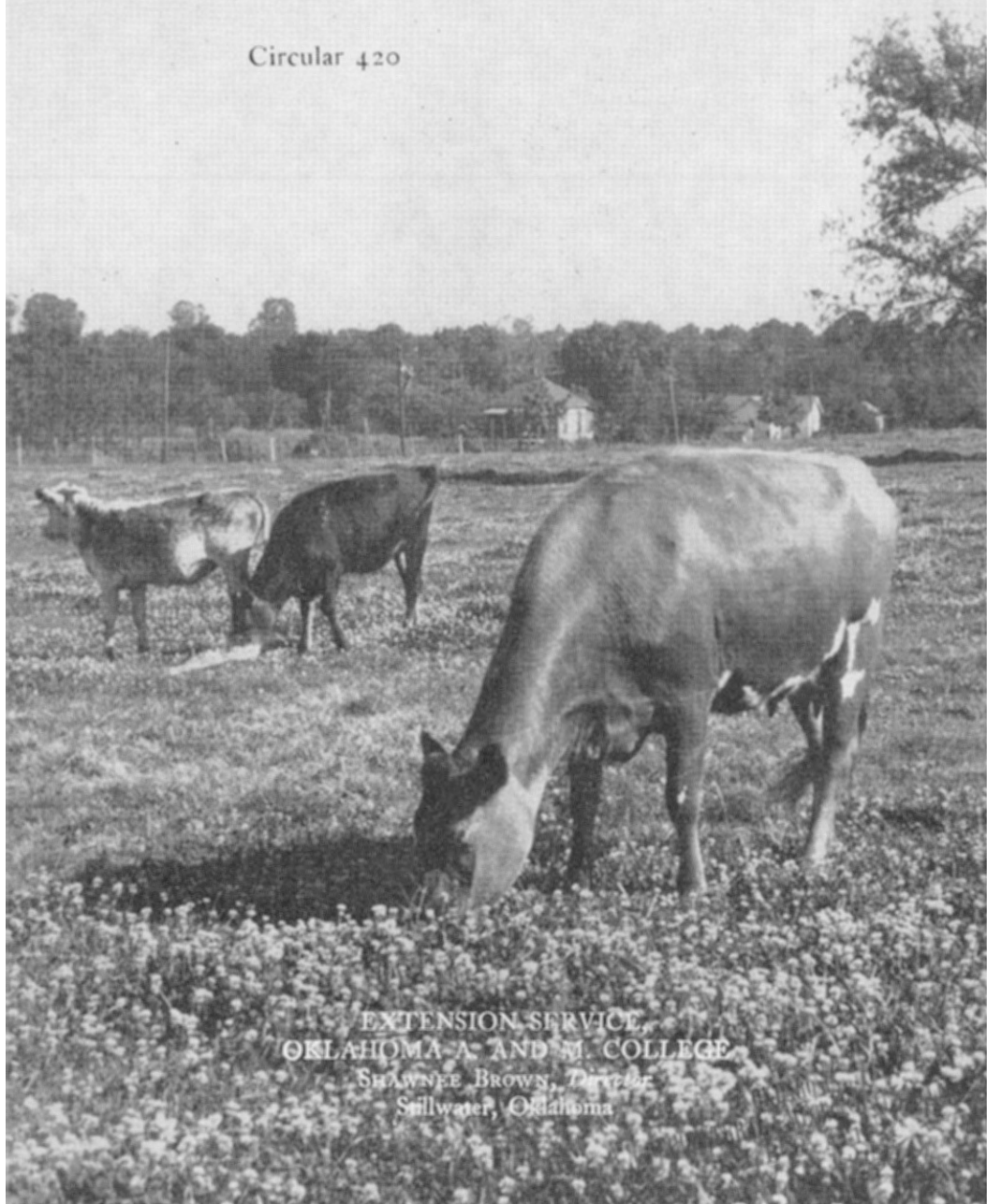
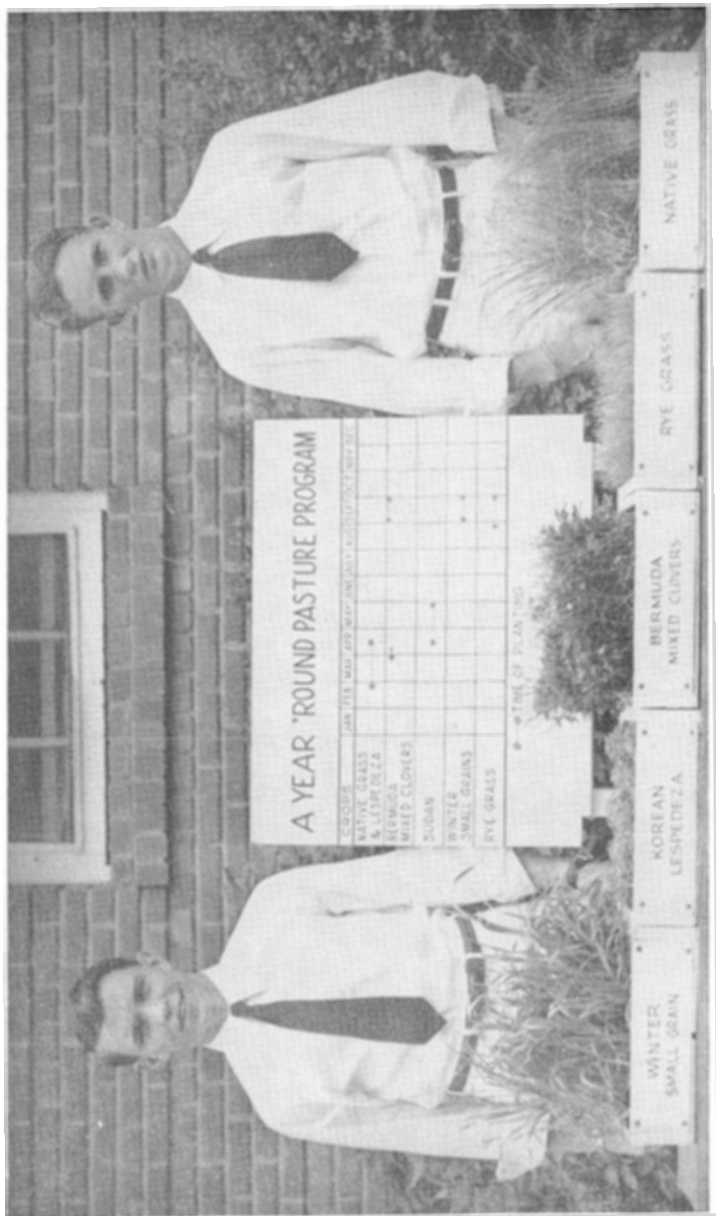


# 4-H CLUB PASTURE PROJECT

Circular 420



EXTENSION SERVICE,  
OKLAHOMA A AND M. COLLEGE  
SHAWNEE BROWN, *Director*  
Stillwater, Oklahoma



“A 4-H Club Pasture Demonstration”

# 4-H CLUB PASTURE PROJECT

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## INTRODUCTION

The territory which is now Oklahoma was once almost entirely covered with grass. The early settlers were cattlemen. Large ranches containing thousands of acres were created and cattle were present in great numbers. Grass was plentiful. Gradually, settlers seeking homesteads came, and the open ranges were cut up into small farms. The buffalo grass and the bluestems were plowed under and much of the land placed under cultivation. Some of this land was fairly level with deep soil; it was suited for growing crops. Other fields were steep, and the soil washed badly after the protective covering of grass was destroyed. During these early years many acres that should have remained in grass were put under cultivation.

These steeply sloping fields, after the first few seasons of good crops, began to wash away. The return of these acres to grass is a good solution to the problem of erosion. Thousands of acres of land have been farmed until it is very low in fertility. The surface soil has washed (eroded) away, the plant food is gone, and crop yields are low. The decayed plant growth and mass of roots that once held the soil in place are gone; the soil does not hold water for crop use during dry periods, and these acres become "idle" acres, nonproductive and unprofitable. These acres can be returned to grass and made productive acres.

Pasture is the natural feed for most classes of livestock. Good pasture contains all the necessary food requirements to promote health, growth, and maturity. Sunshine manufactures protein in the leaves of pasture plants to build muscles and nerves. Sugar and starches are present to supply warmth and energy. Lime, phosphorus, and all other minerals needed for bone building and other uses are present in good pasture. Furthermore, pasture plants are high in the valuable vitamin content, without which animals cannot thrive.

Pasture is the cheapest form of feed. It was determined long ago that feed sufficient to produce 100 pounds of gain on cattle can be supplied by good pasture much cheaper than by producing it in the form of grain. Hogs are seldom sold at a good profit unless pigs and

breeding stock have access to good pasture. Suitable pasture for poultry pays big dividends.

Pastures for laying hens and other poultry may mean the difference between low production and high production—the difference between actual loss or good profit.

The total feed value of an acre of pasture is often greater than that of the grain which might be grown on the same acre. A good permanent pasture containing suitable grasses and legumes may produce as much as 300 pounds of gain per acre. That is more gain than can be produced from 50 bushels of corn when allowance is made for the high cost of the protein that must be fed with corn.

A number of clovers and grasses can be grown together in permanent pastures in some localities, thereby providing grazing for the greater part of the year. Such permanent pastures on fertile soil have been known to produce more than 500 pounds of gain per acre. This would equal the production of more than 85 bushels of corn.

The yield of a pasture in food value depends upon many factors. Rainfall and fertility of soils are the most important of these. It depends on the kind and number of different plants, the stand, and the freedom from objectionable weeds and inferior grasses.

There are unlimited possibilities for club boys who choose pasture as a 4-H project. It is not limited to the rebuilding of worn-out crop land. It is known that regrassing is one of the best treatments to give this kind of land and means good land use. Pasture possibilities do not stop with worn-out land. Rich, fertile acres can be used for pasture and made to return as much in grass as when used for any other crop. There are many native grasses that can be grown profitably; there are also many tame grasses and clovers that thrive in Oklahoma and are valuable for pasture, for hay, and for seed production. The club member who enrolls in the pasture project will find the work both interesting and profitable.

## 4-H PASTURE PROJECT

Because of the demand for information about pasture improvement, the close relationship that pasture has to the livestock industry, and the opportunity to realize good profit from pasture land, the pasture project is offered to farm boys. The project is outlined as follows:

### Objectives

1. To teach farm boys how to establish permanent pastures in the different sections.
2. To show the importance of supplementary pasture in lengthening the grazing season and to protect permanent pastures when they are in a state of low productiveness or when they are dormant.
3. To teach methods of improving pasture by use of seed of improved pasture plants.
4. To make possible an opportunity to earn money in connection with this phase of 4-H Club work.

### Project Phases (Select one or more)

1. Plant one acre or more of permanent pasture.
2. Plant one acre or more of temporary pasture.
3. Plant one acre or more of selected pasture plant or plants as a seed-saving project.

### Exhibit Requirements

1. Project 1.—Prepare three standard bundles (not less than three inches or more than five inches in diameter) from permanent pasture plants grown in the pasture. Also, exhibit samples (two table-spoons) of seed from three of the different plants in the pasture.
2. Project 2.—Prepare one standard bundle of forage and one peck of seed.
3. Project 3.—Prepare one standard bundle of forage and one peck of seed.

### Reports

1. Fill out Progress Report, furnishing information requested about preparation of seedbed, acreage, date of seeding, soil treatment, cultivation and harvesting of seed (in 2 and 3), and total number of days pastured.
2. Write a narrative giving a history of work and progress made.
3. Furnish two pictures of the project; one which will show a view of the area, and one which shows the density or stand of pasture plants.

### SELECTING A SUITABLE AREA

The county agent will be great help in selecting the most suitable available area for this project. Pastures, like farm crops, yield best on fertile soils. Good pastures are never found on land which is low in lime and phosphorus; therefore, the first step in procedure is to test the soil to find out its mineral content. If this soil test shows that lime or phosphorus or both of these minerals are needed, the amount recommended should be added to the soil. Instructions furnished in Circular 412, "A Soil Improvement Program"; OP-34, "Lime for Oklahoma Soils"; and OP-26, "Phosphorus," should be carefully followed.

Grasses require an abundance of nitrogen. Where soil is known to be worn-out and is low in nitrogen and decayed plant material (organic matter) it will be most advisable to select Project 2. On this type of land first add minerals and then grow plants that supply nitrogen, hold soil, and furnish pasture while fertility is being improved. After this project has been practiced for one or two years this type of soil will be suitable for a permanent pasture project.

### PREPARATION OF SEEDBED

Before beginning to prepare the seedbed, it is well to learn something about the plants which are to be selected. When native grasses are to be planted, one should first think about nature's method of planting. What is nature's seedbed like? What is this method of seeding?

Simply this—nature's native wind-blown seed is caught and held by bunches of grass. Later, when the mass of dead blades begin to decay this seed is washed down through and deposited under the mulch and on the surface of the soil. Further decay of this mulch takes place under the snow and when spring rains begin finally results in a thin covering of decayed organic matter deposited over the seed.

Now what about the character of this surface soil? It has not been plowed or otherwise cultivated. It is firm. Yet, since this surface soil is derived in large part from rotted grass it is loose enough to permit the fiber roots to grow and absorb water, and with it, plant food.

And now what about the young plant? A three-day-old plant may have a single blade less than an inch in length and less than one-

sixteenth of an inch wide. This seedling, even under the best conditions, makes slow growth. The roots are really fibrous, almost silk-like. Seedlings of some of the valuable clovers are just as delicate as the native grasses. What chance would such a plant have on loose, cultivated land? Without protection, what chance would it have to survive even one hour's hot sunshine and wind or a hard beating rain? What chance would such a plant have if seed were planted two inches under the surface? The answer to all questions is, "None."

A highly successful system of seeding native grasses has been developed. In brief, it consists of rebuilding nature's seedbed by leaving a mulch of Sudan grass, sorghum, or other close grown annual crops on the surface throughout the winter. Then seed is planted under this mulch in April. This method, although it requires a year's preparation in some counties, is a practical method.

On a small area it is possible to save time by adding a mulch of cotton burs, straw, or decaying leaves from a timbered area. It is better to delay planting several pasture clovers until the grass that is grown with them has formed a surface mulch.

All preparation of soil should be made with the idea in mind of doing away with weeds and obtaining a firm seedbed.

When Project 2 or Project 3 has been selected soil should be prepared in the same manner as would be required if alfalfa were to be planted. Seed from selections of improved pasture plants are usually planted in rows by hand or with a garden seed drill. This requires the same preparation that is ordinarily used for a garden.

### **SUITABLE PASTURE PLANTS**

For permanent pasture, what plants serve best when grown together in a pasture mixture?

The answer to this question depends upon the climate, rainfall, soil character, and soil fertility. It is well to consider some of these conditions.

Sudden changes in temperatures, with prolonged drouth either in winter or summer, accompanied by cold winds and subzero weather or extremes of heat with hot winds and dry atmosphere, prevent the usefulness of some good varieties of pasture plants, altogether, and limit others to different local areas. However, most of the best pasture plants in the world are grown somewhere within the

state. Very few of these can be grown in all sections. No permanent pasture mixture can be suggested for any large area. The variation in soil character on the same farm or ranch often brings about variations in the mixtures of suitable grasses. It can be stated that more than 90 percent of the permanent pasture in the western half of Oklahoma consists of vigorous, deep-rooting, drouth-resisting native grasses, and that the number and kind of these species that should be planted together will depend upon the kind of soil which is selected for a project. Sandy farm land which was once covered with scrub oak, and fine sandy subirrigated land along streams in southwestern Oklahoma and on more limited areas the same type of land in counties still further north have proved to be suited for Bermuda grass.

A collection of widely known cool weather pasture plants produce permanent pastures in northeastern Oklahoma, while a few subtropical plants are useful in southeastern sections.

#### **Temporary Pastures**

Selecting a temporary pasture plant depends largely on whether grazing is desired in summer or winter. Fortunately, there are certain clovers and legumes that improve the soil and supply pasture in summer and others that serve in the same way in the winter. It is wise to adopt this project on land that will later be planted to permanent pasture.

### **SELECTING A PASTURE PLANT FOR SEED HARVESTING PROJECT**

Two general lines of procedure should be considered when plans are made for this project. First, it is possible to make good profits by harvesting seed from such crops as lespedeza, rye grass, sweet clover, yellow hop, and others. Second, it is possible to plant seed-increase plots of improved strains of permanent grasses or other plants. In all phases of pasture work good profits may be realized. When establishing new pasture or rebuilding depleted pasture, it is recommended that adapted, improved strains be used. Before selecting new introductions, it is well to compare the records such species have made at experiment stations with records of grasses or clovers with which we are familiar. Your county agent can help you in selecting the most desirable grasses and clovers for your project.

There are many mixtures of grasses and legumes that can be used to provide good pastures. A few mixtures are suggested and the plants included are fully discussed in the references listed at the close



of this bulletin. The rates of seeding may be increased somewhat if quick stands on small areas are desired. However, the suggested rates have been found to be quite practical for general use in the state.

**WESTERN OKLAHOMA**

<i>Sandy or semi-sandy soils</i>	<i>Pounds of Seed Per Acre</i>
Blue grama - - - - -	3 to 5
Side-oats grama - - - - -	6 to 8
Sand bluestem - - - - -	4 to 6
Sand lovegrass - - - - -	1
Little bluestem - - - - -	2

<i>Heavy or semi-tight soils</i>	
Buffalo grass (when sodded 3' apart in 3½' rows) -	1 to 2
Side-oats grama - - - - -	3 to 5
Blue grama - - - - -	8 to 10
Sand lovegrass - - - - -	1
Little bluestem (in west central) - - - - -	3 to 6

<i>Fine sandy lowland soils</i>	
(Can be used as meadow)	
Switch grass - - - - -	3 to 5
Indian grass - - - - -	5 to 6
Side-oats grama - - - - -	6 to 8
Little bluestem - - - - -	2 to 4

<i>Other sandy soils</i>	
In some counties in southwestern Oklahoma and in some sections farther north there are areas where Bermuda grass can be successfully grown. In such cases a pasture mixture might well consist of—	
Bermuda grass (sodded)	
Sweet clover - - - - -	8 to 10

<i>Temporary Pasture Plants</i>	
Cold weather—	
Wheat, rye, barley, oats	
Sweet clover	
Warm weather—	
Sudan grass	
Sorghums	

**EASTERN OKLAHOMA**

	<i>Pounds of Seed Per Acre</i>
Bermuda grass	
Lespedeza - - - - -	8 to 15
Hop clover - - - - -	1
White Dutch clover - - - - -	1 to 3

*Some Southeastern Counties*

Bermuda grass		
Lespedeza	- - - - -	8 to 15
Black medic	- - - - -	4 to 8
Bur clover	- - - - -	1 to 4 bushels of burs
Dallis grass (Planted after pasture is well established)	- - - - -	4 to 6
Yellow hop	- - - - -	1 to 2

*Some Northeastern Counties*

Bermuda grass (sodded)		
Kentucky bluegrass (Planted after pasture is established)		
Orchard grass	- - - - -	4 to 8
Red top	- - - - -	4 to 6
White Dutch clover	- - - - -	1 to 3 Planted 2nd year
Yellow hop clover	- - - - -	1 to 2 Planted 2nd year
Big hop clover	- - - - -	1 to 2 Planted 2nd year
Black medic	- - - - -	4 to 8 Planted 2nd year

Rye grass, lespedeza and yellow hop also make a good combination.

**TEMPORARY PASTURE**

Some of the best temporary pasture plants for warm weather are—

Sudan grass  
Sweet clover  
Korean lespedeza

Temporary pasture suggested for cool weather pasture—

Rye grass  
Vetch and rye grass or rye  
Sweet clover  
Big hop clover  
Bur clover

**SUGGESTED PASTURE FOR SEED SAVING PROJECT**

Improved short grass (blue grama, side-oats grama, buffalo grass)  
Improved tall grass (big bluestem, little bluestem, Indian grass, sand bluestem, switch grass)

Rye grass, lespedeza, yellow hop clover, and vetch with rye

**In making a study of grass clovers, it is well to learn something about:**

1. Identity and season of growth
2. Soil type preference
3. How seedbed should be prepared
4. Rate, date, and method of seeding
5. Grasses and clovers which grow well together
6. Geographical adaptability
7. Value as pasture plants in meat production
8. Seeding habits and value as a cash seed crop

**Conclusion**

Pasture is needed on every farm to furnish feed for cattle, horses, hogs, sheep, and poultry. A good pasture will cut down the cost of livestock production. It reduces the amount of grain required and livestock thrive on good grass. An acre planted to the proper mixture of pasture plants can produce as much food as will an acre used to grow grain crops. It is important to select the combination that is suited to your area of the state and to the kind of soil on your own farm. Different kinds of soil require different mixtures for best results. The mixtures outlined in this bulletin are for broad areas and some changes may be necessary for your particular plot. Therefore, it is important that you visit the county agent and talk over your plans with him before making the planting. You want the very best pasture that can be grown on your farm. He can help you make this desire come true.

**PASTURE MANAGEMENT**

The two greatest enemies to good pastures are fires and over-grazing. Cool weather plants do not survive in a pasture that is swept by fire.

A permanent pasture needs a surface mulch of grass. This mulch is a storehouse for the seed and helps to prevent erosion. It holds moisture, keeps down evaporation, and protects the soil from the hot rays of the sun during the summer months. It is formed by the dead grass that falls to the ground and gradually accumulates. It forms a protective covering or blanket. The pasture needs this protection. When we allow fire to sweep across the pasture this blanket is destroyed. The soil is left naked and exposed. The grass seed that nature intended to grow and replace some of the old plants is destroyed. The heavy rains that come wash the bare soil away. Let's keep nature's blanket on the pasture. **DON'T BURN. STOP FIRES.**

Over-grazing (putting too much livestock on the pasture) is a bad practice and damages the pasture. The grass is eaten too closely, it does not reseed as it should, and weeds increase. If we over-graze the pasture the good grasses that the livestock like best begin to disappear, and the poorer grasses and weeds increase rapidly. Study the pasture and graze it wisely. A mowing machine is a very important factor in controlling weeds. Clip the weeds before they seed.

High-yielding pastures use heavy amounts of plant food. The soil test shows the minerals in the soil. In many areas it will be necessary to add plant food at intervals of four or five years to keep the pasture producing at a high level.

**SELECTED REFERENCES**

- Farmers' Bulletin 1812—"Native and Adapted Grasses for Conservation of soil and Moisture in the Great Plains and Western States"
- Arkansas Experiment Station Bulletin 407—"Permanent Pasture Studies"
- Kansas Experiment Station Bulletin 772—"Management of Kansas Permanent Pastures"
- Missouri Experiment Station Circular 289—"Soil Treatment to Improve Pastures"
- Oklahoma Extension Service—O. P.-23—"Buffalo Grass"
- Oklahoma Extension Service—O. P.- 5—"Stop Grass Fires"
- Oklahoma Extension Service—O.P.-26—"Phosphorus"
- Oklahoma Extension Service Circular 408—"Lime for Oklahoma Soils"
- Oklahoma Extension Service Mimeograph—"Measuring Progress of Pasture Demonstrations"
- Oklahoma Extension Service Circular 507—"Lespedeza"

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