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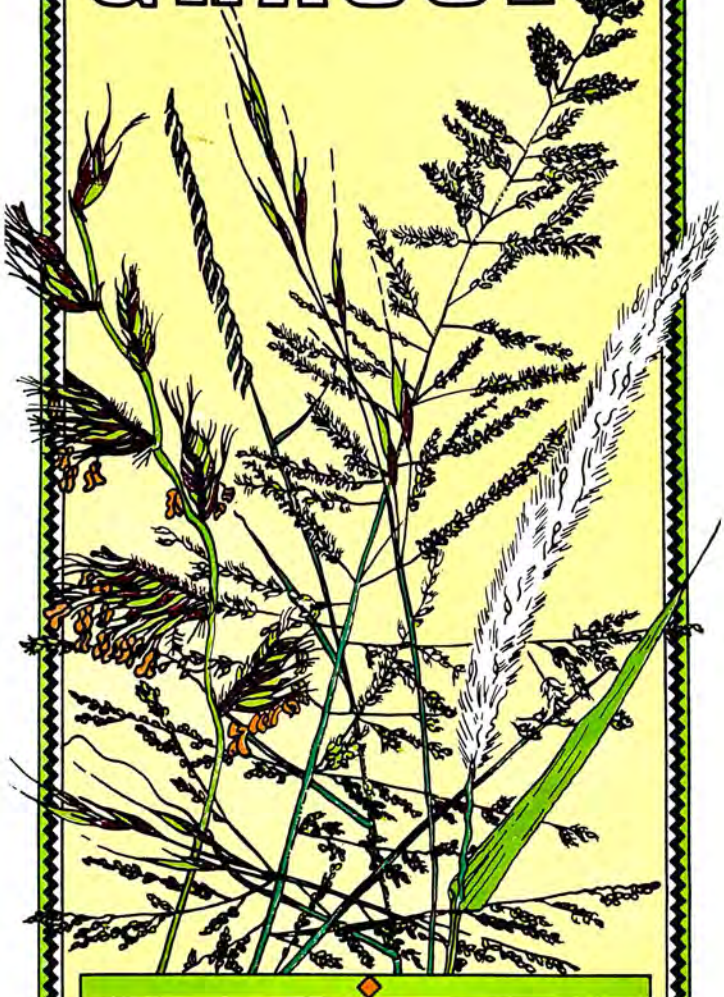
DESERT GRASSES



Published by the
Arizona Native Plant Society

By
Arizona Native Plant Society
Urban Landscape Committee
Tucson, Arizona

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INTRODUCTION

ML *Bouteloua gracilis*

The Arizona Native Plant Society (ANPS) published this booklet to promote the understanding and use of grasses native to, or naturalized in the Southwest. Native grasses have an important role in the restoration and reclamation of our native plant communities as well as in urban and rural landscapes. Many grasses discussed here dominate in communities throughout the state, but some have declined due to development and poor management of livestock and wildlife. Increased use of native grasses may increase biodiversity of our natural communities by providing a greater variety of species for use by wildlife. These low-maintenance plants can also add uniqueness, aesthetic diversity and integrity to a Southwestern landscape. Native grasses can also contribute to wildlife corridors that encourage or support wildlife within urban areas.

The 30 grasses described in this booklet were chosen because they are adapted to conditions in the deserts of the arid Southwest, can be successfully incorporated into plantings in urban and rural areas, and complement plants highlighted in previous ANPS booklets.

How do grasses differ from other plants in the landscape?

A brief introduction to the grass family *(Gramineae)* and its terminology may be helpful, since grasses are distinctive in appearance and structure. *Gramineae* is the fifth largest vascular plant family and contains many of the major food crops of the world, such as rice, wheat, corn, and barley. Plants in this family also provide shelter for humans, livestock, and wildlife.

Technically, the stems of grasses are referred to as culms. Leaves consist of a sheath and blade. Because many species have similar foliage, the floral structures (inflorescences) are often used for identification. An inflorescence consists of many small flowers, called florets, collected in spikelets (highly modified flowering branches). There are three general inflorescence types in the grasses: panicle, spike, and raceme, which are distinguished by how the spikelets are arranged. There are one to several florets per spikelet. At the base of each spikelet are two bracts called

glumes. Each floret has two smaller bracts, a palea and a lemma, and usually has three stamens and two plumose stigmas.

Most arid-adapted grass species are bunchgrasses with tufted forms, such as fountain grass. Matted forms, such as Bermuda grass, are referred to as sod-forming grasses. A bunchgrass proliferates by producing lateral branches called tillers, whereas sod-forming grasses spread by underground stems (rhizomes) or above-ground trailing stems (stolons). The presence of rhizomes and stolons may cause some species of sod-forming grasses to be more invasive, whereas the bunchgrasses are less likely to spread aggressively within a site. For example, Bermuda grass spreads by stolons and rhizomes and can be extremely invasive if not properly maintained. Prodigious seed production or ease of establishment can also contribute to invasive tendencies. For instance, the green variety of fountain grass has these qualities and readily overruns areas near plantings of this species. The purple variety of fountain grass produces sterile seed and is a more appropriate choice for urban landscapes. Under certain conditions, high seed production is a desirable characteristic. The species suggested in this booklet are perennial; they live longer than one year and do not need to be re-seeded yearly. They may flower their first year under good growing conditions.

PLANT SELECTION

The primary criteria used to select the grasses in this booklet were:

1. Low Water Use. All recommended plants are drought-tolerant. However, most will look and grow better if supplemental irrigation is provided during the drier periods of the growing season.

2. Cold Hardiness/Heat Tolerance. All are tolerant of climatic conditions common below about 4000 ft. in southwestern deserts.

3. Appealing Qualities. The majority of these grasses were chosen because of their attractive texture, form, foliage, or inflorescences. Some species also have other exceptional characteristics, such as historical significance on our natural grasslands, or their ability to provide habitat for wildlife.

4. Dependability/Availability. Approximately half of these grasses have been used in cultivation and are available through seed companies. Some botanical institutions carry the hard-to-find species as seed or container plants. We hope this booklet will promote demand for the hard-to-find species, which will increase their availability.

DESIGN NOTES

Bunchgrasses may be used in a landscape design as accents, specimen plants, and transitional plantings. For example, a mass of small to medium-sized bunchgrasses acts as an accent in the foreground of a tree or shrub grouping. Their varied textures and colors enhance and emphasize other landscape plants in a grouping.

The larger bunchgrasses and those with outstanding flowers or color should be considered for specimen plantings where they are the center of attention. A specimen is a single plant or plant clump with distinctive features. It is used in a conspicuous place in the landscape to bring attention to an area. A large specimen of sacaton grass could be appropriately placed so that it leads the eye toward an entryway or other area of emphasis.

Some of these grasses can function structurally in the landscape, serving as transitions between different areas in a yard, as erosion control, or as a low-water-use turf. A sod-forming grass such as buffalo grass or curly mesquite can be used to control soil erosion, whereas a mass planting of sacaton can form a transition between a lush, shady yard and natural desert.

Grasses add diversity to a landscape when included in small numbers throughout. Groups of other plants and masses of grasses can be juxtaposed to create contrast. Many bunchgrasses in this booklet are fine-textured and small to medium in scale. They contrast nicely against a mass of coarse-textured evergreens, a solid background such as a stucco wall, or against a skyline. For example, a mass planting of blue grama mixed with octopus agaves creates a pleasing composition. Small groups of grasses in a perennial flower bed can create variety and interest, and provide changing color throughout the year. Persistent inflorescences can also be used in flower arrangements.

There are two, often overlooked, qualities of grass that are worth mentioning. First, the yellow, brown, or orange autumn and winter color of dormant grasses adds significant interest to the landscape during the cooler months. Second, one of the greatest ornamental qualities about grasses is the motion they bring to a landscape with only a slight breeze. To emphasize this quality, make sure there is adequate space between grasses and plant them in fairly open areas without too many shrubs that may block winds.

PLANTING NOTES

Grasses are generally a care-free group of plants and typically resist most disease and insects. But it is important to choose the right grass for the right place. Look at the microclimates within your planting area – take note of site characteristics such as exposure, slope, and surrounding plant species. For example, certain species may be better suited for shaded areas and, thus, will thrive under a mesquite or other tree canopies.

MM *Heteropogon contortus*

The species suggested in this booklet typically tolerate well-drained and low to moderately fertile soil, even though in natural communities they may be adapted to more specific site characteristics. Also, make sure the growth habit of the grass is compatible with the garden space. For example, a mat-forming grass would not be appropriate in a rock garden because its invasiveness and competitiveness would result in a tangled mass.

Many grasses are propagated both by seeding and by vegetative methods. Grasses are usually propagated vegetatively by plant division, allowing plants to develop to maturity much faster than those produced from seed. In the future you may be able to purchase some of these grasses as container plants; otherwise, you may eventually wish to divide a plant in a site that was established from seed.

Most grasses can be divided and transplanted successfully in early spring or late fall. However, some grass enthusiasts have successfully divided and transplanted plants year around. Divisions or container plants should be transplanted in the same way as shrubs or trees. Dig a hole approximately two times the size of the root ball, place the plant in the hole, and fill and firm the backfill soil around the roots. Do not plant the grass deeper than it was growing previously and do not add soil amendments. Trim the leaves and stem back substantially to lessen transplant shock. To increase soil water retention, add a layer of mulch, straw, or decomposed granite to the surface around the transplanted grass. Initially provide frequent irrigation to transplants. In general, position transplants as far apart as their mature height. However, you may wish to place transplants closer to produce the effect of a natural grassland or groupings under tree canopies.

Most of these species can be grown from seed. Proper site preparation puts you in control of the planting composition and development, especially if you are seeding large areas where weeds can be difficult to control. Remove existing weeds before a planting is done. If possible, follow this by irrigating the site to promote germination of weed seed present in the soil, and repeat the weed removal process. Weed removal is important because newly sown native grasses will be developing more root growth than above ground growth. Aggressive existing weeds may shade out the new grasses and their roots will compete for nutrients and water.

Following weed eradication, the soil surface should be raked and tilled, and rototilled or disked if compaction is severe. Seeds can then be broadcast, usually by scattering seed in one direction and then repeating the step across the other direction perpendicularly. Small seed can be mixed with 4 parts sand, soil, or mulch to improve the uniformity of seed distribution when broadcasting. Lightly rake the soil surface to work the seed into the soil. For best results, a thin layer of mulch, approximately ¼-inch deep, should be applied over the seed. This reduces seed loss from erosion and wildlife, and increases retention of soil moisture for germinating seed. Soil, gravel, decomposed granite, and straw or other plant litter all serve as appropriate mulches.

If irrigation is available, warm-season grasses can be sown from June until the end of August. The most important factor for successful establishment is to keep the upper 2 inches of the soil from drying out until seedlings have emerged. This typically involves watering once to three times a day, depending on site conditions. Again, a mulch will aid in retaining soil moisture. Once seedlings have emerged, monitor plants for watering needs and slowly reduce the frequency of irrigation. Plants tend to become rank if too much irrigation is provided. Most of the suggested grasses do not require supplemental irrigation after establishment, but many have a better appearance if watered once or twice a month during the drier periods of the growing season.

When irrigation is not available, seed should be sown once summer rainfall has begun. It is best to sow seed when the storms are occurring fairly consistently rather than at the beginning of the rainy season. With premature planting, seeds may germinate, but will not have soil moisture for a long enough period to allow seedlings to become established. Be patient, watch the weather reports, and wait for a period with a high probability of repeated storms. During this time, relative humidity is high, so the soil surface does not dry out as quickly, and nature helps out with the irrigation. And don't forget the mulch!

GRASSES

Purple threeawn

Aristida purpurea

DJ

Purple threeawn is found on rocky or sandy plains and slopes, and frequently along roadsides. You will usually find it at 1,000 to 5,000 feet, throughout most of Arizona into Arkansas, Kansas, Utah, southern California and into Mexico. This species flowers March to September, mostly April through May.

Purple threeawn is an erect, dense clumping grass that stands 1 to 2 feet tall. The leaf blades of purple threeawn are narrow, with edges of the thin leaves rolled inward. Different strains of this grass vary from loosely to closely-arranged inflorescences.

Purple threeawn get its name from the purple color of the three awns (bristle-like appendages) attached to the end of the lemma. The mature seed has a point that often gets uncomfortably embedded in clothing. It should not be planted where there is heavy foot traffic.

Purple threeawn is one of the first perennials to grow in the spring. Its fine, rich green growth in April provides an excellent contrast to the purple seedheads that emerge in early May. Mass plantings of purple threeawn in open areas offer striking color to a landscape, and an appealing wave when a breeze is present.

LBH

Spidergrass

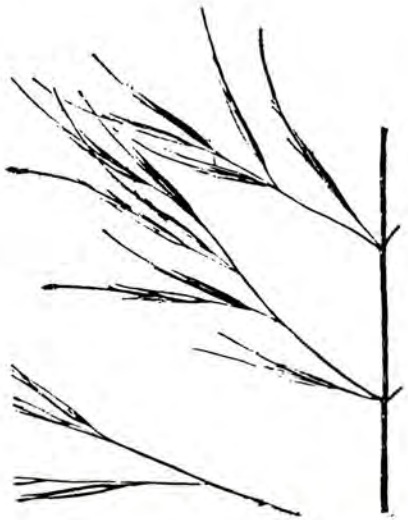
Aristida ternipes

DJ

Spidergrass is found along roadsides, on rocky or sandy slopes and in other places where the soil has been disturbed. It is found throughout Arizona, mostly at 2,500 to 5,500 feet, and flowers from August to November. It is native to Arizona, New Mexico, and all the way to northern South America and the West Indies.

Spidergrass forms tall wiry tufts about 1½ to 4 feet tall. It has firm narrow leaf blades, and often branches well above the base of the plant. The leaf blades are fairly long, 8 to 20 inches. The seeds of spider grass are pressed tight along the main stem with straight or only slightly twisted awns. Two of the 3 awns of each floret are either absent or reduced to mere stubs. Accordingly, it may be thought of as "the one-awn three-awn."

This fine-textured plant forms an interesting silhouette against contrasting backgrounds. Seedheads easily tumble and become tangled in other plants. This grass is more appropriate for informal gardens or open areas.



Cane beardgrass

Bothriochloa barbinodis

MM

Cane beardgrass is found in most counties of Arizona, and into Oklahoma and Texas, California, and Mexico, at elevations of 1,000 to 5,800 feet. Throughout most of Arizona it flowers from April to October. It occurs primarily in open range on mesas, rocky or sandy slopes, and graded roadsides.

This warm-season grass ranges in height from 2 to 4 feet. Because it is a large, coarse bunch grass with a deep, fibrous root system, it is good for erosion control where mineral soils are exposed.

Cane beardgrass can be grouped in open areas or contrasted with dark green species to accent the attractive tufts of silvery, hairy plumes produced on long stems. In addition, the autumn foliage has a pleasing orange-red color and winter foliage cures to an amber brown.

Sprucetop grama

Bouteloua chondrosioides

JRE

The native range of this medium-sized bunchgrass is from western Texas to Arizona, and south into Guatemala. It is typically found on dry, rocky slopes and rolling desert grasslands at elevations from 2,500 to 6,000 feet.

Sprucetop grama generally grows no taller than 1½ feet. The common name refers to the spikelet, which resembles the outline of a Christmas tree, in miniature. Like the other gramas, sprucetop grama is a warm-season grower with seed maturing August through October. (Those interested in seeing a small population of Sprucetop grama can find one along the lower Star Pass trail in the Tucson Mountains.) Sprucetop grama planted in a group or contrasted with other species emphasizes the attractive inflorescences.

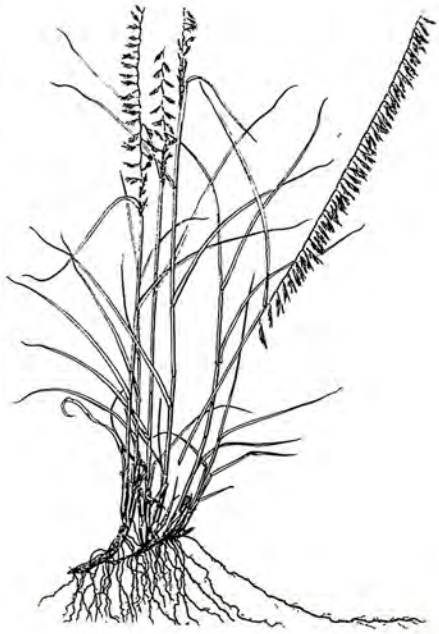
Sideoats grama
Bouteloua curtipendula

DJ

Sideoats grama has a wide distribution. It is found throughout Arizona, south into Mexico, El Salvador, Columbia, and Argentina. It is also found in Alabama and from Texas to Montana, from Maine to Ontario, and south to Maryland.

Sideoats grama is a tall bunchgrass, typically reaching a height of 2 to 3 feet. The plant forms a thick clump and can be rhizomatous. The leaf blades are fairly wide. Flowering spikes often have a pink to purple hue when young. Spikelets hang along one side of the spike, hence the name. The visual effect of the mature spikelets is that of a series of flags hung along a pole. In years of normal rainfall in Arizona's deserts, this species needs no additional irrigation and does not spread rapidly.

Sideoats grama can be grouped in open areas, used intermittently throughout a perennial garden, or contrasted with a solid background to accentuate its silhouette. Delicate foliage, distinct spikelets, and a rosy color during winter makes sideoats grama one of the more attractive grasses for landscape use.



Blue grama
Bouteloua gracilis

ML

Blue grama is a wide-ranging species, occurring as a native from Manitoba to Mexico. The thin, blue-green leaves stay low to the ground in most strains, usually reaching no more than 5 or 6 inches in height. Because of its low stature, blue grama has recently gained widespread popularity as a "natural meadow" or turfgrass. It is also one of the primary forage species of higher southwestern grasslands and is widely adapted to varying environments. The flowering stems reach almost 2 feet, sporting purplish flag-type spikelets. This species needs slightly more water than the other gramas listed here.

Blue grama can be used in situations similar to those suggested for sideoats grama. Its persistent seedheads resembling "bobbing eyelashes" and small stature will make this grass a favorite in many gardens or as a container plant.

LBH

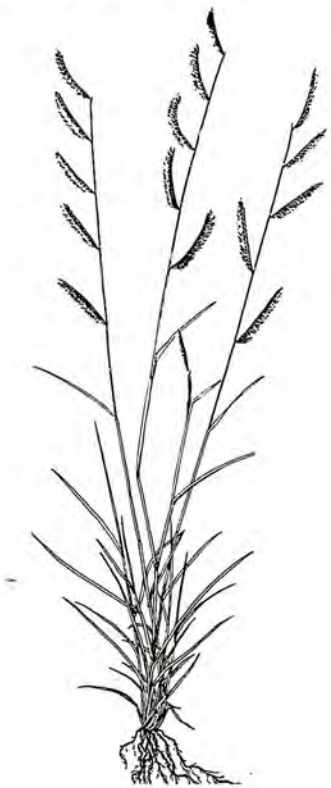
Rothrock grama

Bouteloua rothrockii

JRE

Rothrock grama is typically found at 2,500 to 5,500 feet on dry rocky hillsides and sandy mesas in Arizona, southern California, and northern Mexico. It forms small clumps that reach a height of 1 to 1½ feet.

Similar in appearance to blue grama, it has inflorescences that are more erect and greater in number. It is considered more drought resistant and better adapted to low desert sites than other gramas, but is not as long lived.



LBH

Buffalograss

Buchloe dactyloides

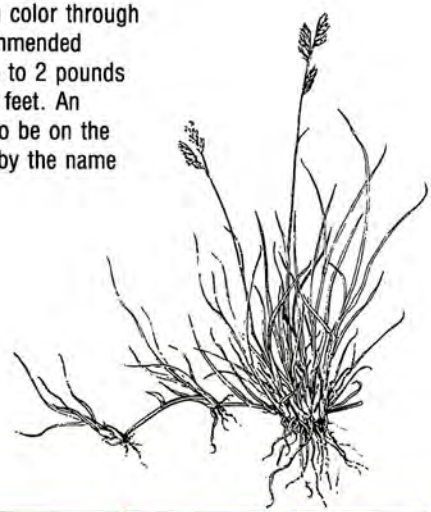
CM

Buffalograss has a wide range occurring from the northern Great Plains southward into Mexico. It is rarely found in Arizona, typically around 5,500 ft. Buffalograss grows in sandy soil, rocky areas and also in limestone soil.

This gray-green perennial forms a dense mat that spreads by runners or stolons. Male and female flowers are usually on separate plants, with the stems of male plants being 4 to 6 inches long and the stems of female plants usually shorter.

Buffalograss is a major forage species of the Great Plains. The sod houses of the early settlers in this region were often made with this grass. This species should not be confused with buffelgrass, an aggressive exotic sometimes used in revegetation.

Buffalograss is an excellent warm-season turfgrass adapted to arid regions. Once it is established, buffalograss needs little or no fertilizer and typically requires 12 inches of rain annually. This grass is also relatively free of disease and insect problems. Mowing is generally not necessary, but if used as a traditional turfgrass, it only needs mowing about twice a year. This grass goes dormant after the first couple of frosts in fall and remains a tannish color through winter. The recommended seeding rate is ½ to 2 pounds per 1,000 square feet. An excellent variety to be on the lookout for goes by the name "Prairie." Buffalograss is also now available in sod form.



Arizona cottontop

Digitaria californica

JRE

This species occurs in open, well-drained soils throughout Arizona. It is also found in Colorado and Texas, and south into Mexico. In Arizona, plants grow at elevations from 1,000 to 6,000 feet.

Arizona cottontop is typically 1½ to 4 feet tall. The panicles are short, 2 to 8 inches long, on flowering stems as tall as 2 feet. The flowering time for Arizona cottontop is from August through November, offering a delicate yet showy plume of snow-white flowers as the desert turns from summer to fall.

The soft, silvery to purplish hairs of the spikelet give plants a dramatic illuminated appearance, hence the name cottontop. This grass makes an attractive accent in the landscape during late summer and fall.

JE

Plains lovegrass

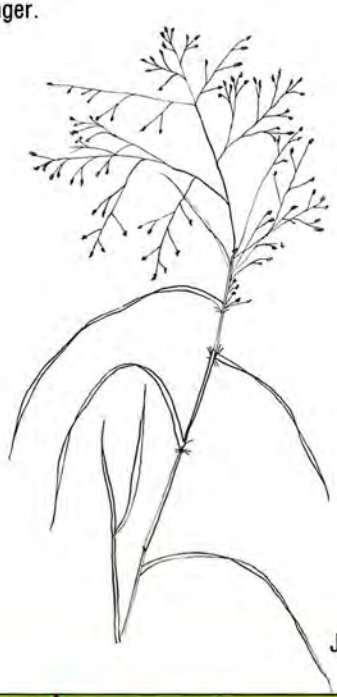
Eragrostis intermedia

JRE

This delicate grass is native to sandy or rocky slopes and plains from eastern Arizona, across to Georgia, Oklahoma and south to Central America. In Arizona, plains lovegrass occurs mostly at elevations between 4,000 and 5,000 feet.

Plains lovegrass has erect or ascending flowering stems that are 2 to 3 feet tall. The panicles are broadly pyramidal, 8 to 16 inches long and 6 to 12 inches wide. The flowers appear from June through October.

The finely textured leaves and moderate size combine to make plains lovegrass an excellent choice for groupings in a residential landscape. The tall, open panicles and winter foliage take on a purple hue, providing a pleasurable contrast to light-colored walls or to foliage such as that of Texas ranger. The airy panicles are easily swayed in light breezes.



JE

Fluffgrass

Erioneuron pulchellus

ML

Fluffgrass is a common perennial growing on dry rocky slopes and desert flatlands up to 5,500 feet in Utah and Nevada to western Texas, Arizona, southern California, and into northern Mexico. It flowers mainly in the summer and fall, occasionally in spring.

This wiry little bunchgrass grows to 6 inches or less in small clumps, usually up to 5 inches in diameter. Fluffgrass has dense fuzzy tufts at the end of wiry, leafless stems. These tufts are composed of many fine, sharp hairs fanning out between broader leaf-like structures, which, when seen in clusters, give it the "fluff" of its name.

In landscaping, these squat oval mounds – first green, later a grey/white – can attractively punctuate a rocky or caliche-laden, otherwise barren expanse. Fluffgrass is easily established and requires little water to thrive. It is also a favorite forage plant of desert tortoises.

LBH

Tanglehead

Heteropogon contortus

DJ

This grass grows in individual bunches and thrives on open slopes, rocky or sandy plains from 1,000 to 6,000 feet. In the United States it is mainly found in semiarid desert grasslands of the Southwest; however, this species is found on other continents, abundantly in Australia. It generally flowers from August to October, occasionally in spring.

Tanglehead is a short-lived perennial 8 to 30 inches tall, topped by an extended raceme from which long twisted awns spread upward or out, often tangling with neighboring racemes. Branching stems are jointed, with flat or folded leaf blades projecting from the node of the joint, though foliage is mainly at the base of the stem. Tanglehead reseeds easily, but is not difficult to control; individuals can be easily and effectively pulled. This species typically dies after a few years.

This species has good ornamental potential with its changing colors; the inflorescence ages from a new pale green growth to golden to nearly a chocolate brown, while the foliage cures from green to red tawny, then grayish-brown, remaining attractive well into winter.

LBH

Curly mesquite
Hilaria belangeri

JRE

This short grass, under 6 inches tall, spreads by stolons to form fairly dense sod. It resembles buffalograss but grows in warmer and more arid climates, from central Texas to southern Arizona and south into northern Mexico. The elevational range for curly mesquite is mostly between 2,000 to 6,500 feet, but it can occasionally be found much lower in southern Sonora. Curly mesquite forms large patches on plains or slopes, sometimes with scattered junipers, oaks, or mesquites. Often its preferred soil has a clay loam or clay horizon at or near the surface. In warmer or more arid sites the typical short form with stolons is replaced by *H. belangeri* var. *longifolia*, which has larger tufts, longer leaf blades, and lacks stolons.

Curly mesquite can be used as a natural lawn and has tan, curly foliage during the winter months. It greens up early in the spring and typically flowers from August to November.

LBH

Tobosa
Hilaria mutica

DJ

Dense clumps of tobosa dominate large areas of short grassland, often with scattered mesquites or soaptree yucca, from southern Arizona and northern Mexico to west Texas, usually between 2,000 and 6,000 feet elevation.

Tobosa has broad, fan-shaped glumes and is typically 1 to 3 feet tall. Most growth and flowering takes place in the warm season, but it can respond to winter moisture if temperatures are not too cold. Although it can grow in a variety of soils, tobosa is most often found in heavy loams and clays on plains, basins, and swales. Tobosa is distinguished from big galleta by having glabrous herbage and its propensity to grow on clay instead of sandy soils.

Big galleta

Hilaria rigida

CM

Big galleta grows in more arid climates than any other perennial grass in North America. It occurs from northwestern Sonora and adjacent Baja California, north to southern Nevada and Utah, mostly at elevations below 5,500 ft. It can grow at temperatures from 85-110°F, which allows it to use moisture at any season in its native low desert. Usually big galleta grows on sandy soils and stabilized dunes, but it can also occur on heavier loam or in crevices on rocky slopes. It blooms from February through September.

Clumps of big galleta are dense, up to 3 feet tall, and may be very long-lived. The clump size is usually proportional to the spacing between them. Big galleta is easily distinguished from related grasses by the white fuzz that covers the lower stems (be sure to look at the stem, not the leaf sheath). Branching stems allow it to function like a shrub, with rapid growth of new leaves on the upper stems after rain. Improved strains are being developed for landscaping.

LBH

Green sprangletop

Leptochloa dubia

MM

Green sprangletop occurs on dry hills, rocky mountain slopes, and valleys, generally at mid-elevation ranges of 2,500 to 6,000 feet. It is native to Florida, Oklahoma, Texas, New Mexico, south of the Mogollon Rim in Arizona, northern Mexico, and Argentina.

Green sprangletop is a tufted perennial, without stolons or rhizomes, growing 1½ to 3½ feet tall with as many as 15 flexible, drooping inflorescences. This species is commonly a dull bluish-green color, frequently with a purple tinge.

Green sprangletop is a valued forage crop on the open range in some regions and is occasionally cut for hay. The genus is from Greek *leptos,* "slender," and *chloe,* "grass," alluding to the slender spikes.

LBH

Bamboo muhly
Muhlenbergia dumosa

JRE

Bamboo muhly is typically found from 3,000 to 5,000 feet in southern Arizona and northwestern Mexico. It grows at the base of rock outcrops, cliffs, and ledges in rich soil and appears to need the extra moisture afforded by such shaded sites. It flowers mostly January to May, forming feathery, compound inflorescences (consisting of many panicles) at the upper end of 3 to 6-foot tall, branched culms. Woody, narrow culms with persistent sheaths and inconspicuous foliage give this grass a bamboo-like or shrubby appearance.

The lacy silhouette of bamboo muhly is accentuated when used in front of a solid background such as a stucco wall, or as a backdrop for low-growing, coarse-textured plants. Old, dead canes should be removed yearly. It is also attractive in a mass planting under canopies.

Bush muhly
Muhlenbergia porteri

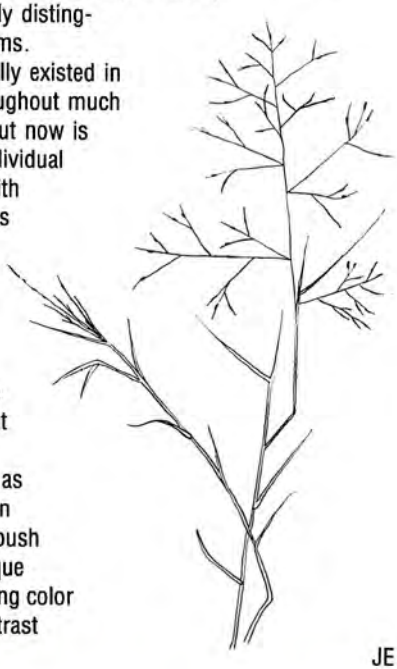
DJ

Bush muhly is found at elevations between 2,000 to 6,000 feet throughout most of Arizona, where annual precipitation ranges from 10 to 16 inches. It is also native to California, Nevada, Colorado, western Texas, and northern Mexico. Bush muhly is adapted to sandy-gravelly soils that have good drainage. It is a late summer bloomer producing flower heads August through October.

Bush muhly is a large, fine-stemmed bunchgrass resembling a shrub or bush, hence the name. It can grow to 3 feet tall and about 3 feet wide. During active growth, the foliage and seedheads acquire a purplish hue. As the seedheads mature their color changes to white, which can give the plant a cobwebby appearance. The leaves are short, fine and are not readily distinguishable from the stems.

Bush muhly originally existed in extensive stands throughout much of southern Arizona but now is generally found as individual plants intermingled with shrubs. This is perhaps due to the protection shrubs offer from grazing or the species' mode of seed dispersal.

Bush muhly can be used as an accent plant to "fill in" openings between shrubs such as catclaw and whitethorn acacias, fourwing saltbush and creosote. Its unique growth form and varying color can create a nice contrast in a landscape.



JE

Deergrass

Muhlenbergia rigens

ML

Deergrass is almost always found in and along rock-floored ephemeral streams, or in open stands of oaks throughout most of Arizona from 3,000 to 7,500 feet. It is also found in Texas, southern California, and northern Mexico. Deergrass blooms from July to October.

It is a large, coarse bunchgrass that normally grows to a height of 3 to 5 feet. Leaves are wide, 4 to 20 inches long and grow from the base of the plant. Foliage is dark green when actively growing, curing to a gray straw color during the winter. The seedhead is a long cylindrical spike, 5 to 15 inches long and ¼-inch in diameter.

Deergrass can tolerate full sun or partial shade. It performs well in a mini-oasis setting or in a location where it receives extra moisture. Due to its large, erect and coarse form it can be used as a specimen or accent plant.

LBH

Indian ricegrass

Oryzopsis hymenoides

MM

Indian ricegrass occurs on open, sandy plains and hills, often in juniper woodlands. Generally it is found at elevations from 3,500 to 6,500 feet throughout the western United States, from Canada to Mexico.

This perennial, cool-season grass grows in dense, typically large clumps usually 12 to 28 inches tall. Indian ricegrass blooms from June to August, displaying a fine-textured, showy inflorescence that is multibranched and spreading.

Indian ricegrass is a valuable forage plant on semiarid rangelands. Both herbage and the plump grain are high in food value. The grain was widely used by native peoples, usually ground into a flour for bread. This genus gets its name from *oryza,* "rice," and *opsis,* "appearance," alluding to a fancied resemblance to rice.

Indian ricegrass has a particularly stunning inflorescence at maturity. Transparent lemma and palea enclose shiny black seeds, making this species a natural choice for dried flower arrangements.

LBH

Pappusgrass

Pappophorum mucronulatum

DJ

Pappusgrass is found in Cochise and Pima counties of Arizona, and in Texas, northern Mexico, and South America. It is locally abundant near Tucson at the base of the Santa Rita Mountains at elevations from 2,000 feet to 4,000 feet, where annual rainfall ranges from 10 to 14 inches. Pappusgrass is well adapted to sandy textured soils and is typically found along dry washes and roadsides. It also grows in calcareous and silt loams throughout the Tucson Basin, in association with creosote bush.

Pappusgrass is an erect warm-season, perennial bunchgrass, 2 to 3 feet tall. Leaves are gray-green to light green, ¼-inch wide and inrolled when stressed for moisture. Flower heads appear from March to October. The inflorescence is cylindrical, 4 to 10 inches long, and appears hairy due to the numerous soft bristles attached to the florets. This grass can be used as an accent plant along drives or in other areas to help simulate a natural open appearance in the landscape.

LBH

Muttongrass

Poa fendleriana

Muttongrass is a cool-season perennial bunchgrass, 1 to 2 feet tall. Leaves are up to 12 inches long and ¼-inch wide. Foliage color varies from bright green during active growth to a pale bluish-green during dormant periods. Inflorescences may be up to 4 inches long, compact and densely flowered. Generally, inflorescences stay erect throughout the growth period.

Muttongrass is found throughout the Rocky Mountain states at elevations above 5,000 feet where annual precipitation exceeds 18 inches. It is adapted to loamy soils that have good water-holding capacities.

This species is shade tolerant and can be used as an under story plant in a mini-oasis setting.

LBH

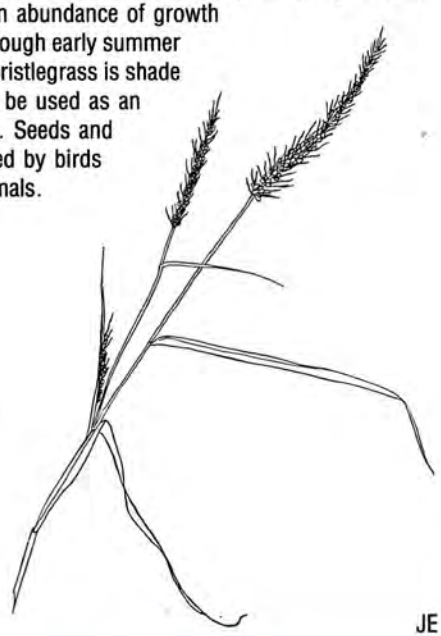
Plains bristlegrass

Setaria macrostachya

BM

Plains bristlegrass is native to Texas, New Mexico, northern Mexico and southern Arizona. It is found at elevations from 2,000 feet to 5,000 feet where annual precipitation ranges from 10 to 18 inches. It is adapted to clay loam and sandy loam soils that are moderately shallow (up to 15 inches) to deep (up to 3 feet).

Plains bristlegrass is a warm-season tufted perennial bunchgrass commonly 1 to 4 feet tall. The stems often bend at the nodes. The form of the inflorescence is a cylindrical spike with the spikelets subtended by long bristle-like hairs, appearing from May to October. Leaves are bright green and less than ½-inch wide, somewhat rough and hairy on the upper surface. As a warm-season grass, this species grows mostly during the summer rainy season. However, with adequate spring moisture it will produce an abundance of growth during spring through early summer months. Plains bristlegrass is shade tolerant and can be used as an understory plant. Seeds and foliage are utilized by birds and small mammals.



JE

Alkali sacaton

Sporobolus airoides

PO

In its wild habitat, alkali sacaton is found on sandy plateaus and washes, heavy-textured (often alkaline) bottomlands and flats, at elevations from 2,500 to 6,500 feet. Besides Arizona, it is found from South Dakota to eastern Washington and south to Texas, southern California, and Mexico. Alkali sacaton typically flowers from May to October in Arizona.

In appearance, this species may be regarded as a smaller, denser version of *Sporobolus wrightii* (sacaton). Except for size, they are remarkably similar. In fact, they were once regarded as varieties of the same species.

Because of their large size, *S. airoides* and *S. wrightii* can be used as accent plants, or as backdrops for a grouping of smaller shrubs, grasses, or groundcovers. When heavy with seed in August through September, the dark-colored panicles contrast with the yellow-green herbage.

Spike dropseed

Sporobolus contractus

JRE

Spike dropseed is found on dry, open, sandy or rocky slopes and washes, and frequently along roadsides from 1,500 to 6,500 feet. It flowers mostly from August to October, but it may flower as early as June. Its height ranges from 1½ to 4 feet, and it grows in small clusters or moderately large clumps.

This species differs from other *Sporobolus* in that the inflorescence is a compressed panicle with spikelets clustered close to the stem, rather than forming an open panicle (hence the name).

Spike dropseed, as well as mesa and sand dropseed, has "flags" of weathered leaf ends on old flowering stems which lend a pleasant and distinctive look to these species in a slight breeze.

Mesa dropseed

Sporobolus flexuosus

BM

Mesa dropseed is found from 2,500 to 5,500 feet throughout Arizona . It also occurs from Utah to western Texas, and southwestern California and northern Mexico. Mesa dropseed prefers a sandy soil. This attractive species grows to heights of 1½ to 4 feet and is characterized by an open, tangled panicle of spikelets appearing from June to October. The flowering heads turn inward on each other and become tangled together by the hooks in the axils of the panicle branches. It closely resembles another species common in southern Arizona, *Sporobolus cryptandrus* (sand dropseed). *S. cryptandrus*, however, has a panicle that is partially or totally enclosed in the elongated upper leaf sheath. Mesa dropseed can be distinguished from other dropseeds by the hooked calluses in the axils of panicle branches, which remain attached to the inflorescence stalks after branches have fallen off the plant. The lacy inflorescences of Mesa dropseed provide an attractive silhouette against a contrasting background.

Sacaton

Sporobolus wrightii

ML

This tall perennial bunchgrass is a conspicuous member of the vegetative community growing in moist alkaline places along river banks, sandy washes, plains, and valley flats from 2,000 to 5,000 feet in many parts of Arizona. It is also found from western Texas to southern California and into central Mexico.

Due perhaps to its unusual height (3 to 6½ feet) and bunching characteristic, this species was often the only grass species mentioned in the annals of early travelers in Arizona. The flower panicles appear from June to October, and are quite long – 14 to 25 inches.

Because of its large size, this grass should be regarded as an accent plant in the garden, or used in the background of a landscape grouping. Older sacaton plants can look unkept because of very resistant litter. Plants can be cut back every year to remove old material.

LBH

New Mexico feathergrass

Stipa neomexicana

DJ

New Mexico feathergrass is found from 3,500 to 6,500 feet on dry hills and open woods in sandy soil. It flowers May to August and occurs from Colorado and Utah to western Texas, Arizona, and northern Mexico.

New Mexico feathergrass grows 1 to 4 feet tall and has very few stems. The blades are thin, usually less than ¼-inch wide and 8 to 12 inches long. The upper surface of the leaf is rough to the touch, and the tips of the leaves frequently dry back about 1 inch. The inflorescence is a panicle, and the brown lemmas have a prominent, somewhat bent, long, reddish awn. The twisted 4-inch-long flexible awns give a silvery appearance to the flowering heads, offering a wonderful contrast to the green herbage. Planted in a grouping, this grass resembles "an amber wave of grain."

Two-feather trichloris

Trichloris crinita

DJ

Two-feather trichloris is usually found on dry plains, in canyons, and on rocky hills below 4,000 feet in Arizona. It ranges from Texas to northern Mexico and into South America. It flowers in late spring to fall. It is well adapted to loamy and silty soils with high salt or carbonates.

This species is a perennial, densely clumping grass that stands 2 to 3½ feet tall. The leaf blades are firm, flat and glaucous (covered with powdery or waxy bloom like a plum or cabbage), about ½ to ¾ inches wide. The spike is relatively narrow and dense, with each inflorescence having numerous clustered branches 2½ to 6 inches long. The flowers usually have 3 awns (a bristle-like terminal appendage). The tall herbage can cure to a straw color with reddish highlights.

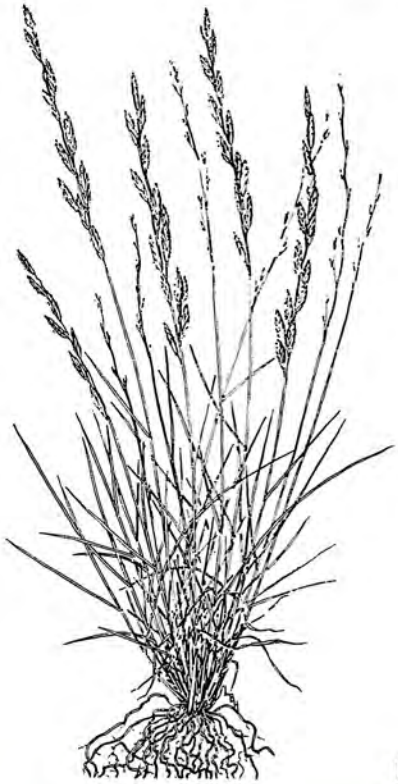
Slim tridens

Tridens muticus

ML

Slim tridens occurs on dry rocky slopes, in desert grasslands and in oak woodlands below 5,500 feet. It blooms April through October and is found throughout Arizona, southern Colorado, western Texas, and in southeastern California.

Slim tridens reaches 8 to 20 inches tall. This grass is tufted, with narrow blades rolled inward or occasionally flat and often glaucous. The inflorescence of slim tridens is 2½ to 8 inches long, narrow and spikelike.



LBH

COMPARATIVE TABLE

Species	Height (ft.)	Flower Color	Leaf Color	Flower Season
Aristida purpurea	1-2	P	G	Sp-F
Aristida ternipes	1.5-4	T	G	S,F
Bothriochloa barbinodis	2-4	W	GyG	SP-F
Bouteloua chondrosioides	1-1.5	O	BG	S,F
Bouteloua curtipendula	1.5-3	Pk	BG	S,F
Bouteloua gracilis	2-3	P	BG	S,F
Bouteloua rothrockii	1-1.5	G	G	S,F
Buchloe dactyloides	0.5	T	GyG	S,F
Digitaria californica	1.5-4	W	G	S,F
Eragrostis intermedia	1-3	Pk	G	S,F
Erioneuron pulchellus	0.5	W	G	S,F
Heterpogon contortus	1.5-3	O	G	S,F
Hilaria belangeri	0.5	G	G	S,F
Hilaria mutica	2-3	G	G	S,F
Hilaria rigida	2-3	G	G	S,F
Leptochloa dubia	1.5-3.5	G	G	S,F
Muhlenbergia dumosa	3-6	G	G	SP,S
Muhlenbergia porteri	2-4	G	G	S,F
Muhlenbergia rigens	3-5	W	DG	S;F
Oryzopsis hymenoides	1-3	W	F	S,F
Pappophorum mucronulatum	2-3	W	GyG	SP-F
Poa fendleriana	1-2	G	G,BG	S,F
Setaria macrostachya	1-4	G	G	S,F
Sporobolus airoides	2-4	BG	YG	S,F
Sporobolus contractus	1.5-4	W	GyG	S,F
Sporobolus flexuosus	1.5-4	W	GyG	S,F
Sporobolus wrightii	3-6.5	W	GyG	S,F
Stipa neomexicana	1-4	BG	G	S
Trichloris crinita	2-3.5	W	G	S,F
Tridens muticus	1-2	W	G	SP-F

COMPARATIVE TABLE

Light	Water	Growth season	Maint-enance	Soil	Invasive	Page
SU	DT	C,W	M	L,H	M	8
SU	DT	C,W	M	L	M	9
SU	DT	W	L	L	L	10
SU	L	W	L	L	L	11
SU	L	W	L	L	L	12
SU	L	W	L	H	L	13
SU	DT	W	L	H	L	14
SU	L	W	L	L	L	15
SU	DT	W	L	L	L	16
SU,SH	L	W	L	L	L	17
SU	DT	W	L	L	L	18
SU	DT	W	M	L	M	19
SU	L	W	L	H	L	20
SU	DT	W	L	L,H	L	21
SU	L	W	L	L,H	L	22
SU	L	W	L	L	L	23
SU,SH	M	C,W	M	L	L	24
SU,SH	DT	W	M	L	L	25
SU,SH	M	C,W	L	H	L	26
SU	M	C	L	L	L	27
SU	DT	W	L	L	L	28
SU,SH	L	C	L	H	L	29
SU,SH	L	W	L	H	L	30
SU	L	W	L	L,H	L	31
SU	DT	W	L	L	M	32
SU	L	W	L	L	L	33
SU	DT	W	M	L	L	34
SU	L	W	M	L	M	35
SU	L	W	M	H	M	36
SU	L	W	L	L	L	37

Key code

Flower color:
BG - blue-green
G - green
O - orange
Pk - pink
P - purple
T - tan
W - white

Leaf color:
G - green
GyG - gray-green
Gy - gray
BG - blue-green
YG - yellow-green

Water:
DT - Drought tolerant; does not need supplemental water once established, but will look better if watered during dry periods (once to twice a month).
L - Low; will require some watering during dry periods; when possible, placement near (1-1.5 ft) an emitter designated for another plant will be sufficient irrigation for plants in this category.
M - Medium; should be watered as the soil begins to dry.

Soil texture:
L - light: predominately sandy soils, where drainage is rapid.
H - heavy: predominately clay soils, where drainage is slow.

Growth season:
C - Cool; grows during the cool periods of the year; late fall, winter, and early spring
W - Warm; grows during the warm periods of the year; late spring, summer, early fall

Maintenance:
L - Low; may require occasional removal of old foliage or seedheads.
M - Medium; may require some trimming of old foliage and seedheads, removal of undesired seedlings, and collection of tumbling debris (foliage, seedheads).

Invasiveness:
L - Low; once established, does not frequently re-seed in an area.
M - Medium; following establishment, frequently re-seeds in an area and may invade other planting areas.

Glossary

Awn:	bristle or stiff hair at the end of a structure, such as the lemma or glume.
Callus:	point or region of attachment of a floret to a rachilla.
Culm:	stem of a grass plant.
Floret:	a unit of a spikelet consisting of lemma, palea, and flower.
Glumes:	pair of sterile bracts at the base of the spikelet.
Lemma:	the lowermost of the two bracts of a grass floret.
Palea:	the upper, and often smaller, bract of a grass floret.
Panicle:	a compound inflorescence with at least some of the branches rebranched.
Pedicel:	the stalk of a single spikelet.
Raceme:	a simply-branched inflorescence; an inflorescence with one-flowered pedicels arising directly from the main axis.
Rachilla:	the axis or rachis of a grass spikelet; the axis of a pinnately compound leaf.
Rhizome:	an underground stem.
Sheath:	section of the leaf below the blade resembling a sheath.
Spike:	an unbranched inflorescence, with spikelet attached directly to the main stem.
Stolon:	a specialized trailing stem that serves to spread or reproduce a plant.
Tiller:	a lateral sucker or shoot that enlarges the diameter of a grass plant.