

A STUDY OF PASTURE DEVELOPMENT AS TAUGHT IN TWENTY-SIX
DEPARTMENTS OF VOCATIONAL AGRICULTURE
IN SOUTHEASTERN OKLAHOMA

By

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CHAPTER I

PURPOSE AND DESIGN OF THE STUDY

Introduction

The production of pasture as a basic crop is growing in importance in southeast Oklahoma. Thirty-seven per cent of the state agricultural income in Oklahoma is derived from beef production alone which is larger than total income derived from any two other livestock enterprises in the state. There are approximately $1\frac{1}{4}$ million head of beef cattle in Oklahoma in addition to the constant growth in number of the dairy industry that must share the 20 million acres of rough lands unsuited to profitable cultivation. Other livestock which utilize pasture are included in this problem, too, such as sheep, hogs, quarter horses, and the latest addition of the "pony" farm.

All these enterprises are dependent to a large degree upon the forages produced in the form of pasture for grazing or hay for winter during pasture deficient periods.

In view of the changing agriculture as it develops from a raw crop, general farming, family size farm to the more specialized livestock larger unit farms, there is a need to change the instruction of our youth to fit this plan. When the farmer is asked the question, "How is your pasture, John?" there may be an assortment of answers. Some answers

will be enthusiastic and some will have a note of disappointment. Nevertheless, the job of the vocational agriculture teacher is to find out ways and means to improve on the farming of his community whatever the type of farming is at the time. Sometimes teachers are reluctant to go along with the change. The Soil Bank, the Conservation Reserve, and other crop control measures enter into the cropping picture. Many farmers are joining the ranks of the city dweller as a member of the labor force because the farm "didn't pay." Sizeable acreages of land in the U.S. are non-productive, classified as idle, layout, fields that are going back to brush and weeds. To the author, this is a time to think and act. It is with that idea the author wishes to present this problem on pasture improvement.

Statement of the Problem

Southeast Oklahoma is receiving more attention as a livestock area, and less land is being farmed in row crops than ever before. There are large areas of lay-out land covered with poor type grasses and timber. Generally speaking, the fences are in poor repair so there is less desire to use this land by the adjoining farmer. The annual rainfall of 45" to 60" is usually sufficient to produce desirable growth.

Are the departments of vocational agriculture in the area putting enough emphasis on pasture development programs to take advantage of the needs? What factors are involved in the pasture development of the area that may affect a successful completion of pasture improvement. What results are being secured from the instruction of all-day students and adults in the way of substantial pasture improvement?

A complete solution to the pasture improvement problem is not expected as a result of this study, but the author believes that much can be gained by interpreting the findings and making them available to teachers of vocational agriculture. It is the author's belief that many teachers of vocational agriculture are not aware of the kind of teaching being done on pastures even in their own classroom. It is hoped that this study will stimulate some thinking on the part of the teacher and encourage him to take a new look at the needs of his community, and revise his program to meet the challenge. "How is your pasture, John?" situations, need more answers such as, "Best I ever saw."

Definitions of Terms

Teacher - as referred to in this study, means vocational agriculture instructor.

Student - means vocational agriculture student enrolled in all-day classes.

Purposes of the Study

The primary purpose of this study is to determine what the situation is and what the needs are, for doing an effective job of teaching pasture improvement in vocational agriculture departments in southeast Oklahoma. In order to accomplish this purpose, there are five minor purposes used:

1. To determine the extent to which the educational needs for pasture improvement are being recognized in the local schools for all-day students and adult farmers.

2. To determine the effectiveness of the program of pasture improvement now being taught in schools of the area.
3. To identify approved practices which are needed for pasture improvement and suggest methods for teaching these practices.
4. To determine and suggest appropriate and satisfactory reference material.
5. To suggest time allocations necessary for effectively teaching pasture improvement in the area.

Limitations of the Study

This study was limited to twenty-six schools in southeastern Oklahoma. The schools were located in the following counties: Bryan, Choctaw, Johnson, Coal, Pushmataha, LeFlore, Latimer, Pittsburg, McCurtain, and Atoka. Four of the schools are two-teacher departments while the rest are one-teacher departments. Only senior students were used in the study. No school was used unless the questionnaires of both the teacher and students were returned.

Method of Procedure

To secure the information needed for this study, a test including a questionnaire was formulated for the students with the assistance of the faculty of the Agricultural Education Department of the Oklahoma State University and the Southeast District Supervisor of Vocational Agriculture. Likewise, another questionnaire was designed to secure certain information from the teacher relative to his department and farmers of the area. A copy of these questionnaires are included in the appendix.

The questionnaires for each school selected were distributed at professional improvement meetings held in May. The author personally discussed the purposes of the study and asked teachers to volunteer the use of their schools for the study. Due to the lateness of the term, when the questionnaires were distributed, only 15 schools returned the completed questionnaires. It was necessary to secure additional schools in May of 1958. The author made use of the telephone in securing 12 more schools. One school was discarded for lack of a completed teacher questionnaire.

In obtaining data and making interpretations, the following steps were followed:

1. Several studies were reviewed to discover information useful for developing the study.
2. A questionnaire was devised for both the student and teacher to use.
3. Interviews were held with the District Supervisor of the area used in the study, and personnel of the Agronomy Department of the Oklahoma State University. Conferences with members of the faculty of the Department of Agricultural Education were also used extensively.
4. The questionnaires were distributed at professional improvement meetings with the approval of the District Supervisor.
5. Questionnaires were submitted to the students by the teacher of vocational agriculture of each school.
6. The completed questionnaires were returned to the investigator by mail in self-addressed postage-paid envelopes furnished each school.

7. Data were classified, tabulated, and an analysis made of the findings.
8. A summary of the results found in the study was made.
9. Conclusions were drawn and recommendations made.

CHAPTER II

REVIEW OF LITERATURE

The review of literature is presented in three parts - Part one, philosophies regarding the need for and development of programs of pasture improvement; part two, appropriate methods of teaching pasture improvement; and part three, related studies.

The Philosophy of Pasture Improvement

The growing of food crops has always been of importance to man. However, with the long range view of things to come, man must become aware of a theoretic shortage some day. Staten says: "We are running out of grass. This is not an idle guess."¹ There is comfort with the feeling when a person has a good product to sell or show. Staten also comments on the saying of a financier as:

Show me your acres of wheat, cotton, or corn, or your cows, and I will tell you how much money you can borrow from my bank next year.²

With reference to southeastern Oklahoma, could it not be said that 'show me your livestock and I'll know what your pastures are.' Combs, in

¹Hi W. Staten, Grasses and Grassland Farming (New York, 1952), p. 12.

²Ibid, p. 37.

in his discussion on values of pastures, says: "Improved pastures and improved livestock go hand in hand. Both are necessary to profitable production of beef, wool, and animal product."³

On fitting the pasture into a farming program, Thompson says:

To use farm labor best, it will pay to have pastures and livestock along with the crops. There are too many months when crops do not use the farmer's time, and pastures and livestock can use time in between crops.

The two main reasons pastures will fit into any farming program are: 1. To use the land and save it, too, and 2. to make money.⁴

The making of money seems to be one of the most impelling reasons for man's reaction why he wants to do a thing for himself. To fulfill this need of more money, many farmers are not prepared to make the pasture pay, so education must be employed for his help.

Methods of Teaching

The methods of teaching pasture management are of importance to the teacher of vocational agriculture. Stewart, in his discussion of methods of teaching, emphasized:

Methods of good teaching depend upon meeting pupil needs or the usefulness of the knowledge in the learner's life activities; the interest of the learner in his lesson; the thinking and understanding that result from the discussion of the lesson; the repetition, if it is necessary, that is provided to fix the useful knowledge in mind. That is our 'million dollar idea'.⁵

³Joseph F. Combs, Growing Pastures in the South, (Chapel Hill, North Carolina, 1951), p. 4.

⁴W. R. Thompson, The Pasture Book, (Philadelphia, 1950), p. 14.

⁵W. F. Stewart, Methods of Good Teaching, p. 6.

The purpose of teaching is to produce learning or provoke thinking.

Hammonds says:

Good teaching is so directing the activities of the learners as to result in the largest amount of the most desirable intended learnings and the smallest amount of undesirable learnings. This is good teaching anywhere, anytime, in any subject.

What is learned is what is practiced; continued practice or use is usually necessary for retention of learning.⁶

The essence of good teaching in the field of vocational agriculture can be summed up in terms of (1) motivation, (2) doing while learning, and (3) satisfying use of knowledge and skills which the learning process provides.⁷ Effective teaching calls for considerable preplanning by the teacher.⁸ Practice is essential to learning. Not until agriculture teachers come to believe in the necessity for practice by the learners can they make their teaching vital.⁹

The use of contests is a popular method for some phases of vocational agriculture. Staten says:

One of the most interesting ways of teaching our farmers is through the route of competition. Competition is the spice of life, especially with the youth of our nation....Why is it that a boy will remember, revere, and do honor unto his coach in high school or college, but his regular classroom teacher infrequently registers on his mind?¹⁰

⁶Carsie Hammonds, Teaching Agriculture, (New York, 19), p. 1.

⁷U. G. Martin, "Motivation and Teaching," Agricultural Education Magazine, Vol. XXIX, No. 3 (September, 1956).

⁸C. C. Scarborough, "Teacher's Unit, or Subject Matter Planning?," Agricultural Education Magazine, Vol. XXIX, No. 3 (September, 1956).

⁹Ibid, p. 163.

¹⁰Hi W. Staten and Melvin D. Jones, Farm Crops Judging Identification and Grading, (Philadelphia, 1951), p. 56.

Related Studies

Other studies have been made to evaluate the various phases of learning acquired by students in vocational agriculture and to point out needs for more thorough preparation and effective teaching.

Morris¹¹ sent out 200 questionnaires to be answered by students in nineteen schools, for the purpose of evaluating the basic concepts of cattle feeding. His findings showed that students with livestock farming programs acquired clearer concepts of cattle feeding problems and information than those without such programs.

Stokes¹² in his study of organizing an adult program on soil conservation, found that pasture studies were important and required more time than was first allowed.

Pastures are being referred to as grassland farming and the author finds that other agricultural workers are interested, too. It is good to the land and the operator's pocket book.¹³ Year-round pastures are a reality in many sections of the country.¹⁴ The use of test plots is a good device to sell pastures to yourself.¹⁵ It is important to practice a system of rotation grazing.¹⁶

¹¹Douglas Morris, "Basic Concepts of Cattle Feeding Acquired by Third and Fourth Year Students of Vocational Agriculture in Central Oklahoma," (unpub. M.S. non-thesis report, Oklahoma State University, Stillwater, 1957).

¹²George W. Stokes, "Organizing and Conducting An Evening Class with Adults Interested in Soil and Moisture Conservation," (unpub. M.S. non-thesis report, Oklahoma State University, 1937).

¹³J. J. Swedberg, "Show Farmers How to Make Grass Pay Off," County Agent and Vo-Ag Teacher Magazine Vol. XIV, No. 4, (April, 1958).

¹⁴Ibid

¹⁵Michael Allen, "All-Year Pastures," Farm Quarterly, Vol. XI, No. 3 (Autumn, 1956).

¹⁶Ibid

Bunch¹⁷ made a study using tests from 230 students in 23 high schools in central Oklahoma. The purposes of his study were (1) to determine the program being taught at the time, (2) to suggest the number of hours to teach soils in the areas, (3) suggest a course of work for young farmers, (4) to suggest suitable reference material, and (5) other aids in soils management techniques. His findings were that scores made by students did not correlate with the practices carried out on their farms. Schools holding evening classes in soils management had a higher percentage of boys with soil-conserving practices. The average scores of students in contests were no better than those without contests. First-year teachers teach less hours of soils management. Soil management programs of boys were in relation to the home farm rather than the teaching program.

Lefors¹⁸ made a study of 246 boys to determine the extent to which soil types and fertility of soils had on establishment of boys on farms and tenure and accomplishment in school. His findings were that students from better soils areas stayed in school longer, their grades were better, more of them completed college. The boys from better soils had better scores on their tests. More farms were abandoned on the poorer soils area than from the better soils area. Lefors concluded that the desires, ambitions, and interests of the boys from the poor soils areas were away from agriculture related jobs.

¹⁷Merle L. Bunch, "A Study of Soils Management as Taught in Twenty-Three High Schools in Central Oklahoma with a Suggested Teaching Program," (unpub. M.S. report, Oklahoma State University, 1951).

¹⁸Neill Lefors, "A Comparative Study of Vocational Agriculture Students Who Lived on Farms of Fertile and Less Fertile Soil Types," (non-thesis study, Oklahoma State University, 1950).

Summary of Literature Review

The review of literature did not reveal any specific studies of educational efforts in pasture improvement had been made. However, related information proved interesting and useful.

The philosophies of Hi Staten, the "Dean of Grass" in Oklahoma, gives fruit for thought. Combs and Thompson, likewise, were symbolizing the responsibility of man to fit grass into the farm plan.

Methods of teaching outlined by Stewart and Hammonds, when understood and used by vocational agriculture teachers, should serve as a guide in teaching pasture improvement. Unit teaching, motivation, and satisfying results contribute to the approaches of learning.

A consideration of the related studies by others in soils and feeding proved helpful in planning this study. Students must have a direct working relationship to the factors of learning created by results and understanding of a need to learn and apply knowledge. In a review of magazine articles, the successful farmers followed a plan and the results were measured in dollars and cents. Perhaps this is the field the most emphasis must be placed.

CHAPTER III

PRESENTATION AND ANALYSIS OF DATA

The primary objective of this study was to secure information relative to the teaching of pasture improvement in southeastern Oklahoma. The investigator, therefore, felt that information received directly from the students and teachers of a school would be a good measure of the conditions of the program of pasture improvement in the school service area. Twenty-six schools are represented in the study from a total of 87 in the southeast district of the state.

In presenting these data relative to the teaching program for pasture improvement, it is recognized that the students filled out the questionnaires themselves and for that reason some students failed to answer some questions or parts of questions. A reference will be made to each table regarding the 'yes' and 'no' answers and the 'no report' answer. Only 165 reported pastures out of the 242 students reporting.

These data are divided into four parts for discussion - (1) the students' report on his home farm; (2) the teacher's report relative to farms in school service area; (3) the student scores; and (4) the teacher's report on the program of pasture improvement in his school.

Data Secured from Students

Permanent pastures are the backbone of a pasture program and the selection and use of permanent pasture plants, as shown in data presented in Table I, verified this fact and indicated that a greater

TABLE I
DISTRIBUTION OF PERMANENT PASTURE PLANT COMBINATIONS AND
FREQUENCY OF USE ON FARMS OF STUDENTS

Plant Combinations*	Students Reporting	Per cent
ACF	26	15.8
CF	23	13.9
ABCF	20	12.1
AC	18	10.9
ABC	13	7.8
ACEF	11	6.7
BC	9	5.5
ABCEF	6	3.6
BCFE	6	3.6
ABCDF	6	3.6
ACE	5	3.0
ACDE	4	2.4
Reporting none	5	3.1
Did not indicate	<u>13</u>	<u>7.9</u>
Totals	165	100.0

*Key to Plant Combinations:

A Mixed native grasses
B Woods grasses
C Bermuda

D King Ranch
E Fescue
F Mixed clovers

percentage of the students recognized the pasture grass groups and also reported bermuda grass to be the dominant plant used. They also rated King Ranch Bluestem low in extent of usage.

The temporary pasture plants used were written in on the answer sheet and as shown in Table II, students indicated that oats, wheat,

TABLE II
DISTRIBUTION OF TEMPORARY PASTURE PLANTS AND FREQUENCY
OF USE ON FARMS OF STUDENTS

Kind of plant	Used alone	Combined with non-legume	Combined with a legume
Sudan grass	4	27	7
Oats	10	50	15
Wheat	1	32	5
Rye	1	17	6
Barley	0	8	3
Rye grass	5	17	3
Johnson grass	1	0	0
Burr clover	0	2	1
Lespedeza	2	2	0
Vetch	0	16	1
Alfalfa	0	1	0

rye, and rye grass were the dominant non-legume plants used on their home farms. Oats was the favorite crop to plant with a legume. Sudan grass would fill in the gaps for summer pasture. The use of alfalfa as a

pasture plant is almost none. Many students failed to report temporary pastures which indicates there is some misunderstanding of the term 'temporary pastures'.

Johnson grass was listed one time; evidently the students do not consider it as a desirable temporary pasture plant.

Bermuda grass is becoming well established and it was thought that all farms would report some Bermuda grass on them. Data from Table III

TABLE III
DISTRIBUTION OF ACRES AND KINDS OF BERMUDA GRASSES USED
ON HOME FARMS OF STUDENTS REPORTING

Acres	Common Bermuda		Coastal Bermuda		Midland Bermuda		Greenfield Bermuda		Mixed	
	No.	%	No.	%	No.	%	No.	%	No.	%
401 - 600	1	.7	1	.7						
301 - 400	2	1.5								
251 - 300	2	1.5								
201 - 250	2	1.5							1	.7
151 - 200	4	2.9	1	.7					1	.7
101 - 150	3	2.1	1	.7					2	1.5
76 - 100	7	5.1								
51 - 75	12	8.8								
26 - 50	25	18.2	2	1.5	2	1.5	1	.7	2	1.5
11 - 25	24	17.5			1	.7			1	.7
6 - 10	14	10.2	2	1.5	2	1.5				
1 - 5	16	11.7	2	1.5	2	1.5				
0										

Of the one hundred and sixty-five students reporting pastures on the home farm:

137 reported Bermuda
9 reported none
19 did not report

does not substantiate that idea. Twenty-eight students reported none or failed to indicate. Common bermuda is the dominant type used on

students farms. There were over 8,000 acres reported to be in Bermuda and less than 1000 acres are of the improved varieties. The students, as a whole, seem to know that there are different varieties of Bermuda.

The problem of establishment of the newer varieties may be the reason for the low percentage of use on the farms.

Data from Table IV shows that combinations of clovers is more

TABLE IV
DISTRIBUTION OF LEGUME PLANT COMBINATIONS AND FREQUENCY
OF USE ON FARMS OF STUDENTS

Kind of legume	Used alone	Combined with one other	Combined with more than one other
Hop clover	3	22	53
Lespedeza	6	23	51
Serecia	2	4	12
Burr clover	3	5	28
Black Medic	1	1	13
Crimson clover	0	6	19
Button clover	0	1	14
Alfalfa	0	0	14
Sweet clover	0	1	19
Vetch	4	8	38
Austrian Winter Peas	0	0	4

frequent than single legumes used alone. The unusual combination of alfalfa on the farm may be accounted for by having it in separate fields,

but on the same farm. No attempt was made to separate the mixtures into fields. However, the combination of hop clover and lespedeza is the most frequent combination in both, one other, and more than one other plant combinations. The student was given the option to write in other plants used. None were written.

Data from Table V shows a good example of generally used poor

TABLE V
DISTRIBUTION OF GRAZING PRACTICES AND FREQUENCY OF USE BY STUDENTS

Practices	Students Reporting	
	Number	Per Cent
1. Continuous grazing	59	35.75
2. Move cattle from one pasture to the next to give the grass a rest	35	21.21
3. Keep cattle off of pasture until the grass is four inches high or more	9	5.45
Combinations of above:		
1 and 2	11	6.66
2 and 3	21	12.71
1 and 3	2	1.21
1, 2, and 3	1	.66
No practice reported	<u>27</u>	<u>16.42</u>
Totals	165	100.00

grazing practice on farms of students. Over 35 per cent of the farms used continuous grazing practice exclusively and a large per cent of others used continuous grazing in combinations with the other two better

practices. One student reported all three practices which indicates he was using several pastures under different management systems. Sixteen per cent of the students did not report grazing practices, yet they did report pastures and livestock on their farms. From these data, grazing practices may be a good area to include in the teaching program.

Data from Table VI as reported by students, shows clearly that 74 per cent of the farms have a period of pasture deficiency. January, February, and December, are the most prominent months of pasture deficiency. Fall and winter pastures are a must. Summer pastures, although indicated deficient by possibly five to eight per cent, is not the big problem. Twenty-six per cent of the students failed to report regarding the deficiency. No space was provided to state that there was no deficiency of pasture on the farm.

TABLE VI

DISTRIBUTION OF COMBINATIONS OF MONTHS DURING WHICH DEFICIENCIES
OCCUR AS REPORTED BY STUDENTS

Months and combinations	Students Reporting	
	Number	Per cent
January, February, December	16	9.70
January, February, November, December	14	8.49
January, February, March, October, November, December	13	7.88
January, February	12	7.27
January, February, March, December	10	6.06
May, June, July, August, September	10	6.06
July, August	7	4.24
January, February, March, November, December	6	3.64
January, February, October, November, December	6	3.64
January, February, March, September, October, November, December	6	3.64
January, December	5	3.03
January, February, March	5	3.03
January, February, December	5	3.03
January, August, November, December	4	2.42
January, February, August, December	3	1.82
Did not indicate	<u>43</u>	<u>26.05</u>
Totals	165	100.00

Data in Table VII shows that 43.63 per cent of the students were using mowing and only 12.73 per cent used chemical methods to control weeds on their home farms.

TABLE VII
DISTRIBUTION OF WEED CONTROL METHODS USED ON FARMS OF STUDENTS

Method used	Students reporting					
	Yes		No		Not reporting	
	Number	Per cent	Number	Per cent	Number	Per cent
Mowing	72	43.63	55	33.33	38	23.04
Chemical	21	12.73	94	56.96	50	30.31

Data from Table VIII shows that 38.78 per cent of the students showed

TABLE VIII
DISTRIBUTION OF FERTILIZERS AND FREQUENCY USED BY STUDENTS

Fertilizers used	Students reporting	
	Number	Per cent
None	64	38.78
No attempt to answer	11	6.66
1. 5-10-5	27	16.36
2. 10-20-10	12	6.66
3. 0-20-0	8	4.84
4. Lime	2	1.21
5. Sodium nitrate	0	0.0
6. Ammonium nitrate	0	0.0
7. Manure	15	9.0
Combinations:		
1 and 6	7	4.24
1 and 3	3	1.81
1, 4, and 7	1	.66

TABLE VIII (Cont'd)

2 and 6	2	1.21
1, 3, and 7	2	1.21
2, 3, 4, and 7	1	.66
2 and 3	1	.66
1 and 7	4	2.42
1 and 4	2	1.21
1, 6, and 7	1	.66
2, 4, and 6	1	.66
2, 3, and 6	<u>1</u>	<u>.66</u>
Totals	165	100.00

no fertilizer used on their farms for pasture improvement. Although 71.22 per cent of the students are using fertilizer the total amount used is small. The table does not show the amounts per acre reported, but none indicated more than 100 lbs. per acre on the questionnaire.

Information in Table IX confirms the data for poor fertilizer use.

TABLE IX

DISTRIBUTION PRACTICE OF SOIL TESTING OF PASTURE LAND BY STUDENTS

Use of soil test	Students reporting	
	Number	Per cent
Yes	46	27.9
No	79	47.9
No response	<u>40</u>	<u>24.2</u>
Totals	165	100.0

Only 27.9 per cent of the students made use of a soil test on the home farm pasture soils.

The use of the Soil Bank as shown from data in Table X is effected by only about 29 per cent of the farms. Eighteen and eight-tenths were not sure about the home farm being in the Soil Bank by not reporting on the question.

TABLE X

DISTRIBUTION OF PARTICIPATION IN SOIL BANK PROGRAM ON FARMS OF STUDENTS

Use of soil bank	Students reporting	
	Number	Per cent
None	87	52.7
Yes	47	28.5
No report	<u>31</u>	<u>18.8</u>
Totals	165	100.0

The carrying capacity of the pastures on the students' farms is shown in Table XI. The range of acres used per cow is wide from one to over 14 acres. One boy reported 40 acres. Part of the area covered in this survey is in open range, or mountainous terrain. Over 50 per cent of the reports show that less than seven acres are required per cow and calf. Some students have good pasture as indicated by five per cent using one acre per cow.

TABLE XI

DISTRIBUTION OF ACRES OF PASTURE GENERALLY USED PER COW ON FARMS OF STUDENTS

Acres allowed	Students Reporting	
	Number	Per cent
14 and over	7	4.24
12 - 13	5	3.13
10 - 11	11	6.67
8 - 9	7	4.24
6 - 7	13	7.88
4 - 5	35	21.22
2 - 3	35	21.22
1	9	5.45
No report	<u>43</u>	<u>26.15</u>
Totals	165	100.00

Some thought was given to whether or not pasture is being given enterprise status. Data in Table XII shows that 61.8 per cent of the

TABLE XII

DISTRIBUTION OF ANSWERS STUDENTS GAVE RELATIVE TO PASTURE AS AN ENTERPRISE

Answers given	Students Reporting	
	Number	Per cent
Yes, pasture is an enterprise	102	61.82
No, pasture is not an enterprise	32	19.39
No report attempted	<u>31</u>	<u>18.79</u>
Totals	165	100.00

students consider pasture an enterprise. The teaching field must begin with the importance of pasture in relation to crops.

Data from Table XIII shows that 4.24 per cent of the students' home

TABLE XIII
DISTRIBUTION OF RATINGS OF CONDITION OF PASTURE
ON THE FARMS OF STUDENTS

Amount of Beef produced	Students reporting	
	Number	Per cent
Excellent	7	4.24
Good	47	28.48
Average	66	40.00
Below average	9	5.46
No attempt to report	<u>36</u>	<u>21.82</u>
Totals	165	100.00

pastures rated as excellent while 40.0 per cent estimated their pasture as average.

Data in Table XIV shows 4.24 per cent of the students rated their pastures as being able to produce over 100 pounds of beef per acre. Tables XIII and XIV point out the one-cow per acre grazing rate referred to in Table XI.

More students attempted to answer the question on condition of pasture than did those of the amount of beef produced per acre. It is evident that less is known about the production per acre phase of pasture improvement.

TABLE XIV
DISTRIBUTION OF ESTIMATES OF BEEF PRODUCED PER ACRE ON
FARMS OF STUDENTS

Amount of beef produced	Students reporting	
	Number	Per cent
101 or more	7	4.24
51 to 100	56	33.95
50 or less	52	31.51
No attempt to report	<u>50</u>	<u>30.30</u>
Totals	165	100.00

From the data presented in Table XV, it is evident that most of the farms keep the family milk cow, several dairy farms are represented, but the major cattle are beef. Even sheep are entering the picture in greater importance. All of the students from one school failed to report the number of livestock. This kind of information is considered personal and some may not have filled out the answer for that reason. The answer to this question is incomplete, but it gives a trend toward beef cattle as the chief enterprise.

TABLE XV

TOTAL NUMBER OF BEEF AND DAIRY CATTLE ON HOME FARMS OF STUDENTS

School number	Number of students	Total head	
		Beef cattle	Dairy cattle
1	9	130	2
2	8	244	42
3	5	0	0
4	10	185	48
5	3	63	4
6	19	835	95
7	17	699	14
8	9	135	28
9	9	58	10
10	14	29	5
11	7	179	44
12	6	97	17
13	16	98	3
14	22	161	33
15	4	30	10
16	15	203	48
17	13	50	26
18	7	51	7
19	10	78	39
20	6	107	92
21	5	112	36

TABLE XV (Cont'd)

22	6	28	9
23	5	150	9
24	7	85	25
25	4	255	4
26	<u>6</u>	<u>104</u>	<u>11</u>
Totals	242	4,166	611

28 boys had both dairy and beef cattle

4 boys reported no livestock

2 boys reported sheep on their farms

Information Reported by Teachers on Farms and Students

Several studies showed that boys tend to have the same kind of project programs as are found on their farms. Data in Table XVI and XVII indicate that there is some correlation. About 29.22 per cent of the boys from the schools represented had pasture improvement and 38 per cent of the adult farm units were estimated to have pasture improvement practice. This substantiates Bunch¹ and Morris² in their findings.

The schools almost follow a pattern on this one factor. There are differences in some instances that could be the result of a large number of non-farm students enrolled.

¹Bunch, p. 44.

²Morris, p. 41.

TABLE XVI

TOTAL NUMBER OF BOYS IN SCHOOLS COMPARED TO THE NUMBER
REPORTED WITH PASTURE IMPROVEMENT PRACTICES

School number	Total number boys	With pasture improvement practices	Per cent
1	42	7	16.66
2	42	30	71.42
3	43	8	18.60
4	68	36	52.93
**5	31	--	--
*6	91	32	35.16
7	31	20	64.51
8	34	10	29.46
9	37	12	32.43
*10	94	0	0.0
11	49	25	51.02
12	31	15	48.38
*13	76	6	7.89
*14	113	20	17.69
15	45	8	17.73
16	44	12	27.27
17	47	5	10.58
18	32	5	15.62
19	53	31	58.48
20	36	4	11.11
21	35	5	14.28
22	57	50	89.47
23	48	8	16.66
24	47	18	38.29
25	35	12	34.28
26	<u>60</u>	<u>27</u>	<u>45.00</u>
Totals	1,321	386	29.22

** Teacher did not report any improvement practices
* These schools have two teachers each

Another interesting fact revealed is that the two-teacher departments do not show an advantage over the one-teacher departments in applications of practices of pasture improvement by students.

TABLE XVII

TOTAL FARMS IN SCHOOL SERVICE AREAS COMPARED TO THE NUMBER OF FARMS
ON WHICH PASTURE IMPROVEMENT PRACTICES WERE CARRIED OUT

School number	Total farming	Farms completing	
	<u>units</u>	<u>improvement practices</u>	
	Number	Number	Per cent
1	67	11	16.4
2	250	135	58.0
3	115	15	13.0
4	819	68	8.2
5	60	40	66.6
6	630	450	71.0
7	125	65	52.0
8	250	100	40.0
9	146	40	27.4
10	325	300	92.3
11	100	82	82.0
12	82	15	18.3
13	250	120	48.0
14	200	75	37.5
15	200	102	51.0
16	195	65	33.3
17	200	55	27.5
18	180	25	13.8
19	200	80	40.0
20	300	30	10.0
21	375	56	14.9
22	190	10	5.3
23	420	200	47.6
24	160	68	41.2
25	150	100	66.6
26	<u>634</u>	<u>210</u>	<u>33.0</u>
TOTALS	6,623	2,517	38.0

Perhaps the teachers felt that the hours allocated to pastures are more valuable in another field. One of the two-teacher departments failed to show any boys with improvement projects in pasture improvement, but the same school showed 92.3 per cent of the farmers with pasture improvement. By closer comparison, it was found that the four two-teacher

departments showed an average of 54.6 per cent of the farmers had completed improvement practices while the average for the one-teacher departments was only 31.0 per cent. However, the four highest ranking one-teacher departments had an average of 68.1 per cent of farmers completing pasture improvement practices. Comparing the same schools on the basis of the students with improvement projects, the data shows that the four two-teacher departments reported 14.43 per cent of the students with improvement projects, while the same four high one-teacher departments showed an average of 39.23 per cent of students with pasture improvement projects. The over-all average of the one-teacher departments was calculated as 31.84 per cent of the students with pasture improvement projects.

The extent of application by farmers is the real test of the effectiveness of the teaching program. The investigator tried to devise a plan that would indicate a field of pasture improvement practice relative to the completion of the practice. Data from Table XVII shows that not all farmers are following the recommended pasture improvement practices. One school shows all Bermuda overseeded with clover. The use of these practices by the farmers indicate their relative value for consideration in this study.

Only 11.54 per cent of the teachers indicated that all the farmers of his area are getting PMA payments. Perhaps this can be accounted for due to open range and lack of education on use of agricultural agencies.

TABLE XVIII

TEACHER ESTIMATES OF THE EXTENT FARMERS CARRIED OUT CERTAIN
PASTURE IMPROVEMENT PRACTICES IN THEIR AREA

Practice number	Teachers estimated					
	All farmers		Part of farmers		No farmers	
	No.	Per cent	No.	Per cent	No.	Per cent
Seed bermuda grass	0	0.0	24	92.3	2	7.7
Plant coastal bermuda	0	0.0	20	76.9	6	23.1
Plant midland bermuda	0	0.0	22	84.6	4	15.4
Plant greenfield bermuda	0	0.0	8	30.8	18	69.2
Planted small grain and vetch and grain in sod	0	0.0	26	100.0	0	0.0
Used sod drill to plant vetch and grain in sod	0	0.0	21	80.8	5	19.2
Plant fescue for pasture	0	0.0	16	61.5	10	38.5
Fertilize pastures properly	0	0.0	26	100.0	0	0.0
Prepare seed bed for sprigging	4	15.4	22	84.6	0	0.0
Use sprigging machines	0	0.0	24	92.3	2	7.7
Overseeded bermuda with clovers	1	3.9	24	92.3	1	3.9
Use sudan for summer pasture	0	0.0	24	92.3	2	7.7
Plant lespedeza for pasture	0	0.0	24	92.3	2	7.7
Harvest hay from pasture in addition to grazing	0	0.0	22	84.6	4	15.4
Use alfalfa for grazing	0	0.0	15	57.7	11	42.3
Inoculate all legume seeds planted for pasture	2	7.7	23	88.5	1	3.9

TABLE XVII (Cont'd)

Harvest clover seeds from pastures after grazing	0	0.0	13	50.0	13	50.0
Farm ponds fenced from livestock	0	0.0	11	42.3	15	57.7
Use reseeded crimson clover in the pasture mixtures	0	0.0	16	61.5	10	38.5
Use ladino and white dutch in pasture mixture	0	0.0	25	96.1	1	3.9
Use chemicals to control weeds	0	0.0	20	76.9	6	23.1
Use chemicals to control brush	0	0.0	25	96.1	1	3.9
Use dozer to remove brush	0	0.0	25	96.1	1	3.9
Use other mechanical devices to remove brush	0	0.0	24	92.3	2	7.7
Control weeds by clipping	0	0.0	25	96.1	1	3.9
Practice burning of pastures	0	0.0	9	34.6	17	65.4
Permanent pastures renovated at least every 3 years	0	0.0	19	73.1	7	26.9
Have an eleven months pasture season	0	0.0	22	84.6	4	15.4
Use proper stocking rate	0	0.0	25	96.1	1	3.9
Have year round water supply	7	26.9	19	73.1	0	0.0
Farmers take advantage of PMA payments on pastures	3	11.5	23	88.5	0	0.0

Student Test Scores

The tests were in three parts similar to Bunch's³ grouping of true-false, completion, and multiple choice. The total possible score was 100. The true-false group contained 37 questions scoring one point each; the completion group contained 17 questions with a possible score of 41 points; and the multiple choice group contained 11 questions with a possible score of 22.

A list of the questions are included in the appendix. The information asked for was of common interest in the area used in the study. The questionnaire included a space for the student's name. While there may be some question about the wisdom of asking for the names of the student, the investigator felt that since students are accustomed to putting names on test papers in class, they would not object to signing this test paper. There also may have been some hesitancy with regard to answering the information about the farm. However, the answers were complete enough to give the investigator confidence that he had made a representative sampling.

Data from Table XIX shows the average scores of students for each of the three divisions of the test and the total average score by schools.

There were no perfect scores made on the tests in total or by parts. The total average score ranged from a low of 55.0 to a high of 94.3. The average score for all schools was 72.2.

³Bunch, pp. 10-13.

TABLE XIX

AVERAGE STUDENT SCORE ACHIEVED ON EXAMINATIONS BY SCHOOLS

School number	Average scores			Total
	True-false	Completion	Multiple choice	
1	34.5	21.8	38.0	94.3
21	33.5	19.3	36.6	89.4
20	34.2	18.5	36.3	89.0
26	32.7	17.0	35.6	85.3
24	30.4	17.0	35.0	82.4
12	30.4	17.5	33.7	81.6
3	32.8	18.2	30.6	81.6
19	32.0	15.5	33.5	81.0
25	29.5	17.7	32.5	79.7
18	26.9	17.4	33.7	77.8
22	32.5	17.8	27.5	77.8
2	31.4	13.9	13.7	77.0
5	28.7	16.0	30.6	75.3
9	27.9	14.0	32.3	74.2
13	27.1	14.3	27.0	68.4
7	27.1	14.3	25.0	66.4
8	29.1	15.0	21.6	65.7
10	26.4	13.5	24.8	64.7
11	28.0	13.0	21.0	62.0
4	28.9	14.3	18.4	61.6
14	26.5	14.1	20.2	60.8
15	26.5	13.5	20.5	60.5
6	27.5	13.8	16.1	57.4
23	28.4	14.4	14.2	57.0
16	26.9	13.8	16.2	56.9
17	26.4	14.3	14.3	55.0
AVERAGES	29.6	19.9	26.7	72.2

The true-false question missed most on the test was question no. 2 by 118 students:

2. _____ Bermuda grass is a good native grass.

Attention is called to the fact that students accept Bermuda as being a native grass because of association in the home pasture.

The true-false question No. 25 was answered correctly most times by 238 students. It is as follows:

25. _____ Fertilizers on pastures is a waste of time.

This question was too easy.

The question omitted the most times in the true-false group was No. 22. Only four omissions were recorded.

22. _____ Greenfield Bermuda was developed at the
Oklahoma State University Experiment Station.

This question was too easy.

In the completion group of questions received, the most missed scores by students. This group required the answers to be written in blank spaces. More knowledge of the subject is also required for answering this type of examination. The question missed most in this group was No. 17.

17. Give a good pasture combination for the limestone soils
_____, _____, _____,
and _____.

Evidently, the students were not taught the different kinds of soils and the combinations most suited to them.

The most correct answers were on question No. 2 of this group:

2. The best grass for southeast Oklahoma is _____.

The students associated this with something at home rather than in the classroom.

The question most often omitted also was No. 17 which was the same as the one missed most often and evidently required knowledge that they probably were not taught.

In the multiple choice group of questions, which only required a circle to be drawn around the two most nearly correct answers, part 2 of question No. 5 received the most missed scores:

5. Weeds can be controlled by: 1. Mowing in early spring; 2. Use of chemicals in late fall; 3. Mowing during summer months; and 4. Controlled grazing.

Students do not use chemicals at home as is indicated elsewhere in this report, and teachers probably do not cover this practice in their teaching plan.

The question most correctly answered in this group is part one of question No. 2:

2. Legumes are plants which: 1. Furnish nitrogen for use by plants; 2. They are good grasses to use; 3. Furnish plenty of protein for livestock; and 4. Help to maintain the acidity of the soil.

The answer to this question could come, in part, from related information on feeding livestock rather than from the study of pastures.

The question omitted most in this group was part 2 of question No. 11:

11. Properly grazed pastures will be indicated by: 1. Grazed to a uniform height of forages of about 6 inches; 2. All forage plants grazed to about 2 inches in height; 3. Some areas grazed to 1 foot height and others of 3-inch height; and 4. All plants grazed to no less than 12 inches in height.

There is no explanation for omission of this question. Since only 13 students left it out, it could have been carelessness or rush to finish the test.

Data as presented in Table XX brings out the fact that students who were reported by teachers as carrying pasture improvement practices on their farms did not make better scores on the test than students not reported as carrying pasture improvement projects.

TABLE XX
COMPARISON OF AVERAGE TEST SCORES OF SENIOR STUDENTS WITH AND WITHOUT PASTURE BY SCHOOLS

School	Total Number	Students Reporting					
		Pasture			No Pasture		
		Number	Per Cent	Av. Score	Number	Per Cent	Av. Score
1	9	7	77.7	94.4	2	22.3	94.0
2	8	6	74.7	80.3	2	25.3	67.0
3	5	5	100.0	81.6	0	0.0	-----
4	10	6	60.0	65.6	4	40.0	55.5
5	3	2	66.6	71.1	1	33.4	84.0
6	19	11	57.9	56.8	8	42.1	58.8
7	17	14	82.3	65.7	3	17.7	70.0
8	9	8	88.8	65.5	1	11.2	58.0
9	9	6	66.6	73.3	3	33.4	76.0
10	14	9	64.0	65.2	5	56.0	63.8
11	7	6	85.9	63.1	1	24.1	55.0
12	6	4	66.6	81.5	2	33.4	81.7
13	16	4	25.0	67.2	12	75.0	68.8
14	22	14	63.6	60.5	8	36.4	61.3
15	4	1	25.0	56.0	3	75.0	62.0
16	15	5	33.3	59.6	10	66.7	61.7
17	13	7	33.8	58.5	6	66.2	55.5
18	7	5	71.4	73.8	2	28.6	88.0
19	10	8	80.0	81.6	2	20.0	78.5
20	6	6	100.0	89.0	0	0.0	-----
21	5	5	100.0	89.4	0	0.0	-----
22	6	5	83.3	77.6	1	16.7	79.0
23	5	4	80.0	60.7	1	20.0	42.0
24	7	7	100.0	82.4	0	0.0	-----
25	4	4	100.0	85.3	0	0.0	-----
26	6	6	100.0	85.3	0	0.0	-----
AVERAGES	242	165	68.0	72.5	77	32.0	68.3

Data in Table XXI presents the distribution of scores by groups. It should be noted that there is a fairly even distribution which would seem to furnish further proof that there is very little difference in the scores of those with pastures on the home farm and those without home farm pastures or without pasture improvement practices.

TABLE XXI

DISTRIBUTION OF TOTAL GRADE AVERAGES OF STUDENTS WITH PASTURE
IMPROVEMENT COMPARED TO STUDENTS WITHOUT PASTURE
IMPROVEMENT AND STUDENTS THAT DID NOT REPORT

Grade Average	Students reporting					
	Group I*		Group II*		Group III*	
	No.	Per Cent	No.	Per cent	No.	Per cent
96-100	1	0.6	0	0.0	0	0.0
91-95	3	1.8	4	2.4	4	2.4
86-90	6	3.6	7	4.2	5	3.1
81-85	15	9.1	6	3.6	2	1.2
76-80	12	7.3	5	3.1	3	1.8
71-75	4	2.4	9	5.5	1	0.6
66-70	7	4.2	9	5.5	9	5.5
61-65	4	2.4	6	3.6	5	3.1
56-60	4	2.4	4	2.4	4	2.4
51-55	2	1.2	5	3.1	5	3.1
46-50	2	1.2	1	0.6	7	4.2
41-45	0	0.0	1	0.6	1	0.6
36-40	1	0.6	1	0.6	0	0.0
Totals	61	36.8	58	35.2	46	28.0

*A total of 242 students classified as:

- Group I - With pasture improvement
- Group II - Without pasture improvement
- Group III - Students not completing information relative to pastures

Teachers Reports Relative to the Program of
Pasture Improvement Taught

The investigator felt the need to secure as much information as possible about the teacher, his years of experience and tenure, the amount of time spent on the teaching of practices related to pasture improvement, the hours allocated in the regular schedule and other related information.

Each local teacher filled out a schedule with this information and sent it in with the students' questionnaires.

Findings summarized in Table XXII reveal that none of the teachers used in this study had taught less than three years while the maximum years taught by one individual was determined as 18.

TABLE XXII
DISTRIBUTION OF TEACHERS IN TERMS OF YEARS IN PRESENT
SCHOOL AND TOTAL YEARS TAUGHT

Interval years	Teachers* reporting			
	Total years taught		Total years in present school	
	Number	Per cent	Number	Per cent
17-18	3	10.34	0	0.0
15-16	1	3.44	0	0.0
13-14	3	10.35	3	10.30
11-12	2	6.90	4	13.80
9-10	5	17.24	4	13.80
7-8	6	20.70	6	20.70

TABLE XXII (Cont'd)

5-6	6	20.70	4	13.80
3-4	3	10.34	3	13.80
1-2	<u>0</u>	<u>0.0</u>	<u>4</u>	<u>13.80</u>
Totals	29*	100.0	29*	100.0

*Three departments have two teachers each on this report.

The distribution of hours taught on the various pasture improvement practices is given in Table XXIII.

Twenty practices on pasture improvement were selected and the teachers were requested to fill in the number of hours used in instruction regarding specific practices for the past year.

Responses summarized in Table XXIII show that the majority of the teachers reported spending less than six hours total time on each of these practices, with the one to two hour period being the most frequently used. A few teachers taught as much as 11 to 12 hours on some practices. After looking at the distribution of hours taught, it is felt that this may account for the low scores made by the students on the tests.

TABLE XXIII
DISTRIBUTION OF THE EXTENT OF INSTRUCTION IN VARIOUS PASTURE IMPROVEMENT PRACTICES
IN TERMS OF PERIODS TAUGHT

Periods Taught	Schools reporting																			
	1a		2b		3c		4d		5e		6f		7g		8h		9i		10j	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
13-14	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
11-12	0	0.0	1	3.8	0	0.0	0	0.0	0	0.0	0	0.0	1	3.9	1	3.9	0	0.0	0	0.0
9-10	0	0.0	0	0.0	1	3.9	0	0.0	0	0.0	0	0.0	1	3.9	1	3.9	0	0.0	1	3.9
7-8	1	3.9	0	0.0	2	7.7	0	0.0	1	3.9	0	0.0	1	3.9	1	3.9	1	3.9	0	0.0
5-6	3	11.5	5	19.3	2	7.7	2	7.7	1	3.9	4	15.4	3	11.5	0	0.0	2	7.7	1	3.9
3-4	5	19.3	6	23.0	6	23.0	2	7.7	4	15.4	6	23.0	7	26.9	4	15.4	3	11.5	4	15.4
1-2	14	53.8	13	50.0	14	53.8	12	46.0	18	69.2	16	61.5	13	50.0	18	69.2	15	57.7	9	34.6
0	3	11.5	1	3.9	1	3.9	9	34.6	2	7.7	0	0.0	0	0.0	1	3.9	5	19.3	11	42.3
Totals	26	100	26	100	26	100	26	100	26	100	26	100	26	100	26	100	26	100	26	100

a - Identification of native plants.
 b - Identification of improved plants and legumes.
 c - Classifying land for pastures.
 d - Fence repair.
 e - Carrying capacity of pastures.

f - Fertilizers on pastures.
 g - Winter pastures.
 h - Summer pastures.
 i - Establishing and renovating pastures on old fields.
 j - Methods of establishing pastures on wooded areas.

TABLE XXIII (Cont'd)

Periods taught	11k		12l		13m		14n		15o		16p		17q		18r		19s		20t	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
13-14	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
11-12	1	3.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	3.9	0	0.0	0	0.0	0	0.0
9-10	1	3.9	0	0.0	0	0.0	2	7.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
7-8	0	0.0	0	0.0	0	0.0	0	0.0	2	7.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5-6	1	3.9	0	0.0	1	3.9	2	7.7	2	7.7	1	3.9	1	3.9	2	7.7	3	11.5	5	19.3
3-4	1	3.9	2	7.7	3	11.5	6	23.0	3	11.5	1	3.9	4	15.4	0	0.0	4	15.4	3	11.5
1-2	14	53.8	9	34.6	16	61.5	15	57.7	9	34.6	6	23.0	11	42.3	10	38.5	13	50.0	16	61.5
0	8	30.8	15	57.7	6	23.0	1	3.9	10	38.5	18	69.2	9	34.6	14	53.8	6	23.0	2	7.7
Totals	26	100	26	100	26	100	26	100	26	100	26	100	26	100	26	100	26	100	26	100

k - Determining value of pasture as a cash crop.

l - Possibilities of seed production in addition to grazing on pastures.

m - Pasture rotation practices.

n - Sprigging, sodding, and seeding of Bermuda grass.

o - Use of chemicals on pastures for weed control.

p - Staking and constructing farm ponds.

q - Testing pasture soils.

r - Mowing and burning of pastures.

s - Determining cost of developing pastures

t - Determining the kind and mixtures of legumes for pastures.

Data presented in Table XXIV indicates that teachers recognized the importance of the soil conservation service personnel as a resource for teaching. Only 15.4 per cent reported that they did not use the personnel for all-day or adult classes, while 57.7 per cent reported using them for both adult and all-day classes.

TABLE XXIV

EXTENT TO WHICH TEACHERS USED SOIL CONSERVATION SERVICE PERSONNEL FOR
TEACHING PASTURE MANAGEMENT TO ALL DAY AND ADULT CLASSES

Personnel used	Teachers reporting	
	Number	Per cent
All-day classes only	1	3.9
Adult classes only	6	23.0
Both all-day and adult classes	15	57.7
Did not use for any classes	<u>4</u>	<u>15.4</u>
Totals	26	100.0

The summarizations of findings presented in Table XXV reveal that teachers included in this study used, the personnel of the soil conservation service for six methods of instruction. The time was divided and reported to be about equal for: (1) lectures; (2) slides and films; and (3) field trips and tours.

TABLE XXV

METHODS OF INSTRUCTION AND EXTENT TO WHICH TEACHERS USED RESOURCE
PERSONNEL OF THE SOIL CONSERVATION SERVICE

Methods of instruction	Teachers used	
	Number	Per cent
Field trips and tours	7	27.0
Community service	1	3.9
Seeding and sodding grasses	2	7.7
Use of slides and films	6	23.0
Demonstrations	2	7.7
Lectures	8	30.7
Totals	26	100.0

From the data summarized in Table XXVI, it is evident that the instruction covered by S.C.S. personnel was confined to eight areas. About 30.7 per cent of the teachers made use of the S.C.S. personnel's instruction for land judging work and 23 per cent to outlining the program of S.C.S.

TABLE XXVI
AREAS OF INSTRUCTION AND EXTENT TO WHICH TEACHERS USED RESOURCE
PERSONNEL OF THE SOIL CONSERVATION SERVICE

Areas of Instruction	Teachers	
	Number	Per cent
Outline S.C.S. program of work	6	23.0
Land judging work	8	30.7
Land clearing (brush control)	2	7.7
Farm planning	3	11.5
Plant identification	1	3.9
Pasture data	1	3.9
Explain use of PMA	1	3.9
Tree planting	<u>4</u>	<u>15.4</u>
Totals	26	100.0

The use of references in the teaching of pasture can be readily observed by reference to Table XXVII. It is evident that 69.24 per cent of the teachers prefer The Pasture Book by Thompson as a text. A few indicated extensive use of Hi. W. Staten's book Grasses and Grassland Farming.

An equal number or 69.24 per cent of the teachers indicated extensive use of USDA and Oklahoma Extension and Experiment Station Bulletins for major class study. It is evident that a wide selection of reference materials is available and considerable variation occurs as to usage.

The teachers listed the references in this report as the most helpful they had and not as the only references used.

TABLE XXVII

KIND AND EXTENT TO WHICH TEACHERS MADE USE OF PASTURE REFERENCES

References	Teachers reporting	
	Number	Per cent
A. Textbooks		
Pastures for the South - King	2	7.7
The Pasture Book - Thompson	18	69.24
Grasses and Grassland Farming - Staten	4	15.39
Pastures - Lancaster, James - others	1	3.85
Pastures - Bunch and Archer	1	3.85
American Grass Book - Bunch	1	3.85
Using and Management of Soils	1	3.85
Feeds and Feeding - Morrison	1	3.85
Production of Field Crops - Wolfe, Kipps, Hutcheson	1	3.85
U.S.D.A. Year book - 1948	1	3.85
B. Other references		
U.S.D.A. and Oklahoma Experiment Station Bulletins	18	69.24
Magazines	2	7.7
Slides	1	3.85
Native Grasses and Legumes - Phillips Pat. Co.	5	19.3

The author was interested in the teachers opinion relative to the importance of teaching pasture improvement. As can be observed through reference to Table XXVIII, 92.3 per cent of the teachers answered that they felt the teaching of pasture improvement to be very important.

TABLE XXVIII
 OPINIONS OF TEACHERS REGARDING IMPORTANCE OF TEACHING
 PASTURE IMPROVEMENT

Opinion ranking	Teachers reporting	
	Number	Per cent
Very important	24	92.3
Important	2	7.7
Unimportant	0	0.0
Totals	26	100.0

This substantiates the affirmative opinion of the author regarding the teaching of pasture improvement.

The adult program is a very important part of every vocational agriculture teacher's program in the state of Oklahoma. The information presented in Table XXIX indicates that a total teaching time of three hours was given to instruction dealing with pasture improvement by 34.7 per cent of the teachers, with only two hours given by 30.8 per cent of the teachers. One teacher used as much as eight hours.

TABLE XXIX
 DISTRIBUTION OF SCHOOLS IN TERMS OF NUMBER HOURS OF ADULT
 CLASSES DEVOTED TO PASTURES

Classes interval Hours	Schools reporting	
	Number	Per cent
8	1	3.8
7	1	3.8

TABLE XXIX (Cont'd)

6	1	3.8
5	2	7.7
4	2	7.7
3	9	34.7
2	8	30.8
1	2	7.7
0	<u>0</u>	<u>0.0</u>
Totals	26	100.0

Findings summarized in Table XXX reveal that, for the most part, teachers allocate four to six hours of class periods for agriculture I and II, and seven to 12 hours for agriculture III and IV per year. A few departments appear to allocate 19 to 21 hours across the board to all four classes.

TABLE XXX

DISTRIBUTION AND NUMBER OF PERIODS ALLOCATED TO EACH CLASS FOR TEACHING PASTURES BY SCHOOLS

Periods	Schools reporting							
	Agri. I		Agri. II		Agri. III		Agri. IV	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
31-40	0	0.0	0	0.0	1	3.87	0	0.0
28-30	0	0.0	0	0.0	0	0.0	1	3.87
25-27	0	0.0	0	0.0	0	0.0	0	0.0
22-24	0	0.0	0	0.0	0	0.0	0	0.0
19-21	3	11.54	2	7.68	2	7.68	3	11.53

TABLE XXX (Cont'd)

16-18	0	0.0	0	0.0	0	0.0	0	0.0
13-15	0	0.0	0	0.0	5	19.20	2	7.68
10-12	2	7.68	6	23.10	7	26.94	7	26.94
7-9	3	11.54	3	11.54	8	30.76	10	38.45
4-6	12	46.17	15	57.69	2	7.68	2	7.68
1-3	5	19.21	0	0.0	0	0.0	0	0.0
0	1	3.87	0	0.0	0	0.0	0	0.0
Totals	26	100.0	26	100.0	26	100.0	26	100.0

The information from the data presented in Table XXXI indicates that 53.8 per cent of the teachers favor and 34.7 per cent do not favor any change in hours presently allocated to pasture improvement.

TABLE XXXI

OPINION RESPONSES OF TEACHERS REGARDING CHANGING OF NUMBER
OF HOURS NOW ALLOCATED TO TEACHING PASTURE IMPROVEMENT

Opinion	Teachers reporting	
	Number	Per cent
Hours should be increased	14	53.8
Hours should be decreased	0	0.0
No change of hours	9	34.7
No opinion	3	11.5
Totals	26	100.0

Since references are only a part of the teaching devices, the investigator asked for the judgment of the teachers in selection of the most useful teaching aids. It is evident from the information in Table XXXII that an assortment of useful teaching aids for pasture improvement were recognized by the teachers.

TABLE XXXII
EXTENT TO WHICH CERTAIN TEACHING AIDS WERE CONSIDERED MOST
USEFUL FOR TEACHING PASTURES

Aids	Teachers reporting	
	Number	Per cent
A. Visual		
Films	9	34.61
Slides	11	42.30
Specimens	4	15.39
Charts and pictures	3	11.54
B. Others		
Field trips		
(a) In community	19	73.07
(b) Out of community	8	30.80
Tours	3	11.54
Demonstration plots	2	7.77
Experiment station visits	6	23.00
Bulletins	5	19.30

Field trips in the local community were overwhelmingly rated as best. Slides and films were next in order. It seems that our best aid is at our door. Why not use it?

The competitive device, judging contests as used for teaching students, has been mentioned by many in the field of education with varying degrees of favor. The author found that the responses summarized in Table XXXIII indicated that the use of land judging contests was wide spread. Only one teacher indicated that his school was not participating in the pasture and land judging contests. On the county level, 30.8 per cent of the schools entered competition and another 34.7 per cent were proficient enough to have participated in the district contests. The sampling even included schools participating in state and national competition.

TABLE XXXIII

DISTRIBUTION OF SCHOOLS BY LEVEL OF PARTICIPATION IN LAND AND PASTURE JUDGING CONTESTS

Level of participation	Schools reporting	
	Number	Per cent
County only	8	30.8
County, district	9	34.7
County, district, state	3	11.5
County, district, state, national	4	15.4
District and national	1	3.8
No contests	<u>1</u>	<u>3.8</u>
Totals	26	100.0

Could it be that emphasis placed on judging results in the instructor working with too small a percentage of the students?

Recognizing the fact that there are limitations to be overcome in getting pasture improvement on the land, the author asked the teachers to list the factors which they felt were the most difficult to overcome in developing a pasture program in their community. Findings summarized in Table XXXIV indicate a wide range of factors, but most outstanding is 'lack of finance' since some 30.72 per cent of the teachers agreed on the importance of this factor. 'Failure on the part of the farmer to know the value of good pasture' was high, with 19.20 per cent listing this factor.

TABLE XXXIV

FREQUENCY OF FACTORS CONSIDERED BY TEACHERS TO BE MOST DIFFICULT TO OVERCOME IN DEVELOPING A PASTURE PROGRAM

List of factors	Schools reporting	
	Number	Per cent
Drouth	3	11.53
Brush control	2	7.68
Weed control	3	11.53
Erosion	1	3.84
Expense when cattle prices are low	1	3.84
Income tax deduction	1	3.84
Keeping cattle on land at same time of pasture development	2	7.68
Time and money	2	7.68
Lack of proper fertilizer	4	15.36
Overgrazing	3	11.53
Lack of finance	8	30.72
Education	3	11.53
Do not know value of good pasture	5	19.20
Will not use sound practices	1	3.84
Lack of planning	2	7.68
Management	1	3.84
Lack of seed bed preparation	3	11.53
Some failures	1	3.84
Habits of farmers	1	3.84
Hard to get ideas over to farmer and student	2	7.68
Not using aid from agencies	1	3.84

TABLE XXXIV (Cont'd)

Absentee owners	1	3.84
Do not inoculate all legumes	1	3.84
Improper stocking rate	1	3.84
Lack of equipment	1	3.84
No desire	1	3.84

Truly these limiting factors must be considered, but it is a job the teacher must pledge his services to overcome.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The place of pasture improvement in the teaching program for the all-day student and the adult classes is important in southeastern Oklahoma.

The status of the present program, according to this study, is in need of revision if the teachers are to do an effective job with both the student and the adult.

It appears that the student has a general idea about pasture improvement, but he is not rounded out with specific knowledge of the subject.

The pasture improvement program is apparently left up to other agricultural agencies to do the teaching job. The pasture improvement practices are those that fit the PMA program at the time.

It is evident that students tend to have pasture improvement projects in relation to the practices on the home farm. It is questionable as to whether the boy has a real improvement project.

The writer feels that the purposes for which this study was made have been realized to a large degree.

Summarization of Investigation

There were a number of factors found to be interesting and useful. The author feels that the list that follows may serve to be of benefit to those who care to follow this study:

1. There was no relationship between the grade students made on tests and the reported carrying out of the improvement practices on the home farm.
2. There was no difference in the average scores of students with pasture improvement and those without.
3. Students seemed to miss more answers on completion type questions and miss less of the true-false type questions.
4. By chance, a comparison of the two-teacher departments with the one-teacher departments used in this study, indicated that the two-teacher departments did not have any advantage over the one-teacher departments on student scores, improvement projects, or completion of improvement practices on farms.
5. There was considerable evidence to support the assertion that the teaching of pastures has not been as thorough as might be desired.
6. Students indicated that it is a common practice to use mixed clovers in the permanent pastures on the home farms of this area.
7. Bermuda grass was found to be the most commonly used base grass; however, very little of the improved Bermuda is being grown on the farms.
8. Temporary pastures are used to some extent and oats, wheat, rye, rye grass, sudan grass, and vetch are the principal plants used.
9. The students indicated that January, February, and December are the most frequent pasture deficient months; however, there were many

students that indicated June, July, August, and September, were also frequently deficient pasture months.

10. There was evidence that the proper use of fertilizers and soil tests was being neglected.

11. The grazing practices reported in this study were primarily continuous grazing, but there was evidence that some farms were using good practices, too.

12. Teachers indicated in this report that one to two hours were commonly used to teach each of the pasture improvement practices, and that some used up to seven hours while two teachers indicated over 14 hours were used to teach one practice.

13. The range in years of tenure of the teachers reported in this report indicated from one year to 18 years in the present school, but in total years taught, none of the teachers have taught less than three years.

14. Only 38 per cent of the farmers were estimated to have completed improvement practices on their farms. The author feels that this is a very low percentage, considering the importance of pastures in the area studied.

15. The study confirmed the thinking of the author that there are very few improvement practices, if any, that at least some few farmers have not mastered on the home farm.

16. The Soil Conservation Service personnel are valuable resource people and they contribute much toward the total program of vocational agriculture for teaching and demonstrating pasture improvement.

17. A number of good references were reported and included in this report. The Pasture Book by Thompson was selected by 69.24 per cent of the teachers as the most useful text.

18. Field trips in the local community are considered the most valuable teaching method by teachers.

19. From this study it appears that pasture improvement is given only about three meetings or six hours for adult or evening classes. The author was surprised at this small amount of time devoted to pastures.

20. The amount of time allocated to pasture improvement on the normal teaching program is interesting: Agriculture I, four to six hours; Agriculture II, four to six hours; Agriculture III, seven to 12 hours; and Agriculture IV, seven to 12 hours; or a range of 22 to 36 hours. Most of the teachers, 53.8 per cent, thought their hours should be increased; however, 34.7 per cent indicated no change of hours for their programs.

21. All teachers in this report considered pasture improvement as either important or very important, but many of them were not devoting as much time to pastures as needed.

22. All schools, but one, used in the survey reported entering teams in the soils and pasture judging contests. Fifteen and four-tenths of the schools were proficient enough to be selected for state and national competition.

23. The report indicated that 28.7 per cent of the students had pasture improvement projects, and 38 per cent of the farmers had completed pasture improvement.

24. Pasture is not considered by all students or teachers as an enterprise on the farm. There were no cases discovered in which the growing of pasture crops either for forage or for seed production was reported as a productive enterprise project.

25. Teachers listed a total of 26 factors that they thought were the most difficult to overcome in getting a pasture program established on the farms of their communities. The most outstanding factors were: 'lack of finance', 'not using fertilizers properly', and 'not knowing the value of a good pasture'.

Conclusions and Recommendations

All vocational agriculture teachers in the southeast district of Oklahoma could well expend more time and effort in actively promoting a local program of pasture improvement. This needed emphasis will require both, an expenditure of more time, and an improvement in the quality of instruction given to the individual and to the group being worked with.

The specific recommendations that follows, the author feels, are warranted.

1. A survey of year-round pastures for the local community should be made first.

2. Teachers need to use contests more on a local school level for all students to learn, rather than just to "win" over another team of the county, district, state, or national level. Let the winning be a result of learning on the local level.

3. In training judging teams, teachers should emphasize the application of the answers rather than specific answers for the contest card.

4. This report showed that teachers were in agreement that the most effective teaching aid was a well-planned field trip into the local community. Teachers are urged to make more use of this method of teaching.

5. Teachers can arouse interest and make instruction more effective by establishing demonstration plots in the community. These plots provide learning activities for both high school students and adults.

6. Develop pastures into a productive enterprise project.

7. The author would suggest that other studies of similar nature be made in southeastern Oklahoma on a more detailed level, but less extensive scale.

8. Due to the growing importance of livestock in Oklahoma, other districts in the state should make a similar study.

9. A suggested teaching outline is included.

A SUGGESTED TEACHING PLAN OUTLINE FOR PASTURE IMPROVEMENT
IN SOUTHEASTERN OKLAHOMA

Problems	Jobs	Suggested number periods
Choosing pasture plants	a. Recognizing desirable and undesirable pasture plants	3
	b. Recognizing varieties of grasses and legumes	3
	c. Station studies on varieties of grasses and legumes	2
Establishment of permanent pastures	a. Seeding, sodding, and sprigging methods	2
	b. Seed bed preparation, seeding rates and combinations to use	2
	c. Stocking rate of newly established pastures, and management factors	1
Fertilization of pastures	a. Plant food removal by forages	2
	b. Selecting fertilizers, rates per acre, and costs	3
	c. Soil tests, soil samples, analysis for pasture	2
Permanent pastures	a. Basic grasses for soil types	2
	b. Pasture and range judging, land use classes	7
	c. Legume combination for base grasses	1
	d. Pasture calendar on year round pasture	1
Temporary pastures	a. Kinds of plants to use	1
	b. Seed bed preparation, seeding rates time of seeding	2
	c. Determining cost and values	2

(cont'd)

Weed and brush control	a. Importance of weed and brush control - field trips	3
	b. Mechanical and chemical methods for brush control	2
	c. Mechanical and chemical methods for weed control	3
	d. Grazing practices and burning practices	1
Farm ponds	a. Lay-out and construction	3
	b. Care and management of ponds	1
Fencing	a. Value of good fences	1
	b. Selection of fencing materials and construction problems	3
Equipment	a. Selection and use of pasture maintenance equipment	1
Miscellaneous	a. Establishment of demonstration plots	3
	b. Agencies useful to establishment and maintenance of pastures	2
Total hrs.		40

The writer feels that the results of the study justifies the allocation of 40 hours to the teaching plan for pastures. Although all departments have a teaching outline in their department, the author thinks that a revision is easier when a pattern is given.

The most hours are allocated to 'pasture and range judging' which is primarily outdoor work. Teachers may take this opportunity to include identification and plant selection at the same time.

Since fertilizers are not used extensively on pastures in the area and test scores on fertilizers were low, the investigator felt that the time given in this outline is a minimum.

The author included fencing in this study because fences are in poor conditions in his own area and other areas are similar.

The investigator is hopeful that these comments will stimulate teachers to accept the challenge to do a more effective job in teaching pasture improvement.

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APPENDIX

- A. Letter of transmittal
- B. Questionnaire
- C. Suggested list of references for
pasture improvement

APPENDIX A

LETTER OF TRANSMITTAL

Dear Vocational Agriculture Instructor:

The purpose of this questionnaire is to secure information relative to the teaching of pastures in southeast Oklahoma. This information will be used in a Problem report and evaluated to determine: how much time is being given to pasture studies; to evaluate the amount of teaching done; to suggest a suitable number of periods to teach in high schools; to determine the facilities needed for teaching pastures; to evaluate the practices used by boys and adults in pasture improvement and development; and to suggest a suitable list of references to be used in teaching pastures.

Your cooperation is sincerely asked in filling out the questionnaire.

Yours truly,

Robert Massengale, Instr.
Vocational Agriculture
Hugo High School

APPENDIX B
QUESTIONNAIRE

Name of the School _____

Name of the Vocational Agriculture Instructor _____

1. How many years have you taught in the present department? _____

2. What is the total number of years taught? _____

3. How many periods were taught on the following phases of pasture development and management this year?

1. Identification of native plants. _____
2. Identification of improved plants and legumes. _____
3. Classifying land for pastures. _____
4. Fence repair. _____
5. Carrying capacity of pastures _____
6. Fertilizers on pastures. _____
7. Winter pastures. _____
8. Summer pastures. _____
9. Establishing and renovating pastures on old fields. _____
10. Methods of establishing pastures on wooded areas. _____
11. Determining value of pastures as a cash crop. _____
12. Possibilities of seed production in addition to grazing on pastures. _____
13. Pasture rotation practices. _____
14. Sprigging, sodding, and seeding of Bermuda grasses. _____
15. Use of chemicals on pastures for weed control. _____
16. Staking and constructing farm ponds. _____
17. Testing pasture soils. _____
18. Mowing and burning of pastures. _____
19. Determining cost of developing pastures. _____
20. Determining the kind and mixtures of legumes for pastures. _____

4. Number of farmers in service area. _____

5. Number of farmers who did pasture improvement work. _____

6. Check in the appropriate column for each of the practices listed for the farmers with pasture improvement as to whether they all, part of them, or none of them carried out the practice the past year.

	ALL	PART	NONE
1. Seed Bermuda grass	_____	_____	_____
2. Plant coastal Bermuda	_____	_____	_____
3. Plant midland Bermuda	_____	_____	_____
4. Plant greenfield Bermuda	_____	_____	_____

- 5. Planted small grain and vetch for winter pastures. _____
- 6. Used sod drill to plant vetch and grain in sod. _____
- 7. Plant fescue for pasture. _____
- 8. Fertilize pastures properly. _____
- 9. Prepare seed bed for sprigging _____
- 10. Use sprigging machines. _____
- 11. Overseeded Bermuda with clovers. _____
- 12. Use sudan for summer pasture. _____
- 13. Plant lespedeza for pasture. _____
- 14. Harvest hay from pasture in addition to grazing. _____
- 15. Use alfalfa for grazing. _____
- 16. Inoculate all legume seeds planted for pasture. _____
- 17. Harvest clover seeds from pastures after grazing. _____
- 18. Farm ponds fenced from livestock. _____
- 19. Use reseeding crimson clover in the pasture mixture. _____
- 20. Use ladino and white dutch in pasture mixture. _____
- 21. Use chemicals to control weeds. _____
- 22. Use chemicals to control brush. _____
- 23. Use dozier to remove brush. _____
- 24. Use other mechanical devices to remove brush. _____
- 25. Control weeds by clipping. _____
- 26. Practice burning of pastures. _____
- 27. Permanent pastures renovated every three years. _____
- 28. Have an eleven months pasture season. _____
- 29. Use proper stocking rate. _____
- 30. Have year round water supply. _____
- 31. Farmers take advantage of PMA payments on pasture. _____

7. Do you use Soil Conservation District personnel to help teach pastures to all-day boys? _____ To adult classes? _____

8. In what ways do you use their services? _____

9. What references do you use for teaching pastures? _____

10. Do you consider the teaching of pastures as:
Very important _____ Important _____ Unimportant _____
11. Do you take part in County or Community pasture tours? _____

12. How many adult or young farmer meetings have you held on pasture management or development this year? _____
13. How many hours do you normally allow for teaching pasture management in Agri. I _____, Agri. II _____, Agri. III _____ Agri. IV _____?
14. Do you think you should increase these hours? _____ Or decrease _____?
15. Do you enjoy teaching pastures? _____
16. What aids do you consider to be most useful for teaching pastures?

17. Do you enter teams in the contests for land, pasture, and range judging? _____ Have you entered teams in County _____ District _____ State _____ or National contests _____?
18. Number of boys who completed pasture improvement practices the past year. _____
19. What factors do you consider to be the hardest to overcome in developing a pasture program? _____

PASTURES QUESTIONNAIRE FOR SENIOR AGRICULTURE STUDENTS

NAME _____ SCHOOL _____ DATE _____

DIRECTIONS: Please write the word True or False for each of the statements below.

1. _____ Pastures are considered a farm enterprise.
2. _____ Bermuda grass is a good native grass.
3. _____ Alfalfa is used chiefly as a pasture plant.
4. _____ Abandoned land is very desirable for pasture land.
5. _____ Animal units are used to determine the carrying capacity of a pasture.
6. _____ Pastures seldom need attention to produce economical forage.
7. _____ All permanent pastures should be terraced.
8. _____ Temporary pastures are used to fill in when permanent pastures are poor.
9. _____ Perennial grasses are those of temporary nature that require reseeding each season.
10. _____ Class I land makes poor pasture.
11. _____ Class VII land is used for pasture because it is too poor for cropping.
12. _____ Land use is an important factor in determining the pasture site.
13. _____ Class V is unfit for pasture due to wetness.
14. _____ Legumes are used in pastures to supply nitrogen to the grasses.
15. _____ Too many legumes may crowd out the base grasses.
16. _____ Blue stem grasses are the best improved grasses for southeast Oklahoma.
17. _____ All pastures should have the same kinds of plants or combinations of plants.
18. _____ Korean Lespedeza is a good winter legume.

19. _____ Vetch makes excellent summer grazing.
20. _____ Bermuda grass makes good summer grazing.
21. _____ Coastal Bermuda can be established easier by seeding than by sprigging.
22. _____ Greenfield Bermuda was developed at the Oklahoma State University Experiment Station.
23. _____ Mowing of pastures tends to control weeds and equalizes grazing of the pasture.
24. _____ Most weeds in pastures can be controlled with chemicals.
25. _____ Fertilizers on pastures are a waste of time and money.
26. _____ Bottom lands produce the most dependable grazing at less cost per pound of gain.
27. _____ Upland sometimes costs more to establish in pasture than the original cost of the land.
28. _____ The farm pond should not be fenced so that livestock can get water on all sides.
29. _____ Good pastures should never be used to harvest seed because of the loss of pasturage at the time.
30. _____ Bloating is only a local problem and is not associated with the types of plants in the pasture.
31. _____ Bermuda grass is a good year round pasture plant.
32. _____ Kentucky fescue is a good legume to grow.
33. _____ Grasses should be planted about four inches deep.
34. _____ 0-20-0 is a good complete fertilizer.
35. _____ 10-20-10 contains the same amount of phosphate as super-phosphate.
36. _____ Nitrogen fertilizers give best results if applied in the fall or early spring.
37. _____ Planting of one-half to two pounds per acre of Indian clover in a mixture is sufficient for pasture.

DIRECTIONS: Fill in the blank spaces with the word which correctly completes the following statements:

1. Legumes should always be _____ before being planted.
2. The best base grass for southeastern Oklahoma is _____.
3. The average permanent pasture will graze about _____ months.
4. Well improved permanent pastures may supply grazing _____ months.
5. Vetch and small grains should be seeded in the months of _____ and _____.
6. Legumes supply _____ in the ration.
7. A good summer legume for pasture is _____.
8. The movement of livestock from one grazing area to another in about equal periods of time is called _____.
9. Four grass type plants for winter grazing are _____, _____, _____, and _____.
10. Four good legume plants for winter grazing are _____, _____, _____, and _____.
11. A good chemical to use to control weeds in pastures is _____.
12. A good chemical to use to control brush is _____.
13. Korean lespedeza should be seeded at the rate of _____ per acre and planted in the months of _____.
14. Harry vetch may be expected to produce grazing from the month of _____ to the month of _____.
15. A complete fertilizer supplies _____ for the plants.
16. Most legumes have a high requirement for _____ fertilizer.
17. Give a good pasture combination for the limestone soils: _____

DIRECTIONS: Draw a circle around the numbers of the TWO statements which are true in each following group:

1. Two ways of supplying phosphate to the land are:
 1. Apply two tons of lime per acre.
 2. Apply rock phosphate at the rate of 400 to 1000 lbs. per acre.
 3. Apply ammonium nitrate at 200 lbs. per acre.
 4. Apply superphosphate at 150 lbs. per acre.

2. Legumes are plants which:
 1. Furnish nitrogen for use by base grasses.
 2. They are good grasses to use.
 3. Furnish plenty of protein for livestock.
 4. Help to maintain the acidity of the soil.

3. The best pastures are found:
 1. On steep slopes so livestock will not bog.
 2. On Class V land.
 3. On land let lay out due to poor crops.
 4. On Class I land.

4. Lespedeza is a good pasture plant because:
 1. It grows during the summer.
 2. It is a desirable winter legume.
 3. It does well in heavy Bermuda.
 4. It produces seed every year.

5. Weeds can be controlled by:
 1. Mowing in early spring.
 2. Use of chemicals in late fall.
 3. Mowing during summer months.
 4. Controlled grazing.

6. Pastures can be improved by:
 1. Overseeding Bermuda grass with a legume.
 2. Grazing plants to within two inches of the ground.
 3. Renovating sods every three years.
 4. Burning off the dead grass and weeds each year.

7. The most valuable native grasses for pastures are:
 1. Broomsedge
 2. Serecia
 3. Big Bluestem
 4. Little Bluestem

8. In establishing pastures it is best to:
 1. Prepare a good loose seed bed for planting.
 2. Graze lightly the first year.
 3. Inoculate the legume seed.
 4. Burn all leaves and grass residue before seedbed preparation.

9. Cool season grasses are:
 1. Broomsedge
 2. Scribner panicum
 3. Western wheat grass
 4. Buffalo grass

10. The tall grasses are:
 1. Switch grass
 2. Silver bluestem
 3. Big bluestem
 4. Sand dropseed

11. Properly grazed pastures will be indicated by:
 1. Grazed to a uniform height of forages of about 6 inches.
 2. All forage plants grazed to about 2 inches in height.
 3. Some areas grazed to 1 foot height and others of 3 inch height.
 4. All plants grazed to no less than 12 inches in height.

ADDITIONAL INFORMATION

DIRECTIONS: Those who have pastures fill in the blanks below:

Do you have pasture on your farm? _____ If so, how many acres do you have on your home farm? _____ Number of acres in woods _____
 Number of acres owned _____ Number of acres of pasture rented _____

1. Permanent pastures. Number of acres _____

Circle each of the kinds of plants used in permanent pastures.

Mixed native grasses, woods grasses, Bermuda, King Ranch, Fescue, mixed clovers. Name others _____

2. Temporary pastures. Number of acres _____

Check each of the kinds of plants used and give acres of each, if possible

Sudan grass _____, oats _____, wheat _____, rye _____, barley _____, rye grass _____. Name others _____

3. Bermuda base pastures. Number of acres _____

Number of acres and the kinds of Bermuda grass used.

Common _____, Coastal _____, Midland _____, Greenfield _____

4. Circle each of the legumes used in your pasture program.

Hop clover, lespedeza, Serecia, Burr clover, Black Medic, Crimson Clover, Button Clover, Alfalfa, Sweet clover, Vetch, Austrian Winter Peas. Name others _____

5. Check the following grazing practices used on your farm.

Continuous grazing _____, move cattle from one pasture to next to give the grass a rest _____, keep cattle off of pasture until the grass is 4 inches high or more _____.

6. Circle the months that you do not have plenty of pasture: Jan., Feb.,

Mar., April, May, June, July, Aug., Sept., Oct., Nov., Dec.

7. What pasture plants do you have for winter pasture? _____

8. Number of acres of pasture normally mowed for weed control. _____

9. Number of acres of pasture chemicals were used on for weed control _____.
10. Did you use fertilizers on your pastures the past year? _____
11. Check the fertilizers used on your pastures and give the rate per acre, if possible, in the following blank spaces:
- 5-10-5 _____, 10-20-10 _____, Superphosphate _____,
Limestone _____, Sodium Nitrate _____, Ammonium Nitrate _____,
Manure _____. List others _____.
12. Do you have a soils analysis run on your pasture land? _____
13. Does your farm use the Soil Conservation Reserve or the Soil Bank program? _____
14. How many acres of pasture are allowed per cow and calf on your farm? _____
15. Do you have pasture improvement included in your Supervised Practice program as an improvement project? _____
16. Do you consider pasture as an enterprise on your farm the same as cotton, corn, grain sorghums, etc.? _____
17. Check the condition you consider fits the pasture on your home farm.
Excellent _____, Good _____, Average _____, Below average _____
18. Check the answer which more nearly fits the beef production on your farm. 50 lbs. per acre _____, 51 to 100 lbs. per acre _____,
101 lbs. or more per acre _____.
19. Number of head of beef cows 2 years old or over _____. Number under 1 year old _____.
20. Number of producing dairy cows _____. Number of young dairy stock _____
21. Pounds of milk produced daily at the present time. _____. The greatest number of pounds of milk produced daily this year _____.
Give the months the greatest production was made. _____

APPENDIX C

SUGGESTED LIST OF REFERENCES FOR PASTURE IMPROVEMENT

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