

# POPULAR PERENNIAL GRASSES OF THE EDWARDS PLATEAU

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Perennial grasses are the staple of rangelands, particularly in the Central Texas region known as the Edwards Plateau. Deep-rooted, tall grasses mixed in with mid-grasses and short grasses keep the soil covered in a turf layer and are essential components of various plant communities throughout the Edwards Plateau. This publication summarizes the most common grasses found in the Edwards Plateau, including their associated values and characteristics. Although this resource is not a technical plant identification tool, it can serve as a beneficial quick-reference guide for landowners looking to gain entry-level knowledge of common Edwards Plateau perennial grasses—without keying out species or understanding complicated plant identification terms.

The Edwards Plateau is rich with springs, stony hills, and steep canyons. This Central Texas region boasts a plethora of rare plants and animals and has a remarkable variety of native perennial grasses (190 grass species), compared to other vegetation areas (Table 1). Rainfall is highest in May or June (also in September) with an average annual rainfall that ranges from 15 to 34 inches. Soils of the Edwards Plateau are usually shallow with various surface textures underlaid by limestone. Elevations range from slightly less than 600 feet to more than 3,000 feet above sea level. Several river systems dissect the surface, creating a rough, well-drained landscape. The limestone of the Edwards Plateau is honeycombed with thousands of caves. Beneath the eastern edge of the Edwards Plateau lies a hidden world of underground lakes known as the Edwards Aquifer. Before settlement occurred, open grasslands and savannahs dominated West Texas rangelands. Today, the region is characterized by stands of grasslands, juniper,

oak woodlands, plateau live oak, or mesquite savannah rangelands.

Table 1. Texas vegetation areas for different annual and perennial native grass species.

Vegetation Area	Number of Native Annual Grass Species	Number of Native Perennial Grass Species
Coastal Prairie	40	109
Post Oak Savanna	36	127
Blackland Prairie	32	114
Cross Timbers	26	107
Edwards Plateau	37	190

In the Edwards Plateau, ranching is the primary agricultural industry. Understanding the role that plant communities play is a key element of ranching on the Edwards Plateau. Regardless of the agricultural industry (e.g., sheep, goats, whitetail deer, or cattle), the ability to understand perennial grass species' role on the landscape is the first step in stewardship of the Edwards Plateau, as well as other rangelands throughout Texas and the U.S.

As many Texans become new ranchers that are new to rangelands and their responsibilities as landowners, recognizing popular grasses of the Edwards Plateau will serve as a foundational step in their new stewardship endeavors. A landowner's understanding of the herbaceous plant community is crucial when contemplating future management strategies. This increased knowledge of grasses is essential for grazing, soil stability, and habitat management decisions. Grasses provide forage for animals, protect the soil, the habitat for ground animals, and fuel for prescribed management burning. It is imperative to learn perennial grass values, how to recognize these popular species, and how these species fulfill the plant community—providing short, mid-grass, and tall grasses of the Edwards Plateau.

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The following is a parade of grasses most commonly found on the Edwards plateau today:

**Buffalograss** is a native, warm-season perennial grass that is a sod-forming. Along with common curlymesquite, these two grasses are the primary forage for most livestock in the Edwards Plateau because both species can survive heavy grazing and tolerate drought conditions. Buffalograss is also a popular ornamental grass choice due to its dense-forming turf on deep soils and rangeland flats. Grazing animals will more readily select buffalograss before consuming common curlymesquite. However—because of their value as ground cover and soil protection—both grasses are vital in the Edwards Plateau.



Figure 1a. Buffalograss (*Buchloe dactyloides*) is a native, warm-season perennial sod-forming grass that grows in large colonies, averaging about 6 to 10 inches tall (photo by Deann Burson).



Figure 1b. Buffalograss grows separate male and female plants. Male plants have elevated seedheads that produce pollen. Female plants produce no true seedhead, but the female flower and seed are located in a bur-type structure near the plant base (photo by Deann Burson).

**Common curlymesquite** is a native, warm-season perennial that is a durable, sod-forming grass. Along with buffalograss, these grasses are the primary forage for most livestock in the Edwards Plateau. Common curlymesquite and buffalograss can survive heavy grazing and tolerate drought conditions. Both species are also turf-formers on deep soils of flats. Common curlymesquite is especially valued in the Edwards Plateau for providing ground cover and soil protection.



Figure 2a. Common curlymesquite (*Hilaria belangeri*) is a native, warm-season perennial sod-forming grass that averages about 6 to 10 inches tall. Curlymesquite is frequently confused with buffalograss (photo by Deann Burson).



Figure 2b. Common curlymesquite is important for its ability to spread rapidly by runners or stolons. Under appropriate conditions, this grass can quickly colonize bare ground and fill gaps between larger bunch grasses (photo by Deann Burson).

**Vinemesquite** is a native, warm-season perennial sod-forming grass that is quite resilient. Vinemesquite provides fair livestock grazing when it is tender and green, but palatability decreases as this grass matures. Vinemesquite spreads with above-ground runners 10 feet long and is often associated with live oak savannah plant communities.



Figure 3a. Vinemesquite (*Panicum obtusum*) is a native, warm-season perennial grass that forms large, dense patches that averages 12 to 16 inches tall (photo by the Noble Research Institute).

**Hairy tridens** is a native, warm-season perennial grass and is considered poor forage for livestock as it is one of the shortest and least productive grasses in the Edwards Plateau. Hairy tridens provide minimal protection to the soil from erosion and is a challenging grass for cattle to graze because of its short stature. However, sheep and goats will graze hairy tridens to a limited extent, due to their small mouths and increased ability to select leaf tissue.



Figure 4a. Hairy tridens (*Erioneuron pilosum*) is a native, warm-season perennial grass that grows between 4 to 12 inches tall. This tufted grass has narrow blades that are often folded at the mid-vein with fuzzy margins and are pointed at the tip (photo by the Noble Research Institute).



Figure 4b. Hairy tridens can be found throughout Texas in a variety of habitats. This grass is commonly found on dry, rocky soil and over-grazed rangelands (photo by the Noble Research Institute).

**Red grama** is a very short native, warm-season perennial bunchgrass. Due to its size, red grama does not provide substantial grazing potential and is considered poor forage for livestock and wildlife. Red grama primarily grows on shallow soils and locations where grazing has eliminated other plants that would typically suppress it. Although red grama is poor forage for cattle, it can provide limited grazing for sheep and goats while it is green and growing. Red grama provides little to no food value for wildlife. The abundance and presence of red grama can denote topsoil loss under poor management.



Figure 5a. Red grama (*Bouteloua trifida*) is a native, warm-season perennial bunchgrass that is small in stature, only reaching 5 to 10 inches tall. Red grama is characterized by its reddish-purple seedhead that contains 3 to 7 spikes (photo by Deann Burson).



Figure 5b. Red grama proliferates on over-grazed sites and can protect the soil from wind and water erosion when managed properly (photo by Deann Burson).

**Texas grama** is a native, warm-season perennial grass that offers poor forage for livestock. Texas grama offers little to no food value for wildlife or livestock. It is also not a high producer of dry matter for consumption. Ironically, Texas grama looks like a miniature sideoats grama, and it is quick to mature and grows as a tightly clustered plant. If found growing on deep soils, previous management and events most likely have removed the site's mid-grass and tall grass species. Through secondary succession, Texas grama becomes the best grass left under past and present management. Its presence may tell a story of land degradation, change, and loss of a viable water source. From a succession standpoint, Texas grama is a valuable grass that helps tell the story of negative change if it becomes noted as a dominant species. Texas grama adds diversity to the plant community as a shortgrass. All grasses cannot be everything, which is why a diverse plant population has made the Edwards Plateau a unique biological area. It is not desirable for all plants to perform the same function.



Figure 6a. Texas grama (*Bouteloua rigidisetata*) is a native, warm-season perennial bunchgrass that ranges from 5 to 12 inches tall. Formerly referred to as "bell grama," this grass is represented by a seedhead containing bell shaped spikes (photo by the Noble Research Institute).



Figure 6b. Texas grama culminates on dry, shallow soils and disturbed sites. It requires minimal water for survival and recovers quickly following a drought—coming back from roots and seeds (photo by Deann Burson).

**Hall panicum** is a native, warm-season perennial grass that is important in range recovery following drought conditions. It was exceptionally strong after the 2011 Texas drought. Hall panicum is considered fair for grazing (not preferred), producing significant quantities of seed for quail, ground birds, and red ants. The leaves of hall panicum are 2 to 10 millimeters wide, featuring a slight curl similar to wood shavings (a descriptive term used by the leaves' observational identifiers as they mature). The stems will be 2 to 4 millimeters wide and more closely resemble the stems of Johnsongrass or Eastern gamagrass. Hall panicum typically grows 20 to 80 centimeters in height and is a mid-grass or a small bunchgrass.



Figure 7a. Hall panicum (*Panicum hallii*) is a native, warm-season perennial bunchgrass that averages 6 to 12 inches tall. It is easily identified late in the growing season by its unique curling of leaves, which resemble wood shavings (photo by Morgan Treadwell).



Figure 7b. Hall panicum is a shallow-rooted grass that grows mostly where soil moisture is accumulated near the surface (photo by Deann Burson).

**Sand dropseed** is a native, warm-season perennial grass that serves as a fair, quality forage for livestock during the early growing season. Sand dropseed is moderately palatable to livestock. Although the seeds are consumed by several species of songbirds and the seedheads are stripped by turkeys for food, sand dropseed is not a preferred forage for deer and other wildlife classes. Sand dropseed grows on sandy and disturbed sites. It also responds quickly to improvements in grazing management.



Figure 8a. Sand dropseed (*Sporobolus cryptandrus*) is a native, warm-season perennial bunchgrass that averages 15 to 30 inches tall. It is commonly found on loamy or sandy loam ecological sites (photo by Deann Burson).



Figure 8b. Sand dropseed may serve as an excellent option for a re-seeding mix on a disturbed rangeland. This bunchgrass establishes quickly and adds structure to the plant community (photo by Deann Burson).



Figure 8c. Sand dropseed is easily identified by its pronounced tuft of white hairs found at the junction of the leaf attached to the stem (photo by Deann Burson).

**Purple threeawn** is a native, warm-season perennial grass that is poor for grazing for livestock and wildlife. Purple threeawn typically occupies soil around red ant beds in the best of pastures and covers the ground in pastures in the worst condition. Purple threeawn is an opportunistic species that can replace other more desirable grasses with heavy grazing or overuse. The abundance of purple threeawn tells a story of vegetation change caused by management that negatively impacts the system.



Figure 9a. Purple threeawn (*Aristida purpurea*) is a native, warm-season perennial grass that averages 12 to 30 inches tall. It has a distinct three-part awn and sharp seedhead that can be carried by the wind or plant itself into the ground (photo by Deann Burson).



Figure 9b. Purple threeawn has a high amount of silica content that serves as an anti-herbivory plant strategy (photo by Deann Burson).



Figure 9c. Purple threeawn increases in plant density when heavily grazed. It can easily displace more desirable and palatable grass species (photo by Deann Burson).

**Wright threeawn** (often called “tall threeawn”) is a native, warm-season perennial bunchgrass that grows well in shallow soils. Wright threeawn provides poor-to-fair forage during the spring growing season but becomes exceptionally unpalatable—during late summer or extreme drought—due to its sharp-pointed seedheads, little leaf area, and high silica content. Threeawn species’ seeds are problematic for wool and mohair. With heavy grazing, wright threeawn and purple threeawn can displace other more desirable grass species.



Figure 10. Wright threeawn (*Aristida purpurea*) is a native, warm-season perennial bunchgrass that averages 12 to 30 inches tall. It is very similar to purple threeawn but does not branch at the base and has more basal leaves (photo by Morgan Treadwell).

**Fall witchgrass** is a native, warm-season perennial bunchgrass that grows on dry, rocky, or sandy soil types. Fall witchgrass is characterized by the crinkled edges on its leaf blades and open panicle seedhead, which resembles lovegrass. It is considered a fair forage value for livestock and wildlife.



Figure 11a. Fall witchgrass (*Digitaria cognata*) is a native, warm-season perennial bunchgrass that averages 12 inches tall. It is easily identifiable by its fine, crinkled edges on one side of the leaf (photo by the Noble Research Institute).



Figure 11b. Fall witchgrass is readily grazed by livestock and can serve as cover for ground-nesting birds (photo by the Noble Research Institute).

**Green sprangletop** is a native, warm-season perennial bunchgrass that is found on shallow, rocky soils. Green sprangletop provides excellent livestock grazing during the growing season and is a good nesting cover for ground-nesting birds. Because it establishes effortlessly on damaged rangelands, this is an important perennial grass. Population densities of green sprangletop fluctuate and are more abundant in wet years.



Figure 12a. Green sprangletop (*Leptochloa dubia*) is a native, warm-season perennial bunchgrass that grows 15 to 30 inches tall (photo by Morgan Treadwell).



Figure 12b. Green sprangletop is an excellent livestock grazing species that is typically found in re-seeding range mixes (photo by Deann Burson).

**Texas wintergrass** is a cool-season, native perennial grass found on nearly all soils in the Edwards Plateau (except shallower soils). Because it is green much of the winter and early spring, Texas wintergrass is a valuable forage, but as the plant matures, grazing value greatly diminishes as the plant becomes increasingly lignified (a change in the character of a cell wall, by which it becomes harder). Texas wintergrass is often called “speargrass” because of its seeds, which can damage animal faces and contaminate wool and mohair.



Figure 13a. Texas wintergrass (*Stipa leucotricha*) produces a sharp-pointed seed and awn that resembles a spear (photo by Deann Burson).



Figure 13b. Texas wintergrass is found on nearly all soils in the Edwards Plateau, except shallower soils (photo by Deann Burson).



Figure 13c. Texas wintergrass often serves as the primary forage for livestock during winter and early spring. However, as the grass matures and produces a seedhead, it often diminishes in palatability (photo by Deann Burson).

**King Ranch (KR) bluestem** is an introduced warm-season perennial grass that adds control and stability for erosion on rough, rocky ground. KR bluestem is a fair forage for wildlife and livestock. This grass was often seeded on degraded rangelands for soil and water conservation. It is now a common perennial grass along Texas roadsides. Native to Southern and Central Europe and Asia, this grass has taken a hold on Texas rangelands.



Figure 14a. King Ranch (KR) bluestem (*Bothriochloa ischaemum var. songarica*) is an introduced warm-season perennial grass that grows from 18 to 48 inches tall (photo by Deann Burson).



Figure 14b. King Ranch (KR) bluestem is a fair forage for wildlife and livestock (photo by Deann Burson).



Figure 14c. King Ranch (KR) bluestem has been observed to rapidly form monocultures and diminish native species' biodiversity (photo by Deann Burson).



**Silver bluestem** is a native, warm-season perennial grass—related to the similar and larger cane bluestem—which can increase in disturbed ground and old fields. Silver bluestem is somewhat palatable to cattle, sheep, and goats during the spring when new growth is present. As silver bluestem matures, it becomes exceptionally coarse and unpalatable to livestock.

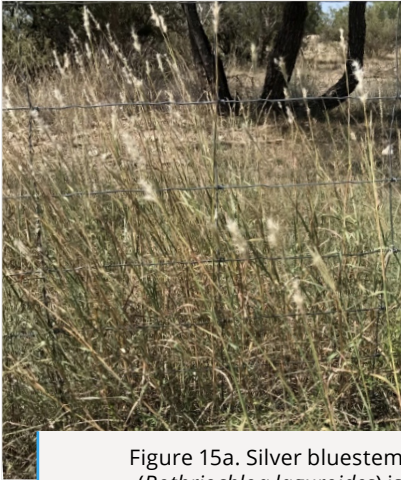


Figure 15a. Silver bluestem (*Bothriochloa laguroides*) is native, warm-season perennial bunchgrass that grows from 15 to 30 inches tall (photo by Deann Burson).



Figure 15b. Silver bluestem and cane bluestem are often confused with one another. Silver bluestem does not have a ring of feathery hairs at the joints on the grass stems (photo by Deann Burson).



Figure 15c. Silver bluestem has a high tolerance of grazing and will respond positively to rest or improved grazing management strategies (photo by Deann Burson).

**Sideoats grama** is known as the State Grass of Texas. It is a native, warm-season perennial bunchgrass that may form colonies from rhizomes. Sideoats grama is highly desirable for livestock and wildlife managers and is more highly desirable in grazing. It is also a critical species in determining stocking levels. The Edwards Plateau variety is usually more sod-forming, enabling sideoats grama to fan out in large colonies that creates light, rusty red patches in the fall. The rhizomatous form is much more palatable and preferred over the bunch form, but the bunch form is more productive.



Figure 16a. Sideoats grama (*Bouteloua curtipendula*) is a native, warm-season perennial grass (photo by Morgan Treadwell).



Figure 16b. Sideoats grama is capable of forming distinct bunchgrasses, but also tillering belowground to form solid colonies across patches of rangelands (photo by Deann Burson).



Figure 16c. Sideoats grama is not only a desirable grass for all livestock classes, but wildlife species also depend on it for nesting cover and forage (photo by Deann Burson).

**Kleingrass** is an introduced warm-season perennial grass most commonly observed in planted fields. It is used as hay, as it is considered good forage for cattle. However, kleingrass is dangerous and toxic to sheep, goats, and horses. Saponins produced by this grass can cause liver damage in these species, along with photosensitization in small ruminants.



Figure 17a. Kleingrass (*Panicum coloratum*) is an introduced warm-season perennial grass that grows from 24 to 60 inches tall (photo by Deann Burson).



Figure 17b. Kleingrass provides an abundance of quality forage for cattle, but toxins cause liver damage in horses, sheep, and goats, with accompanying photosensitization in small ruminants (photo by Deann Burson).

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**Little bluestem** is a native, warm-season perennial grass. It is the tallest grass that is commonly dealt with on rangelands in the Edwards Plateau. Little bluestem was the most abundant grass before 1850—providing fuel for fires—and was eventually grazed out by high numbers of cattle after settlement. It is now returning to the rangelands, which is a sign of improving range conditions. Little bluestem provides good livestock grazing during the spring and early summer when new growth is tender. However, as little bluestem matures, it becomes unpalatable and does not provide good winter forage. It also provides little to no grazing value for whitetail deer—although it provides good whitetail fawning-cover and nesting-cover for ground-nesting birds.

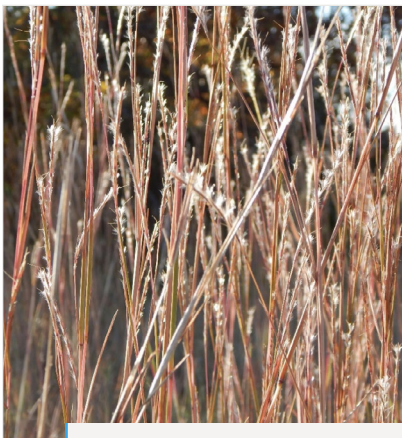


Figure 18a. Little bluestem (*Schizachyrium scoparium*) is a native, warm-season perennial grass that grows from 15 to 30 inches tall (photo by Deann Burson).



Figure 18b. Little bluestem is a good livestock grazing forage in spring and early summer when growth is tender, but becomes unpalatable beginning in late summer due to maturity (photo by Deann Burson).



Figure 18c. Little bluestem is exceptionally fire tolerant and can respond quickly to winter prescribed burns (photo by Deann Burson).

**Big bluestem** is a native, warm-season perennial bunchgrass that is less commonly found in the semi-arid Edwards Plateau climate. Big bluestem is an exceptionally palatable and a nutritious source of forage for livestock and is highly selected by cattle. Thus, the presence of big bluestem declines significantly under increased grazing pressure. Although big bluestem does not provide much grazing value to whitetail deer and other wildlife, the cover from this tall bunchgrass offers an ideal habitat for ground-nesting birds like the Bobwhite quail.



Figure 19a. Big bluestem (*Andropogon gerardii*) is a native, warm-season perennial grass that grows exceptionally tall, averaging 3 to 6 feet in height (photo by Barron Rector).



Figure 19b. Big bluestem is highly palatable to all classes of livestock and serves as an excellent nesting site for quail (photo by Barron Rector).

**Switchgrass** is a native, warm-season perennial grass characterized by its large, golden-yellow panicle seedhead and triangular patch of hair at the base of its leaves. This robust bunchgrass ranges from 36 to 72 inches tall and serves as a good cover for ground-nesting birds. Switchgrass is considered a good forage for livestock and is fair grazing for wildlife. It responds well to fire and provides an excellent fuel source for prescribed burns. Although it is much less widely distributed in the Edwards Plateau, switchgrass can be abundant on river bottoms, terrace sites, and even on some deep soils on uplands in the region's central and eastern parts.



Figure 20a. Switchgrass (*Panicum virgatum*) is a native, warm-season perennial grass that rivals big bluestem in height, averaging 3 to 6 feet tall (photo by Deann Burson).



Figure 20b. Switchgrass provides a large amount of forage for cattle but is less suitable for sheep and goats (photo by Deann Burson).

**Indiangrass**, also known as “Yellow Indiangrass,” is a native, warm-season perennial bunchgrass that has a yellow inflorescence with bent awns emerging alongside its seeds. Indiangrass provides an excellent source of crude protein for livestock and wildlife in the summer when leaves are green but decreases in palatability after reaching maturity. When Indiangrass occurs in the Edwards Plateau, it is a good indicator of a healthy rangeland system.



Figure 21a. Indiangrass (*Sorghastrum nutans*) (also known as “Yellow Indiangrass”) is a native, warm-season perennial bunchgrass that grows from 4 to 6 feet tall (photo by Deann Burson).



Figure 21c. Yellow Indiangrass produces a golden plume seedhead in early fall (photo by Deann Burson).



Figure 21b. Yellow Indiangrass provides excellent livestock grazing during spring, summer, and fall—with marginal value during the winter as a dormant grass (photo by Deann Burson).



Figure 21d. Yellow Indiangrass provides good nesting cover for quail and turkeys, while turkeys commonly “strip” the seeds from the seedhead in the fall (photo by Deann Burson).

Many other grass species occur in lesser numbers. Drought years and above-average rainfall years will also reveal dormant populations, resulting in boom-and-bust cycles of certain grass species throughout the Edwards Plateau. All of these grasses come back from the roots and below-ground buds. Seeds are essential for offering genetic diversity and establishing herbaceous material on the bare ground—caused by soil disturbance, overgrazing, and drought damage. Healthy plants usually produce seedheads, but seeds are not important for immediate survival due to the massive vegetative reproduction that occurs via buds.

By learning the forage value and recognizable characteristics of perennial grasses and plant communities, range managers take an active role in the stewardship of the Edwards Plateau rangelands. Taking the time to learn these grasses will enable any range manager to conduct a basic inventory of the “groceries” that exist “on the shelf.” It will also help landowners to anticipate better livestock grazing habits, patterns, and season of grazing use. Keeping the soil covered and striving to maintain a diverse array of perennial grasses is essential for the overall function, integrity, and stability of the rangelands throughout the Edwards Plateau.

The Edwards Plateau is home to a vast diversity of grass species, extending beyond those mentioned in this publication. The following reference guides are suggested grass identification resources that are useful tools when assessing rangeland conditions and furthering perennial grass knowledge, understanding, and recognition.

1. Gould, F.W. 1974. *Common Grasses of Texas*. TAMU Press. Texas A&M University, College Station, Texas. 253 pages.
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5. Hoffman, G.O., Rodgers, J.D., Ragsdale, B.J. & Miller, R.V. 1970. *Know your grasses*. Texas A&M AgriLife Extension Service Publication B-182. 47 pages.
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