other deficiencies or weaknesses in it. After further correction of weaknesses detected by this test, the questionnaires were mimeographed in the forms found on pages 7 to 10.

## A FARM MECHANICS QUESTIONNAIRE

Arranged by Chris White, Assistant Teacher Trainer  
 Agricultural Education Department  
 Oklahoma A. & M. College  
 Stillwater, Oklahoma

(To be filled in by students of Vocational Agriculture)

- I. Name of student \_\_\_\_\_ II. School \_\_\_\_\_ III. County \_\_\_\_\_  
 IV. Size of farm \_\_\_\_\_ acres. V. Distance from town \_\_\_\_\_ miles.  
 VI. List the plant enterprises on your home farm in order of their importance: 1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_  
 VII. List the animal enterprises on your home farm in order of their importance: 1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_  
 VIII. Is your farm terraced \_\_\_\_\_ IX. How long have you lived on this farm \_\_\_\_\_ years. X. Are you owner or renter \_\_\_\_\_  
 XI. How many places have you lived on in the last five years \_\_\_\_\_  
 XII. Have the major buildings on your farm been painted in the last five years \_\_\_\_\_  
 XIII. Check the native building material that is available to your farm at a low cost. Sand \_\_\_\_\_, Gravel \_\_\_\_\_, Stone \_\_\_\_\_, Timber \_\_\_\_\_, Native lumber \_\_\_\_\_  
 XIV. Check the following equipment found on your home farm.  
 1. Automobile \_\_\_\_\_ 13. Cultivators, 2 or more rows \_\_\_\_\_  
 2. Row Crop Tractor \_\_\_\_\_ 14. Spray machinery \_\_\_\_\_  
 3. Truck \_\_\_\_\_ 15. Cream separator \_\_\_\_\_  
 4. Wheel land tractor \_\_\_\_\_ 16. Milking machine \_\_\_\_\_  
 5. Electric Motor \_\_\_\_\_ 17. Hay Bailer \_\_\_\_\_  
 6. Farm Shop Building \_\_\_\_\_ 18. Farm Level \_\_\_\_\_  
 or Room \_\_\_\_\_ 19. Lister Planter \_\_\_\_\_  
 7. Implement Shed \_\_\_\_\_ 20. Grain Drill \_\_\_\_\_  
 8. Horses or mules \_\_\_\_\_ 21. Mold Board Plow \_\_\_\_\_  
 9. Mowing machine \_\_\_\_\_ 22. Disc Plow \_\_\_\_\_  
 10. Binder or Header \_\_\_\_\_ 23. Stationary Gas Engine \_\_\_\_\_  
 11. Combine or Thresher \_\_\_\_\_ 24. Trailer \_\_\_\_\_  
 12. Cultivators, one row \_\_\_\_\_ 25. Wagon \_\_\_\_\_  
 XV. Check if you have the following in your home.  
 1. Pressure Water System \_\_\_\_\_ 4. Gas \_\_\_\_\_  
 a. Gravity flow \_\_\_\_\_ a. Natural gas \_\_\_\_\_  
 b. Air pressure \_\_\_\_\_ b. Bottled gas \_\_\_\_\_  
 2. Septic tank \_\_\_\_\_ 5. Power Washer \_\_\_\_\_  
 3. Electricity \_\_\_\_\_ 6. Mechanical refrigerator \_\_\_\_\_  
 a. Individual farm plant \_\_\_\_\_ a. Electric \_\_\_\_\_  
 b. Power Line \_\_\_\_\_ b. Gas or oil \_\_\_\_\_  
 c. Wind charger \_\_\_\_\_





A QUESTIONNAIRE ON FARM MECHANICS  
IN DEPARTMENTS OF VOCATIONAL AGRICULTURE  
IN OKLAHOMA HIGH SCHOOLS

Arranged by Chris White, Assistant Teacher Trainer  
Agricultural Education Department  
Oklahoma A. & M. College  
Stillwater, Oklahoma

(To be filled in by the teacher of Vocational Agriculture)

1. Name of teacher \_\_\_\_\_ 2. School \_\_\_\_\_ 3. County \_\_\_\_\_
4. If your school is located in a town what is the population? \_\_\_\_\_
5. If your school is not located in a town how far from one is it? \_\_\_\_\_
6. Do you think Farm Mechanics should be a part of Vocational Agriculture? Yes \_\_\_\_\_ No \_\_\_\_\_.
7. How many class periods per year do you think should be spent in Farm Mechanics? \_\_\_\_\_
8. Give the size of your shop room \_\_\_\_\_ ft. x \_\_\_\_\_ ft.
9. Do you have a separate building for Vocational Agriculture? Yes \_\_\_\_\_ No \_\_\_\_\_.
10. Do you have a separate building for shop? Yes \_\_\_\_\_ No \_\_\_\_\_.
11. Make a rough pencil sketch of your shop floor plan on back of this questionnaire.
12. Would you place more emphasis on farm shop work if greater recognition was given for an outstanding shop program? Yes \_\_\_\_\_ No \_\_\_\_\_.
13. Do you have difficulty in getting pupils to bring in machinery to repair? Yes \_\_\_\_\_ No \_\_\_\_\_.
14. Do you have difficulty in getting pupils to buy lumber and other materials for shop work? Yes \_\_\_\_\_ No \_\_\_\_\_.
15. List other major problems you have conducting your shop program. (List on back of this).
16. Is there a tendency to include so many things in the teaching program that shop is crowded out? Yes \_\_\_\_\_ No \_\_\_\_\_.
17. Do you have supervised practice work in farm mechanics? List kinds \_\_\_\_\_
18. List plant enterprises in your community in order of importance.  
1st \_\_\_\_\_ 2nd \_\_\_\_\_ 3rd \_\_\_\_\_
19. List animal enterprises in your community in order of importance.  
1st \_\_\_\_\_ 2nd \_\_\_\_\_ 3rd \_\_\_\_\_
20. Do you think your shop is adequately equipped? Yes \_\_\_\_\_ No \_\_\_\_\_.
21. Would your school board get you the needed equipment if you asked for it? Yes \_\_\_\_\_ No \_\_\_\_\_.
22. Do you think your department in school gets a fair share of the school's purchases? Yes \_\_\_\_\_ No \_\_\_\_\_.





DISTRIBUTION OF QUESTIONNAIRES. Ten student questionnaires similar to the one on pages 7 and 8 were sent to each school in Oklahoma maintaining a department of vocational agriculture. Table No. I on pages 14 to 17 gives a directory of the schools of Oklahoma maintaining departments of vocational agriculture. In addition to the ten student questionnaires, one teacher questionnaire as shown on pages 9 and 10, was also included. A mimeographed circular letter, which is reproduced on page 13, was sent along with the questionnaires and a self-addressed, stamped envelope was inclosed for the return of the data. Since the writer was personally acquainted with each teacher of vocational agriculture who was requested to participate in this study, he felt that an informal circular letter would be as appropriate as a personal letter. The State Supervisor of Vocational Agriculture indicated his approval of this study by a signed statement requesting the teachers of vocational agriculture in Oklahoma to cooperate in it. This statement was on the letter sent to the teachers.

ATTEMPTS TO GET THE QUESTIONNAIRES RETURNED. The writer visited the two district conferences attended by all vocational agriculture teachers of the State and made a personal appeal to them for their cooperation in the study, and an early response to the questionnaires. In addition to the two district conferences, the writer met with a group of eighteen teachers at Tulsa to solicit a 100 percent

participation of them in the study. As a final resort, a card was sent to the fifty-five teachers who had not returned the questionnaires, appealing for their cooperation.

A total of 106 teacher questionnaires and 985 student questionnaires were returned. Fifteen student questionnaires filled out at Kingfisher High School, under the personal supervision of the writer, were added to the student questionnaires returned by mail, making one thousand student questionnaires and one hundred and six teacher questionnaires used in the study.



OKLAHOMA  
AGRIDULTURAL AND MECHANICAL COLLEGE  
SCHOOL OF AGRICULTURE  
DEPARTMENT OF AGRICULTURAL EDUCATION  
Stillwater

November 12, 1937

To Teachers of Vocational Agriculture

Dear Fellow Worker:

I realize that your time is very valuable and that you do not have much time for extra duties, but if you can spare a little time to fill in the questionnaires enclosed, it will be a big accommodation to me. I hope to make a study that will be of value to all in our line of work.

You will note the questionnaire on yellow paper is to be filled in by the teacher, and the one on white paper is to be filled in by students of vocational agriculture. I have tried to make these forms as simple and easy to understand as possible. I should like very much for you to select average students, preferably not Freshmen, to fill in the information on the questionnaire.

Will you please check the student questionnaires before returning them and see if they have been filled in completely and accurately enough to be a fair representation of the actual situation in each case?

I am inclosing a self-addressed, stamped envelope for return of the questionnaires. If it is at all possible, I hope you will return them to me within the next week so that I can include your school in my study.

I suspect you understand that this study of farm mechanics is being made in connection with my thesis for the Master's degree. I do not feel that for that purpose alone you would be justified in contributing your part toward it; but if your efforts and mine can better the teaching of farm mechanics in Oklahoma we shall have spent our time to a great advantage. I sincerely thank you for your part in this study.

Very sincerely,

CW:c  
Encl.

Chris White  
Assistant Teacher Trainer

I heartily approve this study and shall appreciate your participation in it.

JBP.E

TABLE NO. I.

A DIRECTORY OF SCHOOLS IN OKLAHOMA MAINTAINING DEPARTMENTS  
OF VOCATIONAL AGRICULTURE, ARRANGED ALPHABETICALLY BY DISTRICTS.

## SOUTHWEST DISTRICT

<u>Name of School</u>	<u>Post Office</u>	<u>County</u>	<u>Teacher of Voc. Agri.</u>
Amber C. D. 28	Amber	Grady	Robert Collier
Anadarko S. D. "A"	Anadarko	Caddo	Wager O. Gilbert
Brinkman C. D. 5	Brinkman	Greer	F. M. Treseder
*Cache, C. D. 1	Cache	Comanche	Travis Pyron
Carnegie S. D. 33	Carnegie	Caddo	Spudds Widener
Carter C. D. 50	Carter	Beckham	W. C. Stamper, Jr.
Cement C. D. 160	Cement	Caddo	W. B. Wyatt
Chickasha S. D. 1	Chickasha	Grady	T. L. Duffey
Clinton S. D. 99	Clinton	Custer	Harold Hutton
Comanche S. D. 2	Comanche	Stephens	B. L. Martin
Cooperton C. D. 10	Cooperton	Kiowa	D. Orrel Geier
Cordell S. D. 78	Cordell	Washita	G. E. Gaines
Cyril U. G. D. 64	Cyril	Caddo	J. F. Tomlinson
Delhi C. D. 1	Delhi	Beckham	W. R. Brown
Eldorado S. D. 25	Eldorado	Jackson	Calvin G. McMindes
Elk City S. D. 6	Elk City	Beckham	Clifford E. Kinney
Erick S. D. 51	Erick	Beckham	Marshall Jordan
Fort Cobb S. D. 7	Fort Cobb	Caddo	Lonnie Surrentt
Frederick S. D. 158	Frederick	Tillman	Floyd T. King
Gotebo S. D. 3	Gotebo	Kiowa	J. B. Brantley
Gould S. D. 6	Gould	Harmon	John T. Winn
Grandfield S. D. 249	Grandfield	Tillman	Wm. E. Brown
Hinton S. D. 161	Hinton	Caddo	L. R. Foster
Hobart S. D. 1	Hobart	Kiowa	Hugh D. Jones
Hydro S. D. 1	Hydro	Caddo	Charles Hogan
Indiahoma C. D. 2	Indiahoma	Comanche	Robert Wood
Lexington S. D. 57	Lexington	Cleveland	Aryle A. Haire
Lindsay S. D. 9	Lindsay	Garvin	Wm. H. Hawkins
Mangum S. D. 1	Mangum	Greer	Ben Sorrells
Marlow S. D. 3	Marlow	Stephens	Alton Perry
Mt. View S. D. 39-82	Mountain View	Kiowa	Neal Stidham
Noble S. D. 40	Noble	Cleveland	Victor Riffe
Norman S. D. 29	Norman	Cleveland	E. F. Foreman
*Pauls Valley S. D. 18	Pauls Valley	Garvin	Thomas Glaze
*Reydon	Reydon	Roger Mills	Dwight Houston
Ringling S. D. 14	Ringling	Jefferson	Dale Allen
Rocky S. D. 6	Rocky	Washita	John S. McCannon
Roosevelt C. D. 7	Roosevelt	Kiowa	H. G. Lehr
Rush Springs S. D. 68	Rush Springs	Grady	Calvin E. Horn
Sayre S. D. 31	Sayre	Beckham	J. R. Painter
Snyder C. D. 1	Snyder	Kiowa	Jess L. Green
Temple S. D. 101	Temple	Cotton	T. O. Parker
Tipton C. D. 8	Tipton	Tillman	Hugh DeWoody
Tuttle C. D. 97	Tuttle	Grady	Ralph D. Butler
*Verden C. D. 99	Verden	Grady	Andrew Duffle
Washington U. G. D. 1	Washington	McClain	S. E. Hutchison
*Washita C. D. 20	Washita	Caddo	Chas. F. Tustison
Weatherford S. D. 26	Weatherford	Custer	R. F. Kendall

TABLE NO. I. (Cont'd.)

A DIRECTORY OF SCHOOLS IN OKLAHOMA MAINTAINING DEPARTMENTS  
OF VOCATIONAL AGRICULTURE, ARRANGED ALPHABETICALLY BY DISTRICTS

## NORTHWEST DISTRICT

<u>Name of School</u>	<u>Post Office</u>	<u>County</u>	<u>Teacher of Voc. Agri.</u>
Ames C. D. 3	Ames	Major	W. D. Sumner
Billings S. D. 4	Billings	Noble	John C. Kasel
Blackwell S. D. 45	Blackwell	Key	Ross Chandler
Choctaw C. D. 4	Choctaw	Oklahoma	J. L. Maynard
*Cleveland C. D. 6	Cleveland	Pawnee	Ralph W. Heusel
Cushing S. D. 67	Cushing	Payne	Dick H. Fisher
Dover C. D. 2	Dover	Kingfisher	James W. Cobe
Fairview S. D. 84	Fairview	Major	Rugh Cloud
Freedom Jt. C. 3	Freedom	Woods	Clyde Bland
*Garber S. D. 47	Garber	Garfield	Benton Thomason
Greenfield C. D. 97	Greenfield	Blaine	Ernest C. Hill
Guthrie S. D. 60	Guthrie	Logan	Syrle C. Killian
Guyson S. D. 8	Guyson	Texas	Carl Muller, Jr.
Helena S. D. 89	Helena	Alfalfa	Ernest Voth
Hitchcock C. D. 29	Hitchcock	Blaine	Howard Rutledge
Jet C. D. 4	Jet	Alfalfa	R. C. Widener
Kingfisher S. D. "K"	Kingfisher	Kingfisher	D. C. Boyer
Lamont S. D. 95	Lamont	Grant	H. L. Strickland
Maramec C. D. 3	Maramec	Pawnee	Charles Green
Mooreland C. D. 6	Mooreland	Woodward	Ephraim Wall
Newkirk S. D. 29	Newkirk	Key	Ray C. Baird
*Okeene S. D. 9	Okeene	Blaine	H. V. Witt
Oklahoma City S. D.	Okla. City	Oklahoma	H. G. Jones
*Pawnee S. D. 1	Pawnee	Pawnee	L. C. Bell
Perkins S. D. 56	Perkins	Payne	E. H. Foreman
Perry S. D. 52	Perry	Noble	Floyd Whisenant
Ponca City S. D. 71	Ponca City	Key	T. R. Schreiner
Pond Creek S. D. 90	Pond Creek	Grant	M. J. Hancock
Selling C. D. 8	Selling	Dewey	Alva T. Hill
Stroud S. D. 54	Stroud	Lincoln	A. A. Sewell
*Supply C. D. 5	Supply	Woodward	Leland Walker
Union City C. D. 57	Union City	Canadian	R. W. Knass
Wagoner S. D. 3	Wagoner	Woods	Harold Dedrick
Wellston C. D. 1	Wellston	Lincoln	J. L. Ridson
Yukon S. D. 27	Yukon	Canadian	M. A. Brattin



TABLE NO. I. (Cont'd.)

A DIRECTORY OF SCHOOLS IN OKLAHOMA MAINTAINING DEPARTMENTS  
OF VOCATIONAL AGRICULTURE, ARRANGED ALPHABETICALLY BY DISTRICTS

## SOUTHEAST DISTRICT

<u>Name of School</u>	<u>Post Office</u>	<u>County</u>	<u>Teacher of Voc. Agri.</u>
*Allen S. D. 1	Allen	Fontotoc	Elmo Hendrickson
*Atoka S. D. 15	Atoka	Atoka	M. J. Robertson
*Broken Bow C. D. 74	Broken Bow	McCurtain	Dale Sawyer
Caddo S. D. 5	Caddo	Bryan	Irby Q. Rankin
Calvin S. D. 48	Calvin	Hughes	J. H. Brewley
Excelsior C. D. 2	Okemah	Seminole	J. D. Connolly
*Heavener S. D. 3	Heavener	LeFlore	Bryan V. Brady
Hugo S. D. 39	Hugo	Choctaw	H. W. Young
*Idabel S. D. 5	Idabel	McCurtain	Cyril Pierce
Kingston C. D. 3	Kingston	Marshall	Paul Thompson
*Konawa S. D. 39	Konawa	Seminole	Eldon L. Gunn
Madill S. D. 2	Madill	Marshall	Penny E. Black
Maud Jt. Dist. 117	Maud	Pottawatomie	E. R. Bowins
McLoud S. D. 1	McLoud	Pottawatomie	C. A. Helms
Okemah C. D. 26	Okemah	Okluskee	R. B. Robertson
Paden C. D. 14	Paden	Okluskee	Robert R. Price
Prague S. D. 103	Prague	Lincoln	Parker A. Norton
Prairie Valley U.G.D. 3	Earlsboro	Seminole	George W. Ennis
*Quinton S. D. 17	Quinton	Pittsburg	H. C. Kirkpatrick
Sasakwa S. D. 41	Sasakwa	Seminole	F. L. Shelby
Shawnee S. D. 93	Shawnee	Pottawatomie	Otto T. Krausse
*Shawnee C.D. 3 (Bethel)	Shawnee	Pottawatomie	Marvin Milton
*Spiro S. D. 2	Spiro	LeFlore	J. J. Bennett
Stigler S. D. 20	Stigler	Haskell	M. L. Eikleberry
*Stratford S. D. 2	Stratford	Garvin	J. C. Bull
*Tishomingo C. D. 20	Tishomingo	Johnston	J. W. Goodfellow
Vanoss C. D. 2	Vanoss	Fontotoc	Oscar B. Holt
Wetumka S. D. 5	Wetumka	Hughes	O. S. Adams
Wewoka S. D. 22	Wewoka	Seminole	J. O. Newcomer
*Wilburton S. D. 1	Wilburton	Latimer	Gleo A. Collins

TABLE NO. I. (Cont'd.)

A DIRECTORY OF SCHOOLS IN OKLAHOMA MAINTAINING DEPARTMENTS  
OF VOCATIONAL AGRICULTURE, ARRANGED ALPHABETICALLY BY DISTRICTS

## NORTHEAST DISTRICT

<u>Name of School</u>	<u>Post Office</u>	<u>County</u>	<u>Teacher of Voc. Agri.</u>
Bixby S. D. 23	Bixby	Tulsa	Reeder Thornton
Bristow	Bristow	Creek	Earl H. Powell
Broken Arrow C. D. 7	Broken Arrow	Tulsa	A. W. Castles
Checotah S. D. 19	Checotah	McIntosh	Neill Lefers
Chelsea S. D. 2	Chelsea	Rogers	E. O. Sowers
Choteau S. D. 6	Choteau	Mayes	J. C. Miller
*Copan C. D. 4	Copan	Washington	Lee H. Carleton
*Jay S. D. 33	Jay	Delaware	Glenn Cochran
Jenks S. D. 27	Jenks	Tulsa	T. W. Colby
Locust Grove S. D. 17	Locust Grove	Mayes	Andrew Hesser
Mannford Jt. C. D. 3	Mannford	Creek	C. S. Laws
*Mounds C. D. 3	Bixby	Tulsa	Reeder Thornton
Owasso Jt. C. D. 1	Owasso	Tulsa	D. A. Shirley
*Sallisaw S. D. 1	Sallisaw	Sequoyah	John D. Lowrey
Stilwell S. D. 25	Stilwell	Adair	J. W. Tolleson
*Tahlequah S. D. 35	Tahlequah	Cherokee	Lester Flesner
Tulsa S. D. 22	Turley	Tulsa	H. B. Helms
Union C. D. 2	Broken Arrow	Tulsa	Geo. Boovers
*Wagoner S. D. 19	Wagoner	Wagoner	A. M. Callaway
Westville S. D. 11	Westville	Adair	C. R. Painter
Wyandotte C. D. 1	Wyandotte	Ottawa	J. Delbert Wells

\* Indicates those that did not return questionnaires and are not included in this study.



A MAP SHOWING SCHOOLS OF OKLAHOMA MAINTAINING DEPARTMENTS OF VOCATIONAL AGRICULTURE

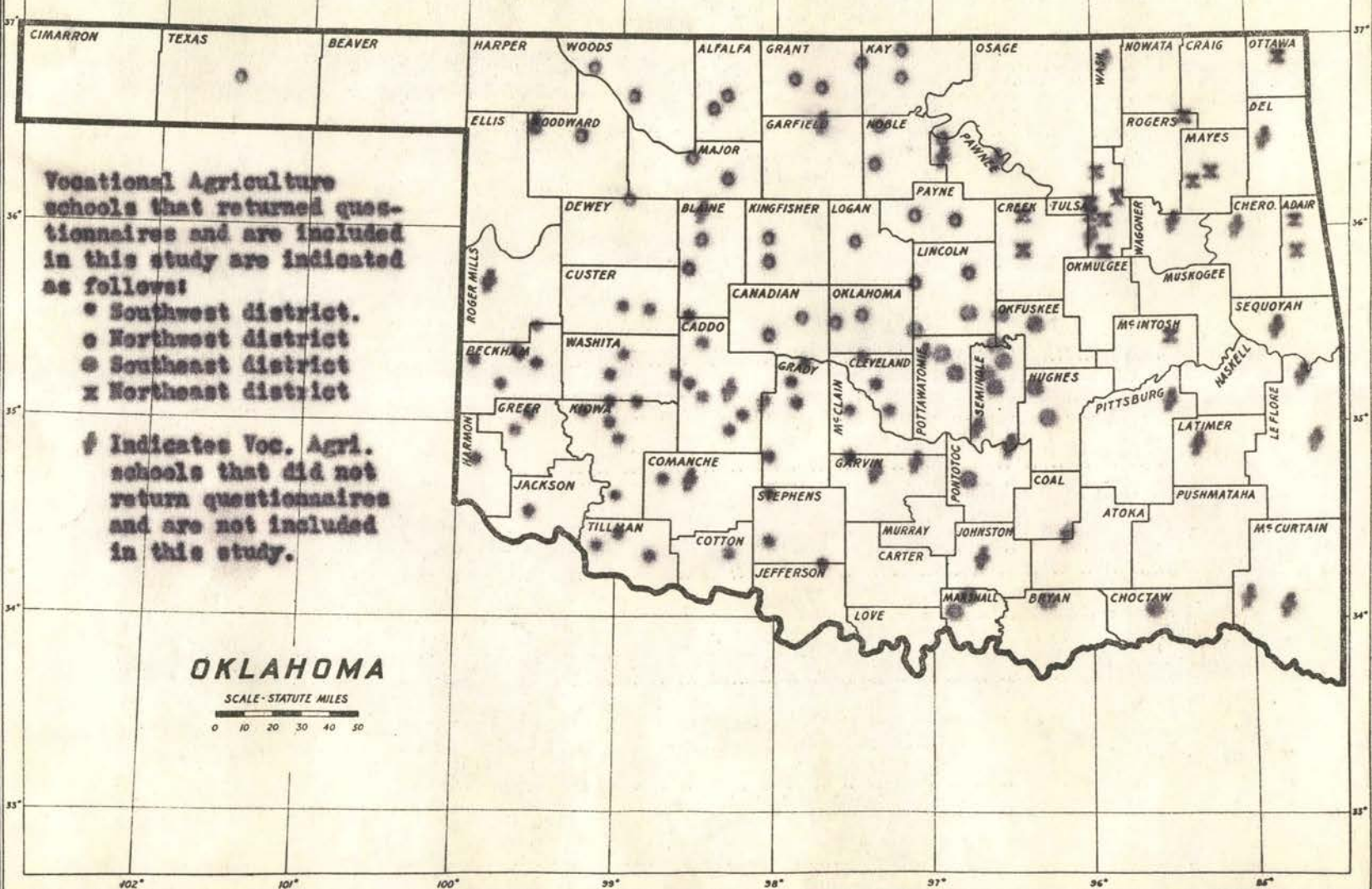




TABLE NO. II

TOWNS, IN VARIOUS POPULATION RANGES, THAT HAVE DEPARTMENTS OF VOCATIONAL AGRICULTURE, INCLUDED IN THIS STUDY

Schools Reporting	South-west Dist.		North-west Dist.		South-east Dist.		North-east Dist.		State	
	No.:	%	No.:	%	No.:	%	No.:	%	No.:	%
POPULATION RANGES OF TOWNS	41	30	15	14	100					
1 to 500	8	20	10	33	0	0	6	43	24	24
501 to 1000	11	27	7	23	5	33	1	7.1	24	24
1001 to 1500	10	24	1	3.3	1	6.7	3	21	15	15
1501 to 2000	2	4.9	3	10	1	6.7	2	14	8	8
2001 to 2500	3	7.3	2	6.7	2	13	1	7.1	8	8
2501 to 3000	1	2.4	1	3.3	0	0	0	0	2	2
3001 to 4000	0	0	0	0	2	13	0	0	2	2
4001 to 5000	2	4.9	1	3.3	1	6.7	0	0	4	4
5001 to 7000	2	4.9	0	0	0	0	1	7.1	3	3
7001 to 10,000	2	4.9	3	10	1	6.7	0	0	6	6
10,001 to 20,000	0	0	1	3.3	1	6.7	0	0	2	2
Over 20,000	0	0	1	3.3	1	6.7	0	0	2	2

FIGURE 1.

TOWNS IN VARIOUS POPULATION RANGES THAT HAVE  
DEPARTMENTS OF VOCATIONAL AGRICULTURE AS REPORTED IN THIS STUDY.

<u>Population Range of Towns.</u>	<u>% of Towns in Various Ranges</u>	<u>Each (X) Represents 1% of Towns</u>
1. 1 to 500.....	24	XXXXXXXXXXXXXXXXXXXXXX
2. 501 to 1000.....	24	XXXXXXXXXXXXXXXXXXXXXX
3. 1001 to 1500.....	15	XXXXXXXXXXXXXX
4. 1501 to 2000.....	8	XXXXXXXX
5. 2001 to 2500.....	8	XXXXXXXX
6. 7001 to 10,000.....	6	XXXXXX
7. 4001 to 5000.....	4	XXXX
8. 5001 to 7000.....	3	XXX
9. 2501 to 3000.....	2	XX
10. 3001 to 4000.....	2	XX
11. 10,001 to 20,000.....	2	XX
12. Over 20,000.....	2	XX



TABULATION AND INTERPRETATION  
OF THE DATA SECURED BY THE QUESTIONNAIRE.

THE SIZE OF TOWNS IN WHICH VOCATIONAL AGRICULTURE IS TAUGHT. Forty-eight per cent of the towns that have departments of vocational agriculture have a population of less than one thousand. Half of this group are in the 1 to 500 population range and the other half composes the 501 to 1000 population range. Table II and Figure 1 indicate that 15 per cent of the towns have a population of between 1001 and 1500. Eight per cent have populations of from 1501 to 2000 and another eight per cent have populations of from 2001 to 2500. All the others, a little over one-fifth of the total, have populations which exceed 2500. Only four towns have a population above 10,000, and only two of these have populations exceeding 20,000. It is significant that 79 per cent of all towns which have departments of vocational agriculture have populations which do not exceed twenty-five hundred.

GENERAL INFORMATION CONCERNING THE DISTRICTS INCLUDED IN THIS STUDY. Table III indicates that six of the 106 schools included in this study are not located in towns. Two of these schools are in the Southwest district, three in the Southeast district, and one in the Northeast district, while the Northwest district has no schools located in the open country. The country schools are located an average of seven miles from town.



TABLE NO. III.

GENERAL INFORMATION CONCERNING  
THE COMMUNITIES INCLUDED IN THIS STUDY

	: South- west Dist.	: North- west Dist.	: South- east Dist.	: North- east Dist.	: State
No. of Voc. Agri. teachers sent questionnaires	: 48	: 35	: 30	: 20	: 133
No. of teachers who returned questionnaires	: 43	: 30	: 18	: 15	: 106
Percentage of questionnaires returned	: 90	: 86	: 60	: 75	: 80
No. of schools that replied, not located in towns	: 2	: 0	: 3	: 1	: 6
Average miles these schools are from town	: 6	: 0	: 9	: 5	: 7
Plant Enterprise of most importance	: Small grain	: Small grain	: Cotton	: Small grain	: Small grain
Plant Enterprise of second importance	: Cotton	: Grain Sorghum	: Corn	: Corn	: Cotton
Plant Enterprise of third importance	: Grain Sorghum	: Cotton	: Grain Sorghum	: Grain Sorghum	: Grain Sorghum
Animal Enterprise of most importance	: Dairy	: Dairy	: Dairy	: Dairy	: Dairy
Animal Enterprise of second importance	: Beef	: Beef	: Hogs	: Hogs	: Beef
Animal Enterprise of third importance	: Hogs	: Hogs	: Poultry	: Beef	: Hogs

It is interesting to note that 90 per cent of the teachers of the Southwest district returned questionnaires while only 60 per cent of those in the Southeast district responded. Eighty-six per cent of the teachers in the Northwest district and 75 per cent of those in the Northeast district responded. Eighty per cent, or 106 of the 133 vocational agriculture teachers of the state filled out and returned the questionnaires sent to them. A total of 43 from the Southwest, 30 from the Northwest, 18 from the Southeast and 15 from the Northeast district sent in their replies to the questionnaire.

Table III shows also the crop and animal enterprises of each of the districts. Small grain is the most commonly produced crop enterprise in the state. It is of first importance in all districts except the Southeast where cotton is most commonly grown. Cotton is of second importance in the state. It ranks second in importance in the Southwest and third in the Northwest. It is not in the three leading crops in the Northeast. The third most commonly grown crop in the state, as revealed by this questionnaire, is grain sorghum. It is third in importance in all districts except the Northwest where it is second. Corn is second in importance in the two east districts but it is not listed among the important crops of the west districts.

Dairying is reported as the most important animal

TABLE NO. IV

## VARIATIONS IN THE SIZE OF FARMS INCLUDED IN THIS STUDY

	: South- : west : Dist.		: North- : west : Dist.		: South- : east : Dist.		: North- : east : Dist.		: State	
	: No. :	: % :	: No. :	: % :	: No. :	: % :	: No. :	: % :	: No. :	: % :
Questionnaires Returned	: 40 :	: 85 :	: 28 :	: 51 :	: 16 :	: 55 :	: 140 :	: 70 :	: 1000 :	: 75 :
Sizes of farms in acres:	:	:	:	:	:	:	:	:	:	:
1 to 10	: 3 :	: 0.7 :	: 6 :	: 2.1 :	: 6 :	: 3.6 :	: 2 :	: 1.4 :	: 17 :	: 1.7 :
11 to 20	: 2 :	: 0.5 :	: 3 :	: 1.1 :	: 4 :	: 2.4 :	: 4 :	: 2.9 :	: 13 :	: 1.3 :
21 to 40	: 9 :	: 2.2 :	: 8 :	: 2.8 :	: 10 :	: 6.1 :	: 12 :	: 8.6 :	: 39 :	: 3.9 :
41 to 80	: 50 :	: 12 :	: 27 :	: 9.5 :	: 37 :	: 22 :	: 33 :	: 24 :	: 147 :	: 14.7 :
81 to 160	: 220 :	: 54 :	: 115 :	: 40 :	: 71 :	: 43 :	: 56 :	: 40 :	: 462 :	: 46.2 :
161 to 320	: 80 :	: 20 :	: 57 :	: 20 :	: 27 :	: 16 :	: 21 :	: 15 :	: 185 :	: 18.5 :
321 to 640	: 36 :	: 8.8 :	: 47 :	: 16 :	: 8 :	: 4.8 :	: 10 :	: 7.1 :	: 101 :	: 10.1 :
OVER 640	: 10 :	: 2.4 :	: 22 :	: 7.7 :	: 2 :	: 1.2 :	: 2 :	: 1.4 :	: 36 :	: 3.6 :



## STRATHMORE PARISH

FIGURE 2.

## VARIATIONS IN THE SIZE OF FARMS SURVEYED IN THIS STUDY

<u>Size of</u> <u>Farm in</u> <u>Acres.</u>	<u>% of Farms</u> <u>in the</u> <u>Size.</u>	<u>Each (X) Represents 1% of the Farms.</u>
1. 81 to 160....	46.2	XX
2. 161 to 320...	18.5	XXXXXXXXXXXXXXXXXXXX
3. 41 to 80.....	14.7	XXXXXXXXXXXXXXXXXXXX
4. 321 to 640...	10.1	XXXXXXXXXXXX
5. 21 to 40.....	3.9	XXXX
6. Over 640.....	3.6	XXXX
7. 1 to 10.....	1.7	XX
8. 11 to 20.....	1.3	X

enterprise in all sections of the state. Beef cattle ranks second in the Northwest and Southwest districts, and third in the Northeast district. It does not have a place in the three leading enterprises of the Southeast district. Swine is the third animal enterprise of importance in the state. It rates third in the two west districts and second in the two east districts. Poultry is the only other animal enterprise found in the high three in any district and it is found in third place only in the Southeast district.

A farm mechanics course for Oklahoma should stress the farm mechanic jobs related to the important enterprises of the state, namely: small grains, cotton, grain sorghums, corn, dairying, beef, hogs, and poultry. Particular stress should be given the units which are of major importance in each particular community. This stress may be given in group instruction in the class room, or it may be supervised farm training on the home farm.

VARIATIONS IN THE SIZE OF THE FARMS INCLUDED IN THE STUDY. The variations in the size of farms in the different sections of the state are indicated in Table IV and Figure 2. The Southeast district has the lowest percentage of farms containing 160 acres or more, and the Northeast has the highest percentage of farms of 40 acres or less. The Northwest district has the highest percentage of farms of 160 acres or more, and the Southwest district has the lowest percentage of farms of 40 acres or less.

TABLE NO. V

THE TENURE OF FAMILIES  
ON FARMS INCLUDED IN THIS STUDY

Number of years lived on present farms	South-		North-		South-		North-		State	
	west Dist.		west Dist.		east Dist.		east Dist.			
	No.	%	No.	%	No.	%	No.	%	No.	%
1 year	36	8.8	27	9.5	31	18.8	27	19.3	113	11.3
2 years	29	7.1	18	6.3	11	6.7	17	12.1	82	8.2
3 years	27	6.6	18	6.3	18	10.9	12	8.6	75	7.5
4 years	25	6.1	10	3.5	10	6.1	10	7.1	55	5.5
5 years	22	5.4	18	6.3	13	7.9	10	7.1	63	6.3
6 years	18	4.4	10	3.5	6	3.6	8	5.7	42	4.2
7 years	18	4.4	9	3.2	8	4.8	5	3.6	40	4.0
8 years	23	5.6	10	3.5	4	2.4	5	3.6	42	4.2
9 years	24	5.9	17	6.0	9	5.5	3	2.1	52	5.2
10 years	26	6.3	10	3.5	6	3.6	3	2.1	45	4.5
11 to 15 years	72	17.6	50	17.5	20	12.1	22	15.7	164	16.4
16 to 20 years	73	17.8	58	20.4	24	14.5	17	12.1	172	17.2
21 to 25 years	8	2.0	7	2.5	2	1.2	2	1.4	19	1.9
Over 25 years	9	2.2	23	8.1	4	2.4	0	0	36	3.6
Students replying	410	100	285	100	165	100	140	100	1000	100



FIGURE 3.

## THE TENURE OF FAMILIES ON THE FARMS INCLUDED IN THIS STUDY.

<u>Number of years Lived on Present Farm.</u>	<u>% of Families in Various Groups.</u>	<u>Each (X) Represents 1% of the Families.</u>
1. 16 to 20.....	17.2	XXXXXXXXXXXXXXXXXX
2. 11 to 15.....	16.4	XXXXXXXXXXXXXXXXXX
3. 1.....	11.3	XXXXXXXXXXXXX
4. 2.....	8.2	XXXXXXXXXX
5. 3.....	7.5	XXXXXXXXX
6. 5.....	6.3	XXXXXX
7. 4.....	5.5	XXXXXX
8. 9.....	5.2	XXXXX
9. 10.....	4.5	XXXXX
10. 6.....	4.2	XXXX
11. 8.....	4.2	XXXX
12. 7.....	4.0	XXXX
13. Over 25.....	3.6	XXXX
14. 21 to 25.....	1.9	XX

Only 9.5 per cent of the farms in the Northwest district are in the 41 to 80 acre group, while 12 per cent in the Southwest district are in this group. In decided contrast to this, the Southeast district and the Northeast district have 22 per cent and 24 per cent respectively, in the 41 to 80 acre group. Forty per cent of the farms in the Northeast and Northwest districts are between 81 and 160 acres in size, while 43 per cent in the Southeast district and 54 per cent in the Southwest district are in this group.

Table IV and Figure 2 indicate that nearly half of the farms occupied by vocational agriculture students are included in the group of farms which range in size from 81 to 160 acres. Eighteen and five-tenths per cent of the farms contain between 161 and 320 acres. Relatively few farms are above 640 acres or below 40 acres in extent. The percentages of farms in those groups are 3.6 and 6.9, respectively. Approximately 90 per cent of all farms included in this survey contain between 41 and 160 acres. There is a decided correlation between the size of the farms and the amount of machinery and equipment on the farm. This correlation holds true when considering the size of the farm and the supervised practice opportunities of the pupils.

THE TENURE OF FAMILIES ON FARMS INCLUDED IN THIS STUDY.  
It is particularly interesting to note the variations in the tenure of families on farms included in this study in

the four districts of the state. In the Southwest district 8.8 per cent of the families have lived for only one year on their present farm, while 19.3 per cent in the Northeast district have lived on their present farm the same period of time. Between these extremes are the Southeast and Northwest districts with 18.8 per cent and 9.5 per cent respectively, while the figure for the state is 11.3 per cent that have lived on their present farm one year. Twenty-nine and two-tenths per cent in the Northeast district have lived on their present farm for more than ten years. In contrast to this, 48.5 per cent in the Northwest district have lived on their present farms longer than ten years. In the Southwest 39.6 per cent of the families have lived on their present farm for over ten years, while the figure for the state is 39.1 per cent for this period of tenure.

Figure 3 clearly shows the picture of the tenure of all farm families included in this study. It is surprising to note that one-third of all the farm families have lived on their present farm from 11 to 20 years, and that 5.5 per cent have remained on the same place for over 21 years. The highest percentage of tenure in any other range consists of those that have lived on their farm only one year. There are 11.3 per cent in this group. Table V shows that the families of the west side of the state have a longer tenure than those of the east half of the state. This is probably due to the fact, as shown in Table VI, that there are more owners in the two west districts than in the east districts.



TABLE NO. VI  
 GENERAL INFORMATION CONCERNING  
 THE PUPILS AND FARMS CONSIDERED IN THIS STUDY

	:South- :west	:North- :west	:South- :east	:North- :east	: State	:King- :fisher :School	
No. of questionnaires sent out	: 480	: 350	: 300	: 200	: 1330	: 27	
No. of questionnaires returned	: 410	: 285	: 165	: 140	: 1000	: 27	
Per cent of questionnaires returned	: 85	: 81	: 55	: 70	: 75	: 100	
Average miles students live from town	: 5	: 6	: 7	: 4.5	: 5.6	: 5	
No. of farms terraced	: 161	: 61	: 73	: 30	: 325	: 3	
Per cent of farms terraced	: 39	: 21	: 44	: 21	: 33	: 11	
Average years lived on present farm	: 10	: 12	: 8	: 7	: 9.7	: 14	
Per cent of ownership	: 59	: 66	: 45	: 50	: 57	: 78	
Per cent of farms that have had the major buildings painted in the last 5 years	: 38	: 50	: 38	: 31	: 40	: 78	
Per cent of farms that have available at a low cost native building material	Sand:	54	66	64	45	58	100
	Gravel:	41	40	47	41	41	19
	Stone:	35	41	52	71	43	22
	Timber:	27	35	45	55	36	
	Lumber:	13	15	28	49	21	

The lack of stability or shifting of farmers from one farm to another makes it difficult for students from such families to have well rounded programs of supervised practice.

GENERAL INFORMATION CONCERNING THE PUPILS AND FARMS CONSIDERED IN THIS STUDY. Questionnaires for this study were sent to 1330 students of vocational agriculture. One thousand, or 75 per cent of them, were returned. The best response came from the Southwest district; 410 were returned out of the 480 sent out. This is an 85 per cent response. The Southeast district returned only 55 per cent, while the Northwest returned 81 per cent and the Northeast 70 per cent of the questionnaires sent out. It is difficult to offer a reason for the 30 per cent less response from the Southeast than from the Southwest district.

The distance students live from town is a factor to consider in planning a program of farm mechanics. The farther a farmer must drive to get a piece of work done the more important it is to him to be able to do it himself. In Table VI it is found that the students of the Southeast district live an average of 7 miles from town while those of the Northeast district live only 4.5 miles from town on the average. The average distance from town in the Southwest district is 5 miles and, in the Northwest district, 6 miles. Considering all students in the study, the average distance they live from town is 5.6 miles.

In the questionnaire, this question was asked, "Is

your farm terraced?" This question may have but little bearing on the farm mechanics of the community but it does show to some extent the stability of the farmers. About every third farm considered in this study is terraced. The highest percentage of terracing is in the Southeast district where 44 per cent of the farms are terraced. The Southwest district is second with 39 per cent of the farms terraced. The other two districts each reported 21 per cent of the farms terraced.

The percentage of ownership of the farms ranges from 66 per cent owners in the Northwest to 45 per cent in the Southeast. The average of the state is 57 per cent home owners.

As shown in Table VI, 40 per cent of the farms in the state have had the major buildings painted within the last 5 years. The lowest per cent of farms that had the major buildings painted was 31 per cent in the Southeast as compared with the highest of 50 per cent in the Northwest.

Some kind of native building material was found available in most all sections of the state. Table VI indicates that sand is the most plentiful since it is available, at a low cost, to 58 per cent of the farms surveyed. Stone was next in importance, being available to 43 per cent, gravel to 41 per cent, timber to 36 per cent, and lumber obtainable, at a low cost, to 21 per cent of the farms surveyed. Only sand, gravel and stone were available, at a low cost, to the majority of the farmers of Kingfisher community.



It has been pointed out in this study that there is considerable native building material in the state. If farmers and prospective farmers are to use this low cost building material to the best advantage, they should be trained in this kind of work. The farm mechanics course offered to vocational agriculture students affords a good opportunity to secure this type of training.

EQUIPMENT AND CONVENIENCES ON THE FARMS IN THIS STUDY.

The content of a farm mechanics course should be based, to some extent, upon the equipment found on the farms of the community in which the course is to be taught. Table VII and Figure 4 show that wagons were the most common farm equipment, being followed next by horses and mules. It is strange that two per cent more of the farms surveyed had wagons than had work stock. Eighty-four per cent of the farms had one row cultivators, and 83 per cent had automobiles. Only 26 per cent of the farms had trucks. The lowest percentage of farms that had automobiles was in the Southeast district; it reported only 64 per cent while the Northwest reported 96 per cent.

Mold-board plows are field equipment commonly found throughout the state. They are found on 77 per cent of the farms. Their distribution is fairly uniform, the number being about equal in each of the districts. Disc plows are not nearly as common as mold-board plows. It was found that only 47 per cent of the farms had disc plows. Most of

TABLE NO. VII  
EQUIPMENT AND CONVENIENCES  
ON THE FARMS OF PUPILS INCLUDED IN THIS STUDY

	:South- :west :Dist.	:North- :west :Dist.	:South- :east :Dist.	:North- :east :Dist.	: State	:King- :fisher :School
Questionnaires Returned	:No.: :40:	% :285:	:No.: :165:	% :140:	:No.: :1000:	% :27:100
<b>FARM EQUIPMENT</b>	:	:	:	:	:	:
1. Automobile	:351:	86:273:	96:105:	64: 98: 70:	827:	83: 26: 96
2. Row crop tractor	:128:	31: 46:	16: 16:	9.7: 21: 15:	211:	21: 2:7.4
3. Truck	: 88:	21: 98:	34: 36:	22: 39: 28:	263:	26: 12: 44
4. Wheat land tractor	: 66:	16:152:	53: 10:	6.1: 15: 11:	243:	24: 19: 70
5. Electric motor	: 27:	7.1: 50:	18: 11:	6.7: 9:6.4:	99:	10: 15: 46
6. Farm shop bldg. or room	:146:	36:161:	56: 61:	37: 45: 32:	413:	41: 19: 70
7. Implement shed	: 94:	23:111:	39: 51:	31: 54: 39:	310:	31: 17: 63
8. Horses or mules	:342:	83:247:	87:155:	94:126:	90: 870:	87: 18: 67
9. Mowing machine	:201:	49:225:	79: 85:	52: 67: 48:	578:	58: 21: 78
10. Binder or header	:199:	49:182:	64: 37:	22: 47: 34:	465:	47: 19: 70
11. Combine or thresher	: 65:	16:106:	37: 3:	1.8: 13:9.3:	187:	19: 11: 41
12. Cultivators, one row	:344:	84:227:	80:152:	92:112:	80: 835:	84: 21: 78
13. Cultivators, two or more rows	:152:	37:104:	36: 19:	12: 21: 15:	296:	30: 11: 41
14. Spray machinery	: 52:	13: 47:	16: 15:	9.1: 33: 24:	147:	15: 13: 48
15. Cream separator	:302:	74:247:	87: 76:	46: 96: 69:	721:	72: 27:100
16. Milking machine	: 8:	2: 6:	2.1:	2:1.2: 2:1.4:	18:1.8:	0: 0
17. Hay balle	: 70:	17: 33:	12: 36:	22: 15: 11:	154:	15: 1:3.7
18. Farm level	: 22:	5.4: 14:	4.9: 14:	8.5: 8:5.7:	58:5.8:	0: 0
19. Lister planter	:351:	86:210:	74:101:	61: 59: 42:	721:	72: 19: 70
20. Grain drill	:205:	50:228:	80: 48:	29: 56: 40:	537:	54: 24: 88
21. Moldboard plow	:302:	74:239:	84:115:	70:109:	78: 765:	77: 26: 96
22. Disc plow	:234:	57:140:	49: 53:	32: 40: 29:	467:	47: 20: 74
23. Stationary gas engine	: 70:	17: 92:	32: 32:	19: 25: 18:	219:	22: 8: 30
24. Trailer	:217:	53:161:	56: 41:	25: 47: 34:	466:	47: 14: 52
25. Wagon	:357:	87:260:	91:148:	90:120:	86: 885:	89: 22: 81
<b>HOME CONVENIENCES</b>	:	:	:	:	:	:
1. Water systems	:	:	:	:	:	:
a. Gravity	: 53:	13: 38:	13: 17:	10: 18: 13:	126:	13: 2:7.4
b. Air pressure	: 25:	6.1: 25:	8.8: 11:	6.7: 11:7.8:	72:7.2:	7: 26
2. Septic tank	: 34:	8.3: 31:	11: 8:	4.8: 11:7.8:	84:8.4:	7: 26
3. Electricity	:	:	:	:	:	:
a. Farm plant	: 23:	5.6: 29:	10: 9:	5.5: 7: 5:	68:6.8:	2:7.4
b. Power line	: 28:	6.8: 55:	19: 13:	7.9: 11:7.8:	107:	11: 17: 63
c. Windcharger	: 58:	14: 35:	12: 5:	3: 9:6.4:	107:	11: 1:3.7
4. Gas	:	:	:	:	:	:
a. Natural	: 29:	7.1: 28:	9.8: 17:	10: 28: 20:	107:	11: 1:3.7
b. Bottled	: 22:	5.4: 20:	7: 7:	4.2: 1: .7:	50: 5:	2:7.4
5. Power washer	:215:	52:202:	71: 63:	38: 53: 38:	533:	53: 26: 96
6. Refrigerators	:	:	:	:	:	:
a. Electric	: 21:	5.1: 26:	9.1: 2:	1.2: 4:2.9:	53:5.3:	10: 38
b. Oil or gas	: 36:	8.8: 25:	8.8: 21:	13: 12:8.6:	94:9.4:	1:3.7

FIGURE 4.

## EQUIPMENT AND CONVENIENCES

ON FARMS OF PUPILS SURVEYED IN THIS STUDY

<u>Kind of Farm Equipment.</u>	<u>§</u> <u>Having.</u>	<u>Each (X) Represents 2% of the Farms.</u>
Wagons.....	89	XX
Horses and Mules.....	87	XX
Cultivators, one row..	84	XX
Automobile.....	83	XX
Mold-board Plow.....	77	XX
Cream Separator.....	72	XX
Lister Planter.....	72	XX
Mowing Machine.....	58	XX
Grain Drill.....	54	XX
Trailer.....	47	XX
Binder or Header.....	47	XX
Disc Plow.....	47	XX
Shop Building or Room.	41	XX
Implement Shed.....	31	XX
Cultivators, two row..	30	XX
Truck.....	26	XX
Wheatland Tractor.....	24	XX
Stationary Gas Engine.	22	XX
Row Crop Tractor.....	21	XX
Combine or Thrasher...	19	XX
Spray Machine.....	15	XX
Hay Bailer.....	15	XX
Electric Motor.....	10	XX
Farm Levels.....	5	XXXX
Milking Machine.....	1.8	X

<u>Kind of Home Convenience</u>	<u>§</u> <u>Having</u>	<u>Each (X) Represents 2% of the Homes.</u>
Power Washing Machine..	53	XX
Gravity Water System..	13	XX
Electric Power Line...	11	XX
Electric Wind Charger.	11	XX
Natural gas.....	10	XX
Oil or gas Refrigerator.	9	XX
Septic Tank.....	8	XX
Air Pressure Water Sys.	7	XX
Electric Farm Plant....	6	XXXX
Electric Refrigerator..	5	XXXX
Bottled Gas.....	5	XXXX



the farms having this kind of equipment were in the western part of the state. Other kinds of farm equipment that were found on more than 50 per cent of the farms include cream separators, lister planters, mowing machines, and grain drills.

Trailers were reported on 47 per cent of the farms. Their distribution was very similar to that of automobiles. Other equipment and facilities on more than 25 per cent of the farms include binders and headers, shop buildings or rooms, implement sheds, and two row cultivators. Binders and headers were found mostly in the Northwest district; 64 per cent of the farms in this district possessed this equipment while only 22 per cent of the farms of the Southeast district had headers and binders. Equipment on less than 25 per cent of the farms listed in order of its importance includes stationary gas engines, combines or thrashers, spray machinery, hay bailers, electric motors, farm levels, and milking machines. Combines and thrashers, which are listed in this last group, were found on 37 per cent of the farms in the Northwest district and on only 1.8 per cent of the farms of the Southeast district.

The power washer is the most common home convenience listed in Table VII and Figure 4. It was reported present in 53 per cent of the farm homes. In the Northwest district 71 per cent of the farm homes have washers, while only 38 per cent of the homes in the two eastern districts have them, and 52 per cent of the homes of the Southwest district

possess this convenience. Running water was found in 20 per cent of the homes; 13 per cent of this number had gravity flow water systems and the other 7 per cent had air pressure systems. Electric power was found on 28 per cent of the farms; 11 per cent were supplied with electricity by power lines, 11 per cent by wind chargers and 6 per cent had electricity generated on the farm by individual farm dynamos.

Only 8 per cent of the farms have septic tanks. The highest percentage of these is in the Northwest district. There are 14 per cent of the farms equipped with mechanical refrigeration and 15 per cent of the homes have gas, either natural or bottled.

From a careful study of Table VII it is found that the farms of the Northwest district possess the most equipment and conveniences. This is a good indication that the standard of living is higher in that district, and it appears that the standard of living is lowest in the Southwest district.

#### SPECIAL PROBLEMS ENCOUNTERED IN TEACHING FARM MECHANICS.

One hundred per cent of the teachers who cooperated in this study stated their conviction that farm mechanics should have a definite place in the vocational agriculture course. It is shown, however, in Table XV that not all of these teachers are teaching farm mechanics. The cause of this may be due to a number of factors. The most important one, however, seems to be the lack of equipment in the schools

THE OPINION OF TEACHERS ON THE PROBLEMS LISTED BELOW  
RELATED TO THE TEACHING OF FARM MECHANICS IN VOC. AGR. COURSES

	South- west Dist.	North- west Dist.	South- east Dist.	North- east Dist.	State					
	No.	%	No.	%	No.	%	No.	%	No.	%
Teachers who think shop should be a part of a voc. agr. course	43	100	30	100	18	100	15	100	106	100
Teachers that have a separate building for shop	13	33	10	33	4	24	2	13	29	29
Teachers that have a separate building for class	8	19	6	20	5	29	2	13	21	20
Teachers who would place more emphasis on shop if more recognition was given to it	29	71	20	69	11	58	14	93	74	71
Teachers who have trouble getting machinery brought in for repair	18	60	20	77	10	71	9	90	57	67
Teachers who have trouble getting boys to furnish material for shop	21	62	14	54	11	67	8	80	54	63
Teachers who think shop is crowded out of the V. A. program	30	77	19	70	12	71	8	80	69	72
Teachers who think their shop is adequately equipped	9	24	7	27	4	24	1	8.3	21	23
School boards that would buy the needed equipment if requested to do so	17	43	10	37	10	67	7	50	44	46
Teachers who think their dept. gets its just share of the school purchases	25	66	16	53	14	82	9	60	64	64



and the lack of funds with which to secure the needed equipment. Another difficulty teachers are likely to encounter is sufficient time to teach all of the things that should be included in a program of vocational agriculture. Seventy-two per cent of the teachers say that farm mechanics is crowded out of their teaching program. This condition seems to be rather uniform throughout the state. It ranges from 62 per cent in the Northeast district to 77 per cent in the Southwest district.

Less than one-fourth of the shops are adequately equipped and slightly over that number have a separate building for shop work. This, no doubt, is one of the chief causes for the lack of development of the farm mechanics program in Oklahoma. The teachers gave as another cause for lack of a more desirable shop program the fact that sufficient recognition and emphasis have not been placed upon this type of work by those administering the program. Seventy-one per cent of them say they would place more emphasis upon this type of work if more recognition were given to it by the state offices.

The majority of the teachers think that their department in the secondary school gets its just share of the money that is spent for school equipment. Only 46 per cent, however, think that their school is financially able to get the needed equipment to carry on a satisfactory farm shop program. Sixty-three per cent of the teachers say they are unable to get the students to buy the needed material for

TABLE NO. IX

THE RANGE IN THE NUMBER OF PERIODS THAT SHOULD  
BE DEVOTED TO FARM MECHANICS EACH YEAR, AS INDICATED BY THE  
OPINION OF TEACHERS

	South- west Dist.	North- west Dist.	South- east Dist.	North- east Dist.	State					
	No.	%	No.	%	No.	%	No.	%	No.	%
10 to 19 periods	3	7.0	4	13.3	2	11.1	0	0	9	8.5
20 to 29 periods	17	39.5	10	33.3	8	44.4	4	26.7	39	36.8
30 to 39 periods	14	32.6	11	36.7	7	38.9	4	26.7	36	34.0
40 to 49 periods	3	7.0	1	3.3	1	5.6	3	20.0	8	7.5
50 to 59 periods	5	11.6	1	3.3	0	0	1	6.7	7	6.6
60 to 69 periods	0	0	2	6.7	0	0	1	6.7	3	2.8
70 to 79 periods	1	2.3	1	3.3	0	0	0	0	2	1.9
80 or more	0	0	0	0	0	0	2	13.3	2	1.9
Teachers replying	43		30		18		15		106	

FIGURE 5.

THE OPINIONS OF TEACHERS OF VOCATIONAL AGRICULTURE  
CONCERNING THE NUMBER OF PERIODS THAT SHOULD BE DEVOTED TO  
PAPER MECHANICS EACH YEAR.

<u>Number of Periods to be Devoted to Shop.</u>	<u>% of Teachers' Opinion.</u>	<u>Each (X) Represents 1% of the Replies.</u>
1. 20 to 29.....	36.8	XX
2. 30 to 39.....	34.0	XX
3. 10 to 19.....	8.5	XXXXXXXXXX
4. 40 to 49.....	7.5	XXXXXXXXXX
5. 50 to 59.....	6.6	XXXXXXX
6. 60 to 69.....	2.8	XXX
7. 70 to 79.....	1.9	XX
8. 80 or More.....	1.9	XX



shop work. This trouble is found mostly in the east half of the state. It is also brought out in Table VIII that trouble is encountered by 71 per cent of the teachers in getting the students to bring in farm machinery for repair in shop work. As in the last situation this is particularly true in the eastern part of the state.

#### THE AMOUNT OF TIME TO DEVOTE TO FARM MECHANICS.

Slightly more than one-third of the teachers who cooperated in this study believed that from 20 to 29 periods each year should be used for instruction in farm mechanics. Thirty to 39 periods should be used for farm mechanics instruction in the opinion of 34 per cent of the teachers. Eight and five-tenths per cent of the teachers thought that 10 to 19 periods for farm mechanics would be sufficient, while 7.5 per cent advocated from 40 to 49 periods. Six and seven-tenths per cent thought that 50 to 59 periods should be devoted to farm mechanics instruction and 2.8 per cent were of the opinion that 60 to 69 periods should be used for this type of work. Only 1.9 per cent thought that 80 or more periods could be used profitably in farm mechanics instruction and another 1.9 per cent advocated the use of 70 to 79 periods for this purpose.

Table IX indicates that 44.4 per cent of the teachers in the Southeast district favored the use of 20 to 29 periods for farm mechanics work, while 39.5 per cent in the Southwest, 33.3 per cent in the Northwest, and 26.7 per cent in the Northeast favored this number. Thirty to thirty-nine

periods of farm mechanics instruction were favored by 38.9 per cent of the teachers in the Southeast district, 36.7 per cent in the Northwest district, 32.6 per cent in the Southwest district, and 26.7 per cent in the Northeast district.

One-fifth of the teachers in the Northeast district thought that 40 to 49 periods should be devoted to farm mechanics; in contrast to this, 7 per cent in the Southwest, 5.6 per cent in the Southeast, and 3.3 per cent in the Northwest thought that 40 to 49 periods of farm mechanics was the proper number.

Ten to 19 periods for shop work were advocated by 11.1 per cent of the teachers in the Southeast district, 13.3 per cent in the Northwest district, and 7 per cent in the Southwest district, while none of the teachers in the Northeast district thought this was the proper number.

None of the teachers in the Southeast district were of the opinion that more than 50 periods should be devoted to farm mechanics; however, 11.6 per cent in the Southwest, 6.7 per cent in the Northeast, and 3.3 per cent in the Northwest were in favor of using from 50 to 59 periods for the farm mechanics program. The Northeast district teachers desired the most farm mechanics work. The Southwest district ranked second and the Northwest district ranked third in the number of periods which the teachers thought should be applied to farm mechanics. The teachers of the Southeast district had the least desire for a large number of

TABLE NO. X

TEACHERS WHO THINK MORE COLLEGE TRAINING  
IN THE FOLLOWING UNITS IN FARM MECHANICS SHOULD  
BE GIVEN PROSPECTIVE VOCATIONAL AGRICULTURE TEACHERS

	South- west Dist.	North- west Dist.	South- east Dist.	North- east Dist.	State					
Questionnaires Returned	No.: 42	%	No.: 30	%	No.: 18	%	No.: 15	%	No.: 105	%
1. Making rough wood farm appliances	24	57	22	73	6	33	10	67	62	59
2. Making finished farm appliances	15	36	17	57	8	44	6	40	46	44
3. Building farm buildings	26	62	23	77	13	72	11	73	73	70
4. Building a house	9	21	7	23	5	28	4	27	25	24
5. Painting	17	40	22	73	6	33	10	67	55	52
6. Rough concrete work	19	45	16	53	8	44	10	67	53	50
7. Finished concrete work	15	36	10	33	7	39	9	60	41	39
8. Building fences	13	31	7	23	4	22	5	33	29	28
9. Glazing	7	17	5	17	4	22	4	27	20	19
10. Freehand sketch- ing	12	29	15	50	7	39	7	47	41	39
11. Farm drawing	25	60	15	50	10	56	6	40	56	53
12. Laying brick, tile, or stone	17	40	14	47	10	56	7	47	48	46
13. Fitting handles	15	36	18	60	5	28	6	40	44	42
14. Figuring bills of material	16	38	18	60	1	5.6	12	80	47	45
15. Tempering metal	13	31	14	47	7	39	7	47	41	39
16. Installing plumb- ing fixtures	23	55	21	70	6	33	9	60	59	56
17. Upkeep and repair of pumps and windmills	23	55	18	60	6	33	8	53	55	52
18. Oiling harness	13	31	12	40	4	22	4	27	33	31
19. Riveting harness	10	24	13	43	3	17	4	27	30	29
20. Harness stitching	13	31	9	30	5	28	6	40	33	31
21. Rope making	12	29	10	33	3	17	7	47	32	30
22. Rope splicing	17	40	16	53	5	28	11	73	49	47
23. Tie 10 useful knots & hitches	15	36	11	37	2	11	8	53	36	34
24. Belt lacing	10	24	15	50	4	22	4	27	33	31
25. Installing shafting	9	21	10	33	5	28	5	33	29	28

(Continued on next page)



TABLE NO. X (Cont.)

TEACHERS WHO THINK MORE COLLEGE TRAINING  
IN THE FOLLOWING UNITS IN PAIR MECHANICS SHOULD  
BE GIVEN PROSPECTIVE VOCATIONAL AGRICULTURE TEACHERS

	South- west Dist.	North- west Dist.	South- east Dist.	North- east Dist.	State					
Questionnaires Returned	No. : 42	% : :	No. : 30	% : :	No. : 15	% : :	No. : 15	% : :	No. : 105	% : :
26. Electric wiring	26	62	26	87	9	50	8	53	69	66
27. Pipe cutting, threading & fitting	21	50	21	70	6	33	7	47	55	52
28. Soldering	18	43	14	47	6	33	8	53	46	44
29. Simple forging	20	48	17	57	10	56	12	80	59	56
30. Welding	17	40	14	47	6	33	6	40	43	41
31. Sharpening edge tools	25	60	22	73	5	28	9	60	61	58
32. Sharpening bits	23	55	22	73	4	22	10	67	59	56
33. Saw filing	27	64	20	67	5	28	9	60	61	58
34. Overhauling imple- ments	29	69	24	80	7	39	10	67	70	67
35. Minor adjustments of gas engines	27	64	25	83	12	67	11	73	75	71
36. Upkeep and minor adjustments of automobiles	26	62	24	80	7	39	8	53	65	62
37. Operation, upkeep and repair of combine	24	57	22	73	1	5.6	4	27	51	49
38. Operation, upkeep and minor repair and adjustment of tractors	30	71	22	73	7	39	8	53	67	64
39. Cutting metal	15	36	14	47	3	17	5	33	37	35
40. Drilling holes in metal	15	36	17	57	4	22	6	40	42	40
41. Overhaul car, truck or tractor motors	22	52	16	53	6	33	4	27	48	46
42. Overhaul trans- mission and rear end of car, truck or tractor	18	43	13	43	5	28	4	27	40	38
43. Plastering	11	26	9	30	2	11	5	33	27	26
44. Threading bolts and nuts	13	31	11	37	3	17	7	47	34	32
45. Grind sickle	15	36	8	27	3	17	6	40	32	30
46. Lay sewage tile	19	45	13	43	5	28	8	53	45	43



FIGURE 6. (Cont'd.)

THE PERCENTAGE OF VOCATIONAL AGRICULTURE TEACHERS  
WHO THINK MORE COLLEGE TRAINING SHOULD BE GIVEN IN THE FOLLOWING UNITS.

<u>Units</u>	<u>% of Teachers</u>	<u>Each (X) Represents 2% of the Teachers.</u>
24. Soldering.....	44	XXXXXXXXXXXXXXXXXXXXXX
25. Lay sewage tile.....	43	XXXXXXXXXXXXXXXXXXXXXX
26. Fitting handles.....	42	XXXXXXXXXXXXXXXXXXXXXX
27. Welding.....	41	XXXXXXXXXXXXXXXXXXXXXX
28. Drilling holes in metal.....	40	XXXXXXXXXXXXXXXXXXXXXX
29. Finished concrete work.....	39	XXXXXXXXXXXXXXXXXXXXXX
30. Freehand sketching.....	39	XXXXXXXXXXXXXXXXXXXXXX
31. Tempering metal.....	39	XXXXXXXXXXXXXXXXXXXXXX
32. Overhaul transmission, rear end of cars, etc..	38	XXXXXXXXXXXXXXXXXXXXXX
33. Cutting metal.....	35	XXXXXXXXXXXXXXXXXXXXXX
34. Tie 10 useful knots and hitches.....	34	XXXXXXXXXXXXXXXXXXXXXX
35. Threading bolts and nuts.....	32	XXXXXXXXXXXXXXXXXXXXXX
36. Oiling harness.....	31	XXXXXXXXXXXXXXXXXXXXXX
37. Harness stitching.....	31	XXXXXXXXXXXXXXXXXXXXXX
38. Belt lacing.....	31	XXXXXXXXXXXXXXXXXXXXXX
39. Rope making.....	30	XXXXXXXXXXXXXXXXXXXXXX
40. Grind sickle.....	30	XXXXXXXXXXXXXXXXXXXXXX
41. Riveting harness.....	29	XXXXXXXXXXXXXXXXXXXXXX
42. Building fences.....	28	XXXXXXXXXXXXXXXXXXXXXX
43. Installing shafting....	28	XXXXXXXXXXXXXXXXXXXXXX
44. Plastering.....	26	XXXXXXXXXXXXXXXXXXXXXX
45. Building a house.....	24	XXXXXXXXXXXXXXXXXXXXXX
46. Glazing.....	19	XXXXXXXXXXXXXXXXXXXXXX



periods for teaching farm mechanics. Thirty-three periods per year is the average amount of time that the teachers think should be devoted to farm mechanics.

THE NEED FOR MORE COLLEGE TRAINING. Table X indicates the percentage of vocational agriculture teachers who think more college training should be given in each of the forty-six common units of farm mechanics to prospective vocational agriculture teachers. The units which the largest percentage of teachers thought required more college training were as follows: making minor adjustments of gas engines, building farm buildings, overhauling implements, wiring for electricity, operation and upkeep of tractors and automobiles, making rough wood appliances, sharpening edge tools, filing saws, and installing plumbing fixtures. Most of the teachers thought that sufficient college training was given in the following farm mechanic units of instruction: glazing, building a house, plastering, installing shafting, building fences, riveting harness, sickle grinding, rope making, belt lacing, harness stitching, and oiling harness. Seventy-one per cent, the highest percentage on any unit, favored more college training on minor adjustment of gas engines while only 19 per cent, the lowest percentage on any unit, thought that more training should be given to glazing. Seventy per cent advocated more college training in building farm buildings while the percentage of teachers who thought more college training should be given in overhauling implements, electric wiring, operation and upkeep of tractors, upkeep

and minor adjustments of automobiles, making rough wood farm appliances, and sharpening edge tools ranged from 67 per cent down to 56 per cent in the order named. Twenty-four per cent of the teachers thought that more college training should be given on building a house while 26 per cent thought that more training in plastering should be given in college. Twenty-eight per cent advocated more college training in building fences and installing shafting. From 29 to 32 per cent of the teachers thought more college training should be given in riveting harness, grinding sickles, rope making, belt lacing, harness stitching, oiling harness, and threading bolts and nuts.

Table X shows that more college training in making minor adjustments of gas engines was favored by 83 per cent of the teachers in the Northwest district while only 64 per cent in the Southwest district were of this opinion. Sixty-seven per cent in the Southeast district and 73 per cent in the Northeast district believe more college work should be given in that unit. Seventeen per cent in each of the Southwest and Northwest districts thought glazing required more college training while 22 per cent in the Southeast and 27 per cent in the Northeast district were of the same opinion. One-half of the teachers in the state thought that more college training should be given in rough concrete work. The percentages for the four districts vary widely on this unit, however. Forty-four per cent in the

FARMS ON WHICH SUFFICIENT TOOLS ARE FOUND TO DO  
EFFICIENTLY THE FARM MECHANICS UNITS LISTED IN THE TABLE BELOW

Questionnaires Returned	:South- :west :Dist.		:North- :west :Dist.		:South- :east :Dist.		:North- :east :Dist.		: State		:King- :fisher :School			
	:No.:	%	:No.:	%	:No.:	%	:No.:	%	:No.:	%	:No.:	%		
	:410:	85:	285:	81:	165:	55:	140:	70:	1000:	75:	27:	100		
1. Making rough wood farm appliances	:253:	62:	188:	66:	95:	58:	83:	59:	619:	62:	27:	100		
2. Making finished farm appliances	:112:	27:	84:	29:	32:	19:	35:	25:	263:	26:	18:	67		
3. Building farm buildings	:187:	46:	142:	50:	73:	44:	72:	51:	474:	47:	23:	85		
4. Building a house	:103:	25:	66:	23:	41:	25:	39:	28:	249:	25:	5:	19		
5. Painting	:197:	48:	157:	55:	56:	34:	56:	40:	466:	47:	25:	93		
6. Rough concrete work	:177:	43:	137:	48:	55:	33:	55:	39:	424:	42:	26:	96		
7. Finished con- crete work	:83:	20:	82:	29:	30:	18:	19:	14:	214:	21:	13:	48		
8. Building fences	:327:	80:	214:	75:	107:	65:	90:	64:	738:	74:	27:	100		
9. Glazing	:45:	11:	58:	20:	18:	11:	16:	11:	137:	14:	12:	44		
10. Freehand sketch- ing	:104:	25:	71:	25:	19:	12:	27:	19:	221:	22:	21:	78		
11. Farm drawing	:112:	27:	63:	22:	27:	16:	30:	21:	232:	23:	11:	41		
12. Laying brick, tile, or stone	:113:	28:	91:	32:	28:	17:	34:	24:	266:	27:	16:	59		
13. Fitting handles	:247:	60:	164:	58:	77:	47:	64:	46:	552:	55:	26:	96		
14. Figuring bills of material	:161:	39:	129:	45:	42:	25:	56:	40:	388:	39:	27:	100		
15. Tempering metal	:81:	20:	62:	22:	33:	20:	28:	20:	204:	20:	10:	37		
16. Installing plumb- ing fixtures	:61:	15:	70:	25:	19:	12:	24:	17:	174:	17:	17:	63		
17. Upkeep and re- pair of pumps and windmills	:183:	45:	161:	56:	37:	22:	30:	21:	411:	41:	23:	85		
18. Oiling harness	:210:	51:	137:	48:	58:	35:	64:	46:	469:	47:	25:	92		
19. Riveting harness	:234:	57:	169:	59:	76:	46:	74:	53:	553:	55:	21:	78		
20. Harness stitch- ing	:56:	14:	46:	16:	29:	18:	17:	12:	148:	15:	5:	19		
21. Rope making	:101:	25:	63:	22:	17:	10:	23:	16:	204:	20:	9:	33		
22. Rope splicing	:96:	23:	94:	33:	31:	19:	34:	24:	255:	26:	26:	96		
23. Tie 10 useful knots & hitches	:95:	23:	98:	34:	37:	22:	36:	26:	266:	27:	27:	100		
24. Belt lacing	:83:	20:	99:	35:	30:	18:	27:	19:	239:	24:	22:	81		
25. Installing shafting	:39:	10:	40:	14:	8:	4:	8:	12:	8:	6:	99:	10:	11:	41

(Continued next page)

Sharpening etc

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FARMS ON WHICH SUFFICIENT TOOLS ARE FOUND TO DO  
EFFICIENTLY THE FARM MECHANICS UNITS LISTED IN THE TABLE BELOW

Questionnaires Returned	:South- :west :Dist.		:North- :west :Dist.		:South- :east :Dist.		:North- :east :Dist.		: State		:King- :fisher :School	
	:No.:	%	:No.:	%	:No.:	%	:No.:	%	:No.:	%	:No.:	%
	:410:	85:	285:	81:	165:	55:	140:	70:	1000:	75:	27:	100
26. Electric wiring	: 58:	14:	68:	24:	17:	10:	14:	10:	157:	16:	18:	67
27. Pipe cutting, thread- ing and fitting	: 72:	18:	69:	24:	26:	16:	33:	24:	200:	20:	5:	19
28. Soldering	:149:	36:	138:	48:	46:	28:	48:	34:	381:	38:	16:	59
29. Simple forging	: 72:	18:	65:	23:	38:	23:	34:	24:	209:	21:	9:	33
30. Welding	: 39:	10:	30:	11:	17:	10:	12:	8.6:	98:	10:	7:	26
31. Sharpening edge tools	:211:	51:	167:	59:	82:	50:	74:	53:	534:	53:	27:	100
32. Sharpening bits	:143:	35:	131:	46:	50:	30:	43:	31:	367:	37:	26:	96
33. Saw filing	:179:	44:	153:	54:	76:	46:	63:	45:	471:	47:	27:	100
34. Overhauling imple- ments	:138:	34:	125:	44:	40:	24:	36:	26:	339:	34:	22:	81
35. Minor adjustments of gas engines	:127:	31:	131:	46:	36:	22:	34:	24:	328:	33:	14:	52
36. Upkeep and minor adjustments of automobile	:191:	47:	165:	58:	55:	33:	62:	44:	473:	47:	26:	96
37. Operation, upkeep and minor repair and adjustment of tractors	:127:	31:	143:	50:	22:	13:	29:	21:	321:	32:	24:	89
38. Operation, upkeep and repair of combine	: 67:	16:	98:	34:	10:	6.1:	13:	9.3:	188:	19:	17:	63
39. Cutting metal	:135:	33:	116:	41:	45:	27:	41:	29:	337:	34:	23:	85
40. Drilling holes in metal	:149:	36:	141:	49:	58:	35:	45:	32:	393:	39:	17:	63
41. Overhaul car, truck, or tractor motors	:136:	33:	120:	42:	39:	24:	36:	26:	331:	33:	16:	59
42. Overhaul trans- mission and rear end of car, truck or tractor	:109:	27:	97:	34:	29:	18:	24:	17:	259:	26:	13:	48
43. Plastering	: 67:	16:	75:	26:	17:	10:	23:	16:	182:	18:	14:	52
44. Threading bolts and nuts	: 97:	24:	92:	32:	21:	13:	27:	19:	237:	24:	9:	33
45. Grind sickle	:114:	28:	129:	45:	54:	33:	59:	42:	356:	36:	21:	78
46. Lay sewage tile	: 44:	11:	50:	18:	14:	8.5:	18:	13:	126:	13:	12:	44



FIGURE 7. (Cont'd.)

THE PERCENTAGE OF FARMS HAVING ADEQUATE  
TOOLS TO DO EFFICIENTLY THE UNITS LISTED BELOW

<u>Units</u>	<u>% of Farms</u>	<u>Each (X) Represents 2% of Farms.</u>
24. Tie 10 useful knots and hitches.....	27	XXXXXXXXXXXXXX
25. Making finished farm appliances.....	26	XXXXXXXXXXXXXX
26. Rope splicing.....	26	XXXXXXXXXXXXXX
27. Overhaul transmission, rear end of cars, etc..	26	XXXXXXXXXXXXXX
28. Building a house.....	25	XXXXXXXXXXXXXX
29. Belt lacing.....	24	XXXXXXXXXXXXXX
30. Threading bolts and nuts.....	24	XXXXXXXXXXXXXX
31. Farm drawing.....	23	XXXXXXXXXXXXXX
32. Freehand sketching.....	22	XXXXXXXXXXXXXX
33. Finished concrete work.	21	XXXXXXXXXXXXXX
34. Simple forging.....	21	XXXXXXXXXXXXXX
35. Tempering metal.....	20	XXXXXXXXXXXXXX
36. Rope making.....	20	XXXXXXXXXXXXXX
37. Pipe cutting, threading and fitting.....	20	XXXXXXXXXXXXXX
38. Operation, upkeep and repair of combine.....	19	XXXXXXXXXXXXXX
39. Plastering.....	18	XXXXXXXXXXXXXX
40. Installing plumbing fixtures.....	17	XXXXXXXXXXXXXX
41. Electric wiring.....	16	XXXXXXXXXXXXXX
42. Harness stitching.....	15	XXXXXXXXXXXXXX
43. Glazing.....	14	XXXXXXXXXXXXXX
44. Laying sewage tile.....	13	XXXXXXXXXXXXXX
45. Installing shafting....	10	XXXXXXXXXXXXXX
46. Welding.....	10	XXXXXXXXXXXXXX



Southeast district, 45 per cent in the Southwest district, 53 per cent in the Northwest district, and 67 per cent in the Northeast district favored more college training in rough concrete work. Figure 6 gives a clear picture of the teachers' opinion on the need for more college training on the 46 units listed in the order of descending importance.

TOOLS ON THE FARMS. Table XI and Figure 7 show that 74 per cent of the farms included in this study had sufficient tools with which to build fences. In contrast, efficient welding equipment was found on only 10 per cent of the farms. Tools for making rough wood farm appliances were found on 62 per cent of the farms, while harness riveting tools were found on 55 per cent of the farms. Another 55 per cent had adequate tools available for fitting handles. Fifty-three per cent of the farms reported sufficient tools with which to sharpen edge tools. Less than one-half of the farms had adequate tools to do any of the other forty-one units of farm mechanics efficiently. Forty-seven per cent of all farms included in this survey had tools with which to do painting, building farm buildings, oiling harness, saw filing, and minor adjustment and upkeep of automobiles. Tools, sufficient to do other units, found on over 30 per cent of the farms, are listed in the order of their importance: rough concrete work, repair and upkeep of pumps and windmills, drilling holes in metal, soldering, sharpening bits, grinding sickles, overhauling implements and cutting metal.

From 10 to 16 per cent of the farms had adequate tools for installing shafting, laying sewage tile, glazing, harness stitching, and electric wiring.

The percentages of farms equipped with the most common tools were, in most cases, quite uniform for the four districts of the state; however, in a few instances there were wide variations. Half of the farms in the Northwest district had sufficient tools for the operation, upkeep and minor repair and adjustment of tractors, whereas only 13 per cent of the farms in the Southeast, 31 per cent in the Southwest district and 21 per cent in the Northeast district had these tools. Adequate tools for the operation, upkeep, and repair of combines were found on 34 per cent of the farms in the Northwest district, 16 per cent in the Southwest district, 9.3 per cent in the Northeast district, and on only 6.1 per cent of the farms in the Southeast district. These variations were accounted for by the fact that different types of farming were practiced in the various districts. Table XI indicates that sufficient tools for the upkeep and repair of pumps and windmills were found on 56 per cent of the farms in the Northwest district, 45 per cent in the Southwest district, 22 per cent in the Southeast district, and 21 per cent in the Northeast district. The more extensive use of windmills and pumps throughout the western part of the state probably accounts for this noticeable variation. Simple forging equipment was quite uniformly distributed through the state. The range was

from 24 per cent in the Northeast district to 18 per cent in the Southwest district. Tools for making rough wood appliances were found on 65 per cent of the farms in the Northwest district and dropped to 58 per cent in the Southeast district. Fifty-one per cent of the farms of the Northeast district had adequate tools for building farm buildings, while 50 per cent of the farms in the Northwest district, 46 per cent in the Southwest district, and 44 per cent in the Southeast district had such tools available.

There is a definite relationship between the percentage of farms that had the necessary tools to do the various farm mechanics units and the farm mechanics teaching program, in that those units in which tools were available for practical use will, as a rule, receive first consideration. There probably is little need for teaching many of the units in which the essential tools for performing the job were not available on the farms of the students.

**TOOLS IN THE SCHOOL SHOPS.** The writer has often heard teachers of vocational agriculture say that they do not attempt to teach farm mechanics because their school does not have the necessary tools or equipment. In the planning of this study one of the purposes in mind was to find out what tools and equipment the schools did have. Table XII and Figure 8 show the result of this investigation. Figure 8 indicates that 82 per cent of the schools included in this survey had sufficient tools to make rough wood appliances and another 80 per cent had tools for fitting handles.



SCHOOLS THAT HAVE SUFFICIENT TOOLS  
TO DO EFFICIENTLY THE FARM MECHANICS UNITS LISTED BELOW

	South-		North-		South-		North-		State	
	west	Dist.	west	Dist.	east	Dist.	east	Dist.		
Questionnaires Returned	No.	%	No.	%	No.	%	No.	%	No.	%
	36		26		17		13		92	
1. Making rough wood appliances	29	81	26	100	14	82	6	46	75	82
2. Making finished farm appliances	13	36	15	58	6	35	4	31	38	41
3. Building farm buildings	15	42	14	54	7	41	4	31	40	43
4. Building a house	5	14	9	35	2	12	1	7.7	17	18
5. Painting	19	53	25	96	7	41	3	23	54	59
6. Rough concrete work	22	61	25	96	5	29	5	38	57	62
7. Finished concrete work	6	17	8	31	2	12	1	7.7	17	18
8. Building fences	11	31	16	62	6	35	4	31	37	40
9. Glazing	2	5.6	6	23	3	18	3	23	14	15
10. Freehand sketching	12	33	15	58	3	18	5	38	35	38
11. Farm drawing	13	36	13	50	5	29	4	31	35	38
12. Laying brick, tile or stone	8	22	7	27	1	5.9	0	0	16	17
13. Fitting handles	27	75	26	100	14	82	7	54	74	80
14. Figuring bills of material	27	75	26	100	14	82	8	62	75	82
15. Tempering metal	7	19	14	54	2	12	2	15	25	27
16. Installing plumbing fixtures	6	17	5	19	1	5.9	1	7.7	13	14
17. Upkeep and repair of pumps and windmills	5	14	10	38	0	0	0	0	15	16
18. Oiling harness	17	47	16	62	11	65	4	31	48	52
19. Riveting harness	11	31	15	58	7	41	3	23	36	39
20. Harness stitching	8	22	9	35	6	35	2	15	25	27
21. Rope making	15	42	17	65	5	29	4	31	41	45
22. Rope splicing	20	56	19	73	9	53	8	62	46	50
23. Tie 10 useful knots & hitches	20	56	20	77	11	65	9	69	60	65
24. Belt lacing	15	42	16	62	2	12	1	7.7	34	37
25. Installing shafting	1	2.8	7	27	0	0	0	0	8	8.7

(Continued on next page)

SCHOOLS THAT HAVE SUFFICIENT TOOLS  
TO DO EFFICIENTLY THE FARM MECHANICS UNITS LISTED BELOW

Questionnaires Returned	South- west Dist.		North- west Dist.		South- east Dist.		North- east Dist.		State	
	No.:	%	No.:	%	No.:	%	No.:	%	No.:	%
	36		26		17		13		92	
26. Electric wiring	5	14	12	46	1	5.9	4	31	22	24
27. Pipe cutting, threading & fitting	7	19	10	38	2	12	3	23	22	24
28. Soldering	15	42	19	73	5	29	4	31	43	47
29. Simple forging	4	11	8	31	4	24	4	31	20	22
30. Welding	1	2.8	6	23	1	5.9	1	7.7	9	10
31. Sharpening edge tools	20	56	25	96	13	76	6	46	64	70
32. Sharpening bits	19	53	19	73	12	71	7	54	57	62
33. Saw filing	27	75	23	88	13	76	6	46	69	75
34. Overhauling imple- ments	10	28	17	65	4	24	5	38	36	39
35. Minor adjustments of gas engines	4	11	14	54	4	24	2	15	24	26
36. Upkeep and minor adjustments of automobiles	6	17	13	50	1	5.9	2	15	22	24
37. Operation, upkeep, and repair of combine	2	5.6	9	35	1	5.9	0	0	12	13
38. Operation, upkeep, and minor repair and adjustment of tractors	3	8.3	10	38	1	5.9	2	15	16	17
39. Cutting metal	7	19	14	54	3	18	3	23	27	29
40. Drilling holes in metal	6	17	17	65	4	24	3	23	30	33
41. Overhaul car, truck or tractor motors	1	2.8	6	23	0	0	0	0	7	7.6
42. Overhaul trans- mission and rear end of car, truck or tractor	1	2.8	5	19	0	0	0	0	6	6.5
43. Plastering	1	2.8	4	15	0	0	0	0	5	5.4
44. Threading bolts and nuts	6	17	12	46	4	24	3	23	25	27
45. Grind sickle	7	19	8	31	7	41	3	23	25	27
46. Lay sewage tile	4	11	8	31	0	0	3	23	15	16





FIGURE 8. (Cont'd.)

THE PERCENTAGE OF SCHOOLS THAT HAVE  
ADEQUATE TOOLS TO DO EFFICIENTLY THE UNITS LISTED BELOW.

<u>Units</u>	<u>% of Schools</u>	<u>Each (X) Represents 2% of Schools</u>
24. Tempering metal.....	27	XXXXXXXXXXXXXX
25. Harness stitching.....	27	XXXXXXXXXXXXXX
26. Threading bolts and nuts.....	27	XXXXXXXXXXXXXX
27. Grinding sickle.....	27	XXXXXXXXXXXXXX
28. Minor adjustments on gas engines.....	26	XXXXXXXXXXXXXX
29. Electric wiring.....	24	XXXXXXXXXXXXXX
30. Pipe cutting, threading and fitting.....	24	XXXXXXXXXXXXXX
31. Upkeep, minor adjustments of automobiles.....	24	XXXXXXXXXXXXXX
32. Simple forging.....	22	XXXXXXXXXXXXXX
33. Building a house.....	18	XXXXXXXXXX
34. Finished concrete work.....	18	XXXXXXXXXX
35. Laying brick, tile or stone.....	17	XXXXXXXXXX
36. Operation, upkeep, etc. of tractors.....	17	XXXXXXXXXX
37. Upkeep and repair of pumps and windmills.....	16	XXXXXXXXXX
38. Lay sewage tile.....	16	XXXXXXXXXX
39. Glazing.....	15	XXXXXXXXXX
40. Installing plumbing fixtures.....	14	XXXXXXXXXX
41. Operation, upkeep, repair of combine.....	13	XXXXXXXXXX
42. Welding.....	10	XXXXXX
43. Installing shafting.....	8.7	XXXX
44. Overhauling car, truck or tractor motor.....	7.6	XXXX
45. Overhaul transmission, rear end of cars, etc.....	6.5	XXX
46. Plastering.....	5.4	XXX

Saw filing equipment was reported in 75 per cent of the schools, and 70 per cent of them had equipment for sharpening edge tools. Sixty-two per cent of all schools had adequate tools to do rough concrete work and sharpen bits. Fifty-nine per cent had painting equipment. Fewer than half of the schools had adequate tools to perform efficiently any of the other thirty-five units of farm mechanics included in this questionnaire. Tools for soldering were found in 48 per cent of the schools and rope making equipment in 45 per cent, while 43 per cent had sufficient tools for building farm buildings. Figure 8 shows that 41 per cent of the schools had tools which could be used in making finished farm appliances. Forty per cent had tools for building fences and 39 per cent had tools for overhauling implements and riveting harness.

Tools for doing the following jobs were found on less than 22 per cent of the schools surveyed: simple forging, installing plumbing fixtures, upkeep and repair of combines, welding, overhauling car, truck or tractor motors, overhauling transmission and rear end of cars, and plastering.

Table XII indicates that schools of the Northwest district were better equipped with tools than were the schools in any other district in the state. The schools of the Southwest district ranked second in the percentage that had adequate tools. The schools of the eastern districts had the smallest amount of equipment in their farm mechanic shops.

In some instances the variation between districts was great, while in others the percentages were quite uniform in the different districts. Table XII indicates that everyone of the schools in the Northwest district had tools for making rough wood farm appliances, whereas only 46 per cent of the schools in the Northeast district had such tools.

Eighty-two per cent of the schools in the Southeast district had tools for making rough wood farm appliances. All of the schools in the Northwest district and three-fourths of the schools in the Southwest district had tools for fitting handles, while 82 per cent in the Southeast district and 54 per cent in the Northeast district were equipped with these tools. From the table it is evident that the schools of the western part of the state are better equipped than those in the eastern part of the state, and that the northern part of the west side seems to have the advantage over the southern part.

There is a close correlation between the number and kind of tools in the school shops and the number and kind of tools on the farms. There is less correlation between fence building tools in the schools and on the farms because they are found on more farms than any other kind of tools, but they rank sixteenth in importance in school shops.

UNITS DONE ON THE FARMS. Table XIII and Figure 9 show the percentage of farms on which certain farm mechanic units had been done within the last year by someone other



TABLE NO. XIII

FARMS ON WHICH THE FARM MECHANICS UNITS LISTED BELOW HAVE BEEN DONE WITHIN THE LAST YEAR BY SOMEONE OTHER THAN A STUDENT OF VOCATIONAL AGRICULTURE

Questionnaires Returned	Southwest Dist.		Northwest Dist.		Southeast Dist.		Northeast Dist.		State		Kingfisher School	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	410	85	285	81	165	55	140	70	1000	75	27	100
1. Making rough wood farm appliances	141	34	112	50	68	41	66	47	417	42	23	85
2. Making finished farm appliances	67	16	83	29	33	20	26	19	209	21	9	33
3. Building farm buildings	125	30	115	40	59	36	56	40	355	36	16	59
4. Building a house	43	10	36	13	20	12	18	13	117	12	2	7.4
5. Painting	111	27	117	41	45	27	31	22	304	30	21	78
6. Rough concrete work	103	25	121	42	36	22	36	26	296	30	20	74
7. Finished concrete work	58	14	68	24	18	11	26	19	170	17	7	26
8. Building fences	239	58	184	65	94	57	80	57	597	60	21	78
9. Glazing	39	9.5	49	17	8	4.8	11	7.9	107	11	12	44
10. Freehand sketching	31	7.6	24	8.4	10	6.1	11	7.9	76	7.6	6	22
11. Farm drawing	35	8.5	34	12	16	10	19	14	104	10	4	15
12. Laying brick, tile or stone	70	17	75	26	27	16	30	21	202	20	14	52
13. Fitting handles	167	41	147	52	66	40	66	47	446	45	22	81
14. Figuring bills of material	138	34	110	39	52	32	44	31	344	34	21	78
15. Tempering metal	66	16	68	24	35	21	24	17	193	19	8	30
16. Installing plumbing fixtures	52	13	64	22	23	14	10	7.1	149	15	10	37
17. Upkeep and repair of pumps and windmills	182	44	172	60	44	27	33	24	431	43	27	100
18. Oiling harness	125	30	80	28	52	32	54	39	311	31	7	26
19. Riveting harness	158	39	132	46	71	43	61	44	422	42	12	44
20. Harness stitching	51	12	44	15	21	13	20	14	136	14	2	7.4
21. Rope making	59	14	38	13	7	4.2	4	2.9	108	11	6	22
22. Rope splicing	67	16	74	26	30	18	26	19	197	20	11	41
23. Tie 10 useful knots & hitches	59	14	77	27	27	16	27	19	190	19	18	67
24. Belt lacing	64	16	92	32	18	11	23	16	197	20	16	59
25. Installing shafting	24	5.9	59	21	9	5.5	6	4.3	98	10	11	41

(Continued on next page)

TABLE NO. XIII (Cont.)

FARMS ON WHICH THE FARM MECHANICS UNITS LISTED BELOW HAVE BEEN DONE WITHIN THE LAST YEAR BY SOMEONE OTHER THAN A STUDENT OF VOCATIONAL AGRICULTURE

	South- west Dist.	North- west Dist.	South- east Dist.	North- east Dist.	State	King- fisher School
Questionnaires Returned	No. %	No. %	No. %	No. %	No. %	No. %
	410: 85:	285: 81:	165: 55:	140: 70:	1000: 75:	27:100
26. Electric wiring	57: 14:	84: 29:	12: 7.3:	9: 6.4:	162: 16:	12: 44
27. Pipe cutting, threading & fitting	113: 28:	105: 37:	39: 24:	35: 25:	292: 29:	10: 37
28. Soldering	128: 31:	130: 46:	42: 25:	41: 29:	341: 34:	14: 52
29. Simple forging	78: 19:	76: 27:	30: 18:	32: 23:	216: 22:	8: 30
30. Welding	87: 21:	61: 21:	33: 20:	23: 16:	204: 20:	0: 0
31. Sharpening edge tools	201: 49:	217: 76:	89: 54:	73: 52:	580: 58:	24: 89
32. Sharpening bits	105: 26:	105: 37:	49: 30:	39: 28:	298: 30:	14: 52
33. Saw filing	155: 38:	120: 42:	86: 52:	60: 43:	421: 42:	18: 70
34. Overhauling imple- ments	132: 32:	130: 46:	46: 28:	34: 24:	342: 34:	24: 89
35. Minor adjustments of gas engines	101: 25:	115: 40:	42: 25:	29: 21:	287: 29:	12: 44
36. Upkeep and minor adjustments of automobile	200: 49:	174: 61:	74: 45:	59: 42:	507: 51:	27:100
37. Operation, upkeep and minor repair and adjustment of tractors	120: 29:	133: 47:	16: 9.7:	23: 16:	292: 29:	20: 74
38. Operation, upkeep and repair of combines	55: 13:	85: 30:	6: 3.6:	8: 5.7:	154: 15:	12: 44
39. Cutting metal	109: 27:	104: 36:	49: 30:	31: 22:	293: 29:	18: 67
40. Drilling holes in metal	132: 32:	136: 48:	56: 34:	42: 30:	366: 37:	21: 78
41. Overhaul car, truck, or tractor motors	140: 34:	139: 49:	43: 26:	43: 31:	365: 37:	14: 67
42. Overhaul trans- mission and rear end of car, truck or tractor	97: 24:	110: 39:	33: 23:	23: 20:	273: 27:	12: 44
43. Flastering	47: 11:	96: 34:	9: 5.5:	19: 14:	171: 17:	10: 37
44. Threading bolts and nuts	100: 24:	108: 38:	33: 20:	25: 18:	266: 27:	11: 41
45. Grind sickle	105: 26:	134: 47:	62: 38:	56: 40:	357: 36:	16: 59
46. Lay sewage tile	17: 4.1:	36: 13:	9: 5.5:	3: 2.1:	65: 6.5:	1: 3.7

FIGURE 9.

FARMS ON WHICH THE FARM MECHANICS UNITS LISTED BELOW  
HAVE BEEN DONE WITHIN THE LAST YEAR BY SOMEONE OTHER THAN A STUDENT OF  
VOCATIONAL AGRICULTURE.

<u>Units</u>	<u>% of Farms</u>	<u>Each (X) Represents 2% of the Farms</u>
1. Building fences.....	60	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
2. Sharpening edge tools.....	58	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
3. Upkeep, minor adjust- ments of automobiles.....	51	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
4. Fitting handles.....	45	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
5. Upkeep and repair of pumps and windmills.....	43	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
6. Making rough wood farm appliances.....	42	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
7. Saw filing.....	42	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
8. Riveting harness.....	42	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
9. Drilling holes in metal.....	37	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
10. Overhauling car, truck or tractor motor.....	37	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
11. Building farm buildings.....	36	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
12. Grinding sickle.....	36	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
13. Figuring bills of material.....	34	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
14. Soldering.....	34	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
15. Overhauling implements.....	34	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
16. Oil harness.....	31	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
17. Painting.....	30	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
18. Rough concrete work.....	30	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
19. Sharpening bits.....	30	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
20. Pipe cutting, threading and fitting.....	29	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
21. Minor adjustments of gas engines.....	29	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
22. Operation, upkeep, etc. of tractors.....	29	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
23. Cutting metal.....	29	XXXXXXXXXXXXXXXXXXXXXXXXXXXX



FIGURE 9. (Cont'd.)

FARMS ON WHICH THE FARM MECHANICS UNITS LISTED BELOW  
HAVE BEEN DONE WITHIN THE LAST YEAR BY SOMEONE OTHER THAN A STUDENT OF  
VOCATIONAL AGRICULTURE.

<u>Units</u>	<u>% of Farms</u>	<u>Each (X) Represents 2% of the Farms.</u>
24. Overhaul transmission, rear end of cars, etc.....	27	XXXXXXXXXXXXXXXXXX
25. Threading bolts and nuts.....	27	XXXXXXXXXXXXXXXXXX
26. Simple forging.....	22	XXXXXXXXXXXXXX
27. Making finished farm appliances.....	21	XXXXXXXXXXXXXX
28. Laying brick, tile or stone.....	20	XXXXXXXXXXXXXX
29. Rope splicing.....	20	XXXXXXXXXXXXXX
30. Welding.....	20	XXXXXXXXXXXXXX
31. Belt lacing.....	20	XXXXXXXXXXXXXX
32. Tempering metal.....	19	XXXXXXXXXXXXXX
33. Tie 10 useful knots and hitches.....	19	XXXXXXXXXXXXXX
34. Finished concrete work.....	17	XXXXXXXXXXXXXX
35. Plastering.....	17	XXXXXXXXXXXXXX
36. Electric wiring.....	16	XXXXXXXXXXXXXX
37. Installing plumbing fixtures.....	15	XXXXXXXXXXXXXX
38. Operation, upkeep, repair of combine.....	15	XXXXXXXXXXXXXX
39. Harness stitching.....	14	XXXXXXXXXXXXXX
40. Building a house.....	12	XXXXXXXXXXXXXX
41. Rope making.....	11	XXXXXXXXXXXXXX
42. Glazing.....	11	XXXXXXXXXXXXXX
43. Farm drawing.....	10	XXXXXXXXXXXXXX
44. Installing shafting.....	10	XXXXXXXXXXXXXX
45. Freehand sketching.....	7.6	XXXXXX
46. Laying sewage tile.....	6.5	XXXX

than a vocational agriculture student. Figure 9 indicates that fences were built on three-fifths of the farms by individuals not enrolled in vocational agriculture. The following jobs were done within the last year on from 42 to 58 per cent of the farms included in this study: fitting handles, saw filing, making rough wood appliances, upkeep and repair of pumps and windmills, sharpening edge tools, and the upkeep and minor adjustment of automobiles. Painting, rough concrete work, sharpening bits, laying brick, tile or stone, splicing rope, welding, and belt lacing were done on from 20 to 30 per cent of the farms. Finished concrete work, plastering, rope making, glazing, farm drawing, and installing shafting were done on from 10 to 17 per cent of the farms included in this study.

Table XIII shows that rough wood farm appliances were made on one-third of the farms in the Southwest district, half of the farms in the Northwest district, 41 per cent in the Southeast district, and 47 per cent in the Northeast district.

UNITS OF FARM MECHANICS DONE BY STUDENTS OF VOCATIONAL AGRICULTURE. Table XIV and Figure indicate the percentage of vocational agriculture students who have done certain farm mechanic units within the last year. Fence building was the most common of all work done; 84 per cent did this job. The percentage of students who had done handle fitting, making rough wood appliances, sharpening edge tools, upkeeping and minor adjustments of automobiles, and

TABLE NO. XIV

STUDENTS OF VOC. AGR. WHO HAVE DONE, WITHIN  
THE LAST YEAR, THE FARM MECHANICS UNITS LISTED BELOW

Questionnaires Returned	South- west Dist.		North- west Dist.		South- east Dist.		North- east Dist.		State		King- fisher School	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	410	85	285	81	165	55	140	70	1000	75	27	1000
1. Making rough wood farm appliances	236	58	178	62	89	54	62	44	565	24	24	89
2. Making finished farm appliances	78	19	82	29	21	13	26	19	207	21	14	52
3. Building farm buildings	130	32	94	33	58	35	42	30	324	32	15	56
4. Building a house	32	7.8	17	6	16	10	12	8.6	77	7.7	0	0
5. Painting	157	38	148	52	50	30	49	35	404	40	26	96
6. Rough concrete work	135	33	106	37	28	17	30	21	299	30	16	59
7. Finished concrete work	37	9	46	16	9	5.5	13	9.3	105	11	3	11
8. Building fences	309	75	268	94	141	85	119	85	837	84	23	85
9. Glazing	23	5.6	50	18	11	6.7	12	8.6	96	9.6	10	37
10. Freehand sketch- ing	53	14	69	24	17	10	25	18	169	17	12	44
11. Farm drawing	97	24	70	25	24	15	29	21	220	22	6	22
12. Laying brick, tile, or stone	46	11	48	17	21	13	26	19	141	14	4	15
13. Fitting handles	239	58	195	68	87	53	72	51	593	59	24	89
14. Figuring bills of material	141	34	135	47	50	30	53	38	379	38	9	33
15. Tempering metal	49	12	64	22	30	18	22	16	165	17	3	11
16. Installing plumbing fixtures	49	12	47	16	14	8.5	15	11	125	13	4	15
17. Upkeep and re- pair of pumps and windmills	202	49	164	58	39	24	35	25	440	44	25	92
18. Oiling harness	134	33	102	36	60	36	55	39	351	35	5	19
19. Riveting harness	192	47	175	61	32	50	70	50	519	52	12	44
20. Harness stitch- ing	29	7.1	30	11	16	9.7	11	7.9	86	8.6	3	11
21. Rope making	92	22	58	20	23	14	17	12	190	19	5	19
22. Rope splicing	80	20	66	23	42	25	35	25	223	22	4	15
23. Tie 10 useful knots and hitches	92	22	95	33	54	33	40	29	281	28	16	59
24. Belt lacing	66	16	90	32	20	12	22	16	198	20	14	52
25. Installing shafting	19	4.6	40	14	3	1.8	6	4.3	68	6.8	4	15

(Continued on next page)



TABLE NO. XIV. (Cont.)

STUDENTS OF VOC, AGR, WHO HAVE DONE, WITHIN  
THE LAST YEAR, THE FARM MECHANICS UNITS LISTED BELOW

	South- west Dist.	North- west Dist.	South- east Dist.	North- east Dist.	State	King- fisher School						
Questionnaires Returned	No. %	No. %	No. %	No. %	No. %	No. %						
	410	85	285	81	165	55	140	70	1000	75	27	100
26. Electric wiring	53	13	69	24	25	15	15	11	162	16	8	30
27. Pipe cutting, threading & fitt- ing	82	20	104	36	34	21	41	29	261	26	7	26
28. Soldering	142	35	145	51	50	30	42	30	379	38	15	56
29. Simple forging	62	15	75	26	36	22	30	21	203	20	8	30
30. Welding	24	5.9	22	7.7	13	7.9	10	7.1	69	6.9	1	3.7
31. Sharpening edge tools	260	63	212	74	99	60	91	65	662	66	25	93
32. Sharpening bits	90	22	101	35	43	26	27	19	261	26	7	26
33. Saw filing	134	33	107	38	70	42	43	31	354	35	10	37
34. Overhauling im- plements	118	29	132	46	35	21	32	23	317	32	16	59
35. Minor adjustments of gas engine	119	29	141	49	48	29	33	24	341	34	11	41
36. Upkeep and minor adjustments of automobiles	229	56	187	66	68	41	65	46	549	55	18	67
37. Operation, upkeep and minor repair and adjustment of tractors	124	30	144	51	18	11	18	13	304	30	21	78
38. Operation, repair and upkeep of combine	57	14	87	31	3	1.8	5	3.6	152	15	7	26
39. Cutting metal	120	29	123	43	42	25	40	29	325	33	21	78
40. Drilling holes in metal	175	43	164	57	56	34	45	32	439	44	17	63
41. Overhaul car, truck or tractor motors	105	26	106	37	34	21	27	19	272	27	8	30
42. Overhaul trans- mission and rear end of car, truck or tractor	59	14	68	24	27	16	16	11	170	17	3	11
43. Plastering	16	3.9	51	18	11	6.7	10	7.1	88	8.8	4	15
44. Threading bolts and nuts	83	20	101	35	40	24	28	20	252	25	9	33
45. Grind sickle	98	24	129	45	77	47	63	45	367	37	15	56
46. Lay sewage tile	18	4.4	28	9.8	10	6.1	6	4.3	62	6.2	2	7.4

FIGURE 10.

STUDENTS OF VOCATIONAL AGRICULTURE WHO HAVE DONE  
WITHIN THE LAST YEAR THE FARM MECHANICS UNITS LISTED BELOW

Units	% of Students	Each (X) Represents 2% of the Students.
1. Building fences.....	84	XX
2. Sharpening edge tools.....	66	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
3. Fitting handles.....	59	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
4. Making rough wood farm appliances.....	57	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
5. Upkeep, minor adjust- ments of automobiles..	55	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
6. Riveting harness.....	52	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
7. Upkeep and repair of pumps and windmills...	44	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
8. Drilling holes in metal.....	44	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
9. Painting.....	40	XXXXXXXXXXXXXXXXXXXX
10. Figuring bills of material.....	38	XXXXXXXXXXXXXXXXXXXX
11. Soldering.....	38	XXXXXXXXXXXXXXXXXXXX
12. Grinding sickle.....	37	XXXXXXXXXXXXXXXXXXXX
13. Oiling harness.....	35	XXXXXXXXXXXXXXXXXXXX
14. Saw filing.....	35	XXXXXXXXXXXXXXXXXXXX
15. Minor adjustments of gas engines.....	34	XXXXXXXXXXXXXXXXXXXX
16. Cutting metal.....	33	XXXXXXXXXXXXXXXXXXXX
17. Building farm buildings.....	32	XXXXXXXXXXXXXXXXXXXX
18. Overhauling implements	32	XXXXXXXXXXXXXXXXXXXX
19. Rough concrete work...	30	XXXXXXXXXXXXXXXXXXXX
20. Operation, upkeep, etc. of tractors.....	30	XXXXXXXXXXXXXXXXXXXX
21. Tie 10 useful knots and hitches.....	28	XXXXXXXXXXXXXXXXXXXX
22. Overhaul car, truck or tractor motor.....	27	XXXXXXXXXXXXXXXXXXXX
23. Pipe cutting, thread- ing and fitting.....	26	XXXXXXXXXXXXXXXXXXXX

FIGURE 10. (Cont'd.)

STUDENTS OF VOCATIONAL AGRICULTURE WHO HAVE DONE  
WITHIN THE LAST YEAR THE FARM MECHANICS UNITS LISTED BELOW

<u>Units</u>	<u>% of Students</u>	<u>Each (X) Represents 2% of the Students</u>
24. Sharpening bits.....	26	XXXXXXXXXXXXX
25. Threading bolts & nuts...	25	XXXXXXXXXXXXX
26. Farm drawing.....	22	XXXXXXXXXXXXX
27. Rope splicing.....	22	XXXXXXXXXXXXX
28. Making finished farm appliances.....	21	XXXXXXXXXXXXX
29. Belt lacing.....	20	XXXXXXXXXXXXX
30. Simple forging.....	20	XXXXXXXXXXXXX
31. Rope making.....	19	XXXXXXXXXXXXX
32. Freehand sketching.....	17	XXXXXXXXXXXXX
33. Tempering metal.....	17	XXXXXXXXXXXXX
34. Overhaul transmission, rear end of cars, etc....	17	XXXXXXXXXXXXX
35. Electric wiring.....	17	XXXXXXXXXXXXX
36. Operation, repair, upkeep of combine.....	15	XXXXXXXXXXXXX
37. Laying brick, tile, or stone.....	14	XXXXXXXXXXXXX
38. Installing plumbing fixtures.....	13	XXXXXXXXXXXXX
39. Finished concrete work.....	11	XXXXXXXXXXXXX
40. Glazing.....	9.6	XXXXXXXXXXXXX
41. Plastering.....	8.8	XXXXXXXXXXXXX
42. Harness stitching.....	8.6	XXXXXXXXXXXXX
43. Building a house.....	7.7	XXXXXXXXXXXXX
44. Welding.....	6.9	XXXXXXXXXXXXX
45. Installing shafting.....	6.8	XXXXXXXXXXXXX
46. Laying sewage tile.....	6.2	XXXXXXXXXXXXX



riveting harness, ranged from 52 per cent to 66 per cent in the order named. Forty-four per cent of the students had done pump and windmill repairing, and drilling holes in metal, while 40 per cent had done painting. Fewer than two-fifths of the students included in this study had done any of the other mechanics units listed in Table XIV and Figure 10. Fewer than one-tenth of the boys had done plastering, glazing, harness stitching, welding, building a house, laying sewage tile, or installing shafting. About one-fifth of the students had done belt lacing, simple forging, rope making, splicing of rope, and farm drawing, or had made finished farm appliances.

The percentage of students who had done certain units was quite uniform; for instance, 60 per cent of the boys in the Southeast district had sharpened edge tools within the last year, while 74 per cent in the Northwest district, 63 per cent in the Southwest district, and 65 per cent in the Northeast district had performed this unit.

In a few cases, however, there were wide variations in the number of pupils in the different districts who had done various farm mechanic jobs. The operation, upkeep and minor repair and adjustment of tractors had been done by 41 per cent of the students in the Northwest district while only 11 per cent in the Southeast district, 13 per cent in the Northeast district, and 30 per cent in the Southwest district reported that they had done this unit. Thirty-

one per cent of the pupils in the Northwest district reported that they had operated, adjusted, and repaired combines, whereas, 14 per cent in the Southwest district, 3.6 per cent in the Northeast district, and only 1.8 per cent in the Southeast district had done these farm mechanic units within the last year.

If the factor, "What the students have done", should be considered alone, very little farm mechanics should be taught. This is, however, only one of the factors in determining subject matter content.

#### UNITS OF FARM MECHANICS THAT SCHOOLS ARE NOW OFFERING.

Table XV and Figure 11 give information on schools which are including certain farm mechanics units in their teaching plan this year (1937-1938). The making of rough wood farm appliances is being taught in 88 per cent of the schools this year. Each of the following jobs is being taught in 76 per cent of the schools: figuring bills of material, sharpening edge tools, and saw filing. Seventy per cent are offering rough concrete work and more than half of the schools are offering painting, sharpening bits, tying useful knots and hitches, soldering, splicing rope, and harness oiling. All of the other units, except installing shafting and building a house, are being taught in from 10 to 50 per cent of the schools this year (1937-1938).

Making rough wood farm appliances is being taught in 82 per cent of the schools in the Northeast district, in 88 per cent in the Southwest district, in 75 per cent in

TABLE NO. XV

SCHOOLS WHICH ARE NOW TEACHING  
THE FARM MECHANICS UNITS LISTED BELOW

Questionnaires Returned	South- west Dist.		North- west Dist.		South- east Dist.		North- east Dist.		State	
	No.:	%	No.:	%	No.:	%	No.:	%	No.:	%
	32		27		16		11		86	
1. Making rough wood farm appliances	28	88	27	100	12	75	9	82	76	88
2. Making finished farm appliances	11	34	13	48	6	38	7	64	37	43
3. Building farm buildings	13	41	13	48	5	31	3	27	34	40
4. Building a house	2	6.5	3	11	1	6.3	0	0	6	7
5. Painting	20	63	22	81	6	38	6	55	54	63
6. Rough concrete work	21	66	23	85	10	63	6	55	60	70
7. Finished concrete work	8	25	13	48	5	31	3	27	29	34
8. Building fences	11	34	20	74	6	38	5	45	42	49
9. Glazing	4	13	8	30	2	13	2	18	16	19
10. Freehand sketch- ing	11	34	16	59	2	13	6	55	35	41
11. Farm drawing	12	38	19	70	3	19	4	36	38	44
12. Laying brick, tile or stone	8	25	5	19	2	13	1	9.1	16	19
13. Fitting handles	21	66	25	93	9	56	6	55	61	71
14. Figuring bills of material	21	66	26	96	9	56	9	82	65	76
15. Tempering metal	6	19	11	41	3	19	3	27	23	27
16. Installing plumb- ing fixtures	9	28	14	52	1	6.3	3	27	27	31
17. Upkeep and repair of pumps and windmills	9	28	8	30	0	0	2	18	19	22
18. Oiling harness	17	53	17	63	9	56	5	45	48	56
19. Riveting harness	14	44	14	52	8	50	5	45	41	48
20. Harness stitching	10	31	12	44	7	44	4	36	33	38
21. Rope making	14	44	12	44	5	31	3	27	34	40
22. Rope splicing	18	56	19	70	6	38	6	55	49	57
23. Tie 10 useful knots and hitches	19	59	20	74	7	44	6	55	52	60
24. Belt lacing	11	34	14	52	3	19	2	18	30	35
25. Installing shafting	4	13	3	11	0	0	0	0	7	8.1

(Continued on next page)



TABLE NO. XV (Cont.)

SCHOOLS WHICH ARE NOW TEACHING  
THE FARM MECHANICS UNITS LISTED BELOW

Questionnaires Returned	South- west Dist.		North- west Dist.		South- east Dist.		North- east Dist.		State	
	No.:	%	No.:	%	No.:	%	No.:	%	No.:	%
	32		27		16		11		86	
26. Electric wiring	8	25	16	59	0	0	5	45	29	34
27. Pipe cutting, threading & fitting:	9	28	14	52	2	13	3	27	28	33
28. Soldering	15	47	17	63	9	56	8	73	49	57
29. Simple forging	5	16	8	30	5	31	3	27	21	24
30. Welding	2	6.3	8	30	0	0	2	18	12	14
31. Sharpening edge tools	19	59	27	100	11	69	8	73	65	76
32. Sharpening bits	15	47	21	78	9	56	7	64	52	60
33. Saw filing	21	66	26	96	10	63	8	73	65	76
34. Overhauling imple- ments	12	38	20	74	6	38	5	45	43	50
35. Minor adjustments of gas engines	5	16	17	63	5	31	5	45	37	43
36. Upkeep and minor adjustments of automobiles	7	22	13	48	1	6.3	4	36	25	29
37. Operation, upkeep, and repair of combine	3	9.4	11	41	1	6.3	1	9.1	16	19
38. Operation, upkeep, and minor repair and adjustment of tractors	6	19	22	81	0	0	2	18	20	23
39. Cutting metal	9	28	11	41	3	19	5	45	28	33
40. Drilling holes in metal	9	28	15	56	4	26	5	45	33	38
41. Overhaul car, truck or tractor motors,	5	16	8	30	0	0	1	9.1	14	16
42. Overhaul trans- mission and rear end of car, truck or tractor	4	13	5	19	0	0	0	0	9	10
43. Plastering	2	6.3	7	26	0	0	1	9.1	10	12
44. Threading bolts and nuts	7	22	12	44	4	26	6	55	29	34
45. Grind sickle	6	19	9	33	5	31	5	45	25	29
46. Lay sewage tile	6	19	6	22	0	0	3	27	15	17



FIGURE 11. (Cont'd.)

SCHOOLS IN WHICH THE PAIR MECHANICS  
UNITS LISTED BELOW ARE NOW BEING TAUGHT

<u>Units</u>	<u>% of Schools</u>	<u>Each (X) Represents 2% of Schools</u>
24. Belt lacing.....	35	XXXXXXXXXXXXXXXXXXXX
25. Electric wiring.....	34	XXXXXXXXXXXXXXXXXXXX
26. Threading bolts and nuts.....	34	XXXXXXXXXXXXXXXXXXXX
27. Finished concrete work.....	34	XXXXXXXXXXXXXXXXXXXX
28. Pipe cutting, thread- ing and fitting.....	33	XXXXXXXXXXXXXXXXXXXX
29. Cutting metal.....	33	XXXXXXXXXXXXXXXXXXXX
30. Installing plumbing fixtures.....	31	XXXXXXXXXXXXXXXXXXXX
31. Upkeep, minor adjust- ment of automobiles.....	29	XXXXXXXXXXXXXXXXXXXX
32. Grinding sickle.....	29	XXXXXXXXXXXXXXXXXXXX
33. Tempering metal.....	27	XXXXXXXXXXXXXXXXXXXX
34. Simple forging.....	24	XXXXXXXXXXXXXXXXXXXX
35. Operation, upkeep, etc. of tractors.....	23	XXXXXXXXXXXXXXXXXXXX
36. Upkeep, repair of pumps and windmills.....	22	XXXXXXXXXXXXXXXXXXXX
37. Operation, upkeep, repair of combine.....	19	XXXXXXXXXXXXXXXXXXXX
38. Glazing.....	19	XXXXXXXXXXXXXXXXXXXX
39. Laying brick, tile or stone.....	19	XXXXXXXXXXXXXXXXXXXX
40. Lay sewage tile.....	17	XXXXXXXXXXXXXXXXXXXX
41. Overhaul car, truck or tractor motors.....	16	XXXXXXXXXXXXXXXXXXXX
42. Welding.....	14	XXXXXXXXXXXXXXXXXXXX
43. Plastering.....	12	XXXXXXXXXXXXXXXXXXXX
44. Overhaul transmission rear end of cars, etc....	10	XXXXXXXXXXXXXXXXXXXX
45. Installing shafting.....	8.1	XXXXXXXXXXXXXXXXXXXX
46. Building a house.....	7.0	XXXXXXXXXXXXXXXXXXXX



the Southeast, and in all of the schools of the Northwest district. Painting is being taught in 81 per cent of the schools in the Northwest district, in 63 per cent in the Southwest district, in 55 per cent in the Northeast and in only 38 per cent of the schools in the Southeast district. None of the schools in the Southeast district are offering instruction in operation, upkeep, and minor repair and adjustment of tractors, while 44 per cent in the Northwest district are giving instruction in this unit. In the Northeast district 18 per cent of the schools are offering instruction in this unit, while it is taught in 19 per cent of the schools of the Southwest district.

The types of farming practiced in the different districts can be largely determined by studying the types of farm mechanic units which are being taught in those districts as indicated in Table XV.

#### PUPILS' CHOICE OF FARM MECHANIC UNITS TO BE TAUGHT.

Tying ten useful knots and hitches, and sharpening edge tools are the two most important units to be included in a course in farm mechanics instruction if the opinions of 62 per cent of the students surveyed are to be relied upon. Table XVI and Figure 12 show that, next in importance, according to the students, are the making of rough wood appliances and figuring bills of material. Sixty-one per cent thought that those units should be included in the teaching program. Students of the different districts expressed but little difference of opinion on these

STUDENTS OF VOC, AGR. WHO THINK THE FARM MECHANICS  
UNITS LISTED BELOW SHOULD BE TAUGHT IN VOC, AGR. COURSES

Questionnaires Returned	:South- :west :Dist.		:North- :west :Dist.		:South- :east :Dist.		:North- :east :Dist.		:King- :State :School		
	:No.:	%	:No.:	%	:No.:	%	:No.:	%	:No.:	%	
	410:	85:	285:	81:	165:	55:	140:	70:	1000:	75:	27:100
1. Making rough wood farm appliances	:244:	60:	184:	65:	86:	52:	92:	66:	606:	61:	24: 89
2. Making finished farm appliances	:196:	48:	137:	48:	84:	51:	82:	59:	499:	50:	18: 67
3. Building farm buildings	:210:	51:	134:	47:	83:	50:	81:	58:	508:	51:	21: 78
4. Building a house	:133:	32:	67:	24:	63:	38:	57:	41:	320:	32:	2: 7.4
5. Painting	:218:	53:	131:	46:	100:	61:	78:	56:	527:	53:	20: 74
6. Rough Concrete work	:214:	52:	146:	51:	74:	45:	91:	65:	525:	53:	22: 81
7. Finished concrete work	:184:	45:	141:	49:	76:	46:	78:	56:	479:	48:	16: 59
8. Building fences	:179:	44:	142:	50:	67:	41:	86:	61:	474:	47:	18: 67
9. Glazing	:117:	29:	94:	33:	47:	28:	55:	39:	313:	31:	16: 59
10. Freehand sketch- ing	:171:	42:	115:	40:	65:	39:	71:	51:	422:	42:	11: 41
11. Farm drawing	:226:	52:	146:	51:	85:	52:	86:	61:	543:	54:	16: 59
12. Laying brick, tile, or stone	:210:	51:	125:	44:	92:	56:	68:	49:	495:	50:	16: 59
13. Fitting handles	:204:	50:	157:	55:	72:	44:	78:	56:	511:	51:	19: 70
14. Figuring bills of material	:252:	61:	177:	62:	96:	58:	86:	61:	611:	61:	24: 89
15. Tempering metal	:186:	45:	115:	40:	83:	50:	75:	54:	459:	46:	18: 67
16. Installing plumb- ing	:162:	40:	123:	43:	71:	43:	63:	45:	419:	42:	15: 56
17. Upkeep and re- pair of pumps and windmills	:176:	43:	136:	48:	72:	44:	69:	49:	453:	45:	13: 48
18. Oiling harness	:155:	38:	129:	45:	78:	47:	83:	59:	445:	45:	15: 56
19. Riveting harness	:152:	37:	127:	45:	84:	51:	77:	55:	440:	44:	11: 41
20. Harness stitch- ing	:149:	36:	124:	44:	79:	48:	63:	45:	415:	42:	19: 70
21. Rope making	:247:	60:	147:	52:	95:	58:	88:	63:	577:	58:	18: 67
22. Rope splicing	:211:	51:	148:	52:	85:	52:	94:	67:	538:	54:	24: 89
23. Tie 10 useful knots & hitches	:236:	58:	170:	60:	107:	65:	104:	74:	617:	62:	20: 74
24. Belt lacing	:171:	42:	149:	52:	81:	49:	72:	52:	474:	47:	20: 74
25. Installing shafting	:111:	27:	88:	31:	58:	35:	62:	44:	319:	32:	10: 37

(Continued on next page)

STUDENTS OF VOC. AGR. WHO THINK THE FARM MECHANICS  
UNITS LISTED BELOW SHOULD BE TAUGHT IN VOC. AGR. COURSES

Questionnaires Returned	:South- :west :Dist.		:North- :west :Dist.		:South- :east :Dist.		:North- :east :Dist.		: State : School		:King- :fisher :School	
	:No.:	%	:No.:	%	:No.:	%	:No.:	%	:No.:	%	:No.:	%
	:410:	85:	285:	81:	165:	55:	140:	70:	1000:	75:	27:	100
26. Electric wiring	:207:	50:	155:	54:	81:	49:	76:	54:	519:	52:	22:	81
27. Pipe cutting, threading & fitting	:192:	47:	154:	54:	87:	53:	75:	54:	508:	51:	23:	85
28. Soldering	:188:	46:	154:	54:	90:	55:	92:	66:	524:	52:	22:	81
29. Simple forging	:181:	44:	155:	54:	77:	47:	91:	65:	504:	50:	21:	78
30. Welding	:191:	47:	111:	39:	86:	52:	80:	57:	468:	47:	9:	33
31. Sharpening edge tools	:239:	58:	189:	66:	105:	64:	91:	65:	624:	62:	23:	85
32. Sharpening bits	:214:	52:	159:	56:	102:	62:	85:	61:	560:	56:	21:	78
33. Saw filing	:224:	55:	177:	62:	112:	68:	85:	61:	598:	60:	25:	92
34. Overhauling imple- ments	:177:	43:	135:	47:	78:	47:	74:	53:	441:	46:	18:	67
35. Minor adjustments of gas engines	:142:	35:	115:	40:	59:	36:	62:	44:	378:	38:	10:	37
36. Upkeep and minor adjustments of automobile	:156:	38:	117:	41:	68:	41:	44:	31:	385:	39:	10:	37
37. Operation, upkeep and minor repair and adjustments of tractor	:179:	44:	133:	47:	69:	42:	64:	46:	445:	45:	19:	70
38. Operation, upkeep and repair of combine	:136:	33:	109:	38:	57:	35:	61:	44:	363:	36:	9:	33
39. Cutting metal	:156:	38:	123:	43:	88:	53:	83:	59:	450:	45:	17:	63
40. Drilling holes in metal	:174:	42:	127:	45:	89:	54:	77:	55:	467:	47:	10:	37
41. Overhaul car, truck, or tractor motors	:157:	38:	120:	42:	61:	37:	62:	44:	400:	40:	17:	63
42. Overhaul trans- mission and rear end of car, truck or tractor	:145:	35:	103:	36:	58:	35:	53:	38:	359:	36:	10:	37
43. Plastering	:158:	39:	110:	39:	72:	44:	71:	51:	411:	41:	19:	70
44. Threading bolts and nuts	:177:	43:	147:	52:	85:	52:	83:	59:	492:	49:	20:	74
45. Grind sickle	:194:	47:	144:	51:	85:	52:	86:	61:	509:	51:	21:	78
46. Lay sewage tile	:122:	30:	93:	33:	50:	30:	58:	41:	323:	32:	10:	37



FIGURE 12.

PERCENTAGE OF VOCATIONAL AGRICULTURE STUDENTS WHO THINK THE FARM MECHANIC UNITS LISTED BELOW SHOULD BE INCLUDED IN THE VOCATIONAL AGRICULTURE COURSE.

<u>Units</u>	<u>% of Students</u>	<u>Each (X) Represents 2% of the Students.</u>
1. Sharpening edge tools.....	62	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
2. Tie 10 useful knots and hitches.....	62	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
3. Making rough wood farm appliances.....	61	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
4. Figuring bills of material.....	61	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
5. Saw filing.....	60	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
6. Rope making.....	58	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
7. Sharpening bits.....	56	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
8. Farm drawing.....	54	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
9. Rope splicing.....	54	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
10. Rough concrete work.....	53	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
11. Painting.....	53	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
12. Electric wiring.....	52	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
13. Soldering.....	52	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
14. Pipe cutting, threading and fitting.....	51	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
15. Grind sickle.....	51	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
16. Building farm buildings.....	51	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
17. Fitting handles.....	51	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
18. Simple forging.....	50	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
19. Making finished farm appliances.....	50	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
20. Laying brick, tile or stone.....	50	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
21. Threading bolts and nuts.....	49	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
22. Finished concrete work.....	48	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
23. Welding.....	47	XXXXXXXXXXXXXXXXXXXXXXXXXXXX

FIGURE 12. (Cont'd.)

PERCENTAGE OF VOCATIONAL AGRICULTURE STUDENTS WHO THINK  
THE FARM MECHANIC UNITS LISTED BELOW SHOULD BE INCLUDED IN THE  
VOCATIONAL AGRICULTURE COURSE.

<u>Units</u>	<u>% of Students</u>	<u>Each (X) Represents 2% of the Students.</u>
24. Drilling holes in metal...	47	XXXXXXXXXXXXXXXXXXXXXXXXXX
25. Building fences.....	47	XXXXXXXXXXXXXXXXXXXXXXXXXX
26. Belt lacing.....	47	XXXXXXXXXXXXXXXXXXXXXXXXXX
27. Tempering metal.....	46	XXXXXXXXXXXXXXXXXXXXXXXXXX
28. Overhauling implements.....	46	XXXXXXXXXXXXXXXXXXXXXXXXXX
29. Operation, upkeep., etc. of tractors.....	45	XXXXXXXXXXXXXXXXXXXXXXXXXX
30. Cutting metal.....	45	XXXXXXXXXXXXXXXXXXXXXXXXXX
32. Oiling harness.....	45	XXXXXXXXXXXXXXXXXXXXXXXXXX
33. Riveting harness.....	44	XXXXXXXXXXXXXXXXXXXXXXXXXX
34. Freehand sketching.....	42	XXXXXXXXXXXXXXXXXXXXXXXXXX
35. Installing plumbing fixtures.....	42	XXXXXXXXXXXXXXXXXXXXXXXXXX
36. Harness stitching.....	42	XXXXXXXXXXXXXXXXXXXXXXXXXX
37. Plastering.....	41	XXXXXXXXXXXXXXXXXXXXXXXXXX
38. Overhauling car, truck or tractor motors.....	40	XXXXXXXXXXXXXXXXXXXXXXXXXX
39. Upkeep, minor adjustments of automobiles.....	39	XXXXXXXXXXXXXXXXXXXXXXXXXX
40. Minor adjustments of gas engines.....	38	XXXXXXXXXXXXXXXXXXXXXXXXXX
41. Operation, upkeep, repair of combine.....	36	XXXXXXXXXXXXXXXXXXXXXXXXXX
42. Overhaul transmission rear end of cars, etc.....	36	XXXXXXXXXXXXXXXXXXXXXXXXXX
43. Installing shafting.....	32	XXXXXXXXXXXXXXXXXXXXXXXXXX
44. Building a house.....	32	XXXXXXXXXXXXXXXXXXXXXXXXXX
45. Lay sewage tile.....	32	XXXXXXXXXXXXXXXXXXXXXXXXXX
46. Glazing.....	31	XXXXXXXXXXXXXXXXXXXXXXXXXX

units. The percentage ranged from 54 to 60 on the units of saw filing, rope making, splicing rope, farm drawing, and sharpening bits. Half of the students thought that simple forging, making finished farm appliances, and laying brick, tile, or stone should be included in the vocational agriculture course. Building a house, laying sewage tile, and glazing received the least consideration by vocational agriculture students; only 31 to 32 per cent thought these units were necessary.

It is significant that only 44 per cent of the students thought that harness repair should be a part of the farm mechanics course since Figure 4 shows that work stock is found on 87 per cent of the farms. The repair and upkeep of tractors was ranked above harness repair although tractors are found on only about half as many farms as are horses.

The fact that laying brick, tile or stone was desired in the program by 50 per cent of the students is probably due to the desire for better houses and more desirable living conditions on the farm home. There is some correlation between this and the amount of native building material over the state. Although the number of automobiles is comparatively low in the Southeast district of the state, 38 per cent of the students selected the operation, care and overhauling of the automobile as a part of the farm mechanics course. Thirty-six to 39 per cent of the pupils surveyed thought that the overhauling



and operation of tractors, combines and stationary gas engines should be included in the farm mechanics course. Thirty-eight per cent of the students in the Northwest district selected operation of the combine, compared to 35 per cent in the Southeast district. It seems that the students of the Southeast district have not kept in mind that combines are not common in their part of the state; consequently it is doubtful if this unit should be taught students in the eastern part of the state.

Another interesting observation is made when the information given in this table is compared with that in Table XVII, in which the teachers give opinions on the same subject. It is noticeable that practically the same units of instruction were given preference in both tables; however, a smaller percentage of students believed these units important compared with the percentage of teachers who thought the same.

UNITS SELECTED BY TEACHERS TO BE USED IN THE FARM MECHANICS PROGRAM. Figure 13 shows that 97 per cent of the teachers of the state selected making rough wood appliances as being the most important unit of instruction in farm mechanics. In the Northwest district this unit was considered most important by 100 per cent of the teachers; 98 per cent in the Northeast, 95 per cent in the Southwest; and 94 per cent of the teachers in the Southeast considered it most important. Rough concrete work was next on the list with a total of 91 per cent.

TABLE NO. XVII

TEACHERS WHO THINK THE FARM MECHANICS UNITS  
LISTED BELOW SHOULD BE TAUGHT IN COURSES OF VOC. AGR.

	South-	North-	South-	North-	State
	west	west	east	east	
	Dist.	Dist.	Dist.	Dist.	
Questionnaires	No.:	No.:	No.:	No.:	No.:
Returned	40	30	17	14	101
	%	%	%	%	%
1. Making rough wood farm appliances	38 : 95	30 : 100	16 : 94	14 : 100	98 : 97
2. Making finished farm appliances	25 : 63	19 : 63	13 : 76	10 : 71	67 : 66
3. Building farm buildings	32 : 80	21 : 70	9 : 53	10 : 71	72 : 71
4. Building a house	11 : 28	8 : 27	5 : 29	4 : 29	28 : 28
5. Painting	33 : 83	29 : 97	13 : 76	10 : 71	85 : 84
6. Rough concrete work	35 : 88	29 : 97	15 : 88	13 : 93	92 : 91
7. Finished concrete work	22 : 55	19 : 63	9 : 53	8 : 57	58 : 57
8. Building fences	28 : 70	26 : 87	14 : 82	10 : 71	78 : 77
9. Glazing	12 : 30	14 : 47	7 : 41	7 : 50	40 : 40
10. Freehand sketch- ing	19 : 48	19 : 63	9 : 53	12 : 86	59 : 58
11. Farm drawing	28 : 70	23 : 77	12 : 71	9 : 64	72 : 71
12. Laying brick, tile or stone	21 : 53	16 : 53	9 : 53	8 : 57	54 : 53
13. Fitting handles	34 : 85	30 : 100	16 : 94	11 : 79	91 : 90
14. Figuring bills of material	35 : 88	28 : 93	13 : 76	11 : 79	87 : 86
15. Tempering metal	22 : 55	21 : 70	7 : 41	8 : 57	58 : 57
16. Installing plumb- ing fixtures	26 : 65	20 : 67	7 : 41	6 : 43	59 : 58
17. Upkeep and repair of pumps and windmills	27 : 68	22 : 73	7 : 41	10 : 71	66 : 65
18. Oiling harness	31 : 78	23 : 77	15 : 88	11 : 79	80 : 79
19. Riveting harness	30 : 75	25 : 83	15 : 88	11 : 79	81 : 80
20. Harness stitching	28 : 70	19 : 63	12 : 71	10 : 71	69 : 68
21. Rope making	21 : 53	16 : 53	7 : 41	6 : 43	50 : 50
22. Rope splicing	30 : 75	23 : 77	12 : 71	12 : 86	77 : 76
23. Tie 10 useful knots & hitches	33 : 83	19 : 63	15 : 88	12 : 86	79 : 78
24. Belt lacing	19 : 48	26 : 87	9 : 53	7 : 50	61 : 60
25. Installing shafting	12 : 30	11 : 37	5 : 29	4 : 29	32 : 32

( Continued on next page )

TABLE NO. XVII (Cont.)

TEACHERS WHO THINK THE FARM MECHANICS UNITS  
LISTED BELOW SHOULD BE TAUGHT IN COURSES OF VOC. AGRIC.

Questionnaires Returned	South- west Dist.		North- west Dist.		South- east Dist.		North- east Dist.		State	
	No.	%	No.	%	No.	%	No.	%	No.	%
	40		30		17		14		101	
26. Electric wiring	28	70	23	77	8	47	11	79	70	69
27. Pipe cutting, threading & fitting	26	65	24	80	14	82	11	79	75	74
28. Soldering	33	83	28	93	16	94	12	86	89	88
29. Simple forging	30	75	26	87	13	76	11	79	80	79
30. Welding	14	35	11	37	8	47	5	36	38	38
31. Sharpening edge tools	31	78	29	97	16	94	12	86	88	87
32. Sharpening bits	30	75	29	97	14	82	12	86	85	84
33. Saw filing	33	83	30	100	16	94	12	86	91	90
34. Overhauling im- plements	32	80	29	97	13	76	11	79	85	84
35. Minor adjustments of gas engines	30	75	29	97	13	76	11	79	83	82
36. Upkeep and minor adjustments of automobiles	26	65	26	87	9	53	10	71	71	70
37. Operation, upkeep and repair of combine	22	55	22	73	2	12	3	21	49	49
38. Operation, upkeep and minor repair and adjustment of tractors	24	60	27	90	9	53	8	57	68	67
39. Cutting metal	20	50	21	70	10	59	9	64	60	59
40. Drilling holes in metal	23	58	23	77	13	76	11	79	70	69
41. Overhaul car, truck or tractor motors	18	45	16	53	6	35	4	29	44	44
42. Overhaul trans- mission & rear end of car, truck or tractor	8	20	11	37	5	29	3	21	27	27
43. Plastering	13	33	11	37	5	29	6	43	33	33
44. Threading bolts and nuts	23	58	23	77	11	65	12	86	69	68
45. Grind sickle	24	60	24	80	13	76	10	71	71	70
46. Lay sewage tile	24	60	17	57	10	59	9	64	60	59





FIGURE 13. (Cont'd.)

PERCENTAGE OF TEACHERS WHO THINK THE FARM MECHANIC UNITS LISTED BELOW SHOULD BE INCLUDED IN COURSES OF VOCATIONAL AGRICULTURE

Units	% of Teachers	Each (X) Represents 3% of the Teachers.
24. Harness stitching.....	68	XXXXXXXXXXXXXXXXXXXXXXXXXX
25. Threading bolts and nuts..	68	XXXXXXXXXXXXXXXXXXXXXXXXXX
26. Operation, upkeep, etc. of tractors.....	67	XXXXXXXXXXXXXXXXXXXXXXXXX
27. Making finished farm appliances.....	66	XXXXXXXXXXXXXXXXXXXXXXXXX
28. Upkeep, repair of pumps and windmills.....	65	XXXXXXXXXXXXXXXXXXXXXXXXX
29. Belt lacing.....	60	XXXXXXXXXXXXXXXXXXXXXXXX
30. Lay sewage tile.....	59	XXXXXXXXXXXXXXXXXXXXXXXX
31. Cutting metal.....	59	XXXXXXXXXXXXXXXXXXXXXXXX
32. Freehand sketching.....	58	XXXXXXXXXXXXXXXXXXXXXXXX
33. Installing plumbing fixtures.....	58	XXXXXXXXXXXXXXXXXXXXXXXX
34. Finished concrete work....	57	XXXXXXXXXXXXXXXXXXXXXXXX
35. Tempering metal.....	57	XXXXXXXXXXXXXXXXXXXXXXXX
36. Laying brick, tile or stone.....	53	XXXXXXXXXXXXXXXXXXXXXXXX
37. Rope making.....	50	XXXXXXXXXXXXXXXXXXXXXXXX
38. Operation, upkeep, repair of combine.....	49	XXXXXXXXXXXXXXXXXXXXXXXX
39. Overhaul car, truck, tractor motor.....	44	XXXXXXXXXXXXXXXXXXXXXX
40. Glazing.....	40	XXXXXXXXXXXXXXXXXXXX
41. Welding.....	38	XXXXXXXXXXXXXXXXXXXX
42. Grinding sickle.....	35	XXXXXXXXXXXXXXXXXXXX
43. Plastering.....	33	XXXXXXXXXXXXXXXXXXXX
44. Installing shafting.....	32	XXXXXXXXXXXXXXXXXXXX
45. Building a house.....	28	XXXXXXXXXXXXXXXXXXXX
46. Overhaul transmission, rear end of cars, etc.....	27	XXXXXXXXXXXXXXXXXXXX

There seems to be quite a difference between the students' and teachers' selections as concrete work was selected only by 50 per cent of the students. (Figure 12)

Fitting handles ranked third along with saw filing, since 90 per cent of the teachers thought it important. Eighty-eight per cent of the teachers surveyed listed soldering as being an important unit of instruction, but only 52 per cent of the students had that opinion. This variation in opinion can likely be accounted for in that the students have not had training in this type of work and they think it is more complicated and that it requires more equipment to do soldering jobs, than do the teachers. Sharpening edge tools, ranked first by the students, was given sixth place by the teachers. Figuring bills of material ranked seventh in the opinion of 86 per cent of the teachers. Overhauling implements ranked eighth in the opinion of 84 per cent of the teachers. It seems that the teachers should show a closer correlation between the repair of tractors, combines, implements, cars and gas engines, but they selected them in the following order: minor repair and adjustment of gas engines would be included by 82 per cent of the teachers; upkeep and minor adjustments of automobiles by 70 per cent; operation and upkeep of tractors by 67 per cent; and operation of combines by only 49 per cent of the teachers; overhauling and major repair jobs of car, truck, or tractor should be included in the program in the opinion of 44 per cent of



the teachers. Instruction in transmission overhauling and repairing of car differentials was last in importance in the opinion of the teachers. Perhaps this is due to the low percentage of trucks and automobiles in the Southeast and Southwest sections of the state.

Teachers selected oiling and riveting of harness over the repair and upkeep of tractors. This would seem quite logical due to the greater per cent of horses and mules included in the farm equipment. There was quite a noticeable difference of opinion of the teachers of vocational agriculture and the students over the state, on the building of farm buildings. Only 50 per cent of the students would include this unit, while 71 per cent of the teachers would include it. Tying ten useful knots, building fences, and rope splicing were among the units selected by the higher percentage of the teachers.

Perhaps the opinions of teachers of the various districts varied more on the free-hand sketching than on the majority of other units. Eighty-six per cent of the teachers of the Northeast district would include this unit as compared to 48 per cent in the Southwest district.

Sixty-seven per cent of the teachers surveyed would include threading bolts and nuts; 60 per cent belt lacing; and 59 per cent laying sewage tile. Glazing and welding were the least important units; only 40 per cent of the teachers thought they should be included in the program.

TABLE NO. XVIII.

THE PERCENTAGE OF AFFIRMATIVE REPLIES ON THE EIGHT DESIGNATED PROBLEMS RELATIVE TO THE FORTY-SIX UNITS OF FARM MECHANICS LISTED BELOW

Column	1	2	3	4	5	6	7	8
Column 1. <u>Farms having sufficient tools to do the units efficiently.</u>								
Column 2. <u>Schools having sufficient tools to do the units efficiently.</u>								
Column 3. <u>Farms on which the units have been done within the last year.</u>								
Column 4. <u>Students who have done the units within the last year.</u>								
Column 5. <u>Students who think the units should be taught.</u>								
Column 6. <u>Teachers who think the units should be taught.</u>								
Column 7. <u>Schools which are now teaching the units.</u>								
Column 8. <u>The average percentage of columns 1, 2, 3, 4, 5, 6, and 7.</u>								
1. Making rough wood farm appliances	62	82	42	57	61	97	88	70
2. Making finished farm appliances	26	41	21	21	50	66	43	38
3. Building farm buildings	47	43	36	32	51	71	40	46
4. Building a house	25	18	12	7.7	32	28	7	19
5. Painting	47	59	30	40	53	84	63	54
6. Rough concrete work	42	62	30	30	53	91	70	54
7. Finished concrete work	21	18	17	11	48	57	34	29
8. Building fences	74	40	60	84	47	77	49	62
9. Glazing	14	15	11	9.6	31	40	19	20
10. Freehand sketching	22	38	7.6	17	42	58	41	32
11. Farm drawing	23	38	10	22	54	71	44	37
12. Laying brick, tile or stone	27	17	20	14	50	53	19	29
13. Fitting handles	55	80	45	59	51	90	71	64
14. Figuring bills of material	39	82	34	38	61	86	76	59
15. Tempering metal	20	27	19	17	46	57	27	30
16. Installing plumbing fixtures	17	14	15	13	42	58	31	27
17. Upkeep and repair of pumps and windmills	41	16	43	44	45	65	22	39
18. Oiling harness	47	52	31	35	45	79	56	49
19. Riveting harness	55	39	42	52	44	80	48	51
20. Harness stitching	15	27	14	8.6	42	68	38	30
21. Rope making	20	45	11	19	58	50	40	35
22. Rope splicing	26	50	20	22	54	76	57	44
23. Tie 10 useful knots and hitches	27	65	19	28	62	78	60	48
24. Belt lacing	24	37	20	20	47	60	35	35
25. Installing shafting	10	8.7	10	6.8	32	32	8.1	15

TABLE NO. XVIII. (Cont'd.)

THE PERCENTAGE OF AFFIRMATIVE REPLIES ON THE EIGHT DESIGNATED PROBLEMS RELATIVE TO THE FORTY-SIX UNITS OF FARM MECHANICS LISTED BELOW

Column 1. Farms having sufficient tools to do the units efficiently.  
 Column 2. Schools having sufficient tools to do the units efficiently.  
 Column 3. Farms on which the units have been done within the last year.  
 Column 4. Students who have done the units within the last year.  
 Column 5. Students who think the units should be taught.  
 Column 6. Teachers who think the units should be taught.  
 Column 7. Schools which are now teaching the units.  
 Column 8. The average percentage of columns 1, 2, 3, 4, 5, 6, and 7.

Column	1	2	3	4	5	6	7	8
26. Electric wiring	16	24	16	16	52	69	34	32
27. Pipe cutting, threading, and fitting	20	24	29	26	51	74	33	37
28. Soldering	38	47	34	38	52	88	57	51
29. Simple forging	21	22	22	20	50	79	24	34
30. Welding	10	10	20	6.9	47	38	14	21
31. Sharpening edge tools	53	70	58	66	62	87	76	67
32. Sharpening bits	37	62	30	26	56	84	60	51
33. Saw filing	47	75	42	35	60	90	76	61
34. Overhauling implements	34	39	34	32	46	84	50	46
35. Minor adjustments of gas engines	33	26	29	34	38	82	43	41
36. Upkeep and minor adjustments of automobiles	47	24	51	55	39	70	29	45
37. Operation, upkeep, and repair of combine	32	13	29	30	45	49	19	31
38. Operation, upkeep and minor repair and adjustment of tractors	19	17	15	15	36	67	23	27
39. Cutting metal	34	29	29	33	45	59	33	37
40. Drilling holes in metal	39	33	37	44	47	69	38	44
41. Overhaul car, truck or tractor motors	33	7.6	37	27	40	44	16	29
42. Overhaul transmission and rear end of car, truck, or tractor	26	6.5	27	17	36	27	10	21
43. Plastering	18	5.4	17	8.8	41	33	12	19
44. Threading bolts and nuts	24	27	27	25	49	68	34	36
45. Grind sickle	36	27	36	37	51	70	29	41
46. Lay sewage tile	13	16	6.5	6.2	32	59	17	21



EVALUATING THE SUBJECT MATTER CONTENT. One of the purposes of this study was to evaluate subject matter content for a farm mechanics course. Throughout this study 46 farm mechanic units have been presented and discussed. These particular units were selected because they represented all of the enterprises of farm mechanics, and they were the more common units in this field. The relative value of these units has been determined by the data given in Table XVIII. This table is a summary of the data taken from the state percentage columns of Tables XI to XVII inclusive. These 7 tables give information which is listed in the first 7 columns of Table XVIII as follows:

- Column 1. Tools on the farm.
- Column 2. Tools in the school shop.
- Column 3. Units done on the farm.
- Column 4. Units students have done.
- Column 5. Units students think should be taught.
- Column 6. Units teachers think should be taught.
- Column 7. Units teachers are teaching.
- Column 8. The average percentage.

The first 7 items listed above have been given equal consideration for the evaluation of the units. The eighth column, "The Average Percentage", is arrived at by taking the average of the figures in the 7 preceding columns. The writer has made a careful study of the evaluation of subject matter content for farm mechanics courses and feels that all 7 of these factors should be considered. He has given them equal consideration.

Table XVIII is included because it presents briefly the material needed for making comparisons of different

parts of this study.

There are in this table 368 sets of numerals. It is not advisable to attempt to discuss each of these; consequently, only a few units will be discussed as type situations.

In a study of the unit, "Making rough wood farm appliances", 97 per cent of the teachers agreed it should be taught and 88 per cent of them reported that they now are teaching it. There is evidently, a mistake in the data reported by the teachers since only 82 per cent of them claimed to have adequate tools to teach this job and 88 per cent of them said they are now teaching pupils how to make rough woodwork appliances. The justification for these figures is that evidently some of the teachers have a few tools and attempt to teach this unit, even though they feel that their tools are not adequate to do an efficient job. While 82 per cent of the schools had tools to do this unit, only 62 per cent of the farms had similar tools. Forty-two per cent of the farms surveyed reported that this type of work was done by someone other than a vocational agriculture student. Fifty-seven per cent of the students reported they had done this unit within the last year. Only 61 per cent of the students thought this unit should be taught but 97 per cent of the teachers believed they should provide instruction in making woodwork appliances. It is possible that the teachers had over-emphasized this unit and, on the other hand, the

students may have under-estimated its value.

"Sharpening edge tools", the thirty-first unit listed in the table, seems to be the unit of second importance when all seven of the factors included in this table are considered. Eighty-seven per cent of the teachers thought this unit should be taught; 76 per cent of them reported that they were then teaching it, while 66 per cent of the students said that they had done this unit within the last year. There were 58 per cent of the farms on which this unit had been done by someone other than vocational agriculture students. Only 53 per cent of the farms surveyed had adequate tools with which to do this unit, but 70 per cent of the schools had these tools. Like the last unit discussed, student opinions on the value of this unit ran considerably lower than the teachers' estimated value.

Considering all seven factors, the unit third in importance is "Fitting handles". Figures on this unit reveal that 71 per cent of the teachers were then teaching this unit, and 90 per cent of them thought it should be taught, while only 51 per cent of the students had this opinion. Fifty-nine per cent of the students reported they had done this unit and 45 per cent of them reported it had been done on their farms by someone else. Adequate tools were on 55 per cent of the farms to do this unit and 80 per cent of the schools had similar tools.

"Building a house", the fourth unit listed in the table, is placed in the next to last place of importance in





FIGURE 14. (Cont'd.)

UNITS OF FARM MECHANICS LISTED IN THE ORDER OF  
IMPORTANCE AS INDICATED BY DATA ACCUMULATED AND COMBINED IN THIS STUDY  
(See Column 5, Table XVIII)

Units	Average % of the Re- plies.	Each (X) Represents 2 per cent.
24. Cutting metal.....	37	XXXXXXXXXXXXXXXXXXXXX
25. Pipe cutting, thread- ing and fitting.....	37	XXXXXXXXXXXXXXXXXXXXX
26. Threading nuts and bolts.....	36	XXXXXXXXXXXXXXXXXXXXX
27. Belt lacing.....	35	XXXXXXXXXXXXXXXXXXXXX
28. Rope mending.....	35	XXXXXXXXXXXXXXXXXXXXX
29. Simple forging.....	34	XXXXXXXXXXXXXXXXXXXXX
30. Electric wiring.....	32	XXXXXXXXXXXXXXXXXXXXX
31. Freehand sketching.....	32	XXXXXXXXXXXXXXXXXXXXX
32. Operation, upkeep, and repair of combine.....	31	XXXXXXXXXXXXXXXXXXXXX
33. Tempering metal.....	30	XXXXXXXXXXXXXXXXXXXXX
34. Harness stitching.....	30	XXXXXXXXXXXXXXXXXXXXX
35. Finished concrete work.....	29	XXXXXXXXXXXXXXXXXXXXX
36. Laying, brick, tile or stone.....	29	XXXXXXXXXXXXXXXXXXXXX
37. Overhaul car, truck, or tractor motors.....	29	XXXXXXXXXXXXXXXXXXXXX
38. Operation, upkeep, minor adjustment of tractors..	27	XXXXXXXXXXXXXXXXXXXXX
39. Installing plumbing fixtures.....	27	XXXXXXXXXXXXXXXXXXXXX
40. Welding.....	21	XXXXXXXXXXXXX
41. Lay sewage tile.....	21	XXXXXXXXXXXXX
42. Overhaul transmission car, truck or tractor...	21	XXXXXXXXXXXXX
43. Glazing.....	20	XXXXXXXXXXXXX
44. Plastering.....	19	XXXXXXXXXXXXX
45. Building a house.....	19	XXXXXXXXXXXXX
46. Installing shafting.....	15	XXXXXXXXXXXXX

the list of 46 units considered; only 28 per cent of the teachers thought this unit should be taught, and only 7 per cent of them reported they were were teaching it. Thirty-two per cent of the students believed this unit should be taught. This is the first unit that has been discussed that more students than teachers thought should be taught. Almost 8 per cent of the students reported that they had done this unit and 12 per cent of them reported it had been done on their farms in the past year. Adequate tools with which to do this work were reported on 25 per cent of the farms, while only 18 per cent of the schools reported similar tools.

Figure 14 contains information concerning the selection of subject matter content for teaching farm mechanics. Due to the simplicity of the figure, but little discussion will be needed about it. The column of numerals in this figure is the same as those in Column 8 of Table XVIII. The 46 farm mechanic units listed in this figure are arranged in the order of their importance as arrived at by the method explained in the first paragraph of this division of this study. The bar graph gives at a glance the relative importance of each unit. It will be noted that an average value of 70 per cent is given the most important unit and that the last unit listed has an average value of only 15 per cent.



### SUMMARY AND CONCLUSIONS.

The preceding pages of this thesis contain an introduction to the problem, a statement of the purposes of the study, a discussion of the methods of procedure used in obtaining the information, and the tabulation and interpretation of the data secured. In this division of the paper a complete summary and conclusions of the study are given. The summary contains the information as given in the questionnaires returned by one thousand students and one hundred and six teachers of vocational agriculture. The conclusions are drawn, using as a guide, the data presented in this study and the opinions of the authors listed in the bibliography found in Appendix A.

#### SUMMARY.

1. One questionnaire for teachers and ten questionnaires for students were sent to each of the 135 schools having departments of vocational agriculture in Oklahoma.
2. One hundred and six teacher questionnaires and one thousand student questionnaires were returned and used.
3. Most departments of vocational agriculture were in towns of less than one thousand population. Less than one-fourth of these departments were in towns of more than 2500 population. Only six departments of vocational agriculture were in the open country.

4. Small grain, cotton and grain sorghums were the most commonly grown crop enterprises, and dairy, beef and hogs were the most common animal enterprises on farms included in this study.

5. Approximately half of the farms surveyed contained from 81 to 160 acres. Only 3 per cent of them were less than 20 acres in size, and only 3.6 per cent of them contained more than 640 acres.

6. The state average tenure of farm families was 9.7 years. Slightly more than 11 per cent had lived on their present farm only one year; 33.6 had lived on their present farm from 11 to 20 years. The tenure of farmers on the west side of the state was longer than the tenure of those on the east side.

7. One-third of the farms surveyed were terraced. Most of the terraced farms were on the east side of the state.

8. Fifty-seven per cent of the farms surveyed were farmed by the owners. A slightly higher percentage of owners were farming on western Oklahoma farms than on the eastern Oklahoma farms.

9. The major buildings on only 40 per cent of the farms surveyed had been painted within the last five years. A higher percentage of the farmers on the west side of the state had painted their major buildings than had those on the east side of the state.

10. Some kind of native building material was available, at a low cost, to the majority of the farms surveyed.

11. More equipment and home conveniences were on western Oklahoma farms than on those in the east side of the state. Wagons, work stock, one row cultivators, automobiles and mold-board plows were on more than three-fourths of the farms surveyed. Slightly more than half of the farms surveyed had washing machines; one-fifth had running water in the home, and almost one-third of them had electricity.

12. Every teacher who replied to the questionnaire thought that farm mechanics should be a part of a vocational agriculture course. If more recognition were placed upon this part of the program almost three-fourths of the teachers would stress this kind of instruction more.

13. The majority of the teachers indicated that they had difficulty in getting materials and implements available for their shop work.

14. Less than one-fourth of the teachers thought their shop was adequately equipped. The northeast district had the lowest percentage of adequately equipped shops. Almost half of the teachers thought their school officials would buy the needed equipment if they were asked to do so.

15. Thirty-three periods each year is the average amount of time that should be devoted to instruction in farm mechanics, if the teachers' opinion may be used as a guide. Almost three-fourths of the teachers thought that between 20 and 40 periods should be spent on this kind of instruction.



16. There were 17 of the more common units of farm mechanics in which the majority of the teachers thought more college training was needed.

17. Most of the farms were not adequately equipped to do more than 5 of the most common units of farm mechanics. Less than one-fourth of the farms could do as many as 18 of the common farm mechanic units.

18. More than one-half of the schools were unable to do more than 11 of the more common farm mechanic units efficiently with the tools in their school shop. Eighteen of the units could not be taught effectively by as many as one-fourth of the schools.

19. Only the three units, building fences, sharpening edge tools, and upkeep and minor adjustments of automobiles, were reported done on more than half of the farms. As a general rule there were very few farm mechanic units reported done on the farms surveyed.

20. Only 6 of the most common farm mechanic units had been done by more than half of the students. Less than one-fourth of the students had done as many as half of the units listed.

21. Only 13 of the 46 units listed were being taught in as many as half of the schools. Some units of most all farm mechanic enterprises were being taught in most of the schools. In general the units being taught in the schools were the ones being done on the farms by the students.

22. More than half of the students thought that as many as 20 of the 46 units listed should be taught. In many cases there was a much higher percentage of students who thought the specified units should be taught than there were students who had done the same units on the farm.

23. More than three-fourths of the teachers thought that 18 or more of the units listed should be taught. More than half of the teachers thought that at least 37 out of the 46 units listed should be taught. More than one-fourth of the teachers thought that all of the 46 units included in the survey should be taught. A higher percentage of teachers thought that more units of farm mechanics should be taught than did the students.

#### CONCLUSIONS RELATIVE TO THE METHOD OF PROCEDURE.

1. Noticeable evidence indicates that many of the questionnaires returned were hurriedly and carelessly filled in, and that the data secured by them were not as reliable as it could have been.

2. Much more accurate and desirable data would have resulted had the investigator personally supervised the filling in of the questionnaires, even though fewer questionnaires would have been obtained.

3. It is evident that many of the informers ignored numerous questions on the questionnaire which gave the same result as if they had given a negative answer to these questions. This condition was the result of the fact that

an affirmative answer was called for. If the informers had not ignored any of the questions a much higher percentage of affirmative answers would have resulted.

4. Though a very careful study was made in planning and making the questionnaire, it did not cover the field thoroughly enough to get all the information that could have been used in the problem.

5. One should not expect a perfect response to a questionnaire.

6. It was evident that the information from the teachers' questionnaires was, in most cases, more reliable than the information from the students.

#### CONCLUSIONS RESULTING FROM THE DATA PRESENTED, AND SUGGESTIONS FOR THE IMPROVEMENT OF FARM MECHANICS IN OKLAHOMA.

1. The study indicates that the type of farming, the kind of crop and animal enterprises, and the amount and kind of equipment on the farms are factors in direct correlation with the amount and kind of farm mechanic instruction that should be given.

2. The study reveals the fact that more opportunities for directed practice in farm mechanics were available to students from the more stable farm homes.

3. Numerous instances throughout the study validate the idea that the farmers of the west side of the state were more stable than those from the east side; conse-



quently, a more desirable program of directed practice in farm mechanics might be expected from students of the west side of the state.

4. The fact that some kind of native building material was available at a low cost to most of the farms surveyed substantiates the idea that farmers could have better buildings and equipment if they were trained in how to use the materials available. In schools of the eastern part of the state, added stress on the instruction in the use of native lumber, timber, and stone should be given. These materials are not common in western Oklahoma; consequently, the need for instruction in their use is not so important in that section. The use of concrete might well be stressed in western Oklahoma since sand and gravel are available to most of those farmers at a low cost.

5. As indicated by the opinions of the teachers of vocational agriculture surveyed, approximately 33 periods each year should be used in farm mechanics instruction.

6. It is shown in the study that the school shops were not adequately equipped to do efficient teaching of farm mechanics; therefore, an effort should be made, by those in charge, to equip the school shops adequately.

7. The teachers' opinions indicate that more training in college should be given in farm mechanics to prospective vocational agriculture teachers. From this study it appears that there is a definite need for more instruction in farm mechanics in preparing teachers to teach vocational agri-

culture. The teachers expressed a need for additional instruction in almost all of the enterprises of farm mechanics.

8. Not much supervised practice in farm mechanics can be expected of the students at home, since there are insufficient tools on the farms to do much of this kind of work. The school shops are more adequately equipped for doing farm mechanics work than the farm shops are. This substantiates the idea that most of the instruction and directed practice in farm mechanics should be done at the school shop rather than at the home shop.

9. Not much work in farm mechanics has been done on the farms surveyed, nor by the students of vocational agriculture; but, since the majority of the replies from the students signified they thought that farm mechanics instruction should be given, the conclusion is drawn that farmers and farm students would do more farm mechanics work if they were properly trained.

10. The study indicates that some units of most all of the farm mechanics enterprises should be taught in courses of vocational agriculture.

11. The study indicates also that the teachers set a higher value on farm mechanics instruction than did the students.

12. No one factor alone should be used to evaluate the importance of a farm mechanics unit in a teaching program. There are at least seven factors that should be considered when arriving at the relative importance of the units.

These factors are:

- (1) The number and kind of tools that are now present, or may be secured for use on the farm.
- (2) The kind of equipment on the farm.
- (3) The kind and number of tools present and the potential tools of the school shop.
- (4) The kind of farm mechanic units that are being done on the farms in his community.
- (5) The kind of farm mechanic units that are being done by pupils at home.
- (6) The opinions of farmers and farm boys as to what units of farm mechanics should be taught.
- (7) The ability of the teacher to teach the various farm mechanic units.

13. Based upon findings in this study the ten most important farm mechanic units, considering the state as a whole, are: (1) Making rough wood appliances; (2) Sharpening edge tools; (3) Fitting handles; (4) Building fences; (5) Filing saws; (6) Figuring bills of material; (7) Painting; (8) Making rough concrete work; (9) Riveting harness; and (10) Soldering.



APPENDIX A.

Selected Bibliography

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APPENDIX B.

General Bibliography



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