

A STUDY OF NATIVE GRASSES
OF COMANCHE COUNTY, OKLAHOMA

By

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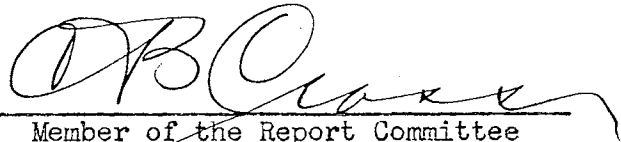
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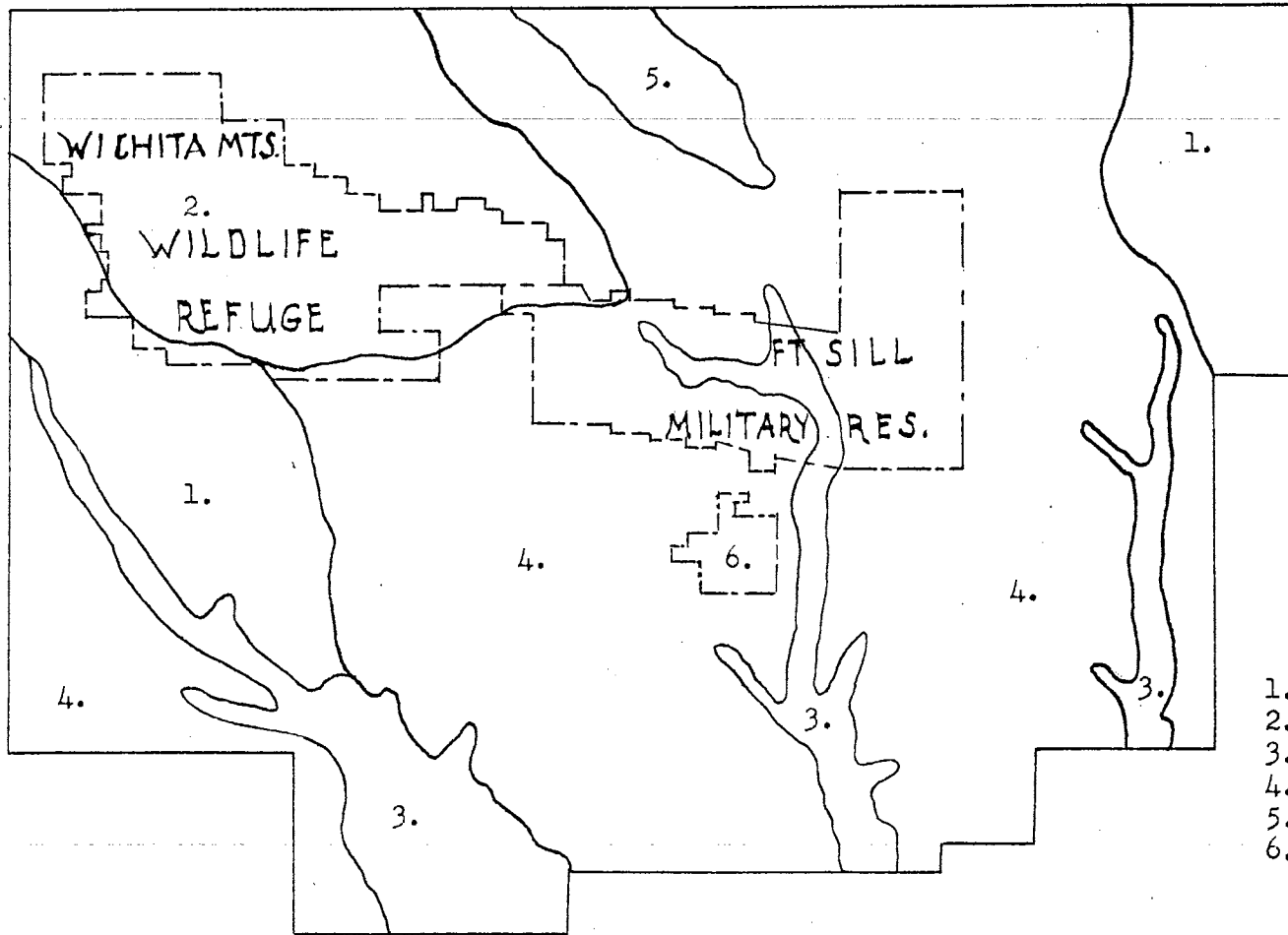
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INTRODUCTION

The objects of this report are: First, to collect, mount, identify, classify, and to make a study of the general description, distribution, use, and importance of the common native grasses of Comanche County; and second, to study pastures as they originally existed, the succession of grasses which occurred, and methods of management and improvement of pastures for the future.

Roughly, Comanche County is 45 miles long and 25 miles wide. The topography can be divided into mountains, rolling prairies and plains; the mountains are located in the northwest portion of the county. The eastern half is rolling to level prairie, and the southwestern part is level to gently rolling plains. The soils can be divided into four large groups: One, the mountains are granite-rock and granite-rock residues; two, the northeastern part is generally light-textured loam to sandy loam; three, the southwestern part is clay and clay-loams; and four, the central and southeastern portion is predominately clay and clay-loams, but has large areas of sandy loam intermixed.

It is still possible to find native grasses in the virgin stage in Comanche County in protected areas along the road and railroad right-of-ways, where grazing has been restricted or prohibited, and in the Wichita Mountain Wildlife Refuge. These virgin stands indicate that Comanche County was originally covered with tall grasses, such as little bluestem, big bluestem, sand bluestem, indian grass, switch grass, and perhaps a scattering of side-oat grama, blue grama, and hairy grama, but no buffalo grass.



- LEGEND:
- 1. Central Cross Timbers
 - 2. Granitic Soils
 - 3. Alluvial Soils
 - 4. Western Prairies
 - 5. Limestone Hills
 - 6. Lawton, Oklahoma

GENERAL SOILS MAP OF COMANCHE COUNTY, OKLAHOMA

(Courtesy of Agronomy Department, Oklahoma A. and M. College)

Although overgrazing receives credit for destroying the native pastures, many authors agree that climatic factors and untimely grazing probably have destroyed as much pasture as overgrazing. The climatic data presented in Table I, page 4, indicate that the rainfall in Comanche County is at the minimum required by the tall grasses for growth and reproduction. The grass in the county before the Civil War had very little grazing, and therefore could maintain itself with a low precipitation.

In 1864, cattlemen began to drive large herds of cattle from Texas through Oklahoma to railroad stations in Kansas for shipment to eastern markets. Stories about the good grass prairies along the Chisholm Trail and other trails spread. Soon many ranchers were using this good grass land to their advantage in trailing cattle to markets.

As a result of this grazing, the delicate balance between tall grasses and climatic condition was upset. The tall grasses began to disappear from the pastures and were replaced by short grasses, and later, by unpalatable grasses, and weeds.

During the period of the First World War, many acres of the best grass land were broken out and used for crop production, thus leaving the poorer soils and inferior grass for pasture. The farmer who required the reduced acreage of pasture to carry the same number of livestock as the larger pastures, finds his grass in poor condition today. Many of these pastures are severely eroded, weedy, and barely covered with buffalo, or some unpalatable grasses.

TABLE I.

AVERAGE RAINFALL AT UNITED STATES EXPERIMENT STATION Lawton, Oklahoma			
Average Obtained over Period of 65 years (1871-1937)			
Month	: Average	: Month	: Average
January	1.09	July	2.95
February	1.10	August	2.79
March	1.61	September	3.19
April	2.91	October	2.88
May	4.95	November	1.82
June	3.38	December	1.63

TABLE II.

AVERAGE TEMPERATURE AT UNITED STATES EXPERIMENT STATION Lawton, Oklahoma			
Average Obtained over Period of 24 Years (1916-1939)			
Month	: Maximum	: Minimum	: Mean
January	50	26	38
February	55	30	43
March	65	38	52
April	73	48	61
May	81	58	69
June	91	67	79
July	96	70	83
August	96	70	83
September	87	62	75
October	76	50	63
November	62	37	49
December	52	28	40

Average Growing Season Obtained over Period of 35 years (1893-1929), 214 days, March 31 to November 1.

Today the pasture land of Comanche County may be divided into three major groups. First is pasture land containing tall grasses and grama grasses. This land is found in the United States Wichita Mountain Wildlife Refuge and in protected areas which have had little or no grazing. The second group is pasture land which has had a measure of range management. This group of pastures produces moderate yields of grammas and buffalo grasses. Bluestem grasses have disappeared as a result of overgrazing.

The third group is pasture land which has been abused by overgrazing and untimely grazing. Pastures of this group contain buffalo grass, unpalatable grasses, and weeds. The proportion of each depends upon how severely the pasture has been abused.

Many of the pastures would be classified in group two, a few in group three, and very few in group one. The condition of the pastures may be judged only from an individual problem, and not from a locality standpoint.



FIGURE 2. A native tall grass of Comanche County, which appears in its virgin stage.

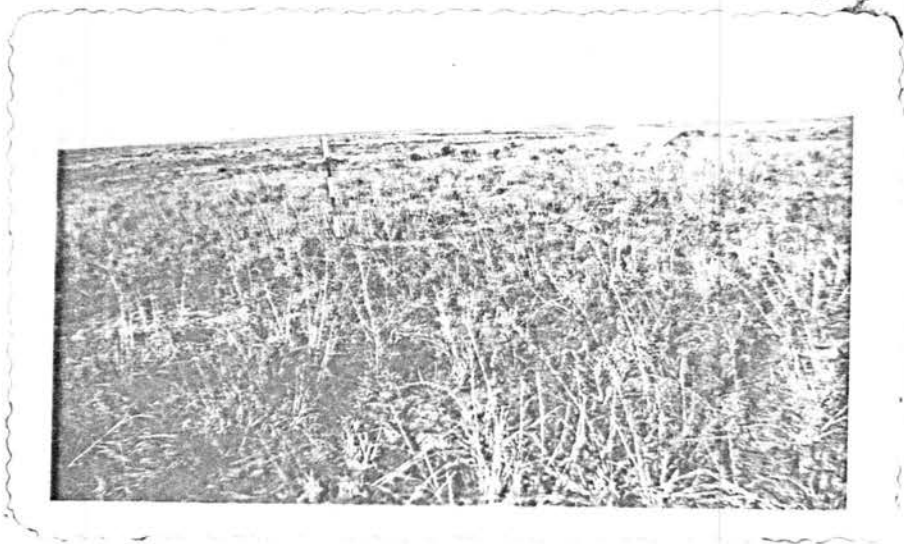


FIGURE 3. An overgrazed pasture, showing many unpalatable grasses.

BUFFALO GRASS (*Buchloe dactyloides*)

GENERAL DESCRIPTION

Buffalo grass is commonly 4 to 8 inches high, but in favorable locations may reach 12 inches. It is queer in that it is dioecious, the staminate (male) inflorescence on one plant and pistillate (female) inflorescence on the other; or sometimes monoecious, the staminate and pistillate inflorescence on the same plant or stolon. The stolons are from a few inches to several feet long with nodes about every 2 or 3 inches. The culms are commonly 4 to 8 inches; those of the pistillate plants usually shorter, generally 2 to 5 inches. The leaves are gray-green, 2 or 3 inches long, 1 to 2 mm. wide, flat, acuminate, slightly roughened, the margins sparingly ciliate or papillose ciliate. A deep fibrous root system enables this grass to be very drought resistant.

GENERAL DISTRIBUTION

It is a native sod grass of the central and southern Great Plains. It is found in the western half of Oklahoma and throughout Comanche County.¹

ADAPTATION

It is very drought-resistant, therefore it will grow in the semi-arid region of the central and southern Great Plains. It will grow on almost any kind of soil, but is especially adapted to clay

¹ Above distribution map and succeeding maps taken from "Native and Adapted Grasses for Conservation of Soil and Moisture in the Great Plains and Western States," Hoover, M. M.

and clay loam. Experiments at Woodward, Oklahoma show that buffalo grass will not survive drought on sandy soils as well as on heavier soils.

USE AND IMPORTANCE

It is principally used for pasture, but it is also a good grass to use for lawns, golf courses and athletic fields in the dry plains. It is very drought-resistant. The sod is ideal for wind erosion control. It is too short to be cut for hay, but after it cures, makes good winter pasture. Ranchers use large areas each year in this manner. Buffalo grass is very nutritious and very palatable. Its nature of growth gives it an added advantage of not being easily killed by overgrazing. Buffalo grass is the most important grass of the Great Plains of Oklahoma.

It is the ideal grass, except for its propagation. The pistillate plants produce seed which may be used for propagation, but being close to the ground, are difficult to harvest. Seed may be collected by sweeping them into flat bottom shovels with heavy street brooms. They also may be picked up by hand in riffles where heavy rains have concentrated them. There are several machines for collecting buffalo grass seed. The most successful of these is designed on principle of a commercial vacuum cleaner. There has been a lot of work done improving the seeding habit of buffalo grass. Experiments at Springfield, Colorado show that in dry years a better stand will be obtained if sod is used instead of seed. Setting sod is a good means of reproduction but is expensive; a great amount of labor is involved.

COMANCHE COUNTY

Buffalo grass is the most important pasture grass in the county. It is well distributed throughout, but is especially prominent in clay and clay loam soils of the south and southwestern part of the county. Buffalo grass is hard to kill by over-grazing. It can be found in many pastures where bluestems and grammas have been killed out by over-grazing, which is evident by their presence on protected areas such as railroad and road right-of-ways.

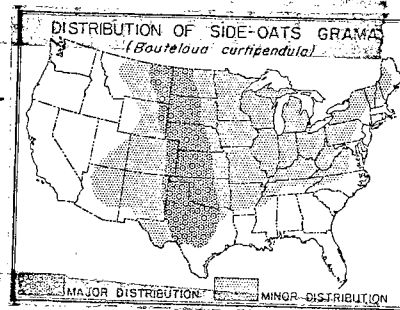
SIDE-CAT GRAMA or TALL GRAMA GRASS (*Bouteloua curtipendula*)

GENERAL DESCRIPTION

The culms are 1-3 feet tall, tufted, erect, simple, spreading by strong scaly rootstocks. There are numerous blades 2-12 inches long, about 4 mm. wide, flat, upper surface and margins are scabrous and more or less hairy. The panicle is from 3-5 mm. long with flattened axis, and numerous spikes (20-60) 6 to 15 mm. long. The spikelets are 5-8 mm. long, purplish or brownish, on flattened rachis, usually 5 to 8 per spike. The glumes are scabrous, especially on the keels, first narrow, acute 4 to 5 mm. long, the upper broader about 7 mm. long. Lemmas of fertile florets are 5 to 6 mm. long, oblong, smooth or slightly scabrous toward the apex, the 3 nerves extended into 3 short ovms. Palea is about the length of the lemma, acuminate, bidentate, the 2 keels scabrous. It is reproduced by seed and underground roots.

GENERAL DISTRIBUTION

Side-cat grama is grown generally throughout the United States east of the Rocky Mountains, but especially plentiful on the Great Plains. The grass grows in all sections of Oklahoma, but especially in the western half. It may be found throughout Comanche County, especially on the sandy soils.



ADAPTATION

This grama is adapted to moderate temperature and moderate rainfall. It makes its best growth on sandy land. This grass isn't as drought resistant as buffalo, but more resistant than the bluestems.

USE AND IMPORTANCE

Side-oat grama is primarily used for pasture, but may be cut for hay, or in mixtures cut for hay. It is highly palatable and nutritious, especially during the growing season, but is less valuable in these respects than blue grama, and is not rated as highly in the winter cured condition. The stems, however, are not palatable, and often remain standing after the leafy foliage has been eaten by the livestock. This grass usually produces more and earlier forage than blue grama, but is less drought resistant and requires more moisture for maximum development.

For seed production, side-oat grama is one of the most promising native grasses, particularly because its upright growth habit facilitates harvesting. In rows spaced to permit cultivation, yields of 400 pounds per acre of seeds have been obtained. Its leafy character, comparatively heavy stems and strongly branching root system, combined with wide soil and climatic adaptation and ease of harvesting and seeding, makes it one of the most useful of our native grasses for general revegetation. The Forest Service states that because of its size, vigorous growth, adaptability to varying growth conditions, and economic value, it appears to be the most promising grama for domestication.² It is considered especially suitable for replanting retired farmland. Seeding at the rate of 20 pounds per acre broadcast, or 8 to 12 pounds if planted in rows, has proved satisfactory.

COMANCHE COUNTY

Side-oat grama is found throughout the county. It is one of the leading pasture grasses and is present in all pastures which have not

² "Grass Culture and Range Improvement in the Central and Southern Great Plains," Savage, D. A., P. 26.

been over grazed. Side-oat grama will stand more grazing than blue grama and the bluestems, because the stems are not palatable, but it will not withstand as much grazing as buffalo grass.

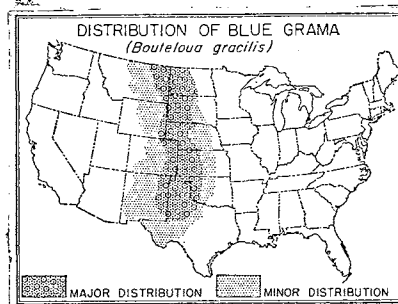
BLUE GRAMA (*Bouteloua gracilis*)

GENERAL DESCRIPTION

The culms are 6-24 inches tall, tufted, erect and somewhat branching at the base. The perennial forms a rough sod in the north and in isolated tufts in the south. The lower leaves are 2 to 8 inches; the upper 1 to 4 inches long. They are flat, narrow, the lower margins usually fringed with rather long, scattered hairs. There are commonly 2 spikes, sometimes 1 or 3, 4.5 to 5 mm. long. Spikelets are numerous, as many as 81, about 5 mm. long. The glumes are unequal, first 4 mm. long and the second 5-6 mm. long. It has a relatively shallow, but very dense root system. It is propagated by seed. The flowers are cross fertilized.

GENERAL DISTRIBUTION

Blue grama grows throughout the United States, but is especially adapted to the dry portion of the High Plains. It grows in the western half of Oklahoma and throughout Comanche County.



ADAPTATION

It is adapted to the High Plains areas, low rainfall, and heavy soils. It won't stand as much drought as buffalo, but withstands more than side-cat, grama or bluestem. It is best adapted to heavy soils but will grow on almost any kind.

USE AND IMPORTANCE

Blue grama is principally used for pasture, but it may be cut for hay. Because of its high palatability and grazing capacity, as well

as its wide soil and climatic adaptation, this grass is excellent as range forage, and ranks high for use on ranges and pastures. It is also used for winter pasture and wind erosion control.

Seed can be produced and harvested commercially. The grass may be sowed in rows and cultivated, or the seed from native pastures may be harvested. After the seeds are mature, they are harvested by stripping machines. To obtain a stand of blue grama grass, prepare a good seed bed, free from weeds and well-firmed. Plant 5-8 pounds of seed per acre, broadcast. Both spring and fall seedings have been made throughout the range of this grass, with the result that very late fall planting of blue grama appears most likely to be generally successful in its northern range and spring seeding throughout the central Great Plains. Favorable moisture at the time of seeding is particularly desirable.

COMANCHE COUNTY

It is widely distributed throughout the county, especially on heavy soil. Blue grama is one of the best and most widely distributed pasture grasses in the county.

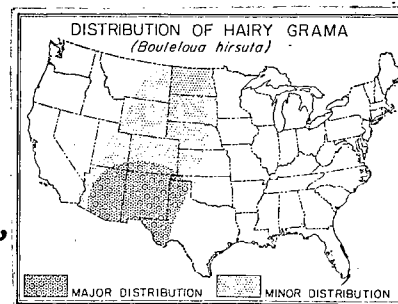
HAIRY GRAMA (*Bouteloua hirsuta*)

GENERAL DESCRIPTION

Hairy grama culms are 6-30 inches tall, rigid, tufted in the south and sod in the north, hairless, leafy at base. The leaves are numerous, larger at the base, 2-8 inches, upper 1-4 inches long, 1-2 mm. wide, flat, slender-pointed, sparsely papillose, hispid on the margins, hirsute on the upper surface near the base, and rough except below near the base. The upper sheaths are shorter than the internodes, glabrous, on the lower, pubescent, sometimes slightly papillose at the throat. There are 1 to 4 spikes, usually $\frac{3}{4}$ inch to 1 inch long, the rachis extending beyond the spikelets in a conspicuous point. There are 35 to 45 spikelets per spike, each about 5 mm. long. The roots are fibrous and rather shallow.

GENERAL DISTRIBUTION

Hairy grama is a native perennial, is found in scattered stands throughout most of the Central and Rocky Mountain States. It reaches its maximum usefulness as a range plant in Arizona and New Mexico, where it occurs with other grasses. It is found in western Oklahoma and throughout Comanche County, especially on the sandy soils.



ADAPTATION

It is adapted to the same general soil and climatic conditions as blue grama. This grass occurs chiefly on dry sandy and sandy loam soils of the southern high plains. It is more drought resistant than

blue grama, and often grows in lower altitudes and on poorer rougher soils. For these reasons, it is considered a valuable grass for re-vegetation of the dry plains.

USE AND IMPORTANCE

Hairy grama is used for pasture. Its palatability is considered equal to blue grama, but the forage production is somewhat less. Its greatest usefulness is limited to sandy soils and to other sites less favorable for the maximum development of the blue grama. Because hairy grama is found on rough, inaccessible ground and rarely in pure stands, the seed must be collected by hand. As this is expensive, the production of seed under cultivation may be advisable. Several vigorous strains of this species, isolated at Woodward, have produced growth comparable to the better strains of blue grama.

COMANCHE COUNTY

Hairy grama is distributed throughout this county, especially on the sandy soils. It is one of the most important pasture grasses. Since this grass will not stand heavy grazing, it has been almost eliminated from some of the pastures in southwestern part of the county.

LITTLE BLUESTEM or PRAIRIE BEARDGRASS

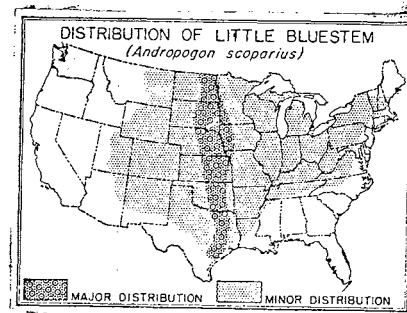
(Andropogon scoparius)

GENERAL DESCRIPTION

The culms are commonly 2-4 feet tall, branching above, usually tufted slender, erect, pithy, green or purplish, usually smooth. The leaves are 4-8 inches long, sometimes longer, 2-8 mm. wide, flat rough, harsh, and sparsely hirsute on the upper surface near the base. The sheaths are shorter than the internodes, flattened, rough, glabrous to sparsely hairy. The ligules are membranaceous, truncate, and about 1 mm. long. The racemes are numerous, 1 to 2.5 inches long, mostly long exserted, solitary on slender peduncles, 1-4 from a single sheath. The rachis is slender, flexuous, commonly with 4-8 joints. The rachis joints and pedicle ciliated are covered with hairs 1-3 mm. long. The spikelets are about 7 mm. long, narrow, with tufts of hairs at the base. The glumes are sub-equal, first two keeled, scabrous on the keels, about 7 nerved acuminate, two-toothed; the second usually slightly shorter, midnerve prominent, and keeled ciliate on the margin. The roots are numerous, fibrous, sometimes with very short rootstocks.

GENERAL DISTRIBUTION

It is grown in every state east of the Rocky Mountains. However, it does best on the eastern boundary of the Great Plains. Little Bluestem grows throughout Oklahoma, but does best on the rolling prairies of central Oklahoma. It grows in all sections of Comanche County, especially along roadsides and protected places, but is missing from many of the over-grazed pastures.



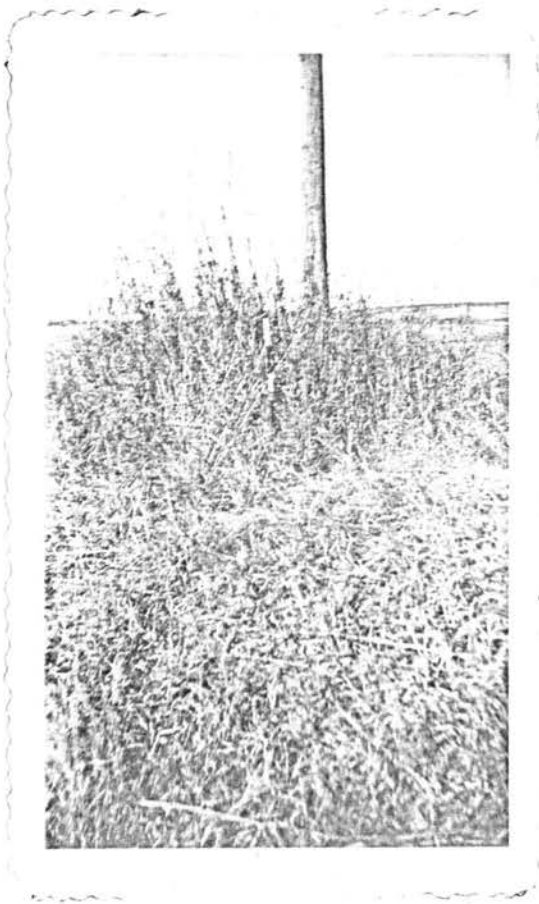


FIGURE 4. Little bluestem, located in protected area near Lawton.

ADAPTATION

Little bluestem is adapted to a variety of soils and climates, but it is best suited to rich land and moderate rainfall. It grows on both sandy and heavy soils, but usually does best on a medium sandy land.

USE AND IMPORTANCE

It is used mostly for pasture, but in places where prairie hay is mowed, it is an important hay grass. Although it is highly palatable throughout most of its range, particularly during the early stages of growth, in the Northern Great Plains it is considered only fair to poor as a pasture grass. In this area it soon becomes rather coarse and cattle do not graze it readily.

Little bluestem is a medium-tall, vigorous-growing bunch grass, but is more susceptible to drought than most other grasses in the dry plains. Under drought conditions it is likely to give way to buffalo and grama grasses.

The seed of this grass can be harvested readily from native stands with power strippers or with small grain combine harvesters. Seed harvested from the native stand contain other grasses such as big bluestem, indian, switch, dropseed and grama, but these mixtures have proved desirable in the reseeding done by the Soil Conservation Service. Commercial seed has been obtained by growing them in nurseries. The rate of seeding is 6-8 pounds per acre, broadcast 20 pounds per acre.

Because of its leafiness and vigorous root system, little bluestem is used for erosion control.

COMANCHE COUNTY

Little bluestem is found throughout the county, especially in protected areas and on well-managed pastures, but it is conspicuously absent from overgrazed land. The low rainfall and the hot dry winds in the summer months are hard on bluestem, and therefore, it isn't as valuable for pasture as buffalo or grama grasses. But this grass is an important grass in Comanche County and if it is to remain measures will have to be taken to restrict grazing during droughts.

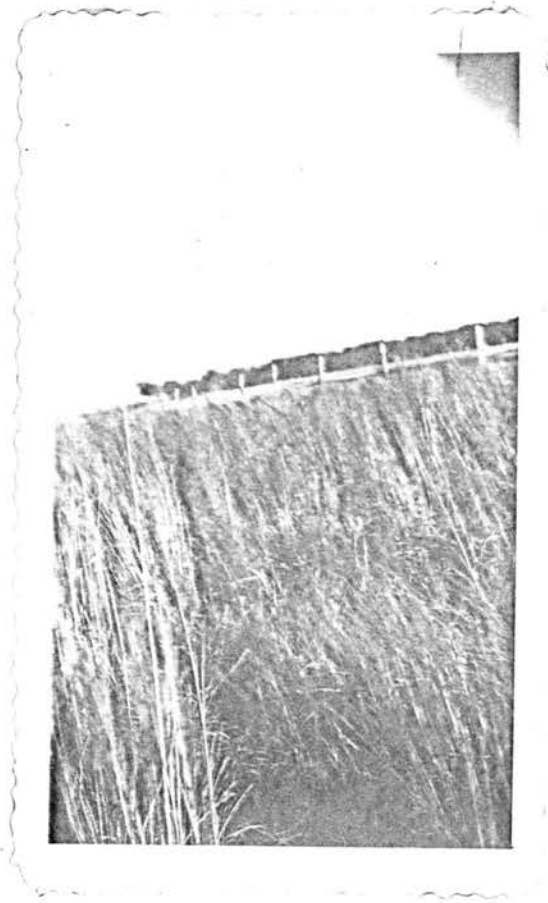


FIGURE 5. A good stand of bluestems in protected areas.

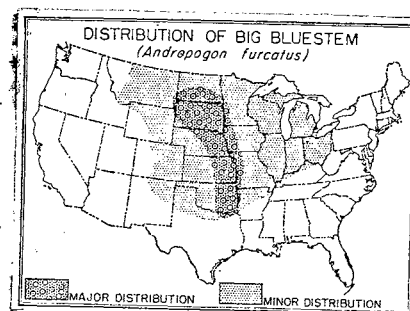
BIG BLUESTEM OR TURKEY FOOT (*Andropogon furcatus*)

GENERAL DESCRIPTION

The culms of big bluestem are 3-6 feet tall, often in large bunches, stout, pithy, simple at the base, branched above, and sometimes with short rootstocks. The leaves are 6-18 inches long, 4-14 mm. wide, flat, margins scabrous, smooth or rough glabrous, and are often hirsute above toward the base. The sheaths usually are shorter than the internodes, often glaucous, glabrous, or sometimes hairy toward the base. The ligule is membranaceous, about 3 mm. long, sometimes fringed. There are usually 2-6 racemes in pairs or threes, 1-5 inches long, rachis joints about 5 mm. long, and the pedicel of pedicellate spikelet about 4 mm. long, with hair about 2 mm. long. The glumes are more or less hispidulous all over, acute, the first keeled, the second acabrous on the keel, and glabrous or hispidulous. The lemmas are about as long as the glumes, two-toothed, with a spiral geneculate scabrous awn 7-18 mm. long. The spikelets are 7-10 mm. long, awnless and staminate. The grass roots are deep and fibrous.

GENERAL DISTRIBUTION

Big bluestem is grown throughout the United States east of the Rocky Mountains, but is especially grown in eastern Oklahoma, eastern Kansas, Nebraska, and South Dakota. It grows over the entire state of Oklahoma, but does best in the eastern half. It is found in protected areas throughout Comanche County, but is especially abundant in the northeastern part.



ADAPTATION

Big bluestem is adapted to good soil and moderate rainfall.

Where climatic conditions are severe, buffalo and grama grasses predominate. Big bluestem and corn compare very favorably in climatic and soil requirements.

USES AND IMPORTANCE

Big bluestem is one of the chief grasses found in prairie hay. It is also used for pasture and erosion control. The plant is very palatable and nutritious. It is one of the leading native grasses in the United States.

COMANCHE COUNTY

Big bluestem is found throughout the county, but is not an important pasture grass, because the only place it is found is in protected areas. It is too near the boundary of its growing range to make much pasture and survive.

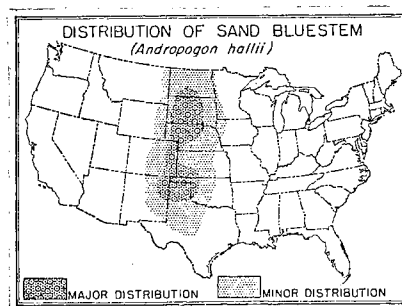
SAND BLUESTEM (*Andropogon hallii*)

GENERAL DESCRIPTION

The culms are 3-6 feet tall, from creeping rootstocks, erect, simple at the base, branched above, and more or less glabrous. The leaves are 2-16 inches long, 5-8 mm. wide, smooth beneath, slightly scabrous above, and margins scabrous. There are commonly three racemes, 1-2 inches long, usually long, exerted on slender peduncles, and as many as three flowering branches from one upper node. The sessile spikelets are 3.5-4 mm. long, oblong, and lanceolate. The glumes are subequal, the second often slightly longer. The pedicellate spikelets are about 4 mm. long, darker in color, glumes about equal, otherwise similar to the sessile spikelets.

GENERAL DISTRIBUTION

This grass grows throughout the Great Plains area. It is not abundant in Oklahoma, but is found somewhat in the western part of the state. It grows scatteringly in the northeastern part of Comanche County.



ADAPTATION

Sand bluestem grows best in sandy soils, with a moderate to small amount of rainfall, and moderate temperatures.

USE AND IMPORTANCE

Sand bluestem is used for forage and soil erosion control. As a forage plant, it is equal to big bluestem. Because of its heavy rootstocks, it is especially adapted to very sandy soils.

At the present time, there is no commercial seed production. Seed could be produced in nurseries. At the present time, it is collected by hand from non-cultivated areas.

COMANCHE COUNTY

There is a scattering of sand bluestem in protected areas of the sandy soils of northeastern Comanche County. Under proper range management, more of this bluestem could be grown. At present it has no commercial value except as a source of seed.

INDIAN GRASS (*Sorghastrum nutans*)

GENERAL DESCRIPTION

The indian grass culms are 3-8 feet tall, erect nodes and pubescent, or bearded. The leaves are 3-18 inches long, 3-15 mm. wide, narrowed toward the base, flat above and conduplicate below, often glaucous, rough, and the margins often hispid-ciliate. The upper sheaths are shorter than the internodes, and glabrous. The lower sometimes are pubescent. The ligules are 2-5 mm. long, thick, and stiff. The panicles are narrow, yellowish, rather dense, 8-12 inches long, contracted, and darker at maturity.

GENERAL DISTRIBUTION

It grows in the United States east of the Rocky Mountains, but grows especially well in the southern Great Plains. It grows throughout Oklahoma, but mostly in the western half. It is found throughout Comanche County in protected places.

ADAPTATION

It is best adapted to moderate to warm temperatures, medium to low rainfall, and sandy soil.

USE AND IMPORTANCE

Indian grass is used for pasture and hay. It is a tall, palatable, tufted grass. Cattle relish it so much that they nearly eliminate it, except in protected places. The large, tawny-haired seeds are easily broadcast, but are difficult to drill, except with special machines. The prompt germination and strong seedling vigor of this species are noticeably helpful in establishing stands. In nature, this grass rarely

grows thickly enough to harvest. It starts growth late in the spring and continues growth until late in the fall.

COMANCHE COUNTY

Indian grass is found throughout the county in protected areas, but contributes very little pasture.

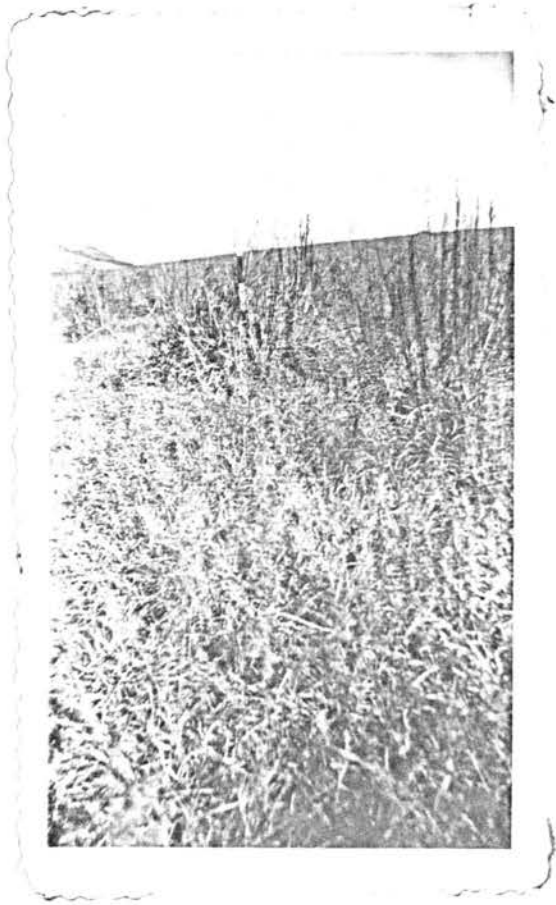


FIGURE 6. Indian grass, located in the Wichita Mountain Wildlife Refuge.

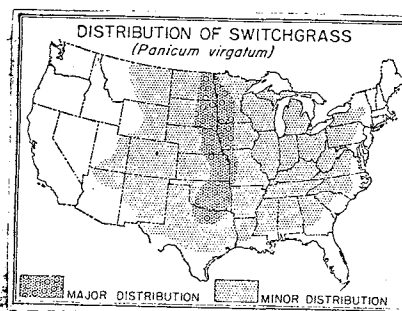
SWITCH GRASS (*Panicum virgatum*)

GENERAL DESCRIPTION

The culms are 3-5 feet tall, solitary, or in small or large clumps, simple, robust, with numerous scaly, creeping rootstocks, and mostly glabrous throughout. The leaves are 4-24 inches long, 3-15 mm. wide, flat attenuate, margins scabrous, and sometimes pilose or sparsely pubescent on the upper surface near the base, and rarely extending to apex. The ligule is a dense ring of hairs 3-4 mm. long. The panicles are 5-20 inches long, ovate, and about half as wide as long. The spikelets are 3-5 mm. long, ovate, acuminate, prominently nerved, turgid, usually gaping, rather short pedicelled, and lower floret usually staminate. The fruit is more smooth and shiny, about 3/4 as long as the spikelet, narrowly ovate, and the margins of the lemma inrolled only at the base. This grass develops extensive rootstock which aid materially in reproduction.

GENERAL DISTRIBUTION

Switch grass is distributed throughout the United States, east of the Rocky Mountains, but grows especially well on the eastern side of the great plains. It grows



in all sections of Oklahoma, but is especially suited to the central and eastern part. In Comanche County this grass is found along creeks and in low, wet places.

ADAPTATION

Switch grass thrives best on low, fairly moist, sandy bottoms, although it is found distributed sparingly throughout higher pastures.

USE AND IMPORTANCE

It is used for pasture, hay, and for protection against wind and water erosion. In the early stages, it is palatable to all classes of livestock. The hay will be of good quality if the plant is cut before fully mature. When the plant matures, it becomes harsh, woody, and unpalatable to livestock. The old stems and leaves stand throughout the winter and give the soil protection against wind, as well as acting as a natural barrier to snow and soil shifting. This special quality in addition to deep roots,^{AND} vigorous rootstocks make this an outstanding grass for use in erosion control. Selections have shown resistance to insect and diseases. Seed can be satisfactorily collected from mature stand by using power strippers. Seed can also be grown in a nursery. When planted in the row, seed at the rate of 6-8 pounds per acre, 15-18 is required for broadcasting or drilling.

COMANCHE COUNTY

Switch grass is distributed throughout the county, but usually it is found in protected places. It has very little value as a pasture grass.

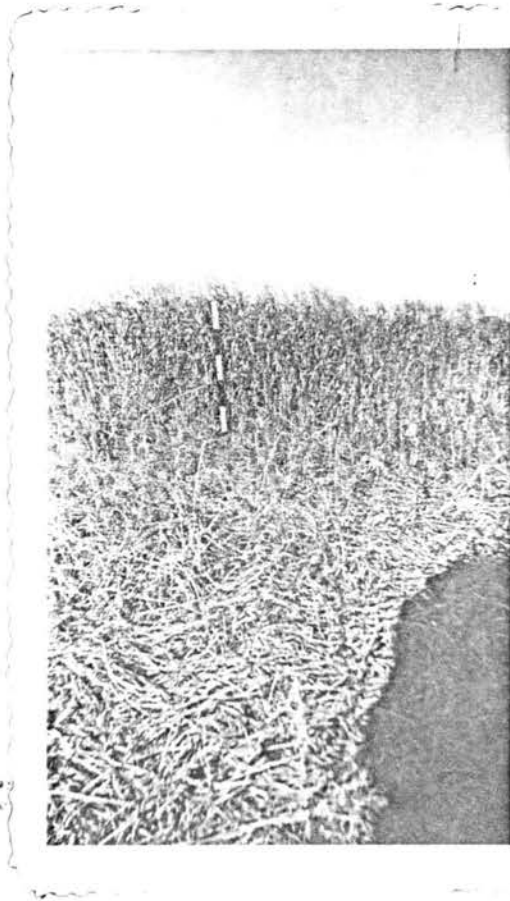


FIGURE 7. Switch grass, located in Wichita Mountain Wildlife Refuge.

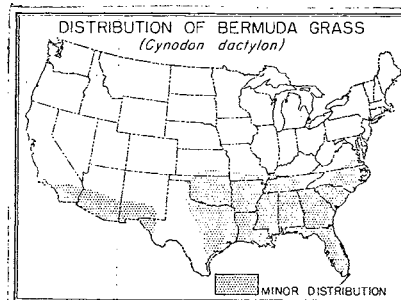
BERMUDA GRASS (*Cynodon dactylon*)
(Not a Native)

GENERAL DESCRIPTION

The bermuda grass grows 4-12 inches from long, creeping rhizomes and branching stolons. The leaves are from 1-2.5 inches long, 1-4 mm. wide, flat, rigid, scabrous above, smooth or scabrous below, and villous at base near ligule. The sheaths are crowded at the base of culm and along stolons, and usually glabrous. There are 3-8 spikes, 1-3 inches long, purple and the rachis flat. The spikelets are about 2 mm. long. The glumes are slightly shorter than second. The lemmas are broader and longer than the glumes, narrowly ovate, and about 2 mm. long. This plant can be propagated by roots or seed.

GENERAL DISTRIBUTION

Bermuda grass is grown in the southern states and in all parts of Oklahoma except the northwestern portion. It grows throughout Comanche County.



ADAPTATION

This grass is adapted to warm, moist climates. It will grow on almost any kind of soil, but does best on rich land.

USE AND IMPORTANCE

Bermuda generally is used for pasture, but in areas where it grows well, it is cut for hay. It is palatable, while young, but becomes coarse and tough with age, and therefore should be kept closely grazed.

COMANCHE COUNTY

Bermuda is an important grass of the county. About 95 percent of all the lawns in the county are in bermuda. Many of the roadside ditches are protected by bermuda, but unfortunately, there are very few pastures which contain bermuda. Bermuda grows well in Comanche County, except during occasionally dry years. More farmers should set bermuda in their pastures, especially along streams and in swales.

JOHNSON GRASS (*Sorghum halepense*)
(Not a Native)

GENERAL DESCRIPTION

The culms are commonly 3-5 feet tall, simple or branched from stout rootstocks, glabrous, and smooth throughout. The leaves are 8-15 inches long, 5-30 mm. wide, flat, somewhat narrowed toward the rounded base, the apex drooping, the margins usually rough, and often villose on upper surface close to the ligule. The sheaths are usually shorter than the internodes. The panicle is 6-12 inches long, sometimes longer, ovate to oblong, and erect or drooping. The spikelets are 5-6 mm. long, lanceolate, and glabrous to sparsely pubescent. The plant propagates from seed and creeping scaly rhizomes.

GENERAL DISTRIBUTION

Johnson grass thrives throughout southern and southeastern United States. It is found throughout Oklahoma except in the extreme northwestern section. It grows in all parts of Comanche County, but does especially well along the streams.

ADAPTATION

It is adapted to warm climate, moderate rainfall, and rich soil.

USE AND IMPORTANCE

Johnson grass is used for pasture and hay. Because of the strong rhizomes, which makes it hard to eradicate, it is classified as a noxious weed in Oklahoma. Under certain conditions, the plant is poisonous to livestock, therefore care must be exercised in pasturing it. When it isn't poisonous, it is a very good pasture, and ranks close to sudan.

Two or three cuttings of hay can be obtained per year. The hay is coarse, especially the first cutting, but is palatable and nutritious.

COMANCHE COUNTY

Johnson grass has very little use in this county as a pasture grass. It is usually found in bottoms along streams. Most of this land is under cultivation, therefore, it is more of a weed than a grass.

SILVER BEARDGRASS (*Andropogon saccharoides*)

GENERAL DESCRIPTION

The culms are 1.5-3.5 feet tall, tufted, slender, simple, or freely branching, erect, and the nodes from glabrous to oppressed hispid. The blades are 2-6 inches long, 2-7 mm. wide, upper surface and margins somewhat rough. The sheaths are shorter than the internodes. The panicle is 2-6 inches long, in the early stages it is narrow and green, but as it matures it becomes narrow, oblong, and silvery white. The sessile spikelets are 3-4 mm. long and are somewhat flattened. The pistillate spikelets, consisting of a single scale or glume, are 2-3 mm. long, on a villous pedicel about 2 mm. long, and the hairs 4-6 mm. long.

GENERAL DISTRIBUTION

It is found in south central United States and throughout Oklahoma, especially in the western half. It occurs throughout Comanche County, but is especially abundant along the roadsides in the southern and southwestern part.

ADAPTATION

It will grow on almost any kind of soil where the rainfall is low and the temperature is hot.

USE AND IMPORTANCE

Very little is known about the palatable quality of this grass, but it is presumed, because of its stemmy nature, not to be too palatable.

COMANCHE COUNTY

It grows throughout the county, but has very little value as a pasture grass.

CRABGRASS (*Digitaria sanguinalis*)

GENERAL DESCRIPTION

Crabgrass is usually an annual, slender, and erect, or prostrate, with slender racemes digitate on a short axis. The spikelets are lanceolate to elliptic, nearly planocone in twos or threes, rarely solitary, sessile or short pedicled, and alternate in two rows on side of a three-winged or wingless rachis.

GENERAL DISTRIBUTION

Crabgrass grows throughout the Cotton Belt, in southern Oklahoma and throughout Comanche County.

ADAPTATION

This grass is best adapted to sandy soils with plenty of rainfall and warm climate.

USE AND IMPORTANCE

Crabgrass is used principally for pasture and in some areas where it grows rank, it is used for hay. It is considered a good annual pasture grass, but it is hard to cure for hay. This grass is considered one of the worst weeds in cultivated fields.

COMANCHE COUNTY

Crabgrass grows throughout the county, but does especially well on sandy soils.

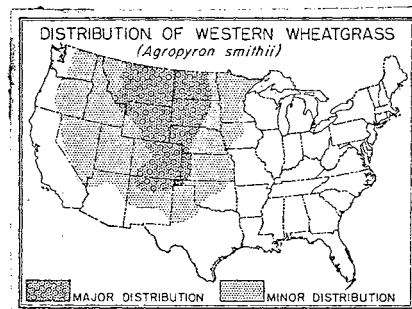
WESTERN WHEAT-GRASS (*Agropyron smithii*)

GENERAL DESCRIPTION

The culms are 1-4 feet tall, numerous, tufted, rigid, and hairless. The leaves are 4-8 inches long, rigid, upright, becoming enrolled, rigid, rough margins, and usually rough on back, otherwise smooth. The sheaths are shorter than the internodes and glaucous. The legule is short, membranaceous ring, slightly ciliate. The spike is long, exerted, 3-7 inches long, erect, straight, and rachis scabrous on the margin. The spikelets have 7-13 flowers, 12-25 mm. long, rarely in pairs, overlapping, slightly divergent, flattened and lanceolate when closed. The roots are fibrous with long, creeping rootstocks.

GENERAL DISTRIBUTION

Western wheat-grass grows throughout the United States except in extreme south, but does exceptionally well on the Great Plains. It grows some in western and northwestern Oklahoma, and is found to a limited extent in Comanche County.



ADAPTATION

Western wheat-grass will grow on almost any kind of soil, but does especially well on gumbo. It grows best in moderate to cool climate, with moderate to light rainfall.

USE AND IMPORTANCE

Where there is a good stand, it makes a high yield of good quality hay, and in scattered areas it makes good pasture. It is also used for soil erosion control. Western wheat-grass is one of the valuable native

forage plants of the west. It is an important constituent of spring, summer and fall ranges. Despite the stiff leaves, the plant rarely becomes too coarse and rank for sheep to graze. Sheep are particularly fond of the head. It cures well on the ground and makes a good winter pasture. Large quantities of seed have been collected and used by the Soil Conservation Service. Now many commercial companies have seed for sale. It should be seeded in the row at the rate of 8-10 pounds per acre and 20-25 pounds per acre if drilled or broadcast. There has been some improvement work started through selection.

COMANCHE COUNTY

Western wheat-grass is relatively unimportant because of the small quantity grown.

PURPLETOP or TALL RED-TOP (*Triodia flava*)

GENERAL DESCRIPTION

The culms are 3-5.5 feet tall, tufted, and flattened, especially below. The leaves are 6-36 inches long, upper shorter, 3-12 mm. wide, flat, narrowed and convolute toward the base, and scabrous on the margins. The sheaths are shorter than the internodes above, overlapping at the base, flattened especially the lower ones, and pubescent at the throat and collar. The panicles are erect, oily, open and spreading, and about 15 inches long. The spikelets are 3 to 7 flowered, 5-9 mm. long, slightly compressed and green or purplish in color. The glumes are subequal, thin, 2-4 mm. long, one-nerved, glabrous, obtuse or acute, and often slightly two-toothed. The lemmas are about 3-4 mm. long, nerves pilose, and slightly toothed.

GENERAL DISTRIBUTION

Purpletop is distributed throughout the eastern half of the United States and is found in eastern Oklahoma. This grass was found in the Wichita Mountain Wildlife Refuge.

ADAPTATION

This species grows on a variety of soils and climates, but it must have at least moderate rainfall.

USE AND IMPORTANCE

Purpletop is used for grazing and is a constituent of most prairie hay. It has some value as pasture and hay grass, but is only of secondary importance.

COMANCHE COUNTY

This grass is of no economic importance, because of the small quantity grown.

BARNYARD GRASS (*Echinochloa crusgalli*)

GENERAL DESCRIPTION

The culms are 2-3 feet tall, stout, erect, rather succulent, and branching from the base. The leaves are 6-24 inches long, 6-30 mm. wide, scabrous on the margins and sometimes on the upper surface. The sheaths are glabrous and smooth. The lemmas are absent, but the ligular area is sometimes pubescent. The panicle is 4-8 inches long, erect or nodding, purple or green in color. The lower racemes are somewhat separated from the rest and sometimes branched. The spikelet is about 3 mm. long, excluding the awns, 1 to 2 flowered, and crowded into small clusters.

GENERAL DISTRIBUTION

Barnyard grass is grown throughout the United States.

ADAPTATION

This grass grows on most soils, under almost any temperature range found in the United States, but must have at least a moderate amount of rainfall.

USE AND IMPORTANCE

It is primarily used for pasture, but is occasionally cut for hay. This grass is very secondary in importance.

COMANCHE COUNTY

The only place barnyard grass was found was in shaded areas along creeks. It has no commercial value in Comanche County, because it occurs so infrequently.

SAND DROPSEED (*Sporobolus cryptandrus*)

GENERAL DESCRIPTION

The culms are 1.5-3.5 feet tall, solid, tufted, erect or somewhat spreading, simple or branching below. The leaves are 3-12 inches long, 3-6 mm. wide, flat or folded, somewhat rigid and rough above. The panicles are dark-colored, narrow, but loosely flowered, 4-7 inches long, with short and slightly spreading branches. The spikelets are light green, purplish or lead color, 2-2.5 mm. long, and those enclosed in the sheath are usually smaller. The roots are perennial, fibrous, but have no rootstocks.

GENERAL DISTRIBUTION

Sand dropseed is found throughout the United States, except in the extreme southeast. It grows best west of the Mississippi river.

ADAPTATION

This grass will grow in almost all types of soils, but is best adapted to sandy or sandy loam soils. It grows under almost every type of climate and rainfall in the United States.

USE AND IMPORTANCE

Sand dropseed produces rather heavy forage that is fairly palatable to all classes of livestock, but care is necessary to avoid destroying the stand by overgrazing. This grass produces an abundance of seed which can be easily harvested with strippers. Sand dropseed is

among the first grasses to appear on abandoned farms and provides effective cover until replaced by a more valuable grass. Seeding at the rate of 2 pounds per acre has proved satisfactory.

COMANCHE COUNTY

Overgrazing has killed all sand dropseed out of the pastures. It was observed in the Wichita Mountain Wildlife Refuge, but was not in large enough quantity to be of any economical value.

DROPSSEED (*Sporobolus asper*)

GENERAL DESCRIPTION

The culms are 1.5-5 feet tall, erect, tufted, often rather stout, and simple or branching. The leaves are 1.5-24 inches long, 1.5-5 mm. wide, the upper short, the basal very long, flat or involute, and rough on the margin. The panicles are 4-12 inches long, included at the base or almost entirely included, and branches oppressed. The spikelets are 4-5-6 mm. long, and on scabrous pedicels 1-3 mm. long. The glumes are acute, and scabrous on the keel, the first 3 mm. long, and the second about 4-4.5 mm. long. The lemma is glabrous and somewhat longer than the palea.

GENERAL DISTRIBUTION

Dropseed is found in central and northeastern United States, and in central Oklahoma. It is found throughout Comanche County in protected areas.

ADAPTATION

This grass is adapted to dry or sandy soils of the prairies and plains.

USE AND IMPORTANCE

Dropseed is used for pasture, and to a limited extent, for hay. It is fairly palatable when young, but soon becomes coarse and stemmy.

COMANCHE COUNTY

Dropseed is of no economic importance, because of the small quantity grown.

DROPSEED (*Sporobolus asper* var. *hookeri*)

This grass is very similar to *Sporobolus asper*, but is more slender. The panicle is looser and is few flowered. The spikelets are usually smaller, 3-5 mm. long. The foliage is rarely villous.

PLAINS MUHLY (*Muhlenbergia cuspidata*)

GENERAL DESCRIPTION

The culms are 20-40 cm. tall, slender, wire-like, erect, and in dense tufts with hard, bulblike scaly bases. The blades are 3-10 cm. long, less than 2 mm. wide, and flat to loosely involute. The panicle is narrow, somewhat spikelike, and 5-10 cm. long. The spikelets are about 3 mm. long.

GENERAL DISTRIBUTION

Plains muhly grows in north central United States and throughout Oklahoma, but does best in the eastern half of the state.

ADAPTATION

This grass is adapted to sandy, gravelly or stony soils with moderate rainfall, and moderate to cool climate.

USE AND IMPORTANCE

Plains muhly is used for grazing, but due to the low yield it is not important as a pasture grass.

COMANCHE COUNTY

It was found only on limited areas on the mountains in the northern part of the county. This plant has no economic importance.

WIRE-STEM MUHLY (*Muhlenbergia mexicana*)

GENERAL DESCRIPTION

The culms are 6-25 inches tall, slender, erect or decumbent, plants top heavy, and glabrous below the roots. The roots at the lower nodes form long scaly rootstocks. The leaves are 2-6 inches long, 2-6 mm. wide, those of the branches smaller, flat and rough. The panicles are numerous, 2-6 inches long, and contracted. The spikelets are 2.5-3 mm. or including the short awn, sometimes 4 mm. long. The glumes are unequal, acuminate, short-awned, and rough on the keel. The lemmas are acuminate and rough.

GENERAL DISTRIBUTION

Wire-stem muhly grows in central and northeastern United States. It is found more commonly in the eastern half of Oklahoma.

ADAPTATION

This grass grows in swamps, thickets, lowlands, and moist places.

USE AND IMPORTANCE

This plant is used somewhat for grazing, hay, and as a soil binder; but due to limited acreage, it is not important in Oklahoma or Comanche County.

COMANCHE COUNTY

The only place wire-stem muhly was observed was along the edges of lakes in the Wichita Mountain Wildlife Refuge.

VIRGINIA WILD-RYE (*Elymus virginicus*)

GENERAL DESCRIPTION

The culms of Virginia wild-rye are 2-3 feet tall, simple, erect, rigid, and often stout. The blades are 5-12 inches long, 4-8 mm. wide, flat, and rough, especially toward the tips. The sheaths are usually shorter than the internodes, sometimes pubescent, the top sheath often flattened and enclosing the base of the spike. The spikelets are 3-5 flowered, two at each node. The glumes are about 12 mm. long, thick, lanceolate, rigid, and bearing on awns about 8 mm. long. The lemma is 6-8 mm. long, either bears an awn 4-18 mm. long, or is rarely awnless.

GENERAL DISTRIBUTION

The Virginia wild-rye grass is found throughout the United States except in California, Oregon, and Nevada.

ADAPTATION

This grass is usually found in woods along the stream banks.

USE AND IMPORTANCE

Virginia wild-rye is used for pasture and sometimes for hay, if it occurs in large areas. It is fair pasture if grazed when young, and makes fair hay if cut in an early stage of growth.

COMANCHE COUNTY

This grass is not considered to be of much value because it occurs so infrequently.

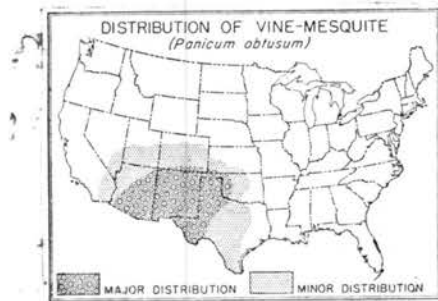
VINE-MESQUITE (*Panicum obtusum*)

GENERAL DESCRIPTION

The vine-mesquite culms are 8-30 inches tall, erect, rather rigid, simple, flattened, glabrous, and nodes glabrous, decumbent at base, with knotted rootstocks, stolons are often several feet long, with swollen beaded or woolly nodes. The leaves are 3-9 inches long, 2-4 mm. wide, and the stolons 1.5-3 feet long, 2-4 mm. wide, margins scabrous, surface smooth to rough, firm erect, long narrow-pointed, sparsely hairy on upper surface near base. The panicle is 3 to 5 inches long, narrow, with a few appressed, raceme-like branches, densely flowered, and partly inclosed by upper leaf sheath. The spikelets are about 6 mm. long and about 1.2 mm. wide when closed. The fruit is 1.8 to 2 mm. long, about 1 mm. wide, obovate, subacute, smooth and shiny. The plant has a coarse, fibrous root system.

GENERAL DISTRIBUTION

Vine-mesquite is found in southwest United States, particularly in New Mexico, Arizona, and west Texas. It is found in the extreme western part of Oklahoma. The only place it was found in any quantity was in the southwestern part of Comanche County.



ADAPTATION

Vine-mesquite is adapted to sandy or gravelly soils, with moderate rainfall and warm climate.

USE AND IMPORTANCE

It is used for pasture, hay, and erosion control. There is a division of opinion about how valuable vine-mesquite is for pasture. Some ranchers say it is fair grass, others say the cattle will not eat it if they can get anything else. It can be easily established by seeding or sowing. The seed can be obtained by cutting hay and thrashing, or by stripping.

When established on a wet soil, it makes rapid growth. For this reason, it is used to prevent soil erosion. There is a possibility of making selections which are drought resistant.

COMANCHE COUNTY

The only place this grass was observed was in the southwestern part of the county, on low, wet stream terraces. It has no economical value, because of its small quantity.

BROAD-LEAVED SPIKE-GRASS (*Uniola latifolia*)

GENERAL DESCRIPTION

The culms are 2-5 feet tall, rather stout, erect or spreading from short, strong rhizomes. The leaves are 4-10 inches long, 8-27 mm. wide, flat, tapering toward both ends, rough on the margin, and commonly with a few hairs on the upper surface at base. The sheaths are usually shorter than the internodes. The panicle is 5-12 inches long, loose and lax, drooping, and axis and branches scabrous. The branches are long, slender, few-flowered, and drooping. The spikelets are on long capillary peduncles, open, usually contain 10-15 flowers, commonly 20-30 mm. long, very flat, and ovate or acute.

GENERAL DISTRIBUTION

This grass is grown in southeastern United States. It grows in eastern and southeastern Oklahoma. The only place it was found in Comanche County was in the Wichita Mountain Wildlife Refuge.

ADAPTATION

Broad-leaved spike-grass is adapted to sandy soils, moderate to warm temperatures, moderate moisture and partly shaded areas.

USE AND IMPORTANCE

This grass forms some grazing where it is plentiful. It is very beautiful and has possibilities of becoming an ornamental plant.

COMANCHE COUNTY

This grass was found in only one small area. It has no commercial value in the county.

ROUGH TRIODIA (*Triodia elongata*)

GENERAL DESCRIPTION

The culms are 1.5 feet tall, slender, tufted, erect, rough and nodes often pubescent. The leaves are 3-12 inches long, 2-4 mm. wide, soon involute, rough, and more or less pubescent. The panicles are exerted, 4-13 inches long, erect or slightly nodding, and branches oppressed. The spikelets are purplish, 3 to 7-flowered, 6-11 mm. long, oblong-linear, and somewhat flattened. The first glume is one-nerved and the second 3 to 5-nerved.

GENERAL DISTRIBUTION

Rough triodia is found in south central United States and in central Oklahoma. This grass was found in the United States Wichita Mountain Wildlife Refuge, Comanche County.

ADAPTATION

This grass is adapted to plains, sandy prairies, and rocky slopes, under moderate to light rainfall and warm climates.

USE AND IMPORTANCE

Rough triodia is used some for grazing while young, but becomes coarse and stemmy as it matures. It has little value economically.

COMANCHE COUNTY

This sample was observed in the United States Wichita Mountain Wildlife Refuge. It is of no economical importance, because it soon becomes unpalatable.

WHITE TRIODIA (*Triodia albescens*)

GENERAL DESCRIPTION

The culms are 1-3 feet tall, erected and tufted. The blades are 4-9 inches long, 3-6 mm. wide, flat, soon becoming involute, slender, smooth underneath, and rough above. The panicle is narrow, spinelike, greenish to nearly white, 3-8 inches long, with oppressed branches, and with crowded short pedicelled spikelets. The spikelets are numerous, oval, short pediceled, 8-12 flowered, 5-7 mm. long, and 2-3 mm. wide.

GENERAL DISTRIBUTION

White triodia is found in central and southern High Plains, western Oklahoma, and in the United States Wichita Mountain Wildlife Refuge in Comanche County.

ADAPTATION

White triodia is adapted to sandy soils, moderate rainfall, and moderate temperature.

USE AND IMPORTANCE

This grass is found in such small quantity that use and importance are hard to determine.

COMANCHE COUNTY

White triodia was only found in a very limited quantity, therefore it is of no economical importance.

PRAIRIE THREE-AWN (*Aristida oligantha*)

GENERAL DESCRIPTION

The culms are 12-24 inches tall, branching at the base and all the nodes, erect or spreading, slender and smooth or sometimes slightly rough. The leaves are usually 4-8 inches long, 1-2 mm. wide, flat or loosely involute, tapering to a fine point, with upper surface rough and sometimes pubescent near the base. The sheaths are loose and glabrous. The panicle is few flowered, 4-8 inches long, has a scabrous axis, is often flexuous, and has spreading spikelets. The spikelets either are single, borne on pedicles about 1 mm. long, or the lower with supplementary short branches bearing 1 or 2 spikelets arranged along the main axis raceme-like. This plant is an annual and has a coarse, fibrous root system.

GENERAL DISTRIBUTION

Prairie three-awn ranges rather widely in the region west of the Mississippi River, and especially in the southwest part of the United States.

ADAPTATION

This grass will grow on almost any soil, and prefers a hot, dry climate.

USE AND IMPORTANCE

There has been considerable difference in opinion among observers as to the forage value of this specie. Some men report it is practically worthless; others say it produces a considerable volume of fine leaves and deserves a higher rating than is frequently given it. After the plant is mature, the awns often become a menace by getting into the

eyes and nostrils of grazing animals, as well as penetrating the wool of sheep, lowering the fleece value.

COMANCHE COUNTY

It grows in considerable quantity throughout the county, except in the mountain area.

GOOSEGRASS (*Eleusine indica*)

GENERAL DESCRIPTION

The culms are 6-24 inches tall, flattened, coarse, erect or decumbent, and spreading or prostrate. The leaves are 3-12 inches long, 3-10 mm. wide, flat, and margins scabrous. There are 2-7 spikes. The spikelets are 3-5 mm. long, 3 to 16-flowered, and flat in shape.

GENERAL DISTRIBUTION

Goosegrass grows throughout the warm, moist climate of North and South America. This grass is found in eastern United States and throughout Oklahoma.

ADAPTATION

This plant grows in warm, moist waste places in almost all types of soil.

USE AND IMPORTANCE

Goosegrass is a weed and is quite troublesome in cultivated fields.

COMANCHE COUNTY

It has no economical value as a pasture grass in Comanche county.

BROMEGRASS (*Bromus* spp.)

GENERAL DESCRIPTION

The brome grasses are low or tall, annual or perennial, and flat-leaved. The panicles are open or contrasted and have several to many-flowered spikelets. The rachilla is disarticulating above the glumes and between the florets. The glumes are unequal and acute. The lemmas are convex on the back or keeled, two-toothed, and either awned from between the teeth or awnless. The palea is usually shorter than the lemma.

GENERAL DISTRIBUTION

Brome grass grows throughout the United States.

ADAPTATION

The different species are adapted to all soil and climatic conditions of the United States.

USE AND IMPORTANCE

Brome grass makes some early pasture, but most species are considered weeds.

COMANCHE COUNTY

These grasses are of no economic importance, except as soil binders, in Comanche county.

WINDMILL GRASS (*Chloris verticillata*)

GENERAL DESCRIPTION

The culms are 6-20 inches tall, usually a few in a tuft, erect or decumbent, branching at the base, the branches commonly sterile, and flattened. The leaves are 3-7 inches long, 2-4 mm. wide, margin and surface rough, the upper shorter, folded, and pointed. The sheaths are shorter than the internodes, loose, and flattened. The spikes are slender, 2-6 inches long, often naked at the base, and clustered at the apex of the culm. The spikelets exclusive of the awns are 2.5-3 mm. long, cuneate-obovate, and flattened. The glumes are one-nerved, acuminate, awn-pointed, narrow, scabrous on the nerves, and the first 2 mm. long, and the second about as long as the spikelet. The lemma, exclusive of the awn, is 2.5-3 mm. long, three-nerved, and obtuse.

GENERAL DISTRIBUTION

Windmill grass is found in south central United States, in the western half of Oklahoma, and in the northeastern part of Comanche County.

ADAPTATION

It is adapted to sandy soils, moderate rainfall, and moderate temperature.

USE AND IMPORTANCE

This grass has no commercial importance, but may be eaten by cattle. It is usually considered a weed in pastures.

COMANCHE COUNTY

This grass is not very important as a pasture grass.

GREEN FOXTAIL-GRASS (*Setaria viridis*)

GENERAL DESCRIPTION

The culms are 8-36 inches tall, tufted, erect, simple or branched at the base, scabrous below the panicle, otherwise smooth and glabrous. The blades are 3-6 inches long, 5-10 mm. wide, flat, and scabrous, especially on the upper surface. The sheaths are shorter than the internodes, flattened and smooth, except sometimes scabrous toward the summit. The legule is very short and densely ciliate. The panicle is green or purple, erect usually 2-2.5 inches long, 8 mm. thick, densely-flowered, and tapering at the apex. The spikelets are 2-2.5 mm. long and elliptical in shape. The fruit is finely transversely wrinkled or ridged.

GENERAL DISTRIBUTION

Green foxtail-grass is common throughout the cooler parts of the United States. It is found in all parts of Oklahoma and Comanche County.

ADAPTATION

This plant will grow on most types of soil and from light to heavy rainfall, but it must have a cool climate.

USE AND IMPORTANCE

It is used somewhat for forage, but it is usually considered a weed.

COMANCHE COUNTY

Green foxtail-grass has no commercial value, except as a soil binder.

PRAIRIE CUPGRASS (*Eriochloa contracta*)

GENERAL DESCRIPTION

The culms of prairie cupgrass are 1.5-3 feet tall, densely-tufted, spreading, freely branching above, and pubescent below the panicles. The leaves are 5-8 inches long, 5-8 mm. wide, flat, and pubescent to glabrous. The panicles are 3-6 inches long, exerted or partly included, narrow, racemes erect or oppressed, .5-1.5 inches long, and as many as 15-20. The spikelets are 4-4.5 mm. long, usually in pairs, acuminate, and lanceolate.

GENERAL DISTRIBUTION

This grass is found in south central United States, in central Oklahoma, and throughout Comanche County.

ADAPTATION

Prairie cupgrass is adapted to low, wet places with warm climates.

USE AND IMPORTANCE

This grass is used some as pasture, but is considered a weed in grain stubble and cultivated fields.

COMANCHE COUNTY

Prairie cupgrass has no economic importance, because of the small quantity grown.

SMALL RUSH-GRASS (*Sporobolus neglectus*)

GENERAL DESCRIPTION

The culms of small rush grass are 2-15 inches tall, tufted, erect, often decumbent at the base, and freely branching. The lower leaves are 1.5-6 inches long, the upper 6-25 mm. long, 2 mm. wide or less, involute toward the tip, erect or ascending, and upper surface scabrous near the base. The panicle is 1-2 inches long, and more or less included in the upper sheath. The spikelets are 2.5-3 mm. long and on short scabrous pedicels. The glumes are acute, more or less scabrous on the keel, and subequal, the lower usually slightly shorter.

GENERAL DISTRIBUTION

Small rush-grass is found in central northeastern United States, central Oklahoma, and in southeastern Comanche County.

ADAPTATION

This grass is adapted to dry, thin sandy soils with cool to moderate temperature and moderate rainfall.

USE AND IMPORTANCE

Small rush-grass is used some for pasture, but is of little economic importance.

COMANCHE COUNTY

This grass is of no economic importance, because it occurs so infrequently.

INDIA LOVEGRASS (*Eragrostis pilosa*)

GENERAL DESCRIPTION

The culms are 6-20 inches tall, tufted, slender, erect or ascending, and branching. The leaves are 1-5 inches long, 2 mm. or less wide, and smooth or slightly rough above. The panicles are 2-6 inches long, branches erect or spreading, and somewhat hairy at the axis. The spikelets are 5 to 12-flowered, 3-6 mm. long, and 1 mm. wide. The glumes are thin, the second one-nerved and about 1.5 mm. long.

GENERAL DISTRIBUTION

India lovegrass grows in the eastern half of the United States and in the eastern half of Oklahoma.

ADAPTATION

It grows on cultivated fields and waste places.

USE AND IMPORTANCE

This grass is classified as a weed and causes considerable trouble in cultivated fields. It is of no economic importance.

COMANCHE COUNTY

This plant was observed in the Wichita Mountain Wildlife Refuge. It is of no economic importance in this county.

SAND LOVEGRASS (*Eragrostis trichodes*)

GENERAL DESCRIPTION

The culms are 2-4 feet tall, tufted, erect, simple, slender, all the internodes being very short, except the upper one, which extends from near the base to the panicle. The blades are 6-36 inches long, 2-7 mm. wide, flat and narrowed toward the base. The sheaths are longer than the internodes, confined usually near the base, and hirsute at the throat, otherwise glabrous. The panicle is purplish, usually exserted, 10-36 inches long, often more than half the length of the culm, and comparatively narrow and oblong.

GENERAL DISTRIBUTION

Sand lovegrass is found in the central and southern Great Plains area of the United States and throughout Oklahoma.

ADAPTATION

This grass is adapted to sandy soils, low rainfall, and hot temperature.

USE AND IMPORTANCE

Sand lovegrass is grazed some while young, but becomes coarse and unpalatable as it matures.

COMANCHE COUNTY

It is found throughout the county, especially in the northeastern part, but it has no commercial importance, because it soon becomes unpalatable.

CLUSTERED LOVEGRASS (*Eragrostis secundiflora*)

GENERAL DESCRIPTION

The culms are 10-36 inches tall, tufted and branching. The plant, panicle and spikelet are variable. The leaves are 8-12 inches long, 2-5 mm. wide, flat, and soon becoming involute toward the apex. The sheaths are shorter or longer than the internodes, and have a tuft of hairs at the throat. The panicles are usually purplish, 8-18 inches long, narrow, and the branches sometimes long and spreading. The spikelets are tinged with purple, 10-15 mm. long, 3-4 mm. wide, flat, and contain 8-40 flowers.

GENERAL DISTRIBUTION

Clustered lovegrass is found in the south central United States and in all parts of Oklahoma. It is found throughout Comanche County, and is especially prevalent in the north and northeastern part.

ADAPTATION

It grows best in sandy soil with a moderate amount of rainfall and warm climate.

USE AND IMPORTANCE

This grass has no commercial importance and is little used.

COMANCHE COUNTY

In comparison with other grasses, it grows in very limited quantities.

LACE GRASS or TINY LOVEGRASS (*Eragrostis capillaris*)

GENERAL DESCRIPTION

The culms are 4-20 inches tall, and erect or spreading from a decumbent base. The leaves are 3-19 inches long, 1.5-3 mm. wide, rough above, glabrous or sparingly pilose on the upper surface, and margins at or near the base. The panicle is open, diffuse, 4-16 inches long, and often $\frac{4}{5}$ the entire length of the plant. The spikelets have 2-4 flowers, 2-3 mm. long, ovate to oblong, and only slightly flattened. The plant has a fibrous root system.

GENERAL DISTRIBUTION

It is found throughout the eastern United States and in all parts of Oklahoma.

ADAPTATION

Lace grass is found on dry, open places.

USE AND IMPORTANCE

It has very little economical importance.

COMANCHE COUNTY

This grass is found throughout the county, but has but very little value.

PANIC-GRASS (*Panicum scribnerianum*)

GENERAL DESCRIPTION

The vernal culms are in 8-20 inches tall, erect or ascending, sometimes widely spreading, and glabrous to harshly puberulent. The leaves are 2-4 inches long, 6-12 mm. wide at the base, firm, ascending, or erect, glabrous on the upper surface, and sometimes sparsely pubescent on the under surface.

GENERAL DISTRIBUTION

Panic-grass grows throughout the United States except the extreme southeast.

ADAPTATION

This grass is adapted to sandy soil with almost any kind of climate and rainfall.

USE AND IMPORTANCE

Panic-grass is not abundant enough to be of importance.

COMANCHE COUNTY

The only place in the county where this grass was observed was in moist, shaded, sandy land in the Wichita Mountain Wildlife Refuge. It is not of any economic importance.

SANDBUR (*Cenchrus pauciflorus*)

GENERAL DESCRIPTION

The sandbur culms are 6-24 inches tall, erect in the early stages, later becoming prostrate or decumbent, freely branching, flattened, and scabrous or rarely pubescent below the racemes. The blades are 1-6 inches long, 2-7 mm. wide, flat, spreading, tapering from the base to the apex, and scabrous on the margins and upper surface. The racemes are spikelike, and the burs are crowded on it. The burs, exclusive of spines, are 3-7 mm. wide and pubescent. The spines are numerous, spreading, flat, and broadened at the base. There are usually 2 spikelets to each bur. These are 5-7 mm. long and about 2 mm. wide.

GENERAL DISTRIBUTION

Sandbur is found throughout the United States, and especially in the Cotton Belt.

ADAPTATION

It grows in almost any kind of climate and rainfall in the United States, but it must have a sandy soil to survive.

USE AND IMPORTANCE

This plant is a good forage when young, but when mature the burs cause mechanical injury to animals, which more than offsets its usefulness.

COMANCHE COUNTY

Sandbur is a serious pest in pastures and cultivated land in the northeastern part.

CONCLUSION

This collection of 39 grasses was made in October under very adverse weather conditions. Collecting samples was very difficult. Many of the country roads were kept impassable by the frequent rains. The wind and heavy rains caused many of the seeds to shatter, and tangled many of the stems and leaves. The moisture caused many samples to mold. The collection was brought to Oklahoma Agricultural and Mechanical College for identification and classification.

This course is of immeasurable value. Much has been learned about the common native grasses and pasture conditions of Comanche County. It will give a better knowledge of facts upon which to base a course in forage crops and pastures suitable to that locality. Better advice on pastures management can be given to the local farmers.

Pasture management in Comanche County is two-fold, moisture conservation and controlled grazing. Moisture conservation is of primary importance; the difference between retaining all the water possible and continuing this practice of wastefulness will make the difference between a pasture and useless, bare, eroded land. Improvement of pastureland may be carried out in several ways; contour furrowing all pasture possible and reseeding poor areas with grama, Bermuda, and buffalo grasses are recommended. The animals kept on the farms should be reduced to equal or below the recommended carrying capacity. Care should be exercised not to overgraze the pastures during droughts. It is important that rotation and deferred grazing be practiced to give the grasses an opportunity to revive and reseed.

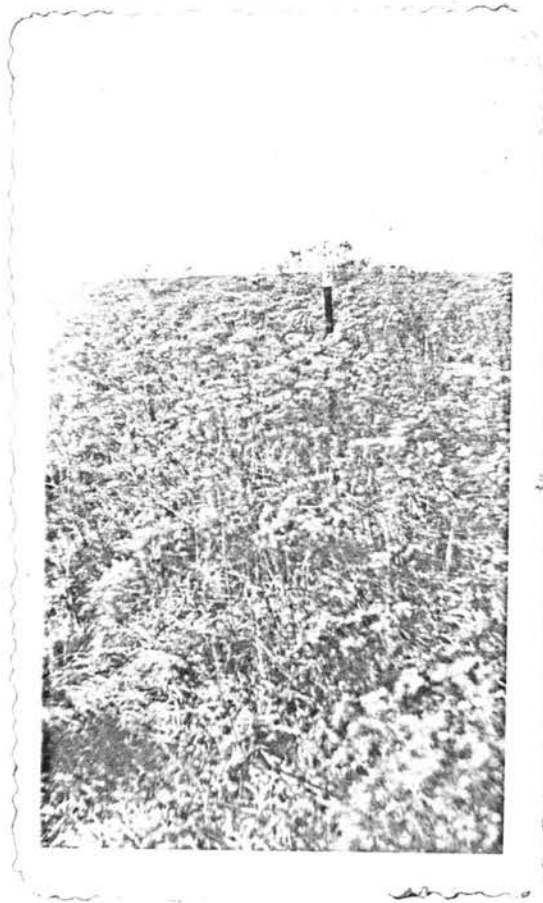


FIGURE 8. A weedy pasture near Lawton.

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