



MillbornTM

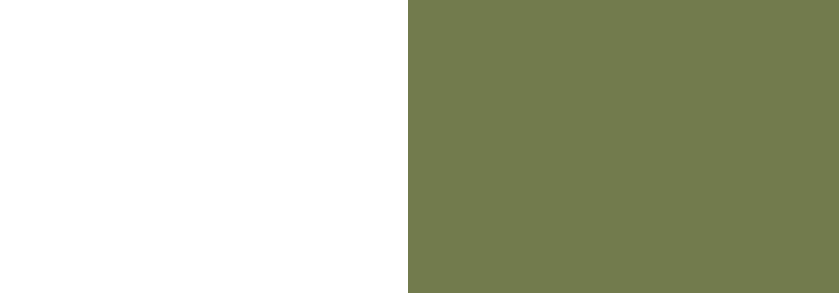
Reclamation Guide





Millborn™

OUR STORY.....	4
GRASSES & GRASSLIKES.....	11
FORBS & NATIVE WILDFLOWERS	45
SHRUBS & WOODY PLANTS	93
PERENNIAL BROADLEAVES & LEGUMES.....	102
TURF SPECIES.....	104
FIELD GRASSES.....	106





PROBLEM-SOLVERS

There's no problem too big for our team. Since our beginning in 1987, we have focused on working together to find a solution for every situation. Through the years, we have walked hundreds of thousands of acres with the goal of exploring, diagnosing, and building a plan for the land.

Our team comes to work each day with one purpose – enriching land and lives. We are dedicated to being trailblazers in the seed industry through every problem we solve. Future generations depend on the decisions we make on our land today. At Millborn, we strive to understand the challenges each person faces on their land and aim to provide solutions that fit the problems at hand. Together, we can enrich land and lives, one acre at a time.

Thank you for trusting in our team. Let's plant new roots.

TEAM MILLBORN



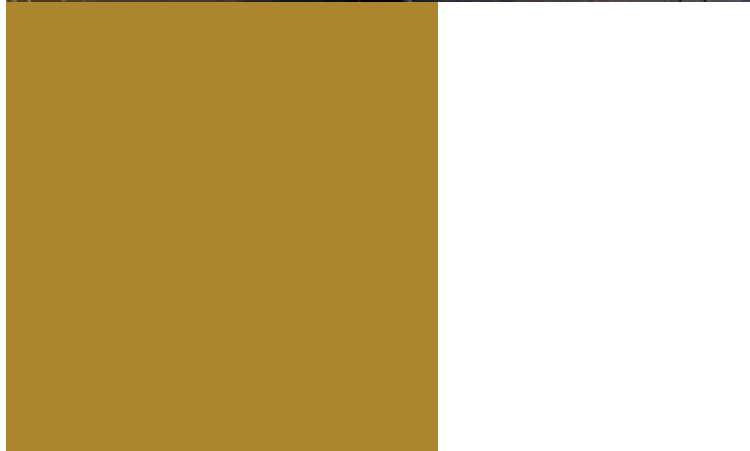


VISIONARIES

As a vertically integrated seed company with global reach, we have the vision and ability to deliver on your project's specific needs in a timely manner. Our team of experts are focused on producing and procuring the highest quality seed products for your specific project.

Delivering products when and where you need them is top-of-mind for us, and we continually invest in the industry's most sophisticated tools to do just that. In 2022, we expanded our warehouse at our headquarters in Brookings, SD along with adding a top-of-the-line blending and packaging line. Investments in our facilities, technology, and processes will continue, as we lead the way as visionaries in the seed industry.

- › **DISTRIBUTION CENTER:** Our 100,000 sq ft warehouse adjacent to the interstate provides easy access to major shipping corridors.
- › **CUSTOM MIXES:** With more than 1,200 species of seed on hand, we can fulfill even the most challenging and specialized orders.
- › **STREAMLINED PACKAGING:** Whether it's by the pound or the truckload, our new state-of-the-art packaging system and large capacity mixer allows us to package our products to fit your needs.





LAND USE LINCHPINS

Our experts spend their time understanding the land and are truly the best in the field. It is our goal to enrich land and lives, and our team does just that through sharing our expertise.

We know information is power when it comes to decision-making, and our goal is to share what we know as much as we can. Our library of resources continues to grow and is available all day, every day.

Tune In: Justin Fruechte and Jared Knock visit with special guests on the Roots + Ruminants podcast to explore creative and innovative use of pasture, rangeland, and practical land use applications. Tune in anywhere you get your podcasts.

See For Yourself: If you enjoy watching and learning, check out our extensive collection of videos organized by specialty on YouTube.

Follow Along: Follow us on Facebook, Instagram, Twitter, and LinkedIn to keep up with the latest updates from our experts.

Get The Details: Our experts dive deep into the agronomics of making the most of your seeds on our blog. Check back often for the latest tips and tricks.



Stay In The Know: Get all of these resources and more straight to your inbox monthly. Sign up for THE ROOTS newsletter to stay in the know.





GRASSES & GRASSLIKES

Grasses and grasslikes are a key component of landscapes across the nation. With local ecotypes available nationwide, streamlined logistics, and fast shipping, we can get seed to your project quickly. We know each project is unique, and it's our goal to make vegetation management and seed selection easier for you and your team. Whether you're establishing new habitat or reclaiming a disturbed area, we're here to help.

Native Grasses are a group of mostly perennial grasses. Native Warm Season Grasses (NWSGs) are the backbone of the prairies, providing a variety of uses and benefits. Native Cool Season Grasses (NCSGs) fulfill an important ecological role. NWSGs reach their maximum production during the summer months, once the soil temperature reaches 55°– 60° F. Most NWSGs are “bunch grasses,” which means they grow in clumps. This bunch grass structure provides an open understory, allowing for easy wildlife movement, while still providing overhead cover. Additionally, these stiff-stemmed plants can withstand heavy loads of snow. NWSGs are primarily used for conservation (wildlife) cover, grazing, haying, and reducing soil erosion. NCSGs actively grow when temperatures are cooler, reaching 50° - 55° F. They are especially active from early spring to early summer and then again in early fall. NCSGs are essential in providing forage, nesting cover, and seeds early in the growing season. Additionally, NCSGs provide a cover for wildlife.

Achnatherum hymenoides, **Indian Ricegrass**

- Can be slow to germinate due to a thick hull, but has good seedling vigor.
- Works well in well-drained soils. Very drought tolerant and winter hardy.
- Very nutritious for livestock and wildlife. Excellent food source for birds.



Did You Know: State grass of Nevada

Andropogon gerardii, **Big Bluestem**

- Is the backbone of the Midwest tall grass prairie.
- Is host to many insects and birds.
- Good option for erosion control. Very palatable for livestock.



Did You Know: Its nickname is "Turkey Foot Grass"

Andropogon hallii, **Sand Bluestem**

- Similar to Big Bluestem but adapted to sandy soils.
- Overgrazing can eliminate this species.
- Recommended for erosion control on sand, loamy sand, or sandy loam (great in a warm season grass mix). Palatable for livestock and wildlife. Upland birds eat the seeds.



Did You Know: Important for erosion control on sandy sites

Beckmannia syzigachne, **American Sloughgrass**

- Short-lived perennial or annual grass.
- Tolerant to alkaline and saline conditions. Halophyte.
- Important species for streambank and wetland restorations.



Did You Know: The best growth is seen in winter ponded, wetland, and riparian areas

Bolboschoenus fluviatilis, **River Bulrush**

- Often found in shallow water areas.
- Important food source for waterfowl. May be used as nest building material for nesting birds and small mammals.
- Will spread aggressively by rhizomes.



Did You Know: Often found at the inlets and outlets of lakes

Bolboschoenus maritimus, **Alkali Bulrush**

- Stems upright and angular. Leaves along lower 2/3 of plant. Flowers sessile, densely clustered at the tip of stem.
- Pioneer species. Excellent species for wastewater treatment.
- Valuable food source for waterfowl.
- Low palatability. Rarely used by livestock and wildlife.



Did You Know: In Utah, it is commonly associated with Saltmarsh

Bouteloua barbata, **Sixweeks Grama**

- Short, small tufts, seeds on one side of 4-12 seedhead branches.
- Grows well in disturbed, dry soils. May become weedy on rocky outcrops.
- Due to annual lifespan, short roots make it easy to pull out of the ground and does not offer much drought tolerance.
- Poor forage value for livestock.



Did You Know: Harvester ants desire seeds, which may lead to seed loss when planted

Bouteloua curtipendula, **Sideoats Grama**

- Large and coarse grama grass. Bluish-green color that cures to reddish-brown or straw. Coarse, straight leaves with 10-30 small spikes.
- Drill into firm, weed-free seedbed. Protect from grazing through second growing season. Delay seeding until good soil moisture.
- No threat of pests, however, not very resistant to grazing. Will thrive under good management.
- Produces large volume of forage as compared to blue grama, but is lower in palatability. Cures well and maintains high feed value through year. Elk use species throughout year. Successfully seeds into rocky, stony, or shallow soils, so is a good erosion control plant when mixed.



Did You Know: State grass of Texas

Bouteloua eriopoda, **Black Grama**

- Important forage grass of the Southwest especially in the drier desert grasslands.
- Primarily reproduces via stolons, and two great successive growing seasons are required for reproduction via stolons.
- Do not overgraze - overgrazing will kill the grass. Will stay green all winter during a mild winter with adequate moisture. Likes dry, sandy soils.



Did You Know: A good source of Vitamin A for the winter

Bouteloua gracilis, **Blue Grama**

- Highly drought tolerant, short native grass that is highly adaptable.
- Palatable to livestock all year long. A good option in a grass mix for erosion control, mine revegetation, or turf plantings.



Did You Know: State grass of Colorado and New Mexico

Bromus anomalus, **Nodding Brome**

- Perennial bunchgrass
- High seedling vigor. Competitive in disturbed areas.
- Drought tolerant and adapted to coarse textured soils.
- Palatability to wildlife and livestock is medium to high.



Did You Know: Grows in northern, southern, and central California

Bromus carinatus, **California Brome**

- With a root system that is deep and widespread, this perennial bunchgrass is a highly variable species that is medium-tall and competitive.
- Widely used for revegetation and erosion control, this grass rapidly and easily establishes.
- Spreads easily by seed and can become a weed pest in some agricultural crops.
- All classes of livestock may find this forage palatable and nutritious. Summer forage for elk but not as palatable for deer.



Did You Know: Seeds were thought to be poisonous by the Native Americans

Bromus ciliatus, **Fringed Brome**

- Found on a wide variety of areas and habitats.
- Great fit for mine reclamation - revegetation species.
- Tolerant of poorly drained soils and moist areas.
- Summer forage for livestock and wildlife - palatable.



Did You Know: Considered an important forage for cattle in the West

Bromus kalmii, **Prairie Brome**

- Short-lived perennial prairie grass.
- High tolerance to cold.
- Palatable as a livestock forage.



Did You Know: Only native brome found in Illinois

Bromus marginatus, **Mountain Brome**

- Tall culms, flat and broad leaves, soft hairy around the sheath.
- Germinates and establishes quickly on disturbed sites.
- Is a short-lived pioneer species that does good in higher elevations.
- Palatable in the spring - great forage option for livestock and wildlife.



Did You Know: Excellent species for mid to high elevation erosion control

Bromus pubescens, **Hairy Woodland Brome**

- Nodding hairy seed heads, foliage.
- Likes partial shade and medium-wet soils.
- Shade tolerant.
- Small mammals and birds consume the seeds.



Did You Know: Grass species that is found across most of the eastern and central United States

Buchloe dactyloides (Bouteloua dactyloides),
Buffalograss

- Dioecious plant - both sexes have spike for seed head. Female flowers are burs in the leaves and male flowers have 2-3 short spikes on stems.
- Very popular native grass to use in lawns. Often planted with Blue Grama.
- Larval host for Green Skipper and many grasshoppers feed on the foliage. Forms a dense sod that helps with soil erosion.



Did You Know: Primary food source for buffalo on the plains in the past

Calamagrostis canadensis,
Bluejoint Reed Grass (Canada Bluejoint)

- Mid-sized to tall native grass with stout stems and ribbed, lax, rough leaves. Narrow to open, loosely-branched flower head.
- One of the more abundant native grasses in North America.
- May become invasive in its northern range.
- For livestock, forage value varies based on region and palatability is fair at best.



Did You Know: One of the more abundant native grasses on the continent

Calamovilfa longifolia, Prairie Sandreed

- Tall, rhizomatous perennial warm-season grass that prefers deep sands.



Did You Know: Important for the Nebraska Sandhills

Carex annectens, Yellowfruit Sedge

- Stems erect, triangular, wrapped in brown sheath. Leaves basal, alternate, longer than stems. Flowers terminal, clustered, 10-15 stalkless spikes.
- Good to use in areas that have seasonal flooding.



Did You Know: Birds and waterfowl love to eat the seed

Carex aquatilis, Water Sedge

- Sod forming. Stems triangular. Leaves from lower half of stems. Flowers 1-3 spikes above 2-3 spikes, male and female.
- Erosion control species for shorelines. Pioneer of climax species.
- Can withstand 1-2 months of submersion.
- Good forage producer in meadows.



Did You Know: Degrade quickly with water pollution

Carex atherodes, Wheat Sedge

- Stems reddish, wrapped in last season's leaves, three-sided. Leaves basal, alternate, often longer than the flowering stem, occasionally hairy. Flowers 3-10 spikelets, male and female, stalkless to short stalks.
- Can tolerate seasonal drying but prefers standing water.
- Low nutrition and palatability values.



Did You Know: It is colony-forming

Carex bebbii, Bebb's Sedge

- Clump-forming. Stems triangular, smooth, erect. Leaves alternate on lower third, flat, smooth, wrapping around stem. Flowers group of spikes, 3-14, terminal, male (base), female (tip).
- Can reach full maturity/reproduction stage in first year.
- Tolerant to calcareous wetlands.



Did You Know: Named after botanist Robert Bebb

Carex bicknelli, Prairie Sedge

- Stems erect, longer than leaves, three-sided, mostly smooth. Leaves alternate on lower third, rough along edges, wrapped around stem. Flowers 3-7 stalkless spikelets, almost cone-shaped, <1" long, nodding.



Did You Know: Other common name is Bicknell's Sedge

Carex brevior, Plains Oval Sedge

- Stems mostly erect, three-sided, often shrouded with last season's leaves. Leaves alternate, shorter than flowering stem. Flowers 3-7 spikes, stalkless, male and female, slightly nodding.
- This sedge is drought tolerant.
- Fairly unpalatable to wildlife and livestock.



Did You Know: Tolerates controlled burns

Carex comosa, Bristly Sedge

- Stems erect, triangular, mostly smooth, rough upper stem. Leaves "W"-shaped cross section. Flowers male and female spikes, single male spike, 2-6 female spikes, nodding.



Did You Know: Forms long, needle-like spines on the seed heads

Carex crinita, Fringed Sedge

- Stems stout, base wrapped in reddish-brown sheath, three-sided, rough along edges. Leaves many, basal and alternate, shorter than flowering stem. Flowers 3-9 male and female spikelets, up to 2-5" long, nodding.
- Tolerates some seasonal flooding.



Did You Know: May be considered an "Evergreen" at times

Carex cristatella, Crested Oval Sedge

- Grows in a clumping formation atop triangular culms. Grass-like leaves appear throughout the clumping formation.
- Seeds eaten by many bird species.



Did You Know: Fossil records show that mammoths consumed Crested Oval Sedge

Carex diandra, Bog Panicked Sedge

- Stems sharply triangular, rough edges. Leaves form lower third, narrow. Flowers tan to brown spikelets.
- Important species for fens and low areas of sand dunes.



Did You Know: Bears brown flowers in the late spring

Carex frankii, Frank's Sedge

- Has bright green-yellow grassblades that grow from the base of plant.

Did You Know: Slowly spreads by rhizomes making it great for shoreline reclamation projects



Carex granularis, Meadow Sedge

- Stems slender, smooth, three-sided, bases wrapped in green to brown sheath. Leaves basal, alternate, often longer than flowering stems. Flowers stalkless to short-stalked, single male flower up to 1.5" long, 2-5 female flowers, all stems are not flowered.
- Can tolerant higher pH levels.



Did You Know: Diverse with male and female flowers

Carex gravida, Heavy Sedge

- Stems erect and three-sided, bases wrapped in brown sheath. Leaves alternate and basal, generally shorter than flowering stems. Flowers male and female, clustered at the end of stems, 5-15 spike per flower.



Did You Know: Leaf blades are more broad which helps it tolerant more shade

Carex hystericina, Porcupine Sedge

- Stems three-sided and erect. Leaves basal and alternate. Single male flower, 1-4 female flowers, erect to spreading, sometimes drooping.
- Fine-leaved sedge for wet soils.



Did You Know: Muskrats will eat this sedge

Carex inops ssp. *heliophila*, **Sun Sedge**

- Stems slender, three-sided, bases red and wrapped in last season's foliage. Leaves basal, erect to mostly erect. One male flower, 1-3 female flowers, stalkless, brown to purple.
- Can become dominant in mid to high elevations of the northern Rocky Mountains.



Did You Know: Also known as Long-Stolen Sedge

Carex interior, **Prairie Star Sedge**

- Stems wrapped at base with brown sheath, erect, slender, three-sided. 3-5 leaves alternate and basal, rough along edges.



Did You Know: Also known as Inland Sedge

Carex lacustris, **Lake Sedge**

- Stems stout, erect, three-sided, bases wrapped in reddish to purple fibrous sheath. Leaves basal and alternate, light green to blue-green, M/W-shaped leaf cross-section. Flowers male and female, clustered towards the end of stems.
- Prefers soil containing mud or silt.



Did You Know: Is rhizomatous and can spread aggressively

Carex laeviconica, **Smoothcone Sedge**

- Stems mostly erect, smooth, three-sided, bases wrapped in reddish to purple fibrous sheath. Leaves alternate, longer than stems, U-shaped tip. Flowers male and female, clustered towards the end of the stem.
- Important cover and nesting/bedding material for many species. Seeds and seedheads eaten by many species.



Did You Know: Most commonly found in riverbanks and floodplains

Carex lupulina, **Hop Sedge**

- Stems mostly erect and smooth, stout, three-sided, bases wrapped in brown to purplish-red sheath. Leaves basal, alternate, occasionally longer than flowering stems. Flowers up to 3" long, single male flower, 2-5 female flowers.
- Has spiked "hop-looking" seed heads.



Did You Know: Its achenes provide food for waterfowl

Carex lurida, **Lurid Sedge**

- Stems stiff, smooth, three-sided. 1-3 alternate leaves, widely spreading. 1-4 female flowers and singular male flower.
- Seeds and seedheads are an important food source for many bird species.



Did You Know: Also known as Swallow Sedge

Carex molesta, **Field Oval Sedge**

- Stems mostly erect, hairless, three-sided. 3-7 leaves, alternate, shorter than flowering stem. Flowers overlapping at the tip of the stem, female flowers at the tip, male flowers below.
- Can thrive in nearly all environments.



Did You Know: Also called Troublesome Sedge due to its aggressive nature

Carex nebrascensis, **Nebraska Sedge**

- Dense root mass. Stems triangular and upright. Leaves long with bluish tinge. Flowers male and female on the same plant.
- Alkali tolerant. Tolerates up to 3 months of inundation.
- Valuable forage species for livestock and wildlife.



Did You Know: Can thrive in dry sites

Carex normalis, **Greater Straw Sedge**

- Flowering stems longer than leaves and vegetative stems, three-sided. Leaves clustered towards tip. Flower spikes overlapping at the tip.
- Tolerant to brief flooding.



Did You Know: Leaves display parallel veins

Carex pallescens, **Pale Sedge**

- Stems slender, sparsely hairy, mostly erect, bases wrapped in reddish-brown sheaths. Leaves alternate, basal, shorter than flowering stem. Single male flower at the top of the stem, 2-4 female flowers.
- Associated with arbuscular mycorrhizal fungi.



Did You Know: Endangered in Minnesota

Carex pellita, **Woolly Sedge**

- Stems triangular, mostly smooth, slightly rough edges. Leaves basal, alternate.



Did You Know: Formerly known as *Carex lanuginosa*

Carex pensylvanica, **Pennsylvania Sedge**

- Stems slender, mostly smooth, three-sided. Leaves basal, alternate, erect. Single male flower at the top, 1-3 female flowers below, stalkless, long white styles.
- Can tolerate dry conditions.



Did You Know: Can grow in full sun to full shade

Carex praegracilis, **Clustered Field Sedge**

- Expanding at the ground level in a loosely clumping formation. Narrow and lengthy leaves.
- Stems slender, rough, three-sided with sharp edges, bases wrapped in brown to black sheaths. Leaves basal, alternate, often shorter than flowering stems. 5-12 stalkless spikes, crowding the tip, male and female flowers.



Did You Know: Another common name is Expressway Sedge

Carex pseudocyperus, **False Bristly Sedge**

- Stems erect, mostly smooth, three-sided. Leaves basal, alternate, longer than flowering stems. Flowers male and female, up to 3" long.



Did You Know: Bases are wrapped in a brown sheath

Carex rostrata, **Beaked Sedge**

- Stems mostly erect, round to triangular. Leaves basal, alternate, somewhat u-shaped cross section. Flowers male and female spikelets.
- High fire tolerance. Moderately salinity and alkaline tolerant.



Did You Know: *Carex utriculata* was once considered a variety of *C. rostrata*

Carex sartwellii, **Running Marsh Sedge**

- Stems erect, slender, three-sided. Leaves basal, alternate, shorter than flowering stems. Many small spikes, stalkless, crowded at top, male flowers at top, female flowers below.



Did You Know: Important ecological component of the ecosystem

Carex scoparia, **Broom Sedge**

- Stems erect, smooth, three-sided, bases wrapped in brown sheaths. 2-6 alternate leaves, rough along midvein. 3-10 overlapping spikes near the tip of the stem.
- Clumping sedge that grows best when temperatures are cool.



Did You Know: Host to different caterpillar species

Carex shortiana, **Short's Sedge**

- Light green, hairless, and 3-angled flowering culms.
- Leaves are slightly rough, up to 12" in length and have a tendency to arch near the middle.
- Fibrous root systems form dark scaly rhizomes and plants often form vegetative offsets.



Did You Know: Exhibit diversity through both male and female flowers

Carex sprengei, Long Beaked Sedge

- Stems slender, smooth, three-sided, basal sheaths look thread-like. Leaves basal, alternate, mostly shorter than flowering stems. 1-4 terminal spikes, separate male and female flowers.
- It is deer resistant.



Did You Know: Loves shade

Carex squarrosa, Narrow-Leaved Cattail Sedge

- Stems erect, glabrous, three-sided. 4-8 alternate leaves. Generally one terminal flower per stem.
- Can tolerate seasonal flooding.



Did You Know: Also known as Squarrose Sedge

Carex stipata, Common Fox Sedge

- Forms in a mounding formation displaying thin leaves throughout. Bronzed seed heads are displayed throughout the plant.
- Seeds eaten by waterfowl and upland birds. Foliage occasionally grazed by deer.



Did You Know: This sedge does great at adapting to change

Carex stricta, Tussock Sedge

- Stems erect, smooth to rough, three-sided, bases wrapped in brown to reddish-purple fibrous sheaths. 3-5 leaves, alternate, basal. 2-3 male flowers at the tip of stems, 3-5 female flowers below.



Did You Know: Host for caterpillars

Carex tetanica, Rigid Sedge

- The lowest bracket has a sheath longer than four millimeters, the lowest spike has a peduncle, the uppermost spike contains only staminate flowers, and the perigynium has no hairs.
- The seeds can provide forage, while the foliage provides shelter and nesting area for wildlife.



Did You Know: Lowest leaf blades are reduced to scales

Carex tribuloides, Awl-Fruited Oval Sedge

- Loose tufts, leafy. Stems triangular. Leaves from lower half, floppy, linear, slightly rough. Flowers terminal, 5-12 spikelets.
- Prefers open, sunny areas.
- High fire tolerance.



Did You Know: Also called Blunt Broom Sedge

Carex vulpinoidea, Brown Fox Sedge

- Clump-forming. Stems triangular, slender, firm. Leaves narrow, smooth with rough margins. Flowers dense spikes.
- Excellent colonizer. Slightly weedy.



Did You Know: Seed head resembles a fox's tail

Danthonia spicata, Poverty Oats

- Leaves tend to curl with age, leading to tufted look. Clump-forming with wiry, naked inflorescences protruding.
- Thrives in poor, dry soil. Commonly planted along roadsides.
- Tolerates droughts and alkaline soils well.
- Limited grazing preponderance by livestock and wildlife.



Did You Know: Prefers poor soil – hence its name

Deschampsia cespitosa, Tufted Hairgrass

- Erect stems and wide, flat, or rolled leaves with two florets per spikelet.
- Establishment during the first year is slow but will be dominant and large by second growing season if heavily planted.
- Host to several diseases and insect pests and is considered a weed in some parts of the world, as it competes with forage crops and trees
- At higher elevations, considered a good forage option for cattle and sheep. Also a host for several North American butterflies and lepidopteran insects throughout the world.



Did You Know: Indicator species for favorable alpine grazing in Wyoming

Distichlis spicata, Inland Saltgrass

- Strongly rhizomatous grass that produces long and hairy shoots.
- Primary habitat are alkaline soils that are poorly drained.
- Resistant to trampling and fire.
- Moderate palatability for livestock and big game.



Did You Know: Native Americans used saltgrass as cereal crop

Eleocharis acicularis, Needle Spike Rush

- Generally clump forming, dense mats. Two leaves per stem. Single spike per stem. Small plant.
- Plant can grow completely underwater.



Did You Know: Used in aquaculture, and even as aquarium foliage

Eleocharis palustris, Creeping Spike Rush

- Dense, deep root mass. Stems singular or small clumps, constantly growing to keep heads out of water, upright, round. Leaves clustered at base. Flowers terminal spikelets.
- Erosion control and wastewater treatment species.
- Tolerant to alkaline and saline conditions.



Did You Know: Also referred to as Great Spike Rush

Elymus canadensis, Canada Wildrye

- Most identifiable part of plant are its long nodding seed heads in summer.
- One of the first grasses to establish in prairie plantings.
- Fair palatability for wildlife and livestock.



Did You Know: Also called "Nodding Wildrye" as the heads droop down

Elymus elymoides, Bottlebrush Squirreltail

- Adapted to wide range of habitats and conditions.
- Establishes easily making it a great species to use in reclamation projects especially after fires.
- One of the most fire resistant native bunchgrasses.
- Persistent ground cover grass that is effective at controlling wind and water erosion. In spring, can be a forage option for cattle, horses, and sheep.



Did You Know: It is a self-fertilizing species

Elymus glaucus, Blue Wildrye

- Tall, upright bunchgrass with thin and flat leaf blades.
- Common habitats include meadows or edges of woodlands.
- Good forage option early in season.



Did You Know: Great plant to use native landscapes due to its blue-green foliage

Elymus lanceolatus, Thickspike (Streambank) Wheatgrass

- Long-lived, cool-season and drought tolerant perennial grass.
- Adapted to a wide range of soils but prefers well drained areas.
- Palatability is good and does best when used in pastures.



Did You Know: Very similar to Streambank Wheatgrass

Elymus riparius, Riverbank Wildrye

- Tufts with leafy culms, leaves alternate along plant.
- Self-seeding once established.



Did You Know: Great for streambank restoration

Elymus trachycaulus, Slender Wheatgrass

- Short-lived, perennial cool-season grass that establishes quickly.
- Excellent choice for higher elevations.
- Produces good quality hay but is moderately tolerant to grazing.



Did You Know: Preferred wheatgrass of Elk and Bighorn Sheep at higher elevations

Elymus villosus, **Silky Wildrye**

- Common grass found in woodlands.
- Tolerates shade well.

Did You Know: Common grass of deciduous woodlands

*Elymus virginicus*, **Virginia Wildrye**

- Similar species to Canada Wildrye but has erect seed heads.
- Establishes easily and shade tolerant making it a good species to use in streambank and woodland restorations.
- Good palatability for livestock and wildlife.

Did You Know: Turns an attractive crimson color in fall

*Elymus wawawaiensis*, **Snake River Wheatgrass**

- Very drought tolerant, long-lived, cool-season perennial bunchgrass.
- Easy to establish and very hearty.
- Produces great forage for cattle and wildlife.

Did You Know: Can survive in as little as 8" annual precipitation

*Eragrostis trichodes*, **Sand Lovegrass**

- Tall, short-lived, leafy bunch grass with a flat, threadlike leaf blade, rounded leaf sheath, and large open and purplish panicle on seedhead.
- Best adapted to deep sandy sites
- Extremely palatable to livestock and wildlife. Begins growth up to two weeks earlier than other warm-season grasses and stays green in the fall.

Did You Know: Known as an ice cream grass of the prairie

*Festuca arizonica*, **Arizona Fescue**

- Deep, fibrous root system. Basal, pale blue-green leaf blades. Tall, rough culms or stems and no rhizomes.
- Due to root system, very valuable for soil stabilization and performs well on slightly acid mine waste sites. Produces large amount of forage and is fairly palatable to livestock and wildlife.

Did You Know: Prefers higher elevations

*Festuca campestris*, **Rough Fescue**

- Perennial, cool-season bunchgrass.
- Highly palatable to livestock and can be a forage option for cattle, horses, sheep, and wildlife (especially during winter grazing). Also provides cover to grouse and other wildlife.

Did You Know: Important source of forage for mule deer and bighorn sheep

*Festuca idahoensis*, **Idaho Fescue**

- Adapted to wide variety of soils and habitats. Has excellent cold tolerance and partial shade tolerant.
- Great forage producing plant.
- Provides good year-round forage to livestock and wildlife.

Did You Know: Key species at higher elevations

*Festuca obtusa (Festuca subverticillata)*, **Nodding Fescue**

- Surfaces contain no hair, blades widen at the base of the plant, sheaths are shorter in length than the internodes.
- Found in areas with partial shade and moist conditions.
- Palatable to most livestock and wildlife.

Did You Know: Shade lover

*Festuca occidentalis*, **Western Fescue**

- Shallow-rooted species.
- Quick to germinate.
- Drought tolerant - good for stream banks, woodlands, etc.
- Palatable to most livestock and wildlife.

Did You Know: Often found in forest areas

*Festuca saximontana*, **Rocky Mountain Fescue**

- Similar to but smaller than *Festuca arizonica*.
- Can establish in mountain soils that are sandy or gravelly.
- Tolerant to open, exposed, high elevation, and shallow soil sites.

Did You Know: Very palatable for livestock



Glyceria canadensis, Rattlesnake Mannagrass

- It is an obligate wetland plant that prefers swamps and other moist areas.
- Fair forage value for wildlife.



Did You Know: Seed heads look like a rattlesnake's rattle

Glyceria striata, Fowl Mannagrass

- Slow growing rhizomes and underground stems - plant is erect, robust, and clumpy. Can be confused with reed mannagrass (reed mannagrass has smoother leaves and not as rough of textures).
- Most widespread member of the *Glyceria* family.
- Palatable for many livestock and seed can be food for waterfowl.



Did You Know: Important host species to certain moths

Hesperostipa comata, Needle-and-Thread Grass

- Very drought tolerant, short-lived, cool-season perennial bunchgrass. It is critically important to western US range.
- Important species after fire disturbance.
- Forage option in fall and winter (generally after seeds have dropped, mature seeds can cause mouth sores and fleece contamination). Grazing option for all livestock.



Did You Know: Seed typically has high dormancy so plant fall to help break dormancy

Hesperostipa spartea, Porcupine Grass

- More robust than needle-and-thread with awns that may be up to 8" long. Plant tends to droop at maturity due to heavy seedhead.
- Difficult establishment from seed. Prefers sandy, well-drained soils.
- Important early season forage, becomes less palatable as it matures. Relatively higher forage value in fall, due to it remaining green longer than other grasses. Seedheads and awns can cause mouth sores and fleece contamination. Fair forage value for cattle, sheep, and horses. Poor forage value for wildlife. Good for upland birds.



Did You Know: Deer and pests leave them alone

Hordeum brachyantherum, Meadow Barley

- To distinguish from other species, meadow barley has bristly and purplish flower heads, becomes stubby at maturity, and is a more upright plant.
- Easy to establish when sown in the fall or early spring and normally has no seed dormancy. Great option for quick cover for soil stabilization.
- Palatable to all classes of livestock.



Did You Know: Important component of freshwater wetland

Hordeum jubatum, Squirrel Tail Grass (Foxtail Barley)

- Showy for grass standards, due to long awns; silky. Inflorescence vary in color from nearly white to purple depending on growth stage.
- Difficult to eradicate once established. Pioneer species after fire if seeded.
- Salt and sodic tolerant. Survives late-season, low-severity burns. Early grazing can reduce prevalence: benefit.
- Poor for all classes of livestock and wildlife due to long awns causing mouth sores and fleece contamination.



Did You Know: County declared weed in Natrona and Sweetwater counties in Wyoming

Juncus balticus (*Juncus arcticus* ssp. *littoralis*), Baltic Rush

- Roots rhizomatous. Tufted herbs. Leaves multi-colored, bladeless. Flowers loose, sessile, greenish to brownish.
- Nitrogen fixer. Erosion control species.
- Tolerant to seasonal drought, shade, moderate salinity, alkali, and sodicity.
- Low palatability. Grazed by cattle late in season.



Did You Know: One of the world's most widespread species

Juncus dudleyi, Dudley's Rush

- Unbranched perennial displaying stiff, straight, erect stems. Grass-like leaves. Tufts atop.
- Seeds are eaten by many bird species and rodents.



Did You Know: Can have up to 80 flowers on a single stalk

Juncus effusus, **Common Rush**

- Stems stout but soft. Leaves dull and brown at the base. Flowers loosely clustered.
- Erosion control species. Nitrogen fixer. Wastewater treatment species.
- Tolerant to periods of drought and inundation. Generally insect and disease resilient.
- Fairly unpalatable, but can be grazed by cattle late in season.



Did You Know: Commonly known as “Soft Rush”

Juncus interior, **Inland Rush**

- Stems erect, smooth, round, clump-forming. 1-2 alternate leaves, half as long as flowering stems. Branched, terminal, single flowers in clusters, erect.
- Seed eaten by waterfowl, foliage avoided by cattle.



Did You Know: Seeds can be transferred by getting stuck to animals or even muddy shoes

Juncus nodosus, **Knotted Rush**

- Stems erect, smooth, unbranched. 2-4 alternate leaves with a single basal leaf. 3-15 flower heads tightly clustered.



Did You Know: Colony former

Juncus tenuis, **Path Rush**

- Stems slender, round, and bright green. Leaves flat without blades. Flowers branched and diffuse.
- Erosion control species. Good for biofilters. Establishes well by seed.
- Used by upland birds and small game. Avoided by livestock and wildlife.



Did You Know: Good choice for landscaping

Juncus torreyi, **Torrey's Rush**

- Stems erect, smooth, unbranched. 2-5 alternate leaves, 1-3 basal leaves, round cross-section. Singular or many flower heads, clustered at the top.
- Provides important cover for many species.



Did You Know: Found on pond edges, stream banks, marshes, wet ditches, and other wetland areas

Koeleria cristata (*Koeleria macrantha*), **Prairie June Grass**

- Prairie June Grass has clusters of light green to bluish green flat leaves with erect seedheads and 2-4 flowers per spikelet.
- Starts growth early in Spring that provides great forage for livestock and wildlife.



Did You Know: Flowers earlier than many other prairie grasses

Leersia oryzoides, **Rice Cut Grass**

- Sharp leaves that can cut flesh along with seeds that look like rice easily identify this species. Often forms dense colonies.
- Requires 180 to 270 day period of cool, moist stratification - normally seeds germinate in the spring.
- Does best in nutrient rich mud and slow moving or stagnant water. Can be considered a weed (cranberry bogs) as it can form dense colonies.
- Seeds are a food source for shorebirds, waterfowl, and small mammals and ducks eat the rhizomes. Provides habitat for reptiles, fish, and amphibians.



Did You Know: The Least Skipper uses as larval host

Leymus cinereus, Great Basin Wildrye

- Extensive deep fibrous root system, long leaf blades, flat wide leaves, and clumps up to 3 feet in diameter.
- Fair seedling vigor - one of the first grasses to grow in the spring. Does best on deep soils and as a pioneer plant. Establishes slowly.
- Can tolerate drought but can also stand up to partial shading or wildfire if not too dry. Do not graze or hay until late during second growing season.
- Palatable to livestock and wildlife - peak protein production reached in mid-June through August. Can provide wind protection in winter calving pastures. Desirable in reclamation areas and can be a barrier for wind erosion or blowing snow control.



Did You Know: Native to Great Basin Region

Leymus salinus, Saline Wildrye

- Tall and tufted bunchgrass.
- Can work in a wide range of habitats.
- Ability to tolerate alkaline environments.
- Great stabilizer of soils. Palatable early and solid forage producer, but not as palatable when mature.



Did You Know: Native to Utah

Leymus triticoides, Beardless (Creeping) Wildrye

- Long grass with smooth stems (sometimes hairy) and green to blue-green leaf blades. Sod-forming native grass.
- Established by seed, sod, or rhizomes. When managed properly, develops into large patches or colonies.
- Recovers well from grazing, tolerates mowing and fire.
- Works well as forage or cover on wet or saline-affected soils. Great nesting habitat for waterfowl or upland game.
- Utilized for soil stabilization and restoration of channels, streams, or river slopes and roadside, riparian, and rangeland.



Did You Know: Stays greener into summer compared to other cool-season grasses

Muhlenbergia asperifolia, Scratchgrass (Alkali Muhly)

- Open panicle, sparsely flowered. Does not generally form clumps, unlike other muhly grasses.
- Valuable species for restoration of riparian areas in the southwest.
- Prefers deep, poorly drained soils that remain wet during growing season. Strongly alkaline and sodic tolerant.
- Low forage quality for livestock.



Did You Know: Valuable species for revegetation

Muhlenbergia montana, Mountain Muhly

- Bunchgrass with fibrous root system.
- Widely grown but can be found mostly in grassland or ponderosa pine habitats.
- Excellent drainage needed - adapted to both moist and dry areas.
- Palatable for both wildlife and livestock, especially when actively growing.



Did You Know: Found in the western United States

Muhlenbergia porteri, Bush Muhly

- Shrubby, bush-like plant with semi-woody base, wiry and branching culms, and purple spikelets. Grows in late winter or early spring and flowers from early spring to summer.
- Protect from overgrazing - allow plants to set seed by not grazing in late summer every two to three years. Does not tolerate soil salinity.
- Highly palatable for livestock but very susceptible to overgrazing. Desert tortoises eat the plant and use it for shelter and cactus wrens utilize it for nesting material.



Did You Know: Desert grassland species

Muhlenbergia racemosa, Green Muhly (Upland Wild Timothy)

- Commonly branched at nodes (more than spike muhly and more robust). Inflorescence are either spike-like clusters or open panicle. Loose tufts. Stems elliptic.
- Rhizomatous growth can lead to aggressive growth. Sources say it grows well on rocky outcrops and road easements.
- Fair forage for cattle, poor forage for sheep and wildlife. Fair in energy, poor in protein value.



Did You Know: Can be used as an ornamental plant in landscape projects

Muhlenbergia wrightii, Spike Muhly

- Loose bunchgrass developing large tufts 1-2' in diameter. Wirey stems, inflorescence interrupted.
- Establishes slowly but is very persistent.
- Found in many areas but especially found in pine-grassland areas.



Did You Know: This plant has been chosen as a "Selected plant of Navajo Rangelands"

Nassella viridula, Green Needlegrass

- Deep, fibrous root system with a seed head that has a compacted panicle and curved, sharply bent awns.
- Slow developing seedlings that are often planted as part of a mix. This species has high dormancy and germinability that improves for several years after harvest.
- Stands up well to winter grazing. Growth tends to happen best when moisture conditions are favorable.
- Well-suited for use in mixes for range seeding, wildlife habitat, mineland revegetation, and critical area establishment. Palatable and nutritious for livestock and wildlife.



Did You Know: Very resistant to disease

Panicum virgatum, Switchgrass

- Distinguished by white patch of hair where leaf attaches to stem. Round, reddish stem and seed head with open panicle.
- Native to all of U.S. except California and PNW. Seed into pure stand if being used for pasture or hay and into firm seedbed. Complete soil test and apply phosphorus and potassium if needed.
- Avoid grazing in the first year and control weeds during establishment year by mowing. Susceptible to grasshoppers, leafhoppers, leaf rust, damping off, and seedling blight.
- For wildlife, great for nesting and cover for pheasants, quail, and rabbits along with food (seeds) for pheasants, quail, turkey, doves, and songbirds.



Did You Know: Important component of the tall grass prairies

Pascopyrum smithii, Western Wheatgrass

- Has coarse blue-green leaves and prominent veins. Sometimes called bluestem wheatgrass or bluejoint.
- Fair seedling vigor and may be slow to establish. Very hardy once established.
- Extremely cold hardy, grazing resistant, and tolerates saline and saline-sodic soils, poor drainage, and drought.
- Rest rotation advised - where it is dense, great for pasture and haying.



Did You Know: State grass of North Dakota, South Dakota, and Wyoming

Poa alpina, Alpine Bluegrass

- Densely tufted, short bunchgrass with leaves that form a dense mat.
- Great for revegetation of rangelands at high elevations.
- Not great forage producer, but good palatability for wildlife.



Did You Know: Native to the Western Mountain Alpine

Poa compressa, Canada Bluegrass

- Distinct blue-green foliate, flat, wiry stems, and short compact panicles. Often gets confused with Kentucky bluegrass.
- Plant seed into a clean, firm seedbed via drilling for best establishment. Slower to establish when broadcast seeded. Weed control during establishment year may be needed.
- Growth dependent on precipitation. Hold off on grazing for first two growing seasons. Susceptible to grasshoppers, plant bugs, stink bugs, skipper caterpillars, moth caterpillars, beetles, and bluegrass billbugs.
- Primarily used for controlling erosion on disturbed sites. Palatable for livestock and big game but not a forage producer. Seed and leaves consumed by wildlife.



Did You Know: One of the most common grasses in North America

Poa fendleriana, Muttongrass

- Narrow leaves, apomictic, and flowers are typically pistillate (occasionally staminate).
- Dormant seeding is ideal into a firm, weed-free seedbed via drill or broadcast followed by cultipacker or harrow operation.
- May be susceptible to stem rust. Among most drought tolerant bluegrasses and does best on well-drained clay loams.
- Rated as excellent forage for cattle and horses and good for elk, sheep, and deer. Provides surface erosion control on arid sites and due to drought tolerance, has high potential for usage in restoration and native diversification projects.



Did You Know: Leaves are rough to the touch

Poa nervosa, Wheeler Bluegrass

- Loosely tufted plant with short rhizomes.
- Easy to establish as revegetation after fires.
- Adaptable to wet conditions in areas like meadows and forests.



Did You Know: Tends to grow in wide open spaces

Poa palustris, Fowl Bluegrass

- Curved shaped plant, stems that extend from the plant, leaves narrow in size as they extend from the plant.
- Used for quick cover on restoration projects due to its excellent seedling vigor.
- Palatable and nutritious to livestock diets.



Did You Know: Will spread by stolons

Poa secunda ssp. *ampla*, Big Bluegrass

- Shallow, fibrous root system.
- Not tolerant of poorly drained soils or exceedingly high water tables.
- Grows in late summer to early fall - very moisture dependent.
- Year-round palatability to wildlife and livestock and seeds are important feed to birds and small mammals.



Did You Know: Has distinct blue color

Poa secunda ssp. *canbyi*, Canby's Bluegrass

- Shallow, fibrous root system - short bunchgrass species.
- Will green-up early in the spring.
- Can adapt to all soil textures and shallow to deep soil types.
- Forage option in early spring and can be competitive with weedy spring annuals.



Did You Know: Used to compete against cheatgrass because of its early green-up in the spring

Poa secunda ssp. *sandbergii*, Sandberg Bluegrass

- Medium-sized bunchgrass with many fine basal leaves. Strong, fibrous root system and flower spikelets that do not have web of hairs at base (unlike Kentucky bluegrass).
- Plant seed two months prior to reliable precipitation. Moderate to good seedling vigor. May need weed control.
- Do not graze until stands are two-years-old and well-rooted. Susceptible to grasshoppers, jackrabbits, and rodents along with leaf and stem rusts and stem maggots.
- Useful for early spring grazing - large volume of early spring forage. Great for spring calving or lambing pasture. Nesting site for upland game birds (pheasants).



Did You Know: Most common native bluegrass in the arid Western U.S.

Psathyrostachys juncea, Russian Wildrye

- Large, long-lived, bunch grass. Has many long, dense, basal leaves and is light to dark green in color.
- Requires special attention during seeding year - very difficult to establish. Slow growing and weak species, which means it takes more time to establish a stand.
- Tolerant of grazing (graze lightly in the spring) carefully manage grazing. Susceptible to grasshoppers, cutworms, and other insects.
- One of most versatile forage grasses for dryland pastures. Forage can be used during all seasons, specifically in drier areas. Palatable to livestock and wildlife.



Did You Know: One of the most versatile forages

Pseudoroegneria spicata ssp. *inermis*, Beardless Bluebunch Wheatgrass

- Highly variable bunchgrass with leaves that are green to blue in color and erect, slender reproductive stems.
- Seed into clean, firm, weed-free seedbed. For a native grass, establishes fairly quickly but needs 2-3 years for full establishment.
- Does not withstand continuous, heavy grazing and can be crowded out by competitive species if not given time to establish. Does not like Spring flooding.
- Palatable to all wildlife and livestock and is a good forage option for cattle and horses year round. Ideal for reclamation of disturbed soils due to its drought resistance and persistence.



Did You Know: State grass of Montana and Washington

Pseudoroegneria spicata ssp. *spicata*, Bluebunch Wheatgrass

- Highly variable bunchgrass with pointed and semi-clasping auricles, green to blue colored leaves, and erect, slender and wavy reproductive stems.
- Seedlings are weaker than other wheatgrasses and require a firm, weed-free seedbed for solid establishment. Establishes fairly quickly but stands should be given 2-3 years for full establishment.
- Susceptible to grasshoppers and other insects on new stands. Heavy, continuous grazing is not recommended on established stands.
- Palatable to livestock and wildlife - can be used for haying, but is a better choice for grazing. Due to drought tolerance and extensive root systems, good option for reclamation needs.



Did You Know: State grass of Montana and Washington

Puccinellia nuttalliana, Nuttall's Alkaligrass

- Hairless plant, pointed tips.
- Does not do well with heavy grazing or dry soils. Halophytic (soil tolerant).
- Great in seed mixes in waterways, shorelines, marshes, or other moist alkaline sites.



Did You Know: Important larval food host

Schizachyrium scoparium, Little Bluestem

- Tufted perennial grass that has ecotypic variation due to broad distribution throughout the U.S. and Canada. Extreme variability in color, height, flowering, etc.
- A clean, weed-free seedbed is required prior to planting. Plant too shallow as opposed to too deep. Adapted to sandy to clay-loam soils.
- Susceptible to leaf spot disease. Grows later in the spring after cool-season species have developed. Utilize rotational grazing to improve grazing efficiency.
- Due to broad adaptation and drought tolerance, used for prairie restoration projects.



Did You Know: State grass of Kansas and Nebraska

Schoenoplectus acutus, Hard Stemmed Bulrush

- Stems upright, gray-green to dark-green. Leaves short and few. Flowers terminal panicle, 3 to 10 spikes.
- Especially good for restoration efforts along wetlands because of its stabilization benefits.
- Low forage value for livestock and wildlife.



Did You Know: Young shoots grown in the spring can be eaten raw or cooked

Schoenoplectus heterochaetus, Slender Bulrush

- Stems firm, erect, round, sheaths reddish at the base. 3-4 leaves with 1-2 of the leaves short. 5-30 spikelets clustered at the top of the stem.
- Typically found in standing water and along lake and ponds.



Did You Know: Acts as a filter absorbing poisonous metals

Schoenoplectus pungens, Three Square Bulrush

- Stems upright and triangular. Leaves basal, flat, rounded near base and tip. Flowers clusters of spikelets, yellowish to reddish.
- Erosion control species.
- Alkaline, saline, and freshwater tolerant.
- Food and cover for many birds.



Did You Know: Favors lakes and rivershores

Schoenoplectus tabernaemontani, Softstem Bulrush

- Tall stem with long leaves that wrap the base. Flowers are reddish brown budlike spikelets.
- Tolerates most levels of salinity and fresh water.
- Food and cover for fish, waterfowl, and furbearers.



Did You Know: Native Americans wove their stems into mats

Scirpus atrovirens, Dark Green Bulrush

- Strong, erect, triangular stems with clusters of brown seeds atop. Long, grass-like leaves expand below the clusters and down the stem.
- Seed are consumed by waterfowl.



Did You Know: Will form a buffer against wind erosion that can allow other aquatic plants to establish

Scirpus cyperinus, Wool Grass

- Slim, erect culms. Leaves smooth and flat. Flowers dense, greenish-brown clusters.
- Important wetland species and helps provide food and cover to waterfowl species.



Did You Know: Has a fuzzy or wool appearance

Scirpus pallidus, Pale Bulrush

- Stems singular or clumping, erect, three-sided with rounded edges. 5-10 alternate leaves. Flowers stiff and open clusters radiating in all directions.



Did You Know: Waterfowl forage on seeds and small mammals such as muskrats can consume the roots

Scirpus pendulus, Red Bulrush

- Stems mostly erect, round, bright yellowish-green. 5-10 alternate leaves, also bright yellowish-green. Flowers open and nodding.
- Prefers wetter soils, but can tolerate seasonal dryness.



Did You Know: Provides important cover for birds

Sorghastrum nutans, Indiangrass

- Tall perennial with scaly, short rhizomes, glabrous culms, flat leaf blades, and glaucous blue-green to green foliage. Dense golden bronze to yellow plume like inflorescence.
- Do not graze in the establishment year - very sensitive to overgrazing. Tolerant to fire. Susceptible to leaf spot, Puccinia virgate (rust fungi) and other foliar diseases.
- Highly palatable to livestock and is great for haying and forage. Due to bunch type growth, great ground cover and nesting option for gamebirds and songbirds. Nesting area for native bees and larval host for pepper and salta skipper butterfly.



Did You Know: State grass of Oklahoma and South Carolina

Sparganium eurycarpum, Giant Bur Reed

- Leaves alternate, stiff, erect, linear. Flowers male and female on the same plant, globular clusters.
- Emergent aquatic species reaching 2-6' tall.
- Somewhat shade tolerant.



Did You Know: Often grows in thick colonies along shorelines

Spartina pectinata, Prairie Cord Grass

- Native to tall grass prairies in U.S. and Canada with coarse, tough leaf blades, stiff stems, scaly, tough rhizomes, and seedheads with 10-20 spikes that have up to 40 spikelets.
- Seedlings develop slowly but stands establish quickly if planted by vegetative material and can grow in seasonally dry sites, areas of alkaline conditions and high water tables, but not tolerant to prolonged flooding. Has few management needs.
- Susceptible to larvae of tortricid moth feeding on florets of prairie cordgrass. May become weedy or invasive in some areas. Grows on many soil types and has salt tolerance.
- Due to stiff stems and robust size of plant, useful in stabilizing soil and providing cover. Forage option in very early season only.



Did You Know: Great option to compete against Reed Canary

Sphenopholis obtusata, Prairie Wedgegrass

- Small tufts of slender, unbranched culms, nodding panicle.
- Considered an annual or short-lived perennial bunchgrass.
- Shown to be most important in native wetland or riparian restorations and stream bank stabilization.



Did You Know: Sometimes referred to as Prairie Wedgescale

Sporobolus airoides, Alkali Sacaton

- Large bunchgrass with flat, wide leaves, open paniced inflorescence with pyramidal shape, small seeds that rest on branches in an open seedhead.
- Reproduces from seeds and tillers - seeds remain viable for years.
- Tolerant of moderate grazing and fire. High salt tolerance.
- Good forage option for cattle and horses in far west U.S. Food source for small mammals, deer, birds, and waterfowl. Due to tolerance of salt, can be used for seed and stabilizing disturbed areas.



Did You Know: Key restoration species in heavily alkaline soils

Sporobolus asper (*Sporobolus compositus*), Rough Dropseed

- Tall bunchgrass with erect, solitary culms, short rhizomes, narrow panicles, flowers during late summer to early autumn.
- Adapted to deep clay soils - does not grow on high water table or deep sandy soils. Grows in late winter or early spring and seedheads form in August.
- Graze only in summer. May become weedy or invasive in areas.



Did You Know: Plant may become aggressive in some regions or habitats

Sporobolus contractus, Spike Dropseed

- Bunchgrass with erect stems, flat leaves when growing that become v-shaped when dry, hairy sheaths on the leaves. Grows in spring and matures to produce seed in October.
- Establish stand before allowing livestock to graze. Can reseed itself after drought or overgrazing.
- Fair nutritional value for livestock. Food source for upland birds and good cover for small mammals and birds.



Did You Know: The name comes from its spike-like shape

Sporobolus cryptandrus, Sand Dropseed

- Long-lived bunchgrass native throughout the U.S. Erect plants that have tufts of white hairs on the collar, small, single brown to purplish florets on the spikelets, and dense, sand binding roots. Produces many small seeds.
- Species spreads naturally from established plant. Do not overgraze.
- Utilized in disturbed areas in the Southwest, Intermountain West, and prairies in Great Plains. Pioneer plant in disturbed areas due to abundant seed production.



Did You Know: Extensive network of roots which act to bind sandy soil in reclamation projects

Sporobolus heterolepis, **Prairie Dropseed**

- Airy and long heads of flowers, narrow pyramid shaped plant.
- Often times slow to establish, but will be long-lived upon establishing.
- Excels in hot, dry conditions and responds well to fire.



Did You Know: Used by native bees and insects for nesting structures

Sporobolus wrightii, **Big Sacaton**

- Coarse, upright grass that forms dense clumps with large leaves that are up to 1 foot long. Stiff, upright clustered pale flowers.
- Do not graze in the establishment year. After establishment year, continuous or rotational graze for management. Tolerant to saline or alkaline soils.
- Utilized for revegetation for saline soils, erosion control on grass hedge terraces or windstrips, or to help stabilize watershed structures, stream banks, and flood plains. Also can be used for wildlife cover.



Did You Know: Is often used to reduce wind erosion on reclamation sites

Tripsacum dactyloides, **Eastern Gamma Grass**

- Tall (can reach height of 8 feet) with seed heads that have several spikes and well-defined midrib.
- Requires thoroughly prepared seedbed with good weed control. Seeds must be stratified for 8 weeks prior to spring sowing.
- Prone to frost heaving during first winter after planting. Weeds need to be controlled. If grazed, good forage management system must be used to provide time for recovery.
- May be used as alternative to annual silage crops or as pasture forage with well-managed rotational grazing.



Did You Know: Distant relative to corn

Vulpia octoflora, **Sixweeks Fescue**

- Loosely tufted annual found in open disturbed areas.
- Less than 5% cover in native settings, mostly between bunchgrasses. Seeds remain viable in the soil bank and sprout during favorable climatic conditions.
- Not great palatability for livestock or wildlife. Option for reclamation in early stages of development.



Did You Know: Key species in the California grasslands

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Cool/Warm Season	Mature Height	Annual precipitation needed
<i>Achnatherum hymenoides</i>	Indian Ricegrass	ACHY	Zones 3-9	Native	Perennial	Cool	1-2 feet	10 inches
<i>Andropogon gerardii</i>	Big Bluestem	ANGE	Zones 4-9	Native	Perennial	Warm	6-8 feet	16 inches
<i>Andropogon hallii</i>	Sand Bluestem	ANHA	Zones 3-10	Native	Perennial	Warm	5-7 feet	14+ inches
<i>Beckmannia syzigachne</i>	American Sloughgrass	BESY	Zones 3-7	Native	Annual/ short lived perennial	Cool	2-3 feet	30+ inches
<i>Bolboschoenus fluviatilis</i>	River Bulrush	BOFL3	Zones 3-9	Native	Perennial	Warm	4 feet	10+ inches
<i>Bolboschoenus maritimus</i>	Alkali Bulrush	BOMA7	Zones 5-9	Native	Perennial	Warm	1-3 feet	18+ inches
<i>Bouteloua barbata</i>	Sixweeks Grama	BOBA2	Zones 2-9	Native	Annual	Warm	12 inches	6 inches
<i>Bouteloua curtipendula</i>	Sideoats Grama	BOCU	Zones 3-8	Native	Perennial	Warm	1.5-3 feet	12 inches
<i>Bouteloua eriopoda</i>	Black Grama	BOER4	Zones 6-10	Native	Perennial	Warm	1-2 feet	10 inches
<i>Bouteloua gracilis</i>	Blue Grama	BOGR2	Zones 3-10	Native	Perennial	Warm	12 inches	10 inches
<i>Bromus anomalus</i>	Nodding Brome	BRAN	Zones 7-10	Native	Perennial	Cool	1-2 feet	5 inches
<i>Bromus carinatus</i>	California Brome	BRCA5	Zones 3-9	Native	Perennial	Cool	3 feet	8 inches
<i>Bromus ciliatus</i>	Fringed Brome	BRCI2	Zones 5-7	Native	Perennial	Cool	4 feet	12 inches
<i>Bromus kalmii</i>	Prairie Brome	BRKA2	Zones 1-4	Native	Perennial	Cool	3 feet	12 inches
<i>Bromus marginatus</i>	Mountain Brome	BRMA4	Zones 4-7	Native	Perennial	Cool	3 feet	12 inches
<i>Bromus pubescens</i>	Hairy Woodland Brome	BRPU6	Zones 3-9	Native	Perennial	Cool	4 feet	35 inches
<i>Buchloe dactyloides</i> (<i>Bouteloua dactyloides</i>)	Buffalograss	BODA2	Zones 3-9	Native	Perennial	Warm	4-6 inches	10 inches

Sun & Shade Tolerance	Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Mycorrhizal Dependent	Drought Tolerance	Growth Form	Elevation
Full sun	Neutral	Loamy, sandy	8	145,000	Spring, Fall	Yes	High	Bunch	Up to 10,000 feet
Full sun, partial shade	Neutral, basic	Clay, loamy, sandy	10	130,000	Spring	Yes	High	Bunch	Up to 8,000 feet
Full sun, partial shade	Neutral	Sandy, gravelly	12	100,000	Spring, Fall	Yes	High	Bunch	Up to 6,000 feet
Full sun, partial shade	Acidic, neutral	Clay, loamy	6	238,000	Spring, Fall	Yes	None	Bunch	Up to 6,000 feet
Full sun, partial shade	Acidic, neutral, and basic	Clay, loamy	22	108,000	Spring	Yes	Low	Rhizomatous	Up to 4,000 feet
Full sun to full shade	Neutral, basic	Clay, loamy, sandy	4.5	230,000	Spring, Summer, Fall	Yes	Low	Rhizomatous	Up to 7,000 feet
Full sun	Acidic, neutral	Loamy, sandy, gravelly	5	400,000	Spring, Summer	Yes	High	Bunch	Up to 6,000 feet
Full sun, partial shade	Acidic, neutral	Clay, loamy, sandy	12	159,200	Summer	Yes	Medium	Rhizomatous	Up to 7,000 feet
Full sun	Acidic, neutral	Loamy, sandy, gravelly	2-3	1,335,000	Spring, Fall	Yes	High	Stoloniferous	Up to 7,000 feet
Full sun	Acidic, neutral	Clay, loamy, sandy	3	724,400	Summer	Yes	High	Bunch	3,500-10,000 feet
Full sun to full shade	Neutral	Loamy, sandy, gravelly	14	119,333	Spring, Fall	Yes	High	Bunch	Up to 10,000 feet
Full sun to full shade	Acidic, neutral	Loamy, sandy	13	106,680	Spring, Fall	Yes	Medium	Bunch	Up to 10,000
Full sun to full shade	Acidic to neutral	Clay, sandy	15	236,000	Spring, Fall	Yes	Low	Bunch	Up to 7,000 feet
Full sun, partial shade	Neutral to basic	Loamy, sandy	12	145,000	Spring, Fall	No	Medium	Bunch	Up to 5,500 feet
Full sun, partial shade	Neutral	Loamy, sandy, gravelly	20-27	64,080	Spring, Fall	Yes	Medium	Bunch	Up to 10,500 feet
Partial shade, full shade	Basic	Loamy	20-25	88,000	Spring, Summer	Yes	Low	Bunch	Up to 8,000 feet
Full sun, partial shade	Neutral, basic	Clay, loamy	25	335,360	Summer	Yes	High	Stoloniferous	Up to 5,000 feet

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Cool/Warm Season	Mature Height	Annual precipitation needed
<i>Calamagrostis canadensis</i>	Bluejoint Reed Grass (Canada Bluejoint)	CACA4	Zones 2-6	Native	Perennial	Cool	3-5 feet	14+ inches
<i>Calamovilfa longifolia</i>	Prairie Sandreed	CALO	Zones 1-5	Native	Perennial	Warm	3-5 feet	15 inches
<i>Carex annectens</i>	Yellowfruit Sedge	CAAN6	Zones 4-8	Native	Perennial	Cool	2 feet	25+ inches
<i>Carex aquatilis</i>	Water Sedge	CAAQ	Zones 3-9	Native	Perennial	Cool	3-5 feet	15+ inches
<i>Carex atherodes</i>	Wheat Sedge	CAAT2	Zones 3-9	Native	Perennial	Cool	3-5 feet	16+ inches
<i>Carex bebbii</i>	Bebb's Sedge	CABE2	Zones 2-8	Native	Perennial	Cool	3 feet	14+ inches
<i>Carex bicknellii</i>	Prairie Sedge	CABI3	Zones 3-7	Native	Perennial	Cool	2-3 feet	18+ inches
<i>Carex brevior</i>	Plains Oval Sedge	CABR10	Zones 3-8	Native	Perennial	Cool	2-3 feet	16+ inches
<i>Carex comosa</i>	Bristly Sedge	CACO8	Zones 3-10	Native	Perennial	Cool	1.5-3 feet	24+ inches
<i>Carex crinita</i>	Fringed Sedge	CACR6	Zones 3-9	Native	Perennial	Cool	2-3 feet	24+ inches
<i>Carex cristatella</i>	Crested Oval Sedge	CACR7	Zones 3-7	Native	Perennial	Cool	1-3 feet	18+ inches
<i>Carex diandra</i>	Bog Panicked Sedge	CADI4	Zones 5-8	Native	Perennial	Cool	1-3 feet	10+ inches
<i>Carex frankii</i>	Frank's Sedge	CAFR3	Zones 5-8	Native	Perennial	Cool	1-2 feet	8+ inches
<i>Carex granularis</i>	Limestone Meadow Sedge	CAGR3	Zones 3-9	Native	Perennial	Cool	1-3 ft	46 inches
<i>Carex gravida</i>	Heavy Sedge	CAGR4	Zones 3-9	Native	Perennial	Cool	12-40 inches	30+ inches
<i>Carex hystericina</i>	Porcupine Sedge	CAHY4	Zones 3-9	Native	Perennial	Cool	1-3 feet	24+inches
<i>Carex inops</i> ssp. <i>heliophila</i>	Sun Sedge	CAINH2	Zones 3-6	Native	Perennial	Warm	1-2 feet	10+ inches
<i>Carex interior</i>	Prairie Star Sedge	CAIN11	Zones 4-8	Native	Perennial	Cool	1-2 feet	14-55 inches
<i>Carex lacustris</i>	Lake Sedge	CALA16	Zones 3-8	Native	Perennial	Cool	2-4 feet	32+ inches
<i>Carex laeviconica</i>	Smoothcone Sedge	CALA12	Zones 3-7	Native	Perennial	Warm	1-3 feet	24+ inches
<i>Carex lupulina</i>	Hop Sedge	CALU4	Zones 3-9	Native	Perennial	Cool	3-4 feet	40+ inches
<i>Carex lurida</i>	Lurid Sedge	CALU5	Zones 2-9	Native	Perennial	Cool	2-3 feet	28+ inches

Sun & Shade Tolerance	Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Mycorrhizal Dependent	Drought Tolerance	Growth Form	Elevation
Full sun to full shade	Acidic to Neutral	Clay, silty	1	3,800,000	Spring, Fall	Yes	Low	Rhizomatous	Up to 5,000 feet
Full sun	Neutral	Loamy, sandy, gravelly	6	274,000	Spring	Yes	High	Rhizomatous	Up to 5,500 feet
Full sun, partial shade	Acidic to Neutral	Medium	2	1,440,000	Spring	Yes	High	Clump	Up to 2,000 feet
Full sun	Acidic to Neutral	Clay, loamy	3-4	1,200,000	Spring	Yes	Low	Bunch	Up to 8,000 feet
Full sun, partial shade	Acidic, neutral, and basic	Clay, loamy	3-4	1,200,000	Spring	Yes	Low	Rhizomatous	Up to 5,000 feet
Full sun	Acidic to Neutral	Clay, loamy	1-2	544,000	Spring	Yes	None	Bunch	Up to 5,000 feet
Full sun, partial shade	Basic	Clay, loamy, sandy	6	272,000	Spring	Yes	Medium	Bunch	Up to 3,000 feet
Full sun to full shade	Basic	Loamy, sandy	3	464,000	Spring, Fall	Yes	Medium	Bunch	Up to 2,500 feet
Full sun	Acidic, neutral, and basic	Clay, loamy	3	480,000	Spring, Fall	Yes	Low	Rhizomatous	Up to 3,500 feet
Full sun to full shade	Acidic, neutral, and basic	Clay, loamy	2.5	368,000	Spring	Yes	Low	Bunch	Up to 3,500 feet
Full sun to full shade	Acidic to Neutral	Clay, loamy	2	928,000	Spring	Yes	Low	Bunch	Up to 2,500 feet
Full sun, partial shade	Neutral	Clay, loamy, sandy	2.5	688,000	Spring	Yes	None	Bunch	Up to 5,000 feet
Full sun to full shade	Neutral	Clay, loamy	5.5	500,000	Spring	Yes	Low	Rhizomatous	Up to 5,000 feet
Full sun to full shade	Basic	Clay, loamy	5	256,000	Spring, Fall	No	Low	Bunch	Up to 2,000 feet
Full sun, partial shade	Acidic to Neutral	Moderately coarse to Medium	3.5	144,000	Fall	Yes	Medium	Clump	Up to 4,000 feet
Full sun	Acidic	Clay, loamy, sandy	3	480,000	Spring	Yes	Low	Clump	Up to 4,000 feet
Full sun	Acidic to Neutral	Loamy, sandy	3	1,297,000	Spring, Summer, Fall	Yes	Medium	Stoloniferous	Up to 5,000 feet
Full sun, full shade	Acidic to Neutral	Clay, loamy	3	624,000	Summer	Yes	Low	Bunch	Up to 3,500 feet
Full sun to full shade	Acidic to Neutral	Clay, loamy	3	512,000	Spring	Yes	None	Rhizomatous	Up to 2,000 feet
Full sun, partial shade	Acidic	Loamy, sandy	8	192,000	Spring	Yes	Medium	Clump	Up to 2,500 feet
Full sun to full shade	Acidic, neutral, and basic	Clay, loamy	15	52,800	Spring, Fall	Yes	Low	Bunch	Up to 5,000 feet
Full sun to full shade	Acidic	Clay, loamy, sandy	8	192,000	Spring, Fall	Yes	Low	Bunch	Up to 2,300 feet

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Cool/Warm Season	Mature Height	Annual precipitation needed
<i>Carex molesta</i>	Field Oval Sedge	CAMO11	Zones 3-8	Native	Perennial	Cool	2-3 feet	10+ inches
<i>Carex nebrascensis</i>	Nebraska Sedge	CANE2	Zones 4-5	Native	Perennial	Cool	2 feet	14+ inches
<i>Carex normalis</i>	Greater Straw Sedge	CANO	Zones 3-8	Native	Perennial	Cool	2-3 feet	18+ inches
<i>Carex pallescens</i>	Pale Sedge	CAPA17	Zones 4-8	Native	Perennial	Cool	1-2.5 feet	13+ inches
<i>Carex pellita</i>	Woolly Sedge	CAPE42	Zones 4-9	Native	Perennial	Cool	3 feet	4+ inches
<i>Carex pennsylvanica</i>	Pennsylvania Sedge	CAPE6	Zones 3-8	Native	Perennial	Cool	8 inches	18+ inches
<i>Carex praeegracilis</i>	Clustered Field Sedge	CAPR5	Zones 3-8	Native	Perennial	Cool	2 feet	12+ inches
<i>Carex pseudocyperus</i>	False Bristly Sedge	CAPS	Zones 3-7	Native	Perennial	Cool	2 feet	24+ inches
<i>Carex rostrata</i>	Beaked Sedge	CAR06	Zones 3-5	Native	Perennial	Cool	3 feet	12+ inches
<i>Carex sartwellii</i>	Running Marsh Sedge	CASA8	Zones 3-7	Native	Perennial	Warm	2-3 feet	20+ inches
<i>Carex scoparia</i>	Broom Sedge	CASC11	Zones 3-9	Native	Perennial	Warm	2 feet	18+ inches
<i>Carex shortiana</i>	Short's Sedge	CASH2	Zones 4-7	Native	Perennial	Cool	2 feet	12+ inches
<i>Carex sprengeii</i>	Long Beaked Sedge	CASP7	Zones 3-5	Native	Perennial	Cool	1-3 feet	12+ inches
<i>Carex squarrosa</i>	Narrow-Leaved Cattail Sedge	CASQ2	Zones 4-6	Native	Perennial	Warm	2 feet	30+ inches
<i>Carex stipata</i>	Common Fox Sedge	CAST5	Zones 3-9	Native	Perennial	Cool	2-3 feet	14+ inches
<i>Carex stricta</i>	Tussock Sedge	CAST8	Zones 3-8	Native	Perennial	Cool	3 feet	24+ inches
<i>Carex tetanica</i>	Rigid Sedge	CATE6	Zones 4-7	Native	Perennial	Warm	2 feet	18+ inches
<i>Carex tribuloides</i>	Awl-Fruited Oval Sedge	CATR7	Zones 3-9	Native	Perennial	Cool	1-3 feet	20+ inches
<i>Carex vulpinoidea</i>	Brown Fox Sedge	CAVU2	Zones 3-9	Native	Perennial	Warm	1-2.5 feet	14+ inches
<i>Danthonia spicata</i>	Poverty Oatgrass	DASP2	Zones 3-8	Native	Perennial	Cool	1-2.5 feet	12 inches
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	DECE	Zones 4-9	Native	Perennial	Cool	2-3 feet	14 inches
<i>Distichlis spicata</i>	Inland Saltgrass	DISP	Zones 7-10	Native	Perennial	Warm	6-18 inches	5+ inches
<i>Eleocharis acicularis</i>	Needle Spike Rush	ELAC	Zones 3-9	Native	Perennial	Cool	8 inches	16+ inches
<i>Eleocharis palustris</i>	Creeping Spike Rush	ELPA3	Zones 3-8	Native	Perennial	Cool	1 foot	16+ inches

Sun & Shade Tolerance	Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Mycorrhizal Dependent	Drought Tolerance	Growth Form	Elevation
Full sun to full shade	Acidic to Neutral	Clay, loamy, sandy	4	400,000	Spring	Yes	Medium	Bunch	Up to 4,000 feet
Full sun	Neutral, basic	Clay, loamy, sandy	4	534,000	Spring, Fall	Yes	None	Rhizomatous	Up to 9,500 feet
Full sun to full shade	Acidic to Neutral	Clay, loamy	5	400,000	Spring	Yes	None	Bunch	Up to 2,000 feet
Full sun, partial shade	Neutral to Basic	Silty, loamy	6	256,000	Spring, Fall	Yes	Medium	Rhizomatous	Up to 5,000 feet
Full sun, partial shade	Acidic, neutral	Clay, silty	3.4	448,000	Spring, Fall	No	Low	Clump	Up to 5,000 feet
Full sun to full shade	Acidic to Neutral	Loamy, sandy	3	480,000	Spring, Fall	Yes	High	Rhizomatous	Up to 2,000 feet
Full sun, partial shade	Acidic, neutral	Clay, loamy, sandy	2.6	1,800,000	Spring, Fall	Yes	Low	Rhizomatous	Up to 10,000 feet
Full sun	Acidic to Neutral	Clay, loamy	3	352,000	Spring, Fall	Yes	High	Clump	Up to 4,000 feet
Full sun to full shade	Acidic to Neutral	Clay, loamy	4	360,000	Spring, Fall	No	Low	Rhizomatous	Up to 8,000 feet
Full sun, partial shade	Acidic to Neutral	Clay, loamy, sandy	2.6	656,000	Spring	Yes	Medium	Rhizomatous	Up to 4,500 feet
Full sun	Acidic	Clay, loamy	1-2	1,300,000	Spring	Yes	None	Bunch	Up to 5,000 feet
Full sun to full shade	Acidic to Neutral	Clay, loamy	4.5	272,000	Spring	Yes	None	Bunch	Up to 4,000 feet
Full sun, partial shade	Acidic to Neutral	Clay, loamy	8	160,000	Spring, Fall	Yes	Medium	Rhizomatous	Up to 3,500 feet
Partial sun, partial shade	Neutral	Clay, loamy	4	320,000	Spring	Yes	None	Bunch	Up to 5,000 feet
Full sun to full shade	Acidic, neutral	Clay, loamy	3-4	544,000	Fall	Yes	Low	Bunch	Up to 6,000 feet
Full sun, partial shade	Acidic, neutral, and basic	Clay, loamy, sandy	2-3	848,000	Spring, Fall	Yes	Low	Bunch	Up to 2,000 feet
Full sun, partial shade	Acidic to Neutral	Silty, loamy	2.4	1,297,000	Spring	Yes	High	Bunch	Up to 2,000 feet
Full sun, partial shade	Acidic to Neutral	Clay, loamy	1-2	1,920,000	Spring, Fall	Yes	Low	Bunch	Up to 4,000 feet
Full sun	Acidic, neutral	Clay, loamy	1-2	1,600,000	Fall	Yes	Low	Bunch	Up to 5,000 feet
Full sun, partial shade	Acidic, Neutral, Basic	Loamy, sandy	4	400,000	Summer	Yes	Medium	Bunch	Up to 4,500 feet
Full sun to full shade	Acidic, neutral	Clay, loamy, sandy	2	2,300,000	Fall	Yes	Low	Bunch	Up to 10,000 feet
Full sun, partial shade	Basic	Clay, loamy	4	520,000	Spring, Summer	Yes	Medium	Rhizomatous	Up to 8,000 feet
Full sun	Acidic, neutral, and basic	Clay, loamy	1-2	1,120,000	Spring, Fall	Yes	Low	Rhizomatous	Up to 8,000 feet
Partial shade, full shade	Neutral, basic	Clay, sandy, gravelly	2	816,000	Spring	No	Low	Rhizomatous	Up to 10,000 feet

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Cool/Warm Season	Mature Height	Annual precipitation needed
<i>Elymus canadensis</i>	Canada Wildrye	ELCA4	Zones 3-9	Native	Perennial	Cool	3 feet	12+ inches
<i>Elymus elymoides</i>	Bottlebrush Squirreltail	ELEL5	Zones 3-10	Native	Perennial	Cool	1.5-2 feet	8 inches
<i>Elymus glaucus</i>	Blue Wildrye	ELGL	Zones 3-5	Native	Perennial	Cool	2-3 feet	16+ inches
<i>Elymus lanceolatus</i>	Thickspike (Streambank) Wheatgrass	ELLA3	Zones 4-7	Native	Perennial	Cool	2-4 feet	7 inches
<i>Elymus riparius</i>	Riverbank Wildrye	ELRI	Zones 3-8	Native	Perennial	Cool	4-5 feet	24 inches
<i>Elymus trachycaulus</i>	Slender Wheatgrass	ELTR7	Zones 2-9	Native	Perennial	Cool	2-2.5 feet	10 inches
<i>Elymus villosus</i>	Silky Wildrye	ELVI	Zones 3-8	Native	Perennial	Cool	2-4 feet	18+ inches
<i>Elymus virginicus</i>	Virginia Wildrye	ELVI3	Zones 3-8	Native	Perennial	Cool	2-3 feet	14+ inches
<i>Elymus wawawaiensis</i>	Snake River Wheatgrass	ELWA2	Zones 5-7	Native	Perennial	Cool	1-2 feet	8 inches
<i>Eragrostis trichodes</i>	Sand Lovegrass	ERTR3	Zones 5-9	Native	Perennial	Warm	2-3 feet	14 inches
<i>Festuca arizonica</i>	Arizona Fescue	FEAR2	Zones 3-9	Native	Perennial	Cool	1-2 feet	10 inches
<i>Festuca campestris</i>	Rough Fescue	FECA4	Zones 3-7	Native	Perennial	Cool	1.5 feet	16-24 inches
<i>Festuca idahoensis</i>	Idaho Fescue	FEID	Zones 4-8	Native	Perennial	Cool	2-3 feet	12 inches
<i>Festuca obtusa (Festuca subverticillata)</i>	Nodding Fescue	FESU3	Zones 3-9	Native	Perennial	Cool	3 feet	24+ inches
<i>Festuca occidentalis</i>	Western Fescue	FEOC	Zones 4-8	Native	Perennial	Cool	2 feet	14 inches
<i>Festuca saximontana</i>	Rocky Mountain Fescue	FESA	Zones 4-8	Native	Perennial	Cool	2-3 feet	10 inches
<i>Glyceria canadensis</i>	Rattlesnake Mannagrass	GLCA	Zones 3-9	Native	Perennial	Cool	3.5 feet	24+ inches
<i>Glyceria striata</i>	Fowl Mannagrass	GLST	Zones 3-9	Native	Perennial	Cool	3-4 feet	10+ inches
<i>Hesperostipa comata</i>	Needle-and-Thread Grass	HECO26	Zones 2-11	Native	Perennial	Cool	2-3 feet	5 inches
<i>Hesperostipa spartea</i>	Porcupine Grass	HESP11	Zones 3-6	Native	Perennial	Cool	4 feet	14 inches
<i>Hordeum brachyantherum</i>	Meadow Barley	HOBR2	Zones 4-10	Native	Perennial	Cool	2 feet	20+ inches
<i>Hordeum jubatum</i>	Squirrel Tail Grass (Foxtail Barley)	HOJU	Zones 4-10	Native	Perennial	Cool	1-2 feet	Wet areas

Sun & Shade Tolerance	Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Mycorrhizal Dependent	Drought Tolerance	Growth Form	Elevation
Full sun, partial shade	Acidic, neutral	Clay, loamy, sandy	10	115,000	Spring, Fall	Yes	Medium	Bunch	Up to 6,000 feet
Full sun	Acidic, neutral	Clay, loamy	7-9	192,000	Fall	Yes	High	Bunch	Up to 10,000 feet
Full sun, partial shade	Acidic, neutral	Clay, loamy, sandy	12	134,500	Spring, Fall	Yes	High	Bunch	Up to 10,000 feet
Full sun, partial shade	Neutral, basic	Loamy, sandy, gravelly	10	155,000	Spring, Fall	Yes	Medium	Rhizomatous	Up to 10,000 feet
Full sun, partial shade	Acidic to Neutral	Clay, loamy, sandy	10	125,000	Spring, Fall	Yes	Low	Bunch	Up to 5,000 feet
Full sun, partial shade	Acidic, neutral, basic	Clay, loamy	8	159,000	Fall	Yes	High	Bunch	Up to 12,000 feet
Partial shade, full shade	Neutral	Medium	8-10	112,000	Spring, Fall	Yes	Medium	Bunch	Up to 4,000 feet
Full sun to full shade	Acidic, neutral	Clay, loamy, sandy	12	73,000	Spring, Fall	Yes	Medium	Bunch	Up to 4,000 feet
Full sun, partial shade	Neutral	Loamy, sandy	12	110,000	Spring, Fall	Yes	High	Bunch	Up to 10,000 feet
Full sun	Neutral, basic	Sandy, gravelly	1-2	1,300,000	Spring, Summer	Yes	High	Bunch	Up to 5,000 feet
Full sun, partial shade	Neutral	Clay, silty	3	550,000	Fall	Yes	Medium	Bunch	Up to 10,000 feet
Full sun, partial shade	Neutral	Loamy, sandy	7-9	205,388	Spring, Fall	Yes	Low	Bunch	Up to 9,500 feet
Full sun, partial shade	Neutral	Clay, loamy, sandy	3-4	450,000	Spring, Fall	Yes	Low	Bunch	Up to 12,000 feet
Partial shade, full shade	Acidic to Neutral	Loamy, sandy	4	400,000	Late Fall, Early Spring	Yes	Low	Bunch	Up to 3,000 feet
Full sun to full shade	Acidic, neutral	Loamy, sandy, gravelly	4-6	348,000	Spring, Fall	Yes	High	Bunch	Up to 9,500 feet
Full sun	Neutral	Loamy, sandy	1-2	1,202,000	Spring, Fall	Yes	Medium	Bunch	Up to 10,000 feet
Full sun, partial shade	Neutral to Basic	Clay, loamy, sandy	2	480,000	Spring, Fall	Yes	Low	Bunch	Up to 5,000 feet
Full sun to full shade	Acidic, neutral, basic	Clay, loamy	1-2	2,560,000	Spring, Fall	Yes	Low	Rhizomatous	Up to 4,000 feet
Full sun	Neutral, basic	Clay, loamy, sandy	8-10	115,000	Fall	Yes	High	Bunch	Up to 10,000 feet
Full sun, partial shade	Acidic to Neutral	Loamy	10-15	40,000	Late Winter, Early Spring	No	Medium	Bunch	Up to 8,000 feet
Full sun to full shade	Neutral, basic	Clay, loamy, sandy	10	60,000	Spring, Fall	Yes	Medium	Bunch	Up to 11,000 feet
Full sun	Alkaline and Saline. Broad.	Coarse to fine	8	256,000	Spring, Fall	No	Medium	Bunch	Up to 6,000 feet

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Cool/Warm Season	Mature Height	Annual precipitation needed
<i>Juncus balticus</i> (<i>Juncus arcticus</i> ssp. <i>littoralis</i>)	Baltic Rush	JUARL	Zones 3-7	Native	Perennial	Cool	2-3 feet	7+ inches
<i>Juncus dudleyi</i>	Dudley's Rush	JUDU2	Zones 2-9	Native	Perennial	Cool	1.5-2.5 feet	18 inches or more
<i>Juncus effusus</i>	Common Rush	JUEF	Zones 2-9	Native	Perennial	Warm	2-3 feet	20+ inches
<i>Juncus interior</i>	Inland Rush	JUIN2	Zones 3-9	Native	Perennial	Cool	1-3 feet	20-55 inches
<i>Juncus nodosus</i>	Knotted Rush	JUNO2	Zones 3-9	Native	Perennial	Warm	6-20 inches	20+ inches
<i>Juncus tenuis</i>	Path Rush	JUTE	Zones 3-9	Native	Perennial	Cool	2 feet	11+ inches
<i>Juncus torreyi</i>	Torrey's Rush	JUTO	Zones 3-9	Native	Perennial	Cool	1-2 feet	14+ inches
<i>Koeleria cristata</i> (<i>Koeleria macrantha</i>)	Prairie June Grass	KOMA	Zones 3-9	Native	Perennial	Cool	1-2 feet	14 inches
<i>Leersia oryzoides</i>	Rice Cut Grass	LEOR	Zones 3-9	Native	Perennial	Cool	4 feet	18+ inches
<i>Leymus cinereus</i>	Great Basin Wildrye	LECI4	Zones 4-9	Native	Perennial	Cool	3-5 feet	8 inches
<i>Leymus salinus</i>	Saline Wildrye	LESA4	Zones 3-8	Native	Perennial	Cool	2 feet	10 inches
<i>Leymus triticoides</i>	Beardless (Creeping) Wildrye	LETR5	Zones 3-8	Native	Perennial	Cool	2-3 feet	7 inches
<i>Muhlenbergia asperifolia</i>	Scratchgrass (Alkali Muhly)	MUAS	Zone 3-9	Native	Perennial	Warm	2 feet	12 inches
<i>Muhlenbergia montana</i>	Mountain Muhly	MUMO	Zones 5-9	Native	Perennial	Warm	1-2 feet	13 inches
<i>Muhlenbergia porteri</i>	Bush Muhly	MUPO2	Zones 6-10	Native	Perennial	Warm	2 feet	10 inches
<i>Muhlenbergia racemosa</i>	Green Muhly (Upland Wild Timothy)	MURA	Zones 3-10	Native	Perennial	Warm	3 feet	14+ inches
<i>Muhlenbergia wrightii</i>	Spike Muhly	MUWR	Zones 5-9	Native	Perennial	Warm	2 feet	13 inches
<i>Nassella viridula</i>	Green Needlegrass	NAVI4	Zones 3-10	Native	Perennial	Cool	18-36 inches	12 inches
<i>Panicum virgatum</i>	Switchgrass	PAVI2	Zones 3-9	Native	Perennial	Warm	3-6 feet	12 inches
<i>Pascopyrum smithii</i>	Western Wheatgrass	PASM	Zones 2-8	Native	Perennial	Cool	1-2 feet	10 inches
<i>Poa alpina</i>	Alpine Bluegrass	POAL2	Zone 3-6	Native	Perennial	Cool	6-12 inches	24 inches
<i>Poa compressa</i>	Canada Bluegrass	POCO	Zones 2-10	Introduced	Perennial	Cool	2 feet	16 inches
<i>Poa fendleriana</i>	Muttongrass	POFE	Zones 4-8	Native	Perennial	Cool	2 feet	10 inches
<i>Poa nervosa</i>	Wheeler Bluegrass	PONE2	Zones 3-5	Native	Perennial	Cool	1-2 feet	12 inches

Sun & Shade Tolerance	Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Mycorrhizal Dependent	Drought Tolerance	Growth Form	Elevation
Full sun to full shade	Neutral, basic	Clay, silty, loamy	1-2	5,472,000	Summer	No	Low	Rhizomatous	Up to 7,500 feet
Full sun	Acidic, neutral, and basic	Medium	1	51,200,000	Spring	Yes	Medium	Bunch	Up to 7,200 feet
Full sun	Acidic, neutral	Clay, loamy, sandy	1-2	16,000,000	Spring, Fall	Yes	Medium	Bunch	Up to 5,000 feet
Full sun	Acidic to Neutral	Clay, loamy, sandy	1	44,800,000	Spring	Yes	Low	Bunch	Up to 6,000 feet
Full sun	Acidic to neutral	Clay, loamy, sandy	1	30,000,000	Spring, Fall	Yes	Medium	Single stem	Up to 4,000 feet
Full sun, partial shade	Acidic, neutral	Clay, loamy, sandy	1	16,000,000	Spring	No	Low	Bunch	Up to 8,000 feet
Full sun, to full shade	Neutral, basic	Loamy, sandy, gravelly	1	25,600,000	Spring	No	Low	Rhizomatous	Up to 12,000 feet
Full sun, partial shade	Neutral	Loamy, sandy, gravelly	1-2	2,315,400	Spring, Fall	Yes	High	Bunch	Up to 8,000 feet
Full sun, partial shade	Acidic to Alkaline	Clay, loamy, sandy	3-4	480,000	Fall	No	Low	Rhizomatous	Up to 5,000 feet
Full sun, partial shade	Neutral, basic	Clay, loamy, sandy	10	130,000	Spring, Fall	Yes	Medium	Bunch	Up to 9,000 feet
Full sun	Neutral	Loamy, sandy, gravelly	20	135,000	Spring, Fall	Yes	High	Bunch	Up to 8,000 feet
Full sun, partial shade	Neutral, basic	Clay, silty, loamy	15	170,000	Spring, Fall	Yes	High	Rhizomatous	Up to 9,000 feet
Full sun to full shade	Neutral, basic	Clay, silty, loamy	1	1,500,000	Spring, Summer	Yes	Low	Rhizomatous	Up to 6,000 feet
Full sun, full shade	Neutral	Loamy, sandy, gravelly	1-2	150,000	Spring, Summer	Yes	High	Bunch	2,600-11,200 feet
Full sun	Neutral	Clay, loamy, sandy	1-2	2,424,000	Spring, Summer	Yes	High	Bunch	Up to 8,000 feet
Full sun to full shade	Neutral	Clay, loamy, sandy	1-2	1,280,000	Early Spring	No	Low	Rhizomatous	Up to 6,000 feet
Full sun, partial shade	Neutral	Loamy, sandy, gravelly	2	1,600,000	Spring, Summer	Yes	Medium	Bunch	3,600-9,000 feet
Full sun, partial shade	Neutral	Clay, loamy	8	181,000	Fall	Yes	High	Bunch	Up to 8,000 feet
Full sun	Acidic, neutral, basic	Clay, loamy, sandy	6-8	389,000	Summer	Yes	Medium	Rhizomatous	Up to 6,000 feet
Full sun, partial shade	Neutral, basic	Clay, loamy	10-12	110,000	Spring, Fall	Yes	High	Rhizomatous	Up to 9,000 feet
Full sun to full shade	Acidic, neutral	Loamy, sandy, gravelly	1-2	1,000,000	Spring, Fall	Yes	Medium	Bunch	Above 5,900 feet
Full sun to full shade	Acidic, neutral	Clay, loamy, sandy	2	2,500,000	Spring, Fall	Yes	Medium	Rhizomatous	Up to 8,000 feet
Full sun, partial shade	Neutral, basic	Loamy, sandy, gravelly	2	900,000	Spring, Fall	Yes	High	Bunch	3,000-12,000 feet
Full sun, partial shade	Acidic, neutral, basic	Loamy, sandy, gravelly	2-5	950,000	Spring, Fall	Yes	Low	Bunch	Up to 6,000 feet

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Cool/Warm Season	Mature Height	Annual precipitation needed
<i>Poa palustris</i>	Fowl Bluegrass	POPA2	Zones 4-8	Native	Perennial	Cool	2-4 feet	20+ inches
<i>Poa secunda</i> ssp. <i>ampla</i>	Big Bluegrass	POAM	Zones 3-8	Native	Perennial	Cool	2 feet	10 inches
<i>Poa secunda</i> ssp. <i>canbyi</i>	Canby's Bluegrass	POCA	Zones 3-9	Native	Perennial	Cool	1-13 inches	10 inches
<i>Poa secunda</i> ssp. <i>sandbergii</i>	Sandberg Bluegrass	POSE	Zones 1-9	Native	Perennial	Cool	1-2 feet	8 inches
<i>Psathyrostachys juncea</i>	Russian Wildrye	PSJU3	Zones 2-5	Introduced	Perennial	Cool	3 feet	8 inches
<i>Pseudoroegneria spicata</i> ssp. <i>inermis</i>	Beardless Bluebunch Wheatgrass	PSSPI	Zones 3-6	Native	Perennial	Cool	2 feet	10 inches
<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	Bluebunch Wheatgrass	PSSPS	Zones 3-7	Native	Perennial	Cool	3 feet	9 inches
<i>Puccinellia nuttalliana</i>	Nuttall's Alkaligrass	PUNU2	Zones 3-6	Native	Perennial	Cool	2 feet	15+ inches
<i>Schizachyrium scoparium</i>	Little Bluestem	SCSC	Zones 3-9	Native	Perennial	Warm	1-3 feet	14 inches
<i>Schoenoplectus acutus</i>	Hard Stemmed Bulrush	SCAC3	Zones 3-9	Native	Perennial	Warm	3-5 feet	12+ inches
<i>Schoenoplectus heterochaetus</i>	Slender Bulrush	SCHE5	Zones 3-9	Native	Perennial	Warm	5-8 feet	12+ inches
<i>Schoenoplectus pungens</i>	Three Square Bulrush	SCPU10	Zones 3-9	Native	Perennial	Warm	3-4 feet	14+ inches
<i>Schoenoplectus tabernaemontani</i>	Softstem Bulrush	SCTA2	Zones 4-9	Native	Perennial	Cool	6-8 feet	18+ inches
<i>Scirpus atrovirens</i>	Dark Green Bulrush	SCAT2	Zones 3-8	Native	Perennial	Cool	3-6 feet	20+ inches
<i>Scirpus cyperinus</i>	Wool Grass	SCCY	Zones 4-9	Native	Perennial	Cool	3-5 feet	20+ inches
<i>Scirpus pallidus</i>	Pale Bulrush	SCPA8	Zones 3-9	Native	Perennial	Cool	3-5 feet	16+ inches
<i>Scirpus pendulus</i>	Red Bulrush	SCPE4	Zones 3-8	Native	Perennial	Cool	2-4 feet	24+ inches
<i>Sorghastrum nutans</i>	Indiangrass	SONU2	Zones 2-9	Native	Perennial	Warm	4-6 feet	14+ inches
<i>Sparganium eurycarpum</i>	Giant Bur Reed	SPEU	Zones 3-7	Native	Perennial	Warm	3-5 feet	20+ inches
<i>Spartina pectinata</i>	Prairie Cord Grass	SPPE	Zones 3-7	Native	Perennial	Warm	3-8 feet	14+ inches
<i>Sphenopholis obtusata</i>	Prairie Wedgegrass	SPOB	Zones 7-9	Native	Annual, Perennial	Cool	1-3 feet	18+ inches
<i>Sporobolus airoides</i>	Alkali Sacaton	SPAI	Zones 4-9	Native	Perennial	Warm	1-3 inches	6 inches

Sun & Shade Tolerance	Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Mycorrhizal Dependent	Drought Tolerance	Growth Form	Elevation
Full sun to full shade	Acidic, neutral	Clay, loamy	1	3,156,000	Spring, Fall	Yes	Low	Bunch	Up to 5,000 feet
Full sun, partial shade	Neutral	Loamy, sandy, gravelly	2-4	950,000	Spring, Fall	Yes	High	Bunch	Up to 8,000 feet
Full sun, partial shade	Neutral	Loamy, sandy, gravelly	3	926,000	Spring, Fall	Yes	High	Bunch	Up to 10,000 feet
Full sun, partial shade	Neutral, basic	Clay, loamy, sandy	2-4	900,000	Spring, Fall	Yes	High	Bunch	Up to 12,000 feet
Full sun	Neutral, basic	Clay, loamy	10	175,000	Fall	Yes	High	Bunch	Up to 8,000 feet
Full sun, partial shade	Neutral	Clay, loamy, sandy	10	120,000	Spring, Fall	Yes	High	Bunch	Up to 10,000 feet
Full sun, partial shade	Neutral	Clay, loamy, sandy	10	140,000	Spring, Fall	Yes	High	Bunch	Up to 10,000 feet
Full sun, partial shade	Neutral, basic	Clay, loamy, sandy	1	2,500,000	Spring, Fall	Yes	Low	Rhizomatous	Up to 7,500 feet
Full sun, partial shade	Acidic, neutral, basic	Clay, loamy, sandy	6-8	260,000	Spring, Summer	Yes	High	Bunch	Up to 7,000 feet
Full sun to full shade	Basic	Clay, loamy	4-5	206,400	Late Summer	Yes	Medium	Rhizomatous	Up to 5,000 feet
Full sun, partial shade	Acidic to Neutral	Clay, loamy, sandy	3	469,000	Spring	Yes	Low	Rhizomatous	Up to 4,000 feet
Full sun, full shade	Basic	Moderately coarse to medium	3	400,000	Spring	Yes	Medium	Rhizomatous	Up to 6,000 feet
Full sun to full shade	Neutral, basic	Clay, loamy, sandy	4	550,000	Spring	Yes	None	Rhizomatous	Up to 5,000 feet
Full sun	Acidic, neutral, and basic	Clay, loamy	1	7,360,000	Spring	Yes	Low	Bunch	Up to 4,500 feet
Full sun	Acidic	Clay, loamy, sandy	0.5-1	27,200,000	Spring	Yes	Low	Bunch	Up to 4,000 feet
Full sun, partial shade	Acidic to neutral	Clay, loamy, sandy	1	7,360,000	Spring	Yes	Low	Rhizomatous	Up to 5,000 feet
Full sun, partial shade	Acidic to neutral	Clay, loamy, sandy	1	5,600,000	Spring, Fall	Yes	None	Rhizomatous	Up to 3,000 feet
Full sun	Acidic, neutral, basic	Clay, loamy, sandy	8	175,000	Spring, Summer	Yes	Medium	Bunch	Up to 6,000 feet
Full sun, partial shade	Acidic, neutral, and basic	Clay, loamy, sandy	50	10,400	Spring	Yes	None	Colonizing	Up to 7,000 feet
Full sun	Neutral, basic	Loamy, sandy	8	105,600	Spring, Summer	Yes	Low	Rhizomatous	Up to 6,500 feet
Full to partial sun.	Acidic, neutral, and basic	Clay, silty, loamy	3-5	3,500,000	Late Fall, Early spring	No	Low	Bunch	Up to 6,000 feet
Full sun, partial shade	Neutral, basic	Clay, silty, loamy	2	1,700,000	Summer	Yes	High	Bunch	Up to 4,500 feet

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Cool/Warm Season	Mature Height	Annual precipitation needed
<i>Sporobolus asper</i> (<i>Sporobolus compositus</i>)	Rough Dropseed	SPCL	Zones 4-10	Native	Perennial	Warm	2-3 feet	14 inches
<i>Sporobolus contractus</i>	Spike Dropseed	SPC04	Zones 3-8	Native	Perennial	Warm	2 feet	12 inches
<i>Sporobolus cryptandrus</i>	Sand Dropseed	SPCR	Zones 5-9	Native	Perennial	Warm	1-2 feet	8 inches
<i>Sporobolus heterolepis</i>	Prairie Dropseed	SPHE	Zones 3-9	Native	Perennial	Warm	2 feet	12 inches
<i>Sporobolus wrightii</i>	Big Sacaton	SPWR2	Zones 5-9	Native	Perennial	Warm	3-5 feet	12 inches
<i>Tripsacum dactyloides</i>	Eastern Gamma Grass	TRDA3	Zones 4-10	Native	Perennial	Warm	6-8 feet	15 inches
<i>Vulpia octoflora</i>	Sixweeks Fescue	VUOC	Zones 4-9	Native	Annual	Cool	6 inches	10 inches

Sun & Shade Tolerance	Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Mycorrhizal Dependent	Drought Tolerance	Growth Form	Elevation
Full sun, partial shade	Neutral	Loamy, sandy	4	1,500,000	Summer	Yes	High	Bunch	Up to 3,500 feet
Full sun, partial shade	Neutral, basic	Loamy, sandy	2	3,000,000	Summer	Yes	High	Bunch	Up to 4,500 feet
Full sun, partial shade	Neutral	Loamy, sandy	1	5,200,000	Summer	Yes	High	Bunch	Up to 8,000 feet
Full sun, partial shade	Neutral	Loamy	4	200,000	Summer	Yes	Medium	Bunch	Up to 5,000 feet
Full sun, partial shade	Neutral, basic	Sandy, gravelly	1	1,965,000	Summer	Yes	Medium	Bunch	Up to 5,000 feet
Full sun, partial shade	Neutral	Clay, loamy, sandy	12	7,200	Spring, Fall	No	Low	Bunch	Up to 4,000 feet
Full sun, partial shade	Acidic, neutral, basic	Clay, loamy, sandy	2-3	965,000	Spring, Fall	Yes	High	Bunch	Up to 7,700 feet



FORBS & NATIVE WILDFLOWERS

Wildflowers are often used for beautification projects, but they also play a critical role in supporting pollinator population and wildlife species diversity. We're proud to offer local ecotypes that will meet the needs of your project. Whether you have pollinators and wildlife on your mind, or you're just looking to add some color to the landscape, we're here to help.

Forbs and native wildflowers increase species biodiversity of wildlife, providing essential food and habitat for beneficial insects, vital pollinators, and all types of wildlife. When designing a pollinator friendly wildflower mix, keep the points below in mind.

- › Choose a variety of colors and shapes to attract a diversity of pollinators.
- › Provide pollen and nectar sources from early spring to late fall. There should be at least three flowering species blooming per season.
- › Choose plants that meet your growing conditions.

Abronia villosa, **Desert Sand Verbena**

- Fragrant purple or pink flowers.
- Forms dense carpets.
- Thrives in sandy, open locations with full sunlight - drought tolerant.
- Intermingles well with other species.



Did You Know: Loves growing in sandy flats, dunes, and desert roadsides

Achillea millefolium, **White Yarrow**

- Perennial herb with several stems grown from a fibrous underground rootstock. Flowers are whiteish to yellow-ish white. Leaves look fern-like.
- Normally found in mildly disturbed soil in grasslands or open forests. Very drought tolerant - does best on soil that is poorly developed and well-drained. Weedy species - can become invasive. Susceptible to mildew or root rot.
- Poor forage value for cattle. Fair forage value for domestic sheep, pronghorn, and deer. Not considered toxic, but may contain compounds that may lead to reduced grazing preference. Several plains region tribes used common yarrow for pain relief, as a stimulant, and to reduce fever.



Did You Know: Preferred species for bees and other pollinators

Achillea millefolium ssp. *occidentalis* (*Achillea millefolium* var. *occidentalis*), **Western Yarrow**

- Small, white flower clusters with domed or flat top shape. Leaves look fern-like.
- Common pest insects include leaf bugs and flea beetles. Poorly drained soils may lead to root rot and mildew. Grows in highly variable soil and climatic conditions.
- Similar to White Yarrow. May make up 40% of domestic sheep's summer diet. Greatly important food source for sage-grouse chicks and other upland birds.



Did You Know: Used by many Native tribes in medicinal tinctures, infected wound poultices, and insect repellents. Important plant for sage-grouse chicks

Agastache foeniculum, **Anise (Fragrant Giant) Hyssop**

- Leaves are a spear-like shape - display foliage.
- Tolerates nearly all types of soil.
- Obtains nutrients for growth from natural sources in the soil.



Did You Know: Edible flower

Agastache scrophulariifolia, **Purple Giant Hyssop**

- A native perennial with growth up to six feet. Boasting stems with a diamond shape. The upper branches appear with a purple shade. The stems form clumps as they are erect.
- Requires cold stratification for planting in the spring.
- Some evidence suggests mildew and rusts can affect plant viability.
- Primarily used by pollinators, with limited evidence of deer herbivory.



Did You Know: Grows unusually tall for a mint

Alisma subcordatum, **American (Common/Mud) Plantain**

- Shiny, rounded shaped leaves. Flowers display six petals.
- Emergent aquatic with lower part of plant submerged and upper parts exposed.
- Very tolerant of repeat trampling or mowing.
- Rich source of carbohydrates, vitamins, and minerals.



Did You Know: Excels at filtering water in aquatic restoration projects

Alisma triviale, **Northern Water Plantain**

- Flowers are green and white or pink. Long leaves that clump. At the top, a system of flowers is displayed.
- Water emergent. Grows in water, swamps, or muddy banks. Tolerates extremely low temperatures.
- Cows consuming this forage have reduced CH₄ production.



Did You Know: The Cherokee people used this to treat sores, bruises, and ulcers

Allium canadense, Wild Garlic

- Blooms range from creamy pale-green to deep maroon.
- Very versatile plant that will adapt to all but the wettest soil conditions.
- High in Vitamin C and Beta-Carotene.



Did You Know: Popular native edible plant

Allium cernuum, Nodding Onion

- Clusters of white and pink florals at the ends of lengthy, upright stalks that are without leaves.
- Sew in well-drained soil with full sun.
- Tolerates clay soils.
- Utilized for medicinal uses within nutrition.



Did You Know: Holds a special value to native bees

Allium stellatum, Prairie Onion

- Chive-like perennial forms tufts of slender, solid leaves and stems.
- Does not compete well with tall or aggressive plants.
- Easily survive drought with bulb and deep secondary root system.



Did You Know: An uncommon native bulb

Anemone canadensis, Canada (Meadow) Anemone

- Upright, white petaled sepals with yellow centers. Green leafy stems.
- Often occurs in large colonies and can be shown in mass blooms.
- Tolerant to pests and disease.



Did You Know: A member of the "buttercup" family

Anemone cylindrica, Thimbleweed

- Topped with white/green floral blooms above 2'-3' upright leafy stems.
- After frost, the thimble matures to a cottony tuft.
- Cottony fruit cluster will release into wind when mature.



Did You Know: Herbivores usually avoid consuming this plant as it has toxic foliage that causes a burning sensation in the mouth

Anemone patens, Pasque Flower

- Showy blossom containing sepals above a stem with silky petals.
- Soon after snow melts, or even as some still remains, pasqueflower blooms on the prairie.
- Typically found on grassy hillsides and open woodlots.



Did You Know: State flower of South Dakota

Anemone virginiana, Tall Thimble Weed (Anemone)

- Greenish-White floral blooms with centers imitating a "thimble". Blooms are above upright multi-stemmed bases.
- After the first frost, flower matures to a cottony tuft.
- Tolerant of disease and insects.



Did You Know: The seed heads appear as "thimbles"

Angelica atropurpurea, Angelica

- Tall, long, plump stems that contain hollow centers in green and purple colors. Boasting fine leaves with bright green colors.
- Lower leaves can be up to 2 feet long and wide.
- Tolerant of disease.



Did You Know: Historically considered powerfully protective from evil and the plague

Aquilegia canadensis, Red Columbine

- Branching perennial up to 3 ft tall known for it's showy red and yellow flowers.
- Tubes in plant contain nectar that attracts long-tongued insects and hummingbirds.
- Once started, often will propagate for years by self-seeding.



Did You Know: Genus name comes from "aquila" which means "eagle"

Aquilegia coerulea, **Colorado Blue Columbine**

- Upright florals in blue, cream, white, and occasionally pale pink. Displays sepals in white, pale blue, and blue. Blades are white or occasionally blue. Boasts spurs in blue, white, and pale pink.
- Can be found in subalpine meadows and near subalpine mountain streams.
- Hardy plant, drought resistant.



Did You Know: Colorado state flower

Asclepias incarnata, **Swamp Milkweed**

- Clusters - narrow leaves that are smooth in texture with sharp tips.
- Directly sow the seeds in the winter or in cool-moist soil.
- Seeks sunny openings of swamps, marshes, bogs and fens.



Did You Know: Toxic when taken in large doses

Asclepias incarnata, **Common Milkweed**

- Wide, thick leaves. Alternating pairs of leaves.
- Sew in a protected area with sunlight.
- Known to be nature's mega food market for insects.



Did You Know: Milky latex in stems, leaves and pods make them unpalatable to many animals

Asclepias tuberosa, **Butterfly Milkweed**

- Like other species in the *Asclepias* genus, butterfly milkweed is a larval host plant for the monarch butterfly.
- Needs a drier well-drained location to grow well and be successful.
- Susceptible to fungus and leafspot.



Did You Know: Was historically used to treat lung inflammations

Asclepias verticillata, **Whorled Milkweed**

- Single stem. Leaves are narrow. Clusters are flat topped.
- Mature plant will self-seed. Sprouting won't begin until seedling experiences a cold-spell.
- Tolerates dry conditions.



Did You Know: Name honors the Greek god Asclepius the god of medicine

Aster azureus (Symphyotrichum oolentangiense), **Sky Blue Aster**

- Heart-shaped leaves are shown near the base of the plant. Leaves decrease in size as they approach the top of the plant.
- Seeks sunny openings of swamps, marshes, bogs and fens.
- Tolerates shade.



Did You Know: Sometimes used to mark the passing of a loved one

Aster ericoides (Symphyotrichum ericoides var. ericoides), **Heath Aster**

- Bushy in appearance with clusters. Miniature daisy-like white flowers looking blooms.
- It is both rhizomatous and will self-seed readily.
- Plants may reach up to 5 ft tall.
- Tolerates drought.



Did You Know: One of the longest lived native Asters

Aster laevis (Symphyotrichum laevis var. laevis), **Smooth Blue Aster**

- Long, lance-shaped leaves. Leaves alternate along the stalk of the plant.
- One of the most attractive blue asters, with bright green foliage that is smooth to the touch.
- Tolerates sandy or clay soils.



Did You Know: Will resprout from the rhizome after being top-killed by fire

Aster novae-angliae (Symphyotrichum novae-angliae), **New England Aster**

- Showy plant. Large. Dense and hairy leaves.
- Extremely late bloomer. By the time it is flowering, many of the lower leaves have fallen off.
- Low tolerance to salt.



Did You Know: Attracts Monarch butterflies

Aster sagittifolius (*Symphyotrichum cordifolium*), Arrow-Leaved Aster

- Thin, sharp leaves. Leaves lower on the plant are heart-shaped. Leaves on the upper portion of the plant are smaller and oval-shaped.
- Self-seeding once established. Sew into moist soil.
- Susceptible to severe conditions.



Did You Know: Widespread in eastern North America

Aster sericeus (*Symphyotrichum sericum*), Silky Aster

- Blooms of florals are featured. Stems are wiry and pointed.
- Once established, will tend to form clumps and self-seed.
- Tolerant of insects and disease.



Did You Know: Distinctive in the wild due to the silky texture

Aster umbellatus (*Doellingeria umbellata* var. *umbellata*), Flat-Topped Aster

- Loose and flat clusters that branch across the stem top.
- Sew seeds on the surface of a weed-free area.
- Tolerant of insects and disease.



Did You Know: Spreads underground by seed

Astragalus canadensis, Canada Milk Vetch

- Small floral blooms that are similar to a pea-shape.
- Adaptable species shown to grow in a variety of environments such as prairies, woodlands and stream banks.
- Tolerant of drought.



Did You Know: Common nectar source for bumblebees

Astragalus crassicaarpus, Ground Plum Milkvetch

- Tight floral blooms, alternating leaves.
- Low-growing legume that prefers full sun and well-drained soils.
- Good resistance to disease.



Did You Know: Bears a round fruit 1/2 to 1 inch across that resembles a plum

Astragalus filipes, Basalt Milkvetch

- Multiple stems with blooming occurring at the tops of stems.
- Often found and abundant in western arid and semiarid sagebrush steppe ecosystems.
- Responds well and colonizes after wildfires.



Did You Know: Unlike many milkvetch species, will not pose any threat to livestock from toxicity

Balsamorhiza macrophylla, Cutleaf Balsamroot

- Stems lax, leafless, long pubescence.
- Large yellow sunflower-like blooms and an unpleasant turpentine odor.
- Tolerant of disturbances.



Did You Know: Strongly tolerant of grazing and trampling

Boltonia asteroides, False Aster

- Clusters that are open and leafy. Centers similar to buttons.
- Sew seeds on the surface of a weed-free area.
- Tolerates clay soils.



Did You Know: Actually a member of the sunflower family

Campanula americana (*Campanulastrum americanum*), Tall Bellflower

- Blooms emerge from a base of foliage.
- Will self-seed as an annual or biennial, depending on when germination occurs.
- Tolerates a wide range of pH levels.



Did You Know: In northern Italy, this often forms a natural hanging carpet over the rock formations

Campanula rotundifolia, Harebell

- Florals shaped similar to bells, thin stems that floral blooms nod at.
- Spread seed on the surface of a weed-free area.
- Tolerates salt.



Did You Know: It was thought by the Haida Indians that picking these flowers would cause it to rain

Castilleja linariifolia, **Wyoming Indian Paintbrush**

- Multiple stems that are leafy. Leaves are shaped in a torch like form with spikes. Hidden are miniature florals.
- Sew in well-drained soil.
- Tolerates arid environments and very drought resistant.



Did You Know: Wyoming state flower

Chamaecrista fasciculata, **Partridge Pea**

- Legume. Stems suberect. Leaves pinnate, 10-15 pairs of leaflets. Flowers showy and yellow.
- Erosion control and soil fertility improvement species.
- Important food source for waterfowl and upland bird species.



Did You Know: Nitrogen fixation is greatest during flowering stage and aids in establishment of other forbs and grasses

Chamerion angustifolium, **Fireweed**

- Stems erect, usually unbranched, reddish, pubescent. Leaves alternate, willow-like, deep green on top, paler beneath. Flowers magenta to deep pink to rose-colored.
- Tends to grow where fire has occurred. Forest reclamation species.
- Tolerant of acid.
- Palatable to livestock and wildlife.



Did You Know: One of the first plants to appear after the eruption of Mt. St. Helens

Clarkia amoena, **Farewell-to-spring**

- Stems branched or simple, pubescent, grayish-green. Leaves linear to lance-shaped, smooth-edged, often folded. Flowers singular, cup-shaped, pale-pink to deep red wine.
- Easy establishment. Readily self-seeding.
- Tolerates seaside conditions. Drought tolerant.



Did You Know: Genus name was given in honor of U.S. expedition leader, Captain William Clark

Cleome serrulata, **Rocky Mountain Bee Plant**

- Clusters of florals with stamens that are lengthy.
- Commonly used as nurse crop in reclamation seedings.
- Disease resistant.



Did You Know: Often found on roadsides and in waste places

Coreopsis lanceolata, **Lance-Leaved (Sand) Coreopsis**

- Leaves possibly hairy, basal leaves divided, upper leaves oval-shaped. Flowers yellow with yellow center.
- Tolerates dry, infertile soils.
- Very drought tolerant.



Did You Know: The name comes from the dark brown seeds that resemble ticks

Coreopsis palmata, **Prairie Coreopsis (Stiff Tickseed)**

- Leaves that are lengthy, narrow lobes. Displays floral blooms.
- Fibrous and long-rhizomatous root system.
- Tolerant of heat, humidity, and drought.



Did You Know: Used in horticulture as an ornamental plant

Coreopsis tinctoria, **Plains Coreopsis**

- Stems branched. Leaves opposite, deeply divided. Flowers yellow with red-brown center.
- Prolific reseeder.
- Not tolerant to dry soils.



Did You Know: The seeds resemble parasitic ticks

Coreopsis tripteris, **Tall Coreopsis**

- Unbranched, tall. Upper half has stems with florals.
- Like its name implies, quite tall species reaching 7-9' in height.
- Late-summer bloomer, unlike other Coreopsis species.



Did You Know: More impressive when it occurs in loose colonies rather than as a stand-alone specimen

Dalea candidum (Dalea candida), White Prairie Clover

- Legume. Thick taproot. Stems herbaceous, few upright branches, ribbed. Leaves alternate, odd-pinnate, compound, leaflets narrowly elliptic, sharp tip, glandularly dotted on underside, folded. Flower cylindrical and white.
- Nitrogen fixer. Beautification and reclamation species.
- Very high drought resistance.
- Palatable and nutritious for livestock and wildlife.



Did You Know: Critical in grassland restoration

Dalea ornata, Western Prairie Clover

- Legume. Clustered stems. Leaves alternate, odd-pinnate, oval leaflets. Leaves and stems dotted with glands. Flowers dense cylinders, light pink to purple.
- Has been shown to be tolerant of fire.
- Non-toxic legume. Good forage quality.



Did You Know: Important nectar source for recovering bee populations

Dalea purpurea, Purple Prairie Clover

- Legume. Multiple erect stems. Leaves alternate, pinnately compound. Flowers cylindrical, rose-purple, gold-orange anthers.
- Nitrogen fixer.
- Moderately drought tolerant. Fair fire tolerance when dormant. Winter hardy.
- Excellent forage value for wildlife and livestock. Highly palatable, but may cause bloat.



Did You Know: Thimble-shaped floral arrangement

Delphinium Virescens (Delphinium carolinianum ssp. virescens), Prairie Larkspur

- Slim, erect stems. Branched or unbranched and clump-forming at the ground level. Deeply cleft, basal floral blooms.
- Sew seeds in the fall or in dry soil in the spring.
- Drought tolerant.



Did You Know: Medicinal uses as a lotion or ointment

Desmanthus illinoensis, Illinois Bundleflower

- Legume. Multiple erect stems, shiny, grooved. Leaves alternate, compound, bipinnate. Flowers white globes. Seed pods brown, oblong.
- Fairly tolerant to fire in dormant stage. Good drought tolerance.
- Nutritious. Palatable by wildlife and livestock. Tannins deter excessive grazing.



Did You Know: Pawnees used leaf tea as wash for itching

Desmodium illinoense, Illinois Tick Trefoil

- Tall member of the pea family. Leaves have three parts. Hairs on leaves make a rough texture.
- Flowers attract long-tongued bees.
- Drought tolerant.



Did You Know: Seeds are eaten by the Bobwhite Quail, Wild Turkey, and White-footed Mouse

Desmodium canadense, Showy Tick Trefoil

- Erect, occasionally sprawling. Stem covered in fine hairs. Leaves alternate in groups of three, lance-shaped, rounded at the tip, fine hook-shaped hairs on underside. Flowers pea-like, nodding in full bloom, pink to purple, dark pink or yellow near the center.
- Prefer moist areas.
- Fire tolerant, increasing vigor.
- Preferred browse for white-tailed deer.



Did You Know: Pollen producing, bee attracting

Dieteria bigelovii var. bigelovii (Machaeranthera bigelovii), Plains Aster

- Large florals with purple petals extending.
- Often found in open dry areas with shallow gravelly soils.
- Will be used as forage throughout the season by deer and livestock.



Did You Know: Can bloom as early as March, but main bloom period is Sept-Oct

Dieteria canescens (*Machaeranthera canescens*), Hoary Tansyaster

- Grow on tall, branching stems.
- Can be used to compete with cheatgrass and knapweed.
- Disturbance tolerant.



Did You Know: Early colonizer of rangelands

Dodecatheon meadia, Shooting Star

- Smooth with lance-shaped leaves. Foliage displayed.
- Prefers a moist, cold environment.
- Tolerates full sun.



Did You Know: Provides a strong impulse from the life realm of nature

Dracopis amplexicaulis, Clasp Coneflower

- Stems solitary, branched halfway up. Leaves alternate, oblong, waxy, wrap around stem. Flowers yellow, drooping, black center cone.
- Prolific reseeder, declines without disturbance.
- Once established, tolerates drought.



Did You Know: Also called the “Clasp Leaf Flower”

Echinacea angustifolia, Narrow-Leaved Coneflower (Black Sampson)

- Woody taproot. Stems rough-hairy, mostly unbranched. Leaves alternate, simple, lance-shaped. Flowers similar to sunflower, drooping, apex, light to pale purple, brownish-purple disks.
- Very similar to Purple Coneflower, with thinner leaves.
- Tolerant of drought and poor soils.



Did You Know: Native Americans used Echinacea to treat snakebites, burns and others

Echinacea pallida, Pale Purple Coneflower

- Large taproot. Stems erect, rarely branched. Leaves basal, alternate, simple, rough on top and bottom. Flowers single at apex, pale pink, drooping, reddish-brown disk, domed, rough.
- Decreases under grazing pressure.
- Drought tolerant.
- High nutrition value. Grazed by livestock and wildlife.



Did You Know: Has been indicated that pale coneflower is the ninth most important prairie forb

Echinacea purpurea, Purple Coneflower

- Stems unbranched, rough-hairy. Leaves ovate to lanceolate, serrate edges, heart-shaped basal leaves. Flowers similar to sunflowers, drooping, reddish-purple to lavender.
- Drought tolerant and deer resistant.
- Flowers may release a slight fragrance in strong sunlight.



Did You Know: Medicinal plant, utilized as tea to strengthen the immune system

Erigeron speciosus, Aspen Fleabane (Aspen daisy)

- Round clusters, clumping, floral blooms.
- Sew seed directly. Plants will form in year one, flowering will begin in year two.
- Drought tolerant.



Did You Know: Displays one of the showiest heads

Eriogonum racemosum, Redroot Buckwheat

- Stalks displaying florals along the upper half of the stalk.
- Will often form large patches or colonies and play host to butterflies and native bees.
- Tolerant to many herbicides.



Did You Know: Also called “Wild Buckwheat”

Eriogonum umbellatum, Sulphur Flower Buckwheat

- Low-growing, mat-forming, woody. Leaves shiny on top and pubescent below. Flowers sulfur-yellow to orange or reddish clusters.
- Often used as a tool in erosion control.
- Grazed by mountain goats and deer.



Did You Know: The Klamath used a poultice of the leaves on burns to sooth the pain

Eryngium yuccifolium, Rattlesnake Master

- Leaves waxy, yucca shaped, bristly, wrapping around stem. Several white cone-shaped flowers in umbel pattern.
- Drought tolerant.
- Fair forage value. Decreasing palatability with maturity.



Did You Know: One flower stalk can have up to 40 flowers

Eschscholzia caespitosa, Tufted Poppy

- Stems stiff, upright, slender. Leaves alternate and rough. Flowers pale purple to dark pink, rounded seed head.
- Annual species that and prefers medium to fine textured soils.
- Drought tolerant.



Did You Know: California native

Eschscholzia californica, California Poppy

- Low-spreading to erect, freely branched. Leaves basal, waxy. Flowers four petals, orange to light yellow, dark orange center.
- Drought tolerant. Frost tolerant.
- Palatable to small mammals. May be toxic to livestock.



Did You Know: California state flower

Eupatorium maculatum (*Eutrochium maculatum*), Joe Pye Weed

- Thick stems, leaves that are lance-shaped. On the tops of stems, large clusters are shown.
- Long blooming season which promotes attraction to pollinators.
- Not drought tolerant.



Did You Know: Once an Indian medicine - treated thyroid fever

Eupatorium perfoliatum, Boneset

- Stems unbranched except for flowers at apex, long white hairs. Leaves opposite, narrow, lanceolate, wrap around stem. Flowers fragrant and white.
- Not drought tolerant.
- Bitter agents deter grazing by livestock.



Did You Know: Utilized for herbal purposes to relieve head pain

Eupatorium purpureum (*Eutrochium purpureum*), Sweet Joe Pye Weed

- Thick stems, leaves with lance-shape, leaves are long in length.
- Flowers have a vanilla-scent and are a favorite for Monarchs.
- Not drought tolerant.



Did You Know: Native Americans used to induce perspiration and break a fever

Gaillardia aristata, Blanket Flower

- Stems erect and pubescent. Leaves alternate, hairy and rough, lance-shaped, margins entire to coarsely-toothed. Flowers yellow, purple globe-like disk.
- Often found in roadsides and railroad right-of-ways.
- Drought tolerant.
- Palatable to livestock and wildlife.



Did You Know: Historically used medicinally for breastfeeding mothers

Gaillardia pulchella, Indian Blanket

- Leaves aromatic. Flowers red to red-tipped with yellow to solid yellow.
- Often found in drier upland sites.
- Eaten by white-tailed deer.



Did You Know: Oklahoma state wild flower

Gentiana andrewsii, Bottle Gentian

- Cluster of florals atop stems.
- Slow-growing but will be long-lived species once established.
- Drought tolerant.



Did You Know: Only strong bees can force the corolla open in order to get at the nectar and deposit pollen

Gentiana flavida, Cream Gentian

- Short, smooth stem. Stem is unbranched. Alternating leaves.
- First Gentian to bloom in late summer or early fall.
- Slightly tolerant to dry soils.



Did You Know: Bumblebees are the main pollinators

Geranium maculatum, Wild Geranium

- Clusters of loose florals atop lobed leaves. Florals open at the top.
- Seed has small tail-like structure attached that bends and moves in response to humidity changes.
- Drought tolerant.



Did You Know: Resemble the bills of cranes

Geranium viscosissimum, Sticky Purple Geranium

- Stems and leaves densely covered in sticky hairs. Leaves basal on long stalks, deeply palmate, sharply toothed. Flowers at the top, 5 petals, pinkish-lavender to purple-magenta, soft hairs.
- Pest and disease tolerant.
- Leaves foraged by wildlife.



Did You Know: Edible - typically added to salads

Gilia capitata, Blue Thimble Flower

- Wide clusters of florals, dense.
- Occurs in woodlands and prairies and found in mass plantings.
- Pest and disease tolerant.



Did You Know: In the phlox family and is considered an herb

Gilia tricolor, Bird's Eyes

- Branched, leaves that are dissected, flowers are showy.
- Sew directly into soil before the last frost.
- Drought tolerant.



Did You Know: Relies on birds to spread its seed

Glycyrrhiza lepidota, Wild (American) Licorice

- Legume. Stems erect and branched. Leaves alternate, smooth. Leaflets opposite, 7-21 leaflets. Flowers similar to alfalfa flower, yellowish-white. Pods barbed (burs).
- Great erosion control species. Common disturbed soils.
- Moderately salinity tolerant. Very sodium tolerant. Tolerant to short-term flooding.
- Highly nutritious. Palatable to livestock. Great forage for cattle. Burs can cause fleece contamination.



Did You Know: Is used for soil stabilization thanks to its good soil-binding capabilities

Helenium autumnale, Sneezeweed

- Lance-shaped leaves that are narrow to oval shaped. There are some teeth. Leaves alternate along stem.
- Pollen is distributed by insects, not wind.
- Resistant to insects and diseases.



Did You Know: Poisonous if ingested

Helianthella uniflora, Oneflowered Helianthella

- Stout taproot. Leaves basal, lanceolate to elliptic, margins entire. One flower per stalk, yellow.
- Not salinity tolerant.
- Fair to good forage value for sheep. Fair forage value to cattle. Browsed by deer.



Did You Know: Form masses of cheerful yellow on hillsides

Helianthus annuus, Annual Sunflower

- Stems erect and rough. Leaves alternate, egg-shaped to triangular, entire to toothed. Flowers yellow with reddish-brown disks.
- Fast growing and drought resistant as an annual.
- Compounds make it insect resistant.



Did You Know: State flower of Kansas

Helianthus giganteus, Giant (Tall) Sunflower

- Tall, upright stem with a large lion-like floral head atop.
- Can be aggressive and rhizomatous if seeded at too high of rate.
- Disease tolerant.



Did You Know: Host to several varieties of butterflies

Helianthus grosseserratus, Sawtooth Sunflower

- Upright stems that are red in color. Leaves are smooth or slightly jagged along edges.
- Favorite forage for upland game birds which aid in spreading seeds to new locations.
- Drought tolerant.



Did You Know: Has been used to make remedies including a tea to reduce fevers

Helianthus maximiliani, Maximilian Sunflower

- Dense clusters. Stem stout with dense white hairs. Leaves folded, pubescent, lance-shaped, smooth or loosely toothed. Flowers yellow. Erosion control species.
- Fire tolerant in dormant stage.
- Palatable to livestock and wildlife. Poor protein value.



Did You Know: One of nine plant species used in research for native bees

Helianthus nuttallii, Nuttall's (Marsh) Sunflower

- Upright stems that are hairless. Forms clumps of floral heads atop stems.
- Prefer saturated soils in meadows but will occasionally see in dry soils with seasonal flooding.
- Disease resistant.



Did You Know: Leaves are almost all opposites

Helianthus pauciflorus, Stiff (Showy) Sunflower

- Dense colonies. Stems stiff and rough. Leaves leathery and stiff, mostly basal, 3 ribbed. Leaves large, yellow, brown to purple centers.
- Used as a tool in erosion control.
- Palatable to livestock.



Did You Know: One of the earliest sunflowers to bloom

Heliomeris multiflora, Showy Goldeneye

- Taproot woody. Many branched stems. Leaves lanceolate to linear, entire to serrate. Two to several flowers per stem, dark yellow.
- Common restoration species.
- Drought tolerant.
- Palatable to cattle and wildlife. Nitrate accumulators.



Did You Know: Attracts bees, butterflies, and hummingbirds

Heliopsis helianthoides, False (Early/Ox-Eye) Sunflower

- Upright forb. Stem smooth and unbranched. Leaves opposite, coarsely serrated, broadly lance shaped, dark green above, light green below, rough top and bottom. Flowers orange-yellow center disk, yellow petals.
- Some drought tolerance. Poor nutrient soil tolerance.
- Poor to good forage for cattle and sheep.



Did You Know: More compact than most of its sunflower counterparts

Herrickia glauca (*Eurybia glauca*), Blueleaf (Gray) Aster

- Simple, branched. Stems are smooth and hairless.
- Colonizes in openings of arid salt desert shrub, sagebrush and woodland communities.
- Disease tolerant.



Did You Know: Common in the Tetons

Heterotheca villosa, Hairy Goldenaster

- Leaves are lance-shaped and narrow. Stems contain hairs that are dense.
- Often found in sandy or rocky soils in dry grasslands.
- Drought tolerant.



Did You Know: Consumed by some Native American tribes

Heuchera richardsonii, Prairie Alumroot

- Plants are low-growing. Plants grow into a form that is similar to a mound.
- Has relatively shallow root system.
- Adaptive to soil conditions but prefers sand and gravel sites that have good drainage.



Did You Know: Sometimes called Coral Bells

Hypericum pyramidatum (*Hypericum ascyron*), Great St. John's Wort

- Floral clusters form at the end of branches, Florals are very small in size.
- Foliage can be slightly toxic, therefore usually avoided by herbivores.
- Withstands drought, can not tolerate waterlogged soil.



Did You Know: Named by the blooming time, blooming at the time of the feast of St. John

Ipomopsis aggregata, Scarlet Gilia (Skyrocket)

- Basal rosette. Basal leaves highly pinnatifid with narrow segments. Stem leaves reduce up the stem. Flowers white to pink, tubular.
- Minor component in restoration seed mixes.
- Drought tolerant.
- Highly palatable to wildlife and livestock with flowering stock.



Did You Know: Lewis and Clark collected this in 1806

Iris missouriensis, Rocky Mountain Iris (Western Blue Flag)

- Stems branched. Leaves linear with parallel venation. Flowers pale lilac to whitish with purple veins.
- Found in riparian areas and next to streambanks.
- Tolerant to saturated landscaping.



Did You Know: Most drought-tolerant of native irises

Iris versicolor, Northern Blue Flag Iris

- Stalk sometimes branched, slightly 'zig-zag'. Leaves 2-4 lance-shaped, sometimes longer than the rest of the plant. Flowers three horizontal petals and three erect petals, dark-violet to pinkish white, sepals yellow to orange.
- Adapted to wet areas and shallow water.
- Leaves known to be eaten by snails.



Did You Know: Symbolizing power, as the three parts represent wisdom, faith, and power

Iris virginica var. *shrevei*, Southern Blue Flag Iris

- Leaves branch down to the ground.
- Delicate and bold floral petals.
- Self-seeding after established.



Did You Know: Water-loving species that will frequently form colonies in wet areas

Kuhnia eupatorioides (*Brickellia eupatorioides*), False Boneset

- Clusters that branch out - clusters may be round or flat topped. Open or loose stems.
- Sew in dry to moderately moist soil with full sun.
- Drought tolerant.
- Creates hairy seed tufts that are spread by the wind.



Did You Know: Roots can grow up to 17 feet deep

Layia platyglossa, Coastal Tidytips

- Wide floral blooms that rise above the branched stems. Florals are tri-toothed.
- Widely adaptable and suited for mass plantings in full sun.
- Drought tolerant.



Did You Know: Important nectar plant for checkerspot butterflies

Leptosiphon grandiflorus, Mountain Phlox (Large-flower Linanthus)

- Low growing plant, branches out on the ground.
- Will form colonies when there is adequate moisture.
- Drought tolerant.



Did You Know: Common along hiking trails

Lespedeza capitata, Round-Head Bush Clover

- Stems erect, simple, branched. Leaves trifoliate, variable shape, sometimes pubescent. Flowers spikes or heads.
- Does best when dormant seeded.
- Palatable to livestock and wildlife. Important food source for bobwhite quail.



Did You Know: Produces a fuzzy fruit that contains one single seed

Liatris aspera, Rough (Button) Blazingstar

- Stem slightly 'zig-zag', covered in short hairs. Leaves longer and wider at the base, narrowing and shorter at the top. Flowers purplish, button shaped.
- Restoration species for tallgrass prairies. Respond favorably to fire treatments.
- Drought tolerant. Low-fertility soil tolerant.
- Livestock graze young foliage, deer graze stems and foliage.



Did You Know: Roots used for pain relievers

Liatris cylindracea, Dwarf Blazingstar

- Upright, small, clumping blooms. Heads are thistle-like.
- Shortest of the Liatris species, growing about 1' tall.
- Drought tolerant.



Did You Know: Roots used for pain relievers

Liatris ligulistylis, Meadow Blazingstar

- Stems are long and branch out widely. Appear thistle like and feathered.
- Directly sow seeds in late fall.
- Blossoms appear all at once along stem and will last for weeks.



Did You Know: Preferred nectar source of the Monarch butterfly due to timing of blooming period

Liatris punctata, Dotted Blazingstar (Gay Feather)

- Woody rootstock. Stems single or cluster. Leaves alternate and linear, arching upward, dotted. Flowers in tufts, spike like at the end of stem, tubular, rose-purple.
- Grows rapidly underground and slower above ground. Lime will help stems grow erect.
- Drought tolerant.
- Fair to good forage value for wildlife and livestock.



Did You Know: Displays rigid spikes of fluffy flowers

Liatris pycnostachya, Prairie Blazingstar (Thickspike Gayfeather)

- Erect, unbranched stems. Stem and leaves short hairs. Leaves alternate, dark green with light-colored mid-rib, longer at the bottom. Spike up to 2' long. Flowers slender, purple, white stamens make inflorescence look fuzzy. Flowers bloom from top to bottom.
- Prairie restoration species, easy propagation from seed.
- Least drought tolerant of Liatris genus. Decreaser in overgrazed pastures.
- Palatable to cattle.



Did You Know: Some research indicates that compounds in the plant could be used to treat kidney disease

Liatris spicata, Dense Blazingstar (Marsh Gayfeather)

- Erect and slim stems. Topped with lavender, showy clusters of floral blooms.
- Most moisture-tolerant Liatris species.
- Tolerant to full sun and drought.



Did You Know: Produces striking spikes

Linum lewisii, **Lewis Flax**

- Woody subshrub. Leaves small, alternate, simple and entire, without stems. Flowers five petals.
- Used in erosion control and beautification in reclamation. Does well on infertile, disturbed soils.
- Cold and drought tolerant. Fire resistant.
- Fair forage for livestock and wildlife in winter and spring.



Did You Know: Named for Captain Meriwether Lewis of the Lewis and Clark expedition

Linum perenne, **Blue Flax**

- Woody subshrub. Leaves small, alternate, simple and entire, without stems. Flowers five petals.
- Used in erosion control and beautification in reclamation. Does well on infertile, disturbed soils.
- Excellent cold and drought tolerance. Fire resistant.
- Fair forage for livestock and wildlife in winter and spring.



Did You Know: Used to make linen

Lobelia cardinalis, **Cardinal Flower**

- Erect, unbranched stems. Leaves alternate, oblong to pointed at both ends. Flowers two-lobed, bright red.
- Seeds do not require cold stratification, but do require sunlight to germinate.
- Deer browsing causes damage to young plants.



Did You Know: Attracts bees, butterflies, and hummingbirds

Lobelia siphilitica, **Great Blue Lobelia**

- Stems erect and frequently branched. Leaves alternate, oblong to lanceolate. Flowers blue and two-lipped on long, terminal racemes.
- Spread seed with broadcast seeder and drag chains for light soil covering.
- Not tolerant to drought.
- Alkaloid toxicity deters grazing.



Did You Know: A favorite of hummingbirds

Lomatium foeniculaceum, **Desert Biscuitroot**

- Dense taproot. Stems short, rarely erect. Leaves basal, mostly alternate, fern-like. Flowers bright green to yellow, umbel.
- Sew seeds in late fall.
- Drought tolerant.



Did You Know: Stood as an important food source for Native Americans

Lomatium macrocarpum, **Bigseed Biscuitroot**

- Small leaves that are clustered near the base of the plant. Florals typically only appear on the bottom 1/4th of the stem.
- Prefers dry, open and rocky areas.
- Drought tolerant.



Did You Know: Taproot was roasted and eaten by the Northern Paiute tribe

Lomatium nudicaule, **Barestem Biscuitroot**

- Leaves compound, groups of three, larger than other biscuitroots. Flowers umbel, petals yellow.
- Two-year grazing deferrment after seeding to help establishment.
- Drought tolerant.
- Limited quantities, hardy important forage. Palatable to sheep.



Did You Know: Important spring and summer food for many species

Ludwigia alternifolia, **Seedbox**

- Small floral blooms with lance-shaped and lengthy leaves.
- Seeds require cold stratification in order to germinate.
- Prefers lowland and wetland areas, including roadside ditches.



Did You Know: Covered with square-like fruits

Lupinus argenteus, **Silvery Lupine**

- Stalked leaves branching from the stems. Floral blooms arranged in a spike-like formation.
- Sew in moist, sandy, well-drained soil.
- Drought tolerant.



Did You Know: Seedpods are harmful to wildlife as they contain toxic alkaloids

Lupinus alpestris, Mountain (Great Basin) Lupine

- Floral blooms with densely branched stems.
- Roughen seeds between two sheets of paper before sewing.
- Drought tolerant.



Did You Know: This plant was described by Aven Nelson, one of the founding professors of the University of Wyoming

Lupinus arizonicus, Arizona Lupine

- Stems reddish-green and pubescent. Leaves compound, sparsely pubescent only on underside. Flowers pink to purple, turning white with maturity.
- Plant seeds in sandy, well drained soils.
- Drought tolerant.



Did You Know: Commonly found in Joshua Tree and Death Valley National Parks

Lupinus perennis, Perennial Lupine

- Erect herbaceous forb, thinly pubescent. Leaves palmately compound. Flowers at terminal racemes, blue to pink to white.
- Sew in moist, sandy, well-drained soil.
- Drought tolerant.



Did You Know: Rare or threatened species in Iowa, Maine, Maryland, New Hampshire, Pennsylvania, Rhode Island, and Vermont

Lupinus perennis, Wild Lupine

- Florals are multi-colored and pea-like. Florals boast a spike-like formation.
- Sew seeds directly in the early spring or fall.
- Drought tolerant.



Did You Know: Reduces abundance of local diversity

Lupinus polyphyllus, Bigleaf Lupine

- Highly variable. Hollow stalk. Leaves large, palmate, smooth to hairy. Flowers white-pink to purplish-blue.
- Prairie and wetland restoration species. Easily hybridized.
- Tolerant to nutrient-poor soils.



Did You Know: A nitrogen fixer

Lupinus rivularis, Riverbank Lupine

- Erect herbaceous forb. Leaves palmately compound, 5-9 leaflets. Flowers purple-blue to white, sparsely hairy.
- Nitrogen fixer. Rapid growing, can be used for critical erosion control in low fertility areas.
- Not tolerant to drought.
- Generally palatable by livestock due to low alkaloid levels.



Did You Know: Improves soil

Lupinus sericeus, Silky Lupine

- Several solid stems. Leaves palm shaped, 5-9 leaflets, pubescent on both sides. Flowers small and spurred, petals bright blue with white or yellow spots, pale blue, or white with brown spots.
- Nitrogen fixer.
- Drought tolerant.
- Poisonous to cattle and sheep. Consumed by wildlife. Poor in nutrition.



Did You Know: Important forage species for bighorn sheep

Lycopus americanus, Water Horehound

- A dense, small cluster of florals surrounding leaves and the stem from the bottom of the plant, working up.
- Sew seeds on the surface of the soil.
- Not drought tolerant.



Did You Know: Was a common herb found in the medicinal chests of Egyptian pharaohs

Machaeranthera tanacetifolia, Prairie Aster

- Stems erect, single or branched, glandular hairs. Leaves alternate and pinnate. Flowers bluish-purple with yellow disk florets.
- Performs well in disturbed areas.
- Drought tolerant.



Did You Know: Very adaptable to many environments

Mimulus ringens, Monkey Flower

- Leaves organized in an opposite manner. Florals are open and double lipped.
- Directly sew seeds in late fall.
- Plant size is strongly correlated to soil moisture and fertility.



Did You Know: If you look closely, you can see a monkey's face in the flower

Mirabilis multiflora, Colorado Four O'Clock

- Bold in color, 5-lobed cups, bushy plant.
- Sew seeds just before last frost of the season.
- Drought tolerant.



Did You Know: The name relates to the time of day that the plant opens

Monarda citriodora, Lemon Beebalm (Lemon Mint)

- Distinctive scent, stalked stems, showy lavender cluster blooms at the top of the stems.
- Evenly spread seeds on loose top soil.
- Drought tolerant.



Did You Know: Gives off a distinctive citrus scent when crushed

Monarda fistulosa, Wild Bergamot (Bee Balm)

- Aromatic. Stems square, branched, and hairy. Leaves deltoid to lanceolate, slightly toothed, gray-green. Flowers tubular, lavender with two "lips", softly pubescent.
- Seed in early spring or late fall.
- Not drought tolerant.



Did You Know: Used for medicinal purposes by Native Americans

Nemophila maculata, Five Spot

- Showy and delicate clusters that are bell-shaped. Leaves are opposite and lobed.
- Sew seeds on the surface in early spring.
- Intolerant of drought or dry soils.



Did You Know: It's name, *Nemophila*, means 'woodland-loving'

Nemophila menziesii, Baby Blue Eyes

- Bold in color, five soft petals, bowl shaped floral blooms, white centers.
- Spread seed with broadcast seeder and drag chains for light soil covering.
- Drought tolerant.



Did You Know: Member of the forget-me-not family

Oenothera biennis, Evening Primrose

- Herbaceous forb. Stem erect, sometimes branched. Leaves lanceolate with fine teeth, usually hairy. Flowers bright yellow with four petals, open during the evening.
- Found along roadsides and railroad embankments.
- Drought tolerant.
- Hummingbird nectar plant. Other birds eat seeds in winter.



Did You Know: Occur in cool, mountainous regions

Oenothera speciosa, Showy Evening Primrose

- Four petaled flowers, buds are nodding, slim stems, cup-shaped flowers, lightly textured petals.
- Sew in soil in an area that is free of weeds.
- Tolerates poor, rocky, and dry soil conditions.



Did You Know: Name comes from the tendency of flowering to occur in the afternoon or evenings

Osmorhiza occidentalis, Sweet Anise (Western Sweetroot)

- Stems are smooth. Leaves are wide, tooth-like, and fern-like in appearance. Leaves contain three compounds.
- Sew seeds one fourth of an inch deep.
- Drought tolerant.



Did You Know: Can be ground up and added to biscuits to add sweetness

Papaver nudicaule, Iceland (Arctic) Poppy

- Stems are tall and leafless with a feather-like foliage. Flowers are bold in color with thin, silky, and ruffled petals.
- Sew seeds in a temperature ranging from 50 - 60 degrees F.
- Drought tolerant.



Did You Know: Extremely tough plant with delicate petals

Parthenium integrifolium, Wild Quinine

- Herbaceous forb. Stems single or branched, sometimes hairy. Leaves ovate to lanceolate, toothed. Flowers umbel (yarrow-like), grayish-white.
- Sew seeds on the surface of a weed-free area.
- Cold and hot weather tolerant.



Did You Know: Long history of medicinal uses by Native Americans

Penstemon acuminatus, Sharpleaf Penstemon

- Thick crown. Stems and leaves smooth to powdery. Leaves fleshy, lanceolate to ovate. Flowers compact, blue to lavender to pink.
- Wildlife habitat and restoration species.
- Drought tolerant.



Did You Know: Key wildlife habitat enhancement and restoration species

Penstemon cyananthus, Wasatch Penstemon

- Thick crown. Stems and leaves smooth to powdery. Leaves fleshy, lanceolate to ovate. Flowers compact, blue to lavender to pink.
- Wildlife habitat and restoration species.
- Not drought tolerant.



Did You Know: Key component of foothills wildflower communities

Penstemon digitalis, Foxglove Beardtongue

- Clump-forming and bushy. Upright, stalked stems with bell-shaped clusters atop the stems.
- Directly sew seeds.
- Tolerated clay soils better than many other Penstemon species.



Did You Know: Resemble the fingers of gloves

Penstemon eatonii, Firecracker Penstemon

- Herbaceous forb. Leaves opposite, entire to toothed. Several flowers lowers or flower clusters stalked, tubular, bright red.
- Like all penstemons, it is used in reclamation for erosion control and beautification.
- Weakly tolerant to saline to acidic soils. Fire resistant. Cold hardy and drought tolerant.
- Desirable forage for deer and antelope.



Did You Know: Flowers preferred by hummingbirds

Penstemon grandiflorus, Shell Leaf Penstemon (Large-Flowered Beardtongue)

- Leaves fleshy and waxy, simple, ovate to oblong, clasping, bluish-green. Flowers large, five lobed, pale purple.
- Directly sew seeds in the late fall.
- Tolerant to acidic, neutral, and alkaline soils.



Did You Know: A favorite of Hummingbirds - deer resistant

Penstemon palmeri, Palmer's Penstemon

- Forb to sub-shrub. Leaves opposite, entire to toothed. Flowers or flower clusters stalked, tubular.
- Like all penstemons, it is used in reclamation for erosion control and beautification.
- Cold hardy and drought tolerant. Weakly saline and acidic tolerant. Fire resistant.
- One of the only penstemons noted to have any forage value. Desirable forage for deer and antelope.



Did You Know: Native to New Mexico and Arizona

Penstemon procerus, **Smallflower (Littleflower) Penstemon**

- Oval and lance-shaped leaves, leaves are densely populated along the base of the plant. Showy, cold colored, silky flowers are atop.
- Seeds require cold, moist stratification in order to germinate.
- Drought tolerant.



Did You Know: Ranges across the Rocky Mountain states

Penstemon strictus, **Rocky Mountain Penstemon**

- Forb to sub-shrub. Leaves opposite, entire to toothed. Flowers or flower clusters stalked, tubular.
- Like all penstemons, it is used in reclamation for erosion control and beautification.
- Cold hardy and drought tolerant. Weakly saline and acidic tolerant. Fire resistant.
- One of the only penstemons noted to have any forage value. Desirable forage for deer and antelope.



Did You Know: Native to the southern Rockies

Persicaria pensylvanica (*Polygonum pensylvanicum*), **Pennsylvania Smartweed**

- Stems reddish with swollen nodes. Leaves alternate. Flowers five-parted, pink to rose.
- Important cover and food source for waterfowl.



Did You Know: Part of the Buckwheat family

Phacelia crenulata, **Desert Bluebells (Cleftleaf Wildheliotrope)**

- Varying shaped leaves that are deeply lobed. Leaf occurrence decreases as you move up the plant. Bell-shaped, silky, bold colored florals bloom atop.
- Sew seeds into coarse or gravelly soil.
- Drought tolerant.



Did You Know: Plant smells strongly onion-like

Phacelia tanacetifolia, **Lacy Phacelia**

- Erect to semi-erect with short stiff hairs. Leaves compound subdivided with smaller leaflets and toothed lobes. Flowers branched into two to four branches, densely hairy, blue to purple.
- Drought tolerant. Used in vineyards to attract beneficial predator insects.
- Not winter hardy. Prefers well-drained soils and doesn't do well in waterlogged conditions.



Did You Know: Well known for its ability to attract bees and butterflies

Phlox drummondii, **Drummond Phlox**

- Clustered blooming stems that spread at ground level, trumpet shaped, silky, cold colored floral blooms atop stems.
- Seed in deep sandy soils. Does well in disturbed areas.
- Drought tolerant.



Did You Know: Statement flower due to the color of the leaves

Phlox pilosa, **Prairie Phlox**

- Erect stems, clump forming. Lance-shaped, sharp leaves. Lavender, silky blooms atop.
- Sew seedlings into well-drained, moist soil.
- Drought tolerant.



Did You Know: Attracts hummingbirds - has the perfect landing pad for butterflies

Physostegia virginiana, **Obedient Plant**

- Tall, spike-shaped plant. Erect stems. Silky, densely-clustered blooms of florals blooming at the top portion of the stem.
- Directly sew seeds in late fall.
- Drought tolerant.



Did You Know: Plant is generally resistant to browsing by deer

Potentilla arguta, **Prairie Clinquefoil**

- Entire plant is consistent in a color of green/white. Tight clusters of white florals atop.
- Sew seeds on the surface of a weed-free area.
- Not drought tolerant.



Did You Know: Good pollen source - reliable grower

Psoralea esculenta (Pediomelum esculentum), **Prairie Turnip (Indian Breadroot)**

- Dense, clustered, spiked floral blooms. Erect stems.
- Seeds take two to four years to fully mature.
- Drought tolerant.



Did You Know: Its edible roots were an important food source for European settlers

Pycnanthemum virginianum, **Mountain Mint**

- Strong, erect stems. Miniature white florals bloom all over the plant.
- Sew seeds on the surface of soil and press seeds into soil.
- Occurs in wet areas and moist soils.



Did You Know: Used to deter chiggers and ticks when rubbed on the body, though it is harmful to the liver

Ratibida columnifera, **Prairie (Longheaded) Coneflower**

- Erect stems. Long-headed cone-flowers bloom atop. Occasional branching along stems. Stems are smooth with slightly textured hair.
- Gently press each seed into the soil.
- Drought tolerant.



Did You Know: Important in the diet of white-tailed deer in Texas

Ratibida columnifera var. *pulcherrima*, **Mexican Hat (Upright Prairie Coneflower)**

- Leaves long, linear segments. Flower disk tall or globeshaped, rays long and drooping.
- Prairie restoration species.
- Weakly acidic and saline tolerant. Moderately alkaline tolerant.



Did You Know: Viable even after it is ingested by cattle

Ratibida pinnata, **Grayhead (Yellow) Coneflower**

- Leaves pinnately compound, rough. Flowers gray to brown disk, 5-8 drooping yellow petals.
- Seeds germinate best in full sun.
- Prefers calcareous soils.



Did You Know: Blooms for two months in the summer

Rudbeckia hirta, **Black-Eyed Susan**

- Stiff, coarse, pubescent stems. Leaves entire or slightly toothed. Flower on each stem, bright yellow with flattish cone structure.
- Plant seeds in 70 degrees F for best results.
- Drought tolerant and general pioneer species.
- Poor to fair forage value for livestock. Grazed by white-tailed deer in winter.



Did You Know: State flower of Maryland

Rudbeckia laciniata, **Wild Golden Glow**

- Stems erect, waxy, and branched. Leaves deeply lobed and irregularly toothed. Droopy yellow flowers with green disk.
- Directly sew seeds in the late fall.
- Cold tolerant.



Did You Know: Can reach towering heights in the wild

Rudbeckia occidentalis, **Western Coneflower**

- Wide, erect, unbranched, clad stem. Clump forming. Petals form, ranging in color, around the risen center of the floral.
- Spread seed with broadcast seeder and drag chains for light soil covering.
- Drought tolerant.



Did You Know: Medicinal uses for teas to strengthen immune system

Rudbeckia subtomentosa, **Sweet Black-Eyed Susan**

- Rigid, erect stems with dense, multi-colored, hairy appearance. Floral blooms atop.
- Broadcast seeds on top of soil six weeks before the last frost.
- Drought tolerant.



Did You Know: Pioneer species

Rudbeckia triloba, **Brown-Eyed Susan**

- Masses of miniature yellow daisies with brown centers atop. Stems are thin and erect and widen slightly in growth form at the ground level.
- Directly sow seed in late fall.
- Drought tolerant.



Did You Know: Common wildflower in North America

Sagittaria latifolia, **Common Arrowhead**

- Aquatic wetland plant. Arrow-shaped leaves, either erect or floating on water surface. Flowers white with three petals, stamens bright yellow.
- Cold then warm then cold dormancy required for seed propagation.
- Seeds eaten by waterfowl. Tubers important food source to beavers, muskrats, and other riparian wildlife.



Did You Know: Popular food source for muskrats and ducks

Senna covesii, **Desert Senna**

- Subshrub. Stems stiff with grayish pubescence. Leaves compound and mostly even. Flowers yellow and pea-like.
- Sew in sandy, well-drained soil.
- Drought tolerant.



Did You Know: Native to the Mojave and Sonoran deserts

Silphium integrifolium, **Rosin Weed**

- Color changing in the presence of sunlight. Erect stems with branching leaves. Yellow, large floral bloom atop.
- Sew seeds on the surface of a weed-free area.
- Drought tolerant.



Did You Know: Color changing in the presence of sunlight

Silphium laciniatum, **Compass Plant**

- Erect forb. Leaves simple, leathery, stiff, rough, pubescent hairs on main vein. Flowers large and yellow on upper half of plant.
- Prefers mildly disturbed areas.
- Hardy plant. Tolerant to variety of soils.
- Palatable and nutritious to livestock.



Did You Know: Name comes from the tilt to the north, creating a vertical plane to the south

Silphium perfoliatum, **Cup Plant**

- Tall forb, square stem. Leaves egg-shaped, toothed margins, cuplike that hold water. Flowers small, yellow, close to the end of stems.
- Directly sow the seeds in late fall.
- Not drought tolerant.



Did You Know: Holds valuable source of water for insect pollinators, songbirds, and frogs

Silphium terebinthinaceum, **Prairie Dock**

- Erect leaves. Stem is coarsely toothed and long-stalked. Leaves are jagged around the edges. Bold yellow petaled floral bloom atop.
- Requires wet and cold stratification.
- Drought tolerant.



Did You Know: Recovers well from wildfires

Sisyrinchium bellum, **Blue-Eyed Grass**

- Small, flattened, winged, multicolored floral atop. Clumped growth form at the ground level with thin stems below florals.
- Press the seeds into the soil, do not cover the seeds.
- Drought tolerant.



Did You Know: Some native tribes used tea made with the roots and leaves to treat stomach aches

Solidago graminifolia (*Euthamia graminifolia*), **Grass-Leaved Goldenrod**

- Branching and bushy formation appearance. Slender stems. Narrow leaves branch out along the stem. Floral blooms that are pea-like are shown atop.
- Sew the seeds on the surface of a weed-free area.
- Drought tolerant.



Did You Know: Hosts for caterpillars and moths

Solidago nemoralis, **Old Field (Gray/Dwarf) Goldenrod**

- Smaller goldenrod species. Stems reddish or grayish-green, lines of short white hairs. Leaves pubescent with smooth margins. Flowers longer than most goldenrods, many small yellow flowers.
- Hardy, pioneer plant.
- Drought tolerant.



Did You Know: Native American tribes used the plant medicinally, as a food source, and burned it as incense

Solidago rigida (*Oligoneuron rigidum* var. *rigidum*), **Stiff Goldenrod**

- Erect forb. Leaves stiff and rough, basal oblong, upper leaves lanceolate. Flowers flat-topped, broad, yellow.
- Prairie restoration species.
- Grazing of pastures increases frequency of stiff goldenrod.
- Infrequently grazed.



Did You Know: Native Americans chewed the leaves to relieve sore throats and toothaches

Solidago speciosa, **Showy Goldenrod**

- Unbranched, erect stems occurring in clusters or singles. Florals bloom in a pyramid-like formation.
- Hemolytic agents may cause sickness in livestock and other herbivores.
- Drought tolerant.



Did You Know: Native Americans chewed the leaves to relieve sore throats and toothaches

Sphaeralcea ambigua, **Desert Globemallow**

- Sub-shrub. Leaves grayish green, triangular. Leaves and stems covered in star-like hairs. Flowers have five petals that are orange. Subspecies have white to lavender flowers.
- Early colonizer, can suppress invasive species after fire and other disturbances. Mine reclamation species.
- Drought tolerant.
- Good browse for bighorn sheep and livestock. Favored plant of desert tortoises.



Did You Know: Used by Native Americans for medicinal purposes

Sphaeralcea coccinea, **Scarlet Globemallow**

- Low growing forb or half-shrub. Plant densely pubescent. Leaves palmately lobed, flowers have five petals, orange to pink.
- Useful in seed mixes and disturbed areas with low rainfall.
- Extremely drought tolerant.
- Excellent browse for domestic sheep and wildlife.



Did You Know: Scarlet Globemallow is a "major food item" for North Dakota bighorn sheep

Sphaeralcea grossulariifolia, **Gooseberryleaf Globemallow**

- Forb to sub-shrub. Varied morphology. Stems and leaves green to white with heavy pubescence. Leaves lobed. Flowers have five petals, orange to pink.
- Adapted to arid to semi-arid ranges. Shows some promise in being competitive against cheatgrass and other annual grasses.
- Moderately saline and sodic tolerant. Drought resistant.
- Preferred for sheep and antelope in spring and summer; cattle, horses, deer, and sheep in spring, summer, and fall.



Did You Know: Grow from a woody base

Sphaeralcea munroana, **Munro's Globemallow**

- Forb or sub-shrub. Leaves and stems pubescent and light green. Flowers five petals, orange to brick-red.
- Aesthetic revegetation species for arid range. Drought tolerant.
- This genus is important for deer, antelope, and rabbits.



Did You Know: Used by Native Americans for medicinal purposes

Thalictrum dasycarpum, **Purple Meadow Rue**

- Fine-textured, grouped leaves. Leaves alternate along stem. Floral blooms are dense, branched clusters that occur along the top portion of the stem.
- Sew seeds in the fall.
- Little to no tolerance to drought.



Did You Know: Individual plants will produce either a male or a female

Thermopsis montana, **Mountain Goldenbanner**

- Slim stems with a coating. Stems are slightly branched with three-leaved leaves. Dense florals occur in clusters along the top portion of the stem.
- Prefers lightweight soil.
- Drought tolerant.



Did You Know: Native to western North America

Tradescantia bracteata, **Prairie Spiderwort**

- Narrow and long leaves along stem. Clustered flowers occur on the stem or at the end of branches. There are six stamens present.
- Drill seed at shallow depth for minimum soil coverage.
- Drought tolerant.



Did You Know: Name comes from the angular placement of leaves

Tradescantia ohioensis, **Ohio Spiderwort**

- Stems are upright and branched. Grass-like leaves appear in an upward growth form. Floral clusters are showy and occur atop.
- Drill seed at shallow depth for minimum soil coverage.
- Drought tolerant.



Did You Know: Spike-like leaves with beautiful flowers

Verbena hastata, **Blue Vervain**

- Square-stemmed, green or red. Leaves toothed lance-shaped. Flowers purplish, showy.
- Directly sew seeds in the late fall.
- Bitter taste causes herbivory avoidance.



Did You Know: Roots can be used to treat depression and anxiety

Verbena stricta, **Hoary Vervain**

- Florals bloom on tall floral spikes. Leaves are covered in hairs and give a foliage appearance and soft texture. Stems are upright.
- Plant seeds in well-drained soil in full sun.
- Drought tolerant.



Did You Know: Larval host plant for common buckeye butterflies

Vernonia fasciculata, **Ironweed**

- Clustered, fuzzy-looking, showy, bold-colored floral heads. Florals branch out atop upright stalks. Foliage appears in a hair-like formation on stalks.
- Seeds require cold-moist stratification.
- Tolerates brief periods of flooding.



Did You Know: After blooming, the heads turn rusty brown

Veronicastrum virginicum, Culver's Root

- Clumping wildflower. Three to seven leaves from the same point, whorled, finely toothed. Flowers white-pink-blue spikes, not fragrant.
- Tolerates full sun and partial shade.



Did You Know: Historically, roots were used to dissolve gravel in the kidneys or aid in birth

Vicia americana, American Vetch

- Single stem forb. Leaves linear to elliptical, even. Flowers purple raceme. Pea-like seed pod.
- Minor component for restoration. After seeding, grazing should be deferred for two seasons to allow establishment. Nitrogen fixer.
- Drought tolerant.
- Preferred to high quality forage for wildlife. Browsed by livestock.



Did You Know: Will spread over other vegetation

Viola pedatifida, Prairie Violet

- Silky, five-petaled florals. Two of the petals will vary in appearance. Stems are upright.
- Directly sew the seeds on the surface of a weed-free area.
- Drought tolerant.



Did You Know: They are without stems as the leaves grow directly from the root

Wyethia amplexicaulis, Mule Ears

- Large, yellow floral bloom atop. Leafy stems growing in a clump-like formation with lance shaped leaves.
- Western Native Seed: Cold, moist stratification increases germination or plant in fall or winter.
- Not drought tolerant.



Did You Know: Flower heads palatable to livestock and wildlife

Wyethia mollis, Woolly Mule Ears

- Stems are covered with short, coarse hairs leaving a wooly-like appearance. Clumping. Stem expansion is upright, widening at the ground level. Floral blooms occur atop.
- Sew in an area without any current existing growth.
- Drought tolerant.



Did You Know: Called true "Mountain Money"

Zizia aptera, Heart Leaf Golden Alexanders

- Basal foliage in a heart-shaped formation with a foliage appearance. Pea-like floral blooms atop.
- Sew the seeds on the surface of a weed-free area.
- Tolerates dry soils.



Did You Know: Commonly used in fresh floral arrangements

Zizia aurea, Golden Alexanders

- Upright forb. Leaves lanceolate with 1-2 lobes. Flowers clustered, umbel, bright yellow.
- Fall planting of unstratified seed leads to unpredictable germination.
- Relatively few disease pest problems.



Did You Know: Native Americans utilized this to make tea that would break fevers

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Abronia villosa</i>	Desert Sand Verbena	ABVI	Zones 7-10	Native	Annual	6-12 inches	Low	Full sun
<i>Achillea millefolium</i>	White Yarrow	ACMI2	Zones 2-9	Introduced	Perennial	3 feet	8 inches	Full sun
<i>Achillea millefolium</i> var. <i>occidentalis</i>	Western Yarrow	ACMIO	Zones 2-9	Native	Perennial	3 feet	8 inches	Full sun
<i>Agastache foeniculum</i>	Anise (Fragrant Giant) Hyssop	AGFO	Zones 4-8	Native	Perennial	2-4 feet	18 inches	Full sun, partial shade
<i>Agastache scrophulariifolia</i>	Purple Giant Hyssop	AGSC	Zones 3-8	Native	Perennial	Up to 6 feet	18-36 inches	Full sun, partial shade
<i>Alisma subcordatum</i>	American (Common/Mud) Plantain	ALSU	Zones 3-9	Native	Perennial	3 feet	45 inches	Partial sun
<i>Alisma triviale</i>	Northern Water Plantain	ALTR7	Zones 5-9	Native	Perennial	3 feet	10-25 inches	Full sun, partial shade
<i>Allium canadense</i>	Wild Garlic	ALCA3	Zones 3-8	Native	Perennial	1-3 feet	6-10 inches	Full sun, partial shade
<i>Allium cernuum</i>	Nodding Onion	ALCE2	Zones 4-8	Native	Perennial	2 feet	12-18 inches	Full sun, partial shade
<i>Allium stellatum</i>	Prairie Onion	ALST	Zones 3-8	Native	Perennial	8-18 inches	12-17 inches	Full sun, partial shade
<i>Anemone canadensis</i>	Canada (Meadow) Anemone	ANCA8	Zones 3-8	Native	Perennial	1-2.5 feet	24 inches	Full sun, partial shade
<i>Anemone cylindrica</i>	Thimbleweed	ANCY	Zones 3-8	Native	Perennial	2-3 feet	13-14 inches	Partial sun, full shade
<i>Anemone patens</i> (<i>Pulsatilla patens</i> ssp. <i>multifida</i> or <i>Pulsatilla patens</i> ssp. <i>patens</i>)	Pasque Flower	PUPAM	Zones 4-8	Native	Perennial	17 inches	6 inches	Full sun, partial shade
<i>Anemone virginiana</i>	Tall Thimble Weed (Anemone)	ANVI3	Zones 3-8	Native	Perennial	2-3 feet	20 inches	Full sun, partial shade
<i>Angelica atropurpurea</i>	Angelica	ANAT	Zones 4-9	Native	Biennial	Up to 9 feet	6 inches	Full sun, partial shade
<i>Aquilegia canadensis</i>	Columbine	AQCA	Zones 3-8	Native	Perennial	1-2 feet	17 inches	Full sun

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Neutral	Coarse to moderately coarse	6-10	38,000	Spring, Fall	High	Bunch	1,500-4,500 feet	Purple, Pink	Spring
Neutral	Moderately coarse	0.5	2,770,000	Spring	Medium	Rhizomatous	4,000-10,000 feet	White	Spring, Summer, Fall
Neutral	Moderately coarse	0.5	2,770,000	Spring	Medium	Rhizomatous	4,000-10,000 ft	White	Spring, Summer, Fall
Neutral	Gravelly, loam	1	1,520,000	Spring	Medium	Bunch	5,000-7,000 feet	Lavender to Purple	Summer, Fall
Acidic to Neutral	Medium	1	1,488,000	Spring	Medium	Bunch	1,300-10,800 feet	Purple to Pale Pink	Summer
Acidic to Neutral	Medium	1.8	960,000	Summer	High	Bunch	Up to 8,500 feet	Lavender	Summer
Acidic, neutral, and basic	Wet soil	1.8	1,056,000	Spring	Medium	Bunch	Up to 7,700 feet	White, Pink	Summer
Acidic, neutral, and basic	Moderately fertile	150	9,000	Fall	High	Bulbs	Up to 1,600 feet	White, Pink, Lavender	Spring, Summer
Acidic, neutral, and basic	Moist, well-drained	8	123,200	Early Spring	Medium	Bunch	Up to 11,500 feet	Pink	Summer
Acidic, neutral, and basic	Sandy	8.8	176,000	Fall	Medium	Rhizomatous	Up to 5,500 feet	Lavender, Pink	Summer
Acidic, neutral, and basic	Acidic	12	128,000	Mid/Late Winter	Medium	Rhizomatous	650-9,000 feet	White	Spring, Summer
Acidic, neutral, and basic	Loam, sand, acidic, neutral, alkaline	3.5	416,000	Fall, Early Spring	High	Rhizomatous	Up to 7,500 feet	White	Summer
Acidic, neutral, and basic	Well-drained	6	288,000	Early Summer	Low	Forb/Herb	Up to 12,500 feet	Blue, Red, Purple, Yellow	Spring
Acidic, neutral, and basic	Loam, sand, acidic, neutral, alkaline	3.5	448,000	Spring, Fall	High	Bunch	Up to 6,000 feet	White, Green	Spring, Summer
Acidic, neutral, and basic	Deep, well-drained	15	86,400	Spring, Fall	Low	Single Crown	6,000-10,600 feet	Gold, Yellow	Spring, Summer, Fall
Acidic	Medium-Coarse	2.5	608,000	Spring	Medium	Bunch	10,200-12,800 feet	Red, Yellow	Spring, Summer

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Aquilegia coerulea</i>	Colorado Blue Columbine	AQCO	Zones 2-5	Native	Perennial	1.5-2 feet	12 inches	Full sun, partial shade
<i>Asclepias incarnata</i>	Swamp Milkweed	ASIN	Zones 4-7	Native	Perennial	3-5 feet	39 inches	Full sun, partial shade
<i>Asclepias incarnata</i>	Common Milkweed	ASSY	Zones 4-9	Native	Perennial	5 feet	9 inches	Full sun, partial shade
<i>Asclepias tuberosa</i>	Butterfly Milkweed	ASTU	Zones 4-7	Native	Perennial	5 feet	16 inches	Full sun, partial shade
<i>Asclepias verticillata</i>	Whorled Milkweed	ASVE	Zones 3-10	Native	Perennial	1-3 feet	5 inches	Full sun, partial shade
<i>Aster azureus</i> (<i>Symphyotrichum oolentangiense</i>)	Sky Blue Aster	SYOOO	Zones 3-8	Native	Perennial	2-3 feet	24-36 inches	Full sun, partial shade
<i>Aster ericoides</i> (<i>Symphyotrichum ericoides</i> var. <i>ericoides</i>)	Heath Aster	SYERE	Zones 3-9	Native	Perennial	1-3 feet	18 inches	Partial sun, full shade
<i>Aster laevis</i> (<i>Symphyotrichum laevis</i> var. <i>laevis</i>)	Smooth Blue Aster	SYIAL3	Zones 4-8	Native	Perennial	2-3 feet	20 inches	Full sun, partial shade
<i>Aster novae-angliae</i> (<i>Symphyotrichum novae-angliae</i>)	New England Aster	SYNO2	Zones 4-8	Native	Perennial	3-4 feet	15-20 inches	Full sun, partial shade
<i>Aster sagittifolius</i> (<i>Symphyotrichum cordifolium</i>)	Arrow-Leaved Aster	SYCO4	Zones 3-9	Native	Perennial	2-3.5 feet	24 inches	Full sun, partial shade
<i>Aster sericeus</i> (<i>Symphyotrichum sericum</i>)	Silky Aster	SYSE2	Zones 4-8	Native	Perennial	1-2 feet	47 inches	Full sun, full shade
<i>Aster umbellatus</i> (<i>Doellingeria umbellata</i> var. <i>umbellata</i>)	Flat-Topped Aster	DOUMU	Zones 3-8	Native	Perennial	2-5 feet	20-24 inches	Full sun, partial shade
<i>Astragalus canadensis</i>	Canada Milk Vetch	ASCA11	Zones 3-8	Native	Perennial	1-4 feet	15 inches	Full sun, partial shade
<i>Astragalus crassicarpus</i>	Ground Plum Milkvetch	ASCR2	Zones 6-9	Native	Perennial	1 foot	18 inches	Full sun, partial shade

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Acidic, neutral, and basic	Medium-Coarse	3-6	363,200	Early Spring, Fall	High	Bunch	6,000-10,000 feet	White, Blue Cream, Light Pink	Spring, Summer
Acidic, neutral	Fine-Medium	20	76,800	Early Spring, Fall	High	Lance-shaped	Up to 7,000 feet	Pink, Red, Lavender	Summer
Acidic, neutral	Fine-Medium	22.5	64,000	Fall	Medium	Rhizomatous	Up to 7,000 feet	Pink, Purple, White	Summer
Acidic, basic	Sandy	22.5	68,800	Spring, Fall	Medium	Forb/Herb	3,600-8,200 feet	Yellow, Orange, Red	Summer
Acidic	Medium-Coarse	9	176,000	Spring, Fall	High	Rhizomatous	3,300-7,500 feet	Greenish-White	Summer, Early Fall
Acidic, neutral	Moist	2.7	1,312,000	Fall	Medium	Perennial	Up to 8,000 feet	Blue, Yellow	Late Summer, Fall
Acidic, neutral	Medium-Coarse	0.5	3,200,000	Fall	Medium	Forb/Herb	3,000-10,000 feet	Blue, Yellow, White, Pink	Late Summer, Fall
Acidic, neutral	Medium-Coarse	1.5	880,000	Spring, Fall	Medium	Bunch	Up to 9,500 feet	Light Blue, Pale Purple	Fall
Acidic	Rich, well-draining	0.8	1,056,000	Spring, Fall	Medium	Bunch	Up to 5,000 feet	Yellow, Lavender, Blue, White	Fall
Acidic, neutral, and basic	Dry to moist, well-drained	1	2,200,000	Fall	High	Bunch	3,800-8,000 feet	Pale Blue, Yellow	Late Summer, Fall
Acidic, neutral	Rocky or sandy	1	416,000	Fall	Medium	Rhizomatous	Up to 5,000 feet	Purple, Yellow	Fall
Acidic, neutral	Moist to wet	1.5	1,072,000	Fall	Medium	Rhizomatous	1,000-5,500 feet	White, Tan, Yellow	Summer, Fall
Acidic, neutral, and basic	Medium	6	272,000	Fall	Medium	Sprawling	Up to 6,000 feet	Yellow, Creamy White	Summer
Acidic, neutral, and basic	Well-drained	13	83,200	Spring, Fall	Medium	Bunch	Up to 9,100 feet	White, Blue, Purple	Summer

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Astragalus filipes</i>	Basalt Milkvetch	ASFI	Zones 4-6	Native	Perennial	1.5-3 feet	8 inches	Full sun, partial shade
<i>Balsamorhiza macrophylla</i>	Cutleaf Balsamroot	BAMA4	Zones 4-5	Native	Perennial	1-3 feet	12 inches	Full sun, partial shade
<i>Boltonia asteroides</i>	False Aster	BOAS	Zones 3-10	Native	Perennial	3-6 feet	14-20 inches	Full sun, partial shade
<i>Campanula americana</i> (<i>Campanulastrum americanum</i>)	Tall Bellflower	CAAM18	Zones 4-7	Native	Biennial	3-5 feet	15 inches	Full shade, partial sun
<i>Campanula rotundifolia</i>	Harebell	CARO2	Zones 3-6	Native	Perennial	1 foot	6 inches	Full sun, partial shade
<i>Castilleja linariifolia</i>	Wyoming Indian Paintbrush	CALI4	Zones 3-7	Native	Perennial	Up to 6 feet	20-36 inches	Full sun, partial shade
<i>Chamaecrista fasciculata</i>	Partridge Pea	CHFA2	Zones 3-9	Native	Annual	1-3 feet	15+ inches	Full sun, partial shade
<i>Chamerion angustifolium</i>	Fireweed	CHAN9	Zones 2-7	Native	Annual	4-6 feet	40-60 inches	Full sun, partial shade
<i>Clarkia amoena</i>	Farewell-to-spring	CLAM	Zones 9-10	Native	Annual	1-3 feet	12 inches	Full sun, partial shade
<i>Cleome serrulata</i>	Rocky Mountain Bee Plant	CLSE	Zones 3-8	Native	Annual	4 feet	8-18 inches	Full sun, partial shade
<i>Coreopsis lanceolata</i>	Lance-Leaved (Sand) Coreopsis	COLA5	Zones 3-8	Native	Perennial	1-2 feet	14 inches	Full sun, partial shade
<i>Coreopsis palmata</i>	Prairie Coreopsis (Stiff Tickseed)	COPA10	Zones 3-8	Native	Perennial	1-3 feet	14 inches	Full sun, partial shade
<i>Coreopsis tinctoria</i>	Plains Coreopsis	COTI3	Zones 4-8	Native	Annual	30-36 inches	14 inches	Full sun, partial shade
<i>Coreopsis tripteris</i>	Tall Coreopsis	COTR4	Zones 3-8	Native	Perennial	Up to 9 feet	10 inches	Full sun, partial shade
<i>Dalea candidum</i> (<i>Dalea candida</i>)	White Prairie Clover	DACA7	Zones 3-8	Native	Perennial	1-3 feet	12 inches	Full sun, partial shade
<i>Dalea ornata</i>	Western Prairie Clover	DAOR2	Zones 3-8	Native	Perennial	1-2 feet	6-14 inches	Full sun, partial shade

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Acidic, neutral	Medium-Coarse	7-12	120,000	Spring, Fall	Medium	Bunch	Up to 8,200 feet	Cream	Spring
Acidic, neutral, and basic	Fine-Coarse	7-15	48,000	Fall	Low	Root System	4,500-7,000 feet	Yellow	Spring, Summer
Acidic	Medium-Coarse	1	2,063,000	Spring, Fall	Medium	Rhizomatous	Up to 7,000 feet	White, Pink, Purple, Blue	Summer
Acidic, neutral, and basic	Fine-Coarse	0.5	2,720,000	Spring	Medium	Bunch	5,000-12,000 feet	White, Purple, Blue	Summer
Neutral, basic	Medium-Coarse	0.25	1,200,000	Fall	High	Bunch	Up to 12,000 feet	Violet, Blue, White	Summer, Fall
Acidic, neutral, and basic	Medium-Coarse	1	4,000,000	Spring, Summer	Medium	Bunch	Up to 9,100 feet	Red	Spring, Summer, Fall
Acidic	Medium-Coarse	25	43,200	Spring	Medium	Forb/Herb	Up to 5,000 feet	Yellow	Summer, Early Fall
Acidic	Fine-Coarse	0.25	8,500,000	Fall	Medium	Rhizomatous	Up to 12,500 feet	Purple, Pink, White	Summer, Early Fall
Neutral	Fine-Coarse	1-2	1,790,000	Spring	Medium	Sprawling	Up to 3,000 feet	Pale Pink, Deep Red	Summer
Neutral	Medium-Coarse	13.5	64,000	Fall	Medium	Bunch	3,000-9,000 feet	Pink	Summer, Early Fall
Acidic, neutral	Fine-Medium	1	320,000	Spring, Summer, Fall	Medium	Bunch	Up to 8,200 feet	Yellow	Spring, Summer
Acidic, neutral	Sandy, gravel	9.5	160,000	Spring	Medium	Patches	1,000-1,700 feet	Bright Yellow	Summer
Acidic, neutral	Sandy	0.7	1,843,902	Spring, Fall	Medium	Forb/Herb	Up to 7,000 feet	Yellow, Orange, White	Summer, Fall
Acidic, neutral	Dry to medium	6.5	224,000	Spring	Medium	Forb/Herb	Up to 2,000 feet	Yellow	Summer, Fall
Acidic, neutral, and basic	Dry, sandy, gravelly	3-6	304,000	Fall	Low	Branching	3,000-8,000 feet	White	Summer
Acidic, neutral	Clay loams, loamy sand	4-8	290,299	Fall	Medium	Root Crown Spread	3,000-7,500 feet	Pink, Purple	Summer

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Dalea purpurea</i>	Purple Prairie Clover	DAPU5	Zones 3-8	Native	Perennial	1-3 feet	12 inches	Full sun, partial shade
<i>Delphinium virescens</i> (<i>Delphinium carolinianum</i> ssp. <i>virescens</i>)	Prairie Larkspur	DECAV3	Zone 4-6	Native	Perennial	1-3 feet	18-25 inches	Full sun, partial shade
<i>Desmodium canadense</i>	Showy Tick Trefoil	DECA7	Zones 3-7	Native	Perennial	3-5 feet	30 inches	Full sun, partial shade
<i>Desmanthus illinoensis</i>	Illinois Bundleflower	DEIL	Zones 3-9	Native	Perennial	3-4 feet	20 inches	Full sun, partial shade
<i>Desmodium illinoense</i>	Illinois Tick Trefoil	DEIL2	Zones 4-8	Native	Perennial	3-6 feet	36 inches	Full sun, partial shade
<i>Dieteria bigelovii</i> var. <i>bigelovii</i> (<i>Machaeranthera bigelovii</i>)	Plains Aster	MABI	Zones 3-8	Native	Perennial	1-3 feet	10 inches	Full sun, partial shade
<i>Dieteria canescens</i> (<i>Machaeranthera canescens</i>)	Hoary Tansyaster	MACAC3	Zones 5-9	Native	Annual/ Biennial/ Short-Lived Perennial	6-30 inches	8 inches	Full sun, no shade
<i>Dodecatheon meadia</i>	Shooting Star	DOME	Zones 4-8	Native	Perennial	2-18 inches	7 inches	Full sun, partial shade
<i>Dracopis amplexicaulis</i>	Clasping Coneflower	DRAM	Zones 2-11	Native	Annual	12-28 inches	10 inches	Full sun, no shade
<i>Echinacea angustifolia</i>	Narrow-Leaved Coneflower (Black Sampson)	ECAN2	Zones 3-8	Native	Perennial	6-24 inches	10 inches	Full sun, partial shade
<i>Echinacea pallida</i>	Pale Purple Coneflower	ECPA	Zones 3-8	Native	Perennial	3 feet	16 inches	Full sun, partial shade
<i>Echinacea purpurea</i>	Purple Coneflower	ECPU	Zones 4-9	Native	Perennial	2.5 feet	16 inches	Full sun, partial shade
<i>Erigeron speciosus</i>	Aspen Fleabane (Aspen daisy)	ERSP4	Zones 5-9	Native	Perennial	8-24 inches	14 inches	Full sun, partial shade
<i>Eriogonum racemosum</i>	Redroot Buckwheat	ERRA3	Zones 4-9	Native	Perennial	3 feet	12-25 inches	Full sun, partial shade
<i>Eriogonum umbellatum</i>	Sulphur Flower Buckwheat	ERUM	Zones 4-8	Native	Perennial	4-12 inches	12-25 inches	Full sun, partial shade

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Acidic, neutral	Clay loams, loamy sand	5	288,000	Spring, Summer	Medium	Subshrub Forb/Herb	3,500-7,500 feet	Pink, Purple	Summer, Early Fall
Acidic	Dry, limey	1.6	960,000	Fall	Medium	Clumping	Up to 800 feet	White, Blue	Late Spring, Early Summer
Acidic, neutral, and basic	Rocky clay	17	88,000	Fall	High	Forbs/Herbs	3,000-6,500 feet	Pink, Rose-Purple	Summer
Acidic, neutral, and basic	Medium	20	67,200	Spring	High	Bushy	3,000-7,000 feet	White	Summer, Early Fall
Acidic, neutral, and basic	Clay loam	20	67,200	Spring, Fall	Medium	Forb/Herb	300-1,000 feet	Purple	Summer
Acidic	Moist, well-drained	1-2	1,014,000	Fall	Medium	Rhizomatous	3,600-7,550 feet	Lavender, Blue, White	Summer
Acidic, neutral, and basic	Rocky, sandy	1-2	1,300,000	Spring, Fall	Low	Bunch	1,000-11,000 feet	Blue, Purple	Summer/Fall
Acidic, neutral, and basic	Rocky, sandy	2	960,000	Spring	Low	Cluster	Up to 4,000 feet	White, Deep Pink	Summer
Acidic, neutral	Moist	1.75	1,600,000	Fall	Medium	Rhizomatous	3,200-8,400 feet	Yellow	Late Spring, Summer
Acidic, neutral	Well-drained, clay, loam	10	112,000	Fall	Medium	Bunch	1,000-6,000 feet	Pink, Purple	Summer
Acidic, neutral	Sandy, clay	18	106,000	Spring	High	Bunch	Up to 8,500 feet	Pink, Purple	Late Spring, Summer
Acidic, neutral, and basic	Well-drained	15	115,664	Spring	Medium	Forb/Herb	Up to 6,300 feet	Red, Purple, Lavender	Summer
Acidic, neutral	Well-drained, moist	1	1,892,000	Spring, Fall	Medium	Subshrub Forb/Herb	2,000-11,220 feet	White, Yellow, Blue, Purple	Summer, Fall
Neutral, basic	Medium texture	5-9	200,000	Spring	Medium	Subshrub	4,000-10,000 feet	White, Pink	Summer, Fall
Acidic, neutral, and basic	Dry, well-drained	4-7	150,000	Spring	Medium	Shrub	2,500-10,000 feet	Yellow, Cream	Summer

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Eryngium yuccifolium</i>	Rattlesnake Master	ERYU	Zones 4-9	Native	Perennial	Up to 5 feet	24-36 inches	Full sun, partial shade
<i>Eschscholzia caespitosa</i>	Tufted Poppy	ESCA	Zones 4-10	Native	Annual	6-12 inches	6 inches	Full sun, partial shade
<i>Eschscholzia californica</i>	California Poppy	ESCA2	Zones 6-10	Native	Annual	12-15 inches	6 inches	Full sun, partial shade
<i>Eupatorium maculatum</i> (<i>Eutrochium maculatum</i>)	Joe Pye Weed	EUMA9	Zones 4-8	Native	Perennial	2-6 feet	16 inches	Full sun, partial shade
<i>Eupatorium perfoliatum</i>	Boneset	EUPE3	Zones 3-8	Native	Perennial	3-5 feet	14-20 inches	Full sun, partial shade
<i>Eupatorium purpureum</i> (<i>Eutrochium purpureum</i>)	Sweet Joe Pye Weed	EUMAM3	Zones 4-8	Native	Perennial	2-6 feet	20 inches	Full sun, partial shade
<i>Gaillardia aristata</i>	Blanket Flower	GAAR	Zones 3-9	Native	Perennial	10-24 inches	10 inches	Full sun, partial shade
<i>Gaillardia pulchella</i>	Indian Blanket	GAPU	Zones 2-11	Native	Perennial	10-12 inches	10 inches	Full sun, partial shade
<i>Gentiana andrewsii</i>	Bottle Gentian	GEAN	Zones 3-7	Native	Perennial	1-3 feet	20 inches	Full sun, partial shade
<i>Gentiana flavida</i>	Cream Gentian	GEAL4	Zones 2-7	Native	Perennial	3 feet	45 inches	Full sun, partial shade
<i>Geranium maculatum</i>	Wild Geranium	GEMA	Zones 3-8	Native	Perennial	8-24 inches	10-20 inches	Full sun, partial shade
<i>Geranium viscosissimum</i>	Sticky Purple Geranium	GEV12	Zones 2-9	Native	Perennial	1.5-3 feet	10-20 inches	Full sun, partial shade
<i>Gilia capitata</i>	Blue Thimble Flower	GICA5	Zones 7-10	Native	Annual	1-2 feet	9 inches	Full sun, partial shade
<i>Gilia tricolor</i>	Birds Eyes	GITR2	Zones 6-10	Native	Annual	12-18 inches	20 inches	Full sun, partial shade
<i>Glycyrrhiza lepidota</i>	Wild (American) Licorice	GLLE3	Zones 3-10	Native	Perennial	1.5-3 feet	10-16 inches	Full sun, partial shade

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Acidic, neutral, and basic	Moist	12.5	120,000	Fall	High	Clumping	Up to 5,000 feet	Green, White	Summer
Acidic, neutral, and basic	Sand, loam	5	448,000	Spring, Fall	Medium	Low Spreading to Erect	800-2,000 feet	Yellow	Spring, Early Summer
Acidic, neutral, and basic	Sand, heavy clay	5-10	295,100	Spring, Fall	Medium	Low Spreading to Erect	Up to 6,500 feet	Yellow, Orange	Spring, Early Summer
Acidic, neutral	Well-drained	0.8	1,520,000	Spring, Fall	Low	Clusters	Up to 7,000 feet	Purple	Summer
Acidic, neutral, and basic	Moist, wet	0.6	2,560,000	Spring, Fall	Low	Clumping	Up to 1,100 feet	White	Summer, Fall
Acidic, neutral, and basic	Well-drained	2.3	1,360,000	Spring, Fall	Low	Root System	3,000-4,000 feet	Purple	Summer, Fall
Acidic, neutral	Rocky, gravelly, sandy	7-10	157,008	Spring	Medium	Forb/Herb	Up to 9,000 feet	Red, Yellow	Summer, Fall
Acidic, neutral	Sandy, well-drained	7	153,000	Spring, Fall	Medium	Subshrub Forb/Herb	Up to 9,000 feet	Red, Yellow	Summer, Fall
Acidic, neutral, and basic	Moist	0.35	4,480,000	Fall, Early Spring	Medium	Bunch	Up to 5,000 feet	Violet, White	Fall
Acidic to neutral	Dry, medium	0.4	2,240,000	Late Summer, Early Fall	Low	Rhizomatous	Up to 12,000 feet	White	Fall
Acidic, neutral	Dry, medium	18	80,000	Spring, Fall	Medium	Mound	Up to 10,500 feet	Rose Purple	Spring, Fall
Acidic, neutral, and basic	Well-drained	6-12	50,000	Late Fall	Low	Clumping to Mounding	Up to 10,500 feet	Pink, Lavender, Purple	Spring, Summer
Acidic, neutral	Moist, well-drained	1	861,820	Spring, Fall	Medium	Rhizomatous	Up to 6,000 feet	Lavender	Summer
Acidic	Well-drained	1	1,020,000	Spring, Fall	Medium	Forb-erect	Up to 5,000 feet	Light Blue, Violet	Spring
Acidic, neutral, and basic	Well-drained, sandy, loam	20	62,400	Spring, Fall	Medium	Forb-erect	3,500-8,400 feet	White	Summer

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Helenium autumnale</i>	Sneezeweed	HEAU	Zones 3-9	Native	Perennial	5 feet	10 inches	Full sun, partial shade
<i>Helianthella uniflora</i>	Oneflowered Helianthella	HEUN	Zones 2-11	Native	Perennial	2-3 feet	10 inches	Full sun, partial shade
<i>Helianthus annuus</i>	Annual Sunflower	HEAN3	Zones 4-9	Native	Annual	1.5-10 feet	18 inches	Full sun, partial shade
<i>Helianthus giganteus</i>	Giant (Tall) Sunflower	HEGI	Zones 2-11	Native	Perennial	12 feet	19 inches	Full sun, no shade
<i>Helianthus grosseserratus</i>	Sawtooth Sunflower	HEGR4	Zones 3-8	Native	Perennial	8 feet	24-36 inches	Full sun, partial shade
<i>Helianthus maximiliani</i>	Maximilian Sunflower	HEMA2	Zones 3-9	Native	Perennial	3-9 feet	18 inches	Full sun, no shade
<i>Helianthus nuttallii</i>	Nuttal's (Marsh) Sunflower	HENU	Zones 5-9	Native	Perennial	Up to 10 feet	12-17 inches	Full sun, partial shade
<i>Helianthus pauciflorus</i>	Stiff (Showy) Sunflower	HEPA19	Zones 3-7	Native	Perennial	5 feet	8-15 inches	Full sun, partial shade
<i>Heliomeris multiflora</i>	Showy Goldeneye	HEMU3	Zones 4-10	Native	Perennial	1-4 feet	18-26 inches	Full sun, partial shade
<i>Heliopsis helianthoides</i>	False (Early) (Ox-Eye) Sunflower	HEHE5	Zones 3-9	Native	Perennial	3-6 feet	5 inches	Full sun, partial shade
<i>Herrickia glauca</i> (<i>Eurybia glauca</i>)	Blueleaf Aster (Gray Aster)	ARPU3	Zones 8-11	Native	Perennial	8-28 inches	18 inches	Full sun, full shade
<i>Heterotheca villosa</i>	Hairy Goldenaster	HEVI4	Zones 4-8	Native	Perennial	16 inches	10-14 inches	Full sun, partial shade
<i>Heuchera richardsonii</i>	Prairie Alumroot	HERI	Zones 2-6	Native	Perennial	2-3 feet	20 inches	Full sun, partial shade
<i>Hypericum pyramidatum</i> (<i>Hypericum ascyron</i>)	Great St. John's Wort	HYAS80	Zones 5-10	Native	Perennial	3-5 feet	14 inches	Full sun, full shade
<i>Ipomopsis aggregata</i>	Scarlet Gilia (Skyrocket)	IPAG	Zones 6-9	Native	Biennial/ Short-Lived Perennial	2-3 feet	10 inches	Full sun, no shade
<i>Iris missouriensis</i>	Rocky Mountain Iris (Western Blue Flag)	IRMI	Zones 3-9	Native	Perennial	1-2 feet	5 inches	Full sun, partial shade

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Acidic, neutral, and basic	Sandy loam, clay	0.8	2,080,000	Spring	Medium	Forb/Herb	6,000-7,000 feet	Yellow	Summer, Fall
Neutral, and basic	Well-drained	15-25	41,000	Fall	High	Multiple Stem	Up to 11,000 feet	Yellow	Summer
Acidic, neutral, and basic	Well-drained	30	46,919	Spring	High	Forb/Herb	3,900-8,400 feet	Yellow	Summer, Fall
Acidic, neutral, and basic	Well-drained, moist	10	160,000	Spring	Medium	Forb/Herb	Up to 4,000 feet	Yellow	Summer, Fall
Acidic, neutral	Rich, moist, well-drained	20	160,000	Spring	Medium	Rhizomatous	1,000-5,500 feet	Yellow	Summer
Acidic, neutral	Moist	5	208,000	Spring	Medium	Clusters	Up to 2,000 feet	Yellow	Summer, Fall
Acidic	Dry	12-16	217,000	Spring	Low	Rhizomatous	Up to 5,000 feet	Yellow	Summer, Early Fall
Acidic, neutral, and basic	Well-drained	0.25-1	64,000	Spring	Medium	Rhizomatous	Up to 7,000 feet	Yellow, Brown	Summer, Fall
Acidic	Medium Texture	1	1,050,000	Fall	Medium	Single crown	4,400-9,800 feet	Golden Yellow	Summer, Fall
Neutral	Moist	20	100,800	Spring	Medium	Rhizomatous	3,000-11,800 feet	Orange, Yellow	Summer
Acidic, neutral, basic	Moist, well-drained	2-4	500,000	Fall	Medium	Bunch	Up to 6,000 feet	Reddish Brown, Gray	Late Summer
Acidic, neutral	Sand	6-8	43,000	Spring	Medium	Subshrub	4,000-10,500 feet	Yellow	Summer, Fall
Acidic, neutral	Rocky	0.2	11,200,000	Fall	Medium	Forb/Herb	1,800-5,500 feet	Pale Green	Spring, Summer, Fall
Acidic, neutral, and basic	Sand, silty, clay, loam	0.5	3,040,000	Early Spring	Medium	Forb/Herb	Up to 4,000 feet	Bright Yellow	Summer
Acidic, neutral, and basic	Medium, loam, sandy	6-8	280,000-700,000	Spring, Summer	High	Rosette	3,600-10,800 feet	Red, Pink, White	Summer
Acidic, neutral, and basic	Moist, well-drained	20-30	25,000	Fall	Medium	Rhizomatous	Up to 11,500 feet	Light Purple, White, Violet	Summer

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Iris versicolor</i>	Northern Blue Flag Iris	IRVE2	Zones 3-9	Native	Perennial	2-3 feet	44 inches	Full sun, partial shade
<i>Iris virginica var. shrevei</i>	Southern Blue Flag Iris	IRVIS	Zones 5-9	Native	Perennial	2 feet	45 inches	Full sun, partial shade
<i>Kuhnia eupatorioides (Brickellia eupatorioides)</i>	False Boneset	BREU	Zones 6-9	Native	Perennial	1-3.5 feet	14-16 inches	Full sun, partial shade
<i>Layia platyglossa</i>	Coastal Tidytops	LAPL	Zones 3-10	Native	Annual	12 inches	5 inches	Full sun, partial shade
<i>Leptosiphon grandiflorus</i>	Mountain Phlox (Large-flower Linanthus)	LEGR23	Zones 7-10	Native	Annual	12-18 inches	4 inches	Full sun, full shade
<i>Lespedeza capitata</i>	Round-Head Bush Clover	LECA8	Zones 3-8	Native	Perennial	2-4 feet	14 inches	Full sun, partial shade
<i>Liatris aspera</i>	Rough (Button) Blazingstar	LIAS	Zones 3-9	Native	Perennial	2-5 feet	13-20 inches	Full sun, partial shade
<i>Liatris cylindracea</i>	Dwarf Blazingstar	LICY	Zones 4-7	Native	Perennial	1.5-2 feet	10-22 inches	Full sun, partial shade
<i>Liatris ligulistylis</i>	Meadow Blazingstar	LILI	Zones 3-6	Native	Perennial	5 feet	33 inches	Full sun, partial shade
<i>Liatris punctata</i>	Dotted Blazingstar (Gay Feather)	LIPU	Zones 4-9	Native	Perennial	1-2.5 feet	15 inches	Full sun, partial shade
<i>Liatris pycnostachya</i>	Prairie Blazingstar (Thickspike Gayfeather)	LIPY	Zones 3-9	Native	Perennial	4 feet	10 inches	Full sun, partial shade
<i>Liatris spicata</i>	Dense Blazingstar (Marsh Gayfeather)	LISP	Zones 3-9	Native	Perennial	2-6 feet	18 inches	Full sun, partial shade
<i>Linum lewisii</i>	Lewis Flax	LILE3	Zones 3-9	Native	Perennial	8-28 inches	10+ inches	Full sun, partial shade
<i>Linum perenne</i>	Blue Flax	LIPE2	Zones 3-8	Introduced	Perennial	1-3 feet	10-23 inches	Full sun, partial shade
<i>Lobelia cardinalis</i>	Cardinal Flower	LOCA2	Zones 3-9	Native	Perennial	1-6 feet	10-80 inches	Full sun, partial shade
<i>Lobelia siphilitica</i>	Great Blue Lobelia	LOSI	Zones 4-8	Native	Perennial	20-59 inches	5+ inches	Full sun, partial shade

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Acidic	Loamy	90	20,800	Fall	Medium	Rhizomatous	Up to 1,500 feet	Deep Blue, Purple	Spring
Acidic, neutral	Loamy	90	16,000	Summer	Medium	Clumps	5,500 feet	Light Blue, Deep Violet	Spring
Acidic, neutral, and basic	Dry, sandy, clay	3	523,041	Spring, Summer	Medium	Rhizomatous	Up to 3,000 feet	White, Pink, Yellow, Green	Summer, Fall
Acidic, neutral, and basic	Very well-drained	2-5	350,000	Spring/Fall	High	Cluster	3,600-5,000 feet	Yellow, White	Spring, Summer
Acidic, neutral, and basic	Moist	1-2	969,000	Spring, Fall	High	Bunch	Up to 4,000 feet	Pale Pink, White	Spring
Acidic, neutral, and basic	Well-drained, dry	10	128,000	Spring, Summer, Fall	High	Open or Shrubby	3,000-6,500 feet	Gold, Yellow, Purple	Summer, Fall
Acidic, neutral	Loam, clay, sandy, rocky	5.5	256,000	Late Fall	Medium	Bunch	Up to 7,000 feet	Deep Rosey Purple	Summer, Fall
Acidic, neutral, and basic	Dry	5.5	224,000	Spring	Medium	Rhizomatous	Up to 5,000 feet	Purple, Rose	Summer, Fall
Acidic, neutral	Moist, well-drained	9.5	176,000	Spring, Fall	Medium	Rhizomatous	Up to 6,000 feet	Pink, Purple	Late Summer, Early Fall
Acidic, neutral	Dry, coarse	10	112,000	Spring, Fall	Medium	Rhizomatous	3,600-5,000 feet	Rose, Purple	Fall
Acidic, neutral	Moist	8	176,000	Spring, Summer, Fall	Low	Bunch	Up to 6,000 feet	Rose, Purple	Summer
Acidic, neutral	Moist, well-drained	10	136,077	Fall	Medium	Forb/Herb	Up to 4,000 feet	Rose, Purple	Summer
Neutral, basic	Loamy, sandy, gravelly	4	287,000	Spring, Fall	Medium	Bunch	Above 2,500 feet	Blue, Lilac	Spring, Summer
Neutral, basic	Loamy, sandy, gravelly	5	287,000	Spring, Fall	High	Bunch	3,500-9,500 feet	White, Blue, Red, Yellow	Summer
Acidic, neutral, and basic	Loamy	0.3	11,292,758	Fall	Medium	Forb/Herb	3,000-7,500 feet	Scarlet	Summer
Acidic, neutral	Moist	0.2	8,000,000	Spring, Fall	Low	Forb/Herb	2,000-8,000 feet	Blue, Violet	Summer

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Lomatium foeniculaceum</i>	Desert Biscuitroot	LOFO	Zones 5-9	Native	Perennial	16 inches	14+ inches	Full sun
<i>Lomatium macrocarpum</i>	Bigseed Biscuitroot	LOMA3	Zones 5-10	Native	Perennial	28 inches	14 inches	Full sun
<i>Lomatium nudicaule</i>	Barestem Biscuitroot	LONU2	Zones 6-8	Native	Perennial	8-18 inches	14 inches	Full sun
<i>Ludwigia alternifolia</i>	Seedbox	LUAL2	Zones 4-8	Native	Perennial	Up to 4 feet	11+ inches	Full sun, partial shade
<i>Lupinus alpestris</i>	Mountain (Great Basin) Lupine	LUAL5	Zones 4-8	Native	Perennial	1-2 feet	10 inches	Full sun, partial shade
<i>Lupinus argenteus</i>	Silvery Lupine	LUAR3	Zones 5-10	Native	Perennial	1-2 feet	34 inches	Full sun, partial shade
<i>Lupinus arizonicus</i>	Arizona Lupine	LUAR4	Zones 6-10	Native	Annual	Up to 36 inches	10+ inches	Full sun
<i>Lupinus perennis</i>	Perennial Lupine	LUPE3	Zones 3-8	Native	Perennial	12-24 inches	34 inches	Full sun, partial shade
<i>Lupinus perennis</i>	Wild Lupine (Local Eco Type)	LUPE3	Zones 3-8	Native	Perennial	8-24 inches	35 inches	Full sun, partial shade
<i>Lupinus polyphyllus</i>	Bigleaf Lupine	LUPO2	Zones 4-8	Native	Perennial	3-5 feet	35 inches	Partial shade
<i>Lupinus rivularis</i>	Riverbank Lupine	LURI	Zones 7-9	Native	Perennial	1-5 feet	Up to 100 inches	Full sun
<i>Lupinus sericeus</i>	Silky Lupine	LUSE4	Zones 4-8	Native	Perennial	8-20 inches	10-18 inches	Full sun, partial shade
<i>Lycopus americanus</i>	Water Horehound	LYAM	Zones 3-9	Native	Perennial	1-3 feet	2 inches	Full sun, partial shade
<i>Machaeranthera tanacetifolia</i>	Prairie Aster	MATA2	Zones 4-8	Native	Perennial	1-3 feet	10+ inches	Full sun, partial shade
<i>Mimulus ringens</i>	Monkey Flower	MIRI	Zones 3-9	Native	Perennial	3.5 feet	High rainfall, standing water	Full sun, partial shade
<i>Mirabilis multiflora</i>	Colorado Four O'Clock	MIMU	Zones 4-8	Native	Perennial	2 feet	12 inches	Full sun
<i>Monarda citriodora</i>	Lemon Beebalm (Lemon Mint)	MOCI	Zones 5-9	Native	Perennial	2-3 feet	11+ inches	Full sun, partial shade

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Neutral	Loamy, sandy	5-10	47,200	Fall	High	Dense Carpet	Above 1,100 feet	Bright Yellow	Spring, Summer
Neutral, basic	Loamy, sandy, gravelly	5-10	45,000	Fall, Late Winter	High	Single Stem	4,200-9,500 feet	White, Yellow	Spring, Summer
Neutral, basic	Loamy, sandy, gravelly	5-10	55,909	Spring, Fall	Medium	Forb/Herb	5,200-8,300 feet	Yellow	Spring, Summer
Acidic	Sandy	0.1	20,800,000	Fall	Medium	Rhizomatous	Up to 5,000 feet	Yellow	Summer
Neutral	Well-drained, coarse	20-30	12,000	Fall	High	Densely Branched	Up to 10,400 feet	Blue, Purple	Summer
Neutral	Clay, loamy, sandy	20-30	126,000	Fall	Medium	Single Crown	Up tp 12,500 feet	Blue, Purple	Summer
Neutral	Loamy, sandy	6-12	135,000	Fall	Medium	Forb/Herb	Up to 4,100 feet	Blue, Purple, White	Spring, Summer
Neutra	Moist, well-drained	40	17,600	Fall	Medium	Single Crown	Up to 3,000 feet	Blue, Purple	Spring
Acidic	Dry, sandy	40	17,600	Spring	Medium	Densely Branched	3,300-9,800 feet	Purple	Summer
Neutral	Loamy	8-15	19,000	Spring, Summer, Fall	Medium	Forb/Herb	Above 1,700 feet	Pink, Blue, Purple	Summer
Neutral	Well-drained, sandy, gravelly	20-30	15,500	Spring, Fall	Low	Bunch	Up to 6,000 feet	Purple, Blue, White	Spring, Summer
Acidic	Well-drained, coarse	20-30	12,900	Spring, Fall	High	Multiple Stem	Above 4,000 feet	Blue, Purple	Summer
Acidic	Clay, loamy	0.8	2,080,000	Late Summer	Low	Single Crown	Up to 5,000 feet	White	Summer
Neutral	Well-drained	3-5	408,000	Fall	Medium	Rhizomatous	5,700-8,600 feet	Violet, Blue, Yellow	Summer, Fall
Acidic	Well-drained	0.1	36,800,000	Fall	Medium	Rhizomatous	8,000-9,700 feet	Peach, White, Yellow	Spring, Summer
Neutral	Loamy, sandy, gravelly	20-30	6,300	Spring	High	Bunch	2,500-6,500 feet	Deep Pink	Spring, Summer
Acidic, neutral, and basic	Moist	1	839,000	Spring, Fall	Medium	Colonies	4,000-8,500 feet	Lavender, White	Spring, Summer

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Monarda fistulosa</i>	Wild Bergamot (Bee Balm)	MOFI	Zones 3-8	Native	Perennial	2-4 feet	20+ inches	Full sun, partial shade
<i>Nemophila maculata</i>	Five Spot	NEMA	Zones 7-13	Native	Annual	12-15 inches	12-16 inches	Full sun, partial shade
<i>Nemophila menziesii</i>	Baby Blue Eyes	NEME	Zones 2-11	Native	Annual	6 inches	5+ inches	Full sun, full shade
<i>Oenothera biennis</i>	Evening Primrose	OEBI	Zones 5-9	Native	Perennial	16-36 inches	5-12 inches	Full sun, partial shade
<i>Oenothera speciosa</i>	Showy Evening Primrose	OESP2	Zones 5-9	Native	Perennial	10 inches	Average	Full sun
<i>Osmorhiza occidentalis</i>	Sweet Anise (Western Sweetroot)	OSOC	Zones 5-9	Native	Perennial	3 feet	16+ inches	Partial shade
<i>Papaver nudicaule</i>	Iceland (Arctic) Poppy	PANU3	Zones 2-7	Introduced	Perennial	1-2 feet	5-15 inches	Full sun
<i>Parthenium integrifolium</i>	Wild Quinine	PAIN3	Zones 3-7	Native	Perennial	2-4 feet	20+ inches	Full sun
<i>Penstemon acuminatus</i>	Sharpleaf Penstemon	PEAC	Zones 6-8	Native	Perennial	8-24 inches	12-30 inches	Full sun
<i>Penstemon cyananthus</i>	Wasatch Penstemon	PECY2	Zones 3-8	Native	Perennial	18 inches	12-30 inches	Full sun, partial shade
<i>Penstemon digitalis</i>	Foxglove Beardtongue	PEDI	Zones 3-8	Native	Perennial	Up to 4 feet	30-55 inches	Full sun, partial shade
<i>Penstemon eatonii</i>	Firecracker Penstemon	PEEA	Zones 4-8	Native	Perennial	2-3 feet	10-20 inches	Full sun
<i>Penstemon grandiflorus</i>	Shell Leaf Penstemon (Large-Flowered Beardtongue)	PEGR7	Zones 3-9	Native	Perennial	Up to 4 feet	12-25 inches	Full sun, partial shade
<i>Penstemon palmeri</i>	Palmer's Penstemon	PEPA8	Zones 4-9	Native	Perennial	4-5 feet	6-14 inches	Full sun
<i>Penstemon procerus</i>	Smallflower (Littleflower) Penstemon	PEPR2	Zones 3-9	Native	Perennial	17-35 inches	10-16 inches	Full sun, partial shade
<i>Penstemon strictus</i>	Rocky Mountain Penstemon	PEST2	Zones 4-9	Native	Perennial	1-3 feet	15-20 inches	Full sun, partial shade

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Neutral	Clay, loamy	1.5	1,120,000	Spring, Fall	None	Clumping	Up to 5,000 feet	Lavender, Pink, White	Summer, Fall
Neutral	Clay, loamy	10-16	87,000	Spring	Low	Spreading	Below 7,500 feet	White, Violet	Spring
Neutral	Moist, loamy	3-6	258,000	Spring	Medium	Dense	Up to 10,200 feet	Bright Blue, White	Spring, Summer
Neutral	Clay, loamy, sandy	1	1,440,000	Spring, Fall	Medium	Forb/Herb	3,000-7,500 feet	Bright Yellow, White	Summer, Fall
Neutral	Loamy, sandy	1	2,500,000	Spring, Fall	High	Spreading	3,000-10,000 feet	Pink, Yellow, White	Summer, Fall
Neutral	Clay, loamy, sandy	15-30	29,800	Spring, Summer	High	Upright	Above 3,000 feet	Yellow	Summer
Acidic, neutral	Well-drained	1	3,250,000	Spring, Fall	Medium	Tufted or Matted	1,000-3,250 feet	Orange, Yellow, Pink, White	Spring, Summer
Acidic, neutral	Well-drained	13.5	112,000	Fall	High	Branched	1,000-5,000 feet	Gray, White	Summer, Fall
Neutral	Sandy, gravelly	2-4	400,000-500,000	Spring	High	Low tufts	Up to 8,000 feet	Blue	Summer
Neutral	Clay, loamy, sandy	2-4	290,000	Fall	Low	Clumping, erect	2,150-6,000 feet	Blue	Summer
Acidic, neutral, and basic	Clay, loamy, sandy	0.8	2,080,000	Fall	High	Erect	3,500-7,500 feet	Pale Purple	Summer
Neutral, basic	Clay, loamy, sandy	1-3	400,000	Fall	Medium	Rosette	3,300-8,000 feet	Bright Red	Spring, Summer
Neutral	Dry, rocky	6.8	224,000	Fall	Medium	Cluster	5,200-9,650 feet	Pink, Lavender	Spring, Summer
Neutral	Well-drained	3	620,000	Fall	High	Upright	2,600-8,200 feet	Lavender, Red, Pink, White	Spring, Summer
Neutral	Loamy, sandy	2-3	200,000	Late Winter	Medium	Erect	5,000-8,000 feet	Violet, Yellow, Blue, White	Summer
Neutral	Sandy, rocky	1-3	478,000	Fall	Medium	Spreading	6,000-10,000 feet	Blue, Violet	Summer

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Persicaria pennsylvanica</i> (<i>Polygonum pennsylvanicum</i>)	Pennsylvania Smartweed	POPE2	Zones 7-11	Native	Annual	Up to 6 feet	17+ inches	Full sun
<i>Phacelia crenulata</i>	Desert Bluebells (Cleftleaf Wildheliotrope)	PHCR	Zones 5-10	Native	Annual	Up to 2 feet	12-14 inches	Full sun
<i>Phacelia tanacetifolia</i>	Lacy Phacelia	PHTA	Zones 2-10	Native	Annual	1-3 feet	7-18 inches	Full sun
<i>Phlox drummondii</i>	Drummond Phlox	PHDR	Zones 2-11	Native	Annual	20 inches	25-70 inches	Full sun
<i>Phlox pilosa</i>	Prairie Phlox	PHPI	Zones 4-9	Native	Perennial	6-18 inches	15-20 inches	Full sun, partial shade
<i>Physostegia virginiana</i>	Obedient Plant	PHV8	Zones 3-9	Native	Perennial	Up to 4 feet	36 inches	Full sun, partial shade
<i>Potentilla arguta</i>	Prairie Cinquefoil	POAR7	Zones 3-8	Native	Perennial	1-3 feet	10+ inches	Full sun, partial shade
<i>Psoralea esculenta</i> (<i>Pediomelum esculentum</i>)	Prairie Turnip (Indian Breadroot)	PEES	Zones 4-8	Native	Perennial	30 inches	12-15 inches	Full sun, full shade
<i>Pycnanthemum virginianum</i>	Mountain Mint	PYVI	Zones 4-8	Native	Perennial	1-3 feet	18+ inches	Full sun, partial shade
<i>Ratibida columnifera</i>	Prairie (Longheaded) Coneflower	RACO3	Zones 4-9	Native	Perennial	1.5 feet	16-40 inches	Full sun
<i>Ratibida columnifera</i> var. <i>pulcherrima</i>	Mexican Hat (Upright Prairie Coneflower)	RACO3	Zones 4-8	Native	Perennial	1-2 feet	10+ inches	Full sun
<i>Ratibida pinnata</i>	Grayhead (Yellow) Coneflower	RAPI	Zones 3-7	Native	Perennial	Up to 5 feet	18+ inches	Full sun, partial shade
<i>Rudbeckia hirta</i>	Black-Eyed Susan	RUHI2	Zones 3-10	Native	Annual/ Perennial	12-40 inches	28+ inches	Full sun
<i>Rudbeckia laciniata</i>	Wild Golden Glow	RULA3	Zones 3-9	Native	Perennial	4-6 feet	15+ inches	Full sun, full shade
<i>Rudbeckia occidentalis</i>	Western Coneflower	RUOC2	Zones 4-9	Native	Perennial	.5-2 feet	10+ inches	Full sun, partial shade

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Acidic, neutral, and basic	Clay, loamy, sandy	10	62,000	Spring	Medium	Bunch	2,500-7,000 feet	Pink	Summer
Acidic, neutral, and basic	Sandy, rocky	1-3	1,000,000	Spring	Medium	Forb/Herb, Erect	1,000-10,000 feet	Purple, Violet	Spring
Neutral	Fine to coarse	5	235,000	Spring	Medium	Erect	Up to 8,000 feet	Lavender, Blue	Spring
Neutral	Well-drained, sandy	4-8	234,000	Fall	Medium	Rhizomatous	Up to 5,200 feet	Red, Peach, Lavender, White	Spring
Acidic, neutral	Clay, rocky	5	230,000	Spring, Fall	Medium	Clumping, Upright	Up to 7,000 feet	Pink, Deep Pink, Lavender	Summer
Acidic, neutral, and basic	Moist	8.8	2,770,000	Fall	Medium	Upright	Up to 7,000 feet	Pink, Lavender	Late Summer
Acidic, neutral, and basic	Loamy, well-drained	0.5	440,000	Spring, Fall	Low	Shrubby/Clumpy	Up to 6,580 feet	White	Summer
Acidic, neutral	Dry, rocky	50	17,600	Fall	Medium	Forb-Erect	3,000-6,500 feet	Light Blue	Summer
Acidic, neutral, and basic	Dry, sandy, rocky	0.5	4,500,000	Spring	Medium	Erect	2,000-6,500 feet	White	Summer
Neutral	Clay, loamy, sandy	2	600,000	Fall	Medium	Erect	4,000-9,000 feet	Yellow, Brown	Summer, Fall
Neutral	Clay, loamy, sandy	2	600,000	Spring, Fall	Medium	Upright	Up to 9,000 feet	Reddish-Brown	Spring, Summer, Fall
Acidic, neutral	Loamy, sandy	3.3	625,000	Spring	Medium	Stout Rhizomes	Up to 7,000 feet	Bright Yellow, Gray	Summer
Neutral	Clay, loamy, sandy	1	1,700,000	Spring, Fall	Medium	Erect	2,500-8,200 feet	Yellow, Gold, Dark Brown	Summer
Acidic, neutral, and basic	Fine to coarse	6.8	160,000	Fall	High	Large Colonies	Up to 9,000 feet	Yellow	Summer, Fall
Neutral	Clay, loamy, sandy	4-5	150,000	Spring, Fall	Medium	Clumping	4,000-9,000 feet	Red, Yellow, Green	Summer

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Rudbeckia subtomentosa</i>	Sweet Black-Eyed Susan	RUSU	Zones 3-10	Native	Perennial	1-3 feet	25 inches	Full sun, partial shade
<i>Rudbeckia triloba</i>	Brown-Eyed Susan	RUTR2	Zones 3-10	Native	Biennial/ Short-Lived Perennial	6 feet	20-80 inches	Full sun, partial shade
<i>Sagittaria latifolia</i>	Common Arrowhead	SALA2	Zones 5-11	Native	Perennial	3 feet	14+ inches	Full sun, partial shade
<i>Senna covesii</i>	Desert Senna	SECO10	Zone 7	Native	Perennial	3 feet	12.6 inches	Full sun
<i>Silphium integrifolium</i>	Rosin Weed	SIIN2	Zones 4-8	Native	Perennial	Up to 8 feet	10-20 inches	Full sun
<i>Silphium laciniatum</i>	Compass Plant	SILA3	Zones 3-8	Native	Perennial	9 feet	10-15 inches	Full sun, partial shade
<i>Silphium perfoliatum</i>	Cup Plant	SIPE2	Zones 4-8	Native	Perennial	Up to 8 feet	16+ inches	Full sun, partial shade
<i>Silphium terebinthinaceum</i>	Prairie Dock	SITE	Zones 4-7	Native	Perennial	8 feet	14-18 inches	Full sun, partial shade
<i>Sisyrinchium bellum</i>	Blue-Eyed Grass	SIBE	Zones 4-9	Native	Perennial	1-1.5 feet	8 inches	Full sun
<i>Solidago graminifolia</i> (<i>Euthamia graminifolia</i> var. <i>graminifolia</i>)	Grass-Leaved Goldenrod	EUGRG	Zones 3-9	Native	Perennial	3-6 feet	18 inches	Full sun, partial shade
<i>Solidago nemoralis</i>	Old Field (Gray/Dwarf) Goldenrod	SONE	Zones 3-9	Native	Perennial	6-30 inches	15+ inches	Full sun, partial shade
<i>Solidago rigida</i> (<i>Oligoneuron rigidum</i> var. <i>rigidum</i>)	Stiff Goldenrod	OLRIR	Zones 3-9	Native	Perennial	1.5-6.5 feet	14+ inches	Full sun, partial shade
<i>Solidago speciosa</i>	Showy Goldenrod	SOSP2	Zones 3-8	Native	Perennial	1-6 feet	16+ inches	Full sun, partial shade
<i>Sphaeralcea ambigua</i>	Desert Globemallow	SPAM2	Zones 4-10	Native	Perennial	14-30 inches	6+ inches	Full sun
<i>Sphaeralcea coccinea</i>	Scarlet Globemallow	SPCO	Zones 6-8	Native	Perennial	4-16 inches	6+ inches	Full sun
<i>Sphaeralcea grossulariifolia</i>	Gooseberryleaf Globemallow	SPGR2	Zones 4-10	Native	Perennial	14-30 inches	6-12 inches	Full sun

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Acidic	Clay, loamy, sandy	2	712,000	Spring, Fall	Medium	Large Clumps	5,000-9,500 feet	Yellow, Dark Brown	Summer, Fall
Acidic	Loamy	2.5	500,000	Spring, Fall	Medium	Clumps	5,000-9,500 feet	Yellow, Brown	Summer, Fall
Acidic	Loamy, sandy	1.6	67,000	Spring, Summer	None	Spade-like	1,500-3,000 feet	White, Yellow, Green	Summer
Neutral	Coarse	8-14	110,000	Spring	Medium	Forb/Herb	1,000-3,000 feet	Yellow	Spring, Summer, Fall
Acidic	Well-drained	75	20,000	Fall	Medium	Short rhizomes	Up to 5,000 fee	Yellow	Summer
Acidic, neutral, and basic	Clay, silt	50	10,500	Spring, Fall	High	Upright	Up to 5,500 feet	Yellow	Summer
Acidic, neutral	Clay, Loamy, Sandy	25	100,000	Fall	Low	Clumping	4,200-10,000 feet	Yellow	Summer
Basic	Dry	75	17,000	Fall	High	Upright, Clumping	750-2,750 feet	Yellow	Summer
Neutral	Clay, loamy	3-5	350,000	Fall	Medium	Clumping	Up to 8,000 feet	Deep Blue, Deep Violet	Spring, Summer
Acidic, neutral	Clay, sandy	0.8	5,600,000	Spring, Fall	Medium	Rhizomatous	Up to 7,000 feet	Yellow	Summer
Neutral	Loamy, sandy, gravely	0.4	1,000,000	Spring, Fall	Medium	Clumping	1,700-10,000 feet	Yellow	Late Summer
Acidic, basic	Loamy, sandy, gravely	1-2	770,000	Spring, Fall	High	Clusters	500-7,220 feet	Yellow	Summer, Fall
Acidic, neutral, and basic	Dry	1	1,300,000	Fall	Medium	Clumping	3,300-8,750 feet	Yellow	Summer, Fall
Neutral	Clay, loamy, sandy	2-4	500,000	Spring	High	Clumping	Up to 3,500 feet	Apricot, Orange	Spring, Summer, Fall
Neutral, basic	Loamy, sandy	5	500,000	Spring	High	Colonies, Clumping	3,000-9,000 feet	Red, Orange	Spring, Summer, Fall
Neutral	Loamy, sandy, gravely	2-4	500,500	Fall	Medium	Single Crown	2,600-7,500 feet	Red, Orange	Spring

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed	Sun & Shade Tolerance
<i>Sphaeralcea munroana</i>	Munro's Globemallow	SPMU2	Zones 4-10	Native	Perennial	8-32 inches	6-14 inches	Full sun, partial shade
<i>Thalictrum dasycarpum</i>	Purple Meadow Rue	THDA	Zones 3-8	Native	Perennial	16-79 inches	20-50 inches	Full sun, partial shade
<i>Thermopsis montana</i>	Mountain Goldenbanner	THMO6	Zones 4-9	Native	Perennial	2-4 feet	10-20 inches	Full sun, partial shade
<i>Tradescantia bracteata</i>	Prairie Spiderwort	TRBR	Zones 4-9	Native	Perennial	Up to 2 feet	16-20 inches	Full sun
<i>Tradescantia ohiensis</i>	Ohio Spiderwort	TROH	Zones 3-9	Native	Perennial	2-3 feet	25-80 inches	Full sun, partial shade
<i>Verbena hastata</i>	Blue Vervain	VEHA2	Zones 3-9	Native	Perennial	2-5 feet	20-45 inches	Full sun, partial shade
<i>Verbena stricta</i>	Hoary Vervain	VEST	Zones 4-7	Native	Perennial	Up to 5 feet	20-30 inches	Full sun, partial shade
<i>Vernonia fasciculata</i>	Ironweed	VEFA2	Zones 6-8	Native	Perennial	3-10 feet	12-17 inches	Full sun, partial shade
<i>Veronicastrum virginicum</i>	Culver's Root	VEVI4	Zones 3-8	Native	Perennial	6 feet	20-80 inches	Full sun, partial shade
<i>Vicia americana</i>	American Vetch	VIAM	Zones 4-7	Native	Perennial	30 inches	9+ inches	Full sun, full shade
<i>Viola pedatifida</i>	Prairie Violet	VIPE2	Zones 3-8	Native	Perennial	6-12 inches	30 inches	Full sun, partial shade
<i>Wyethia amplexicaulis</i>	Mule Ears	WYAM	Zones 4-9	Native	Perennial	Up to 32 Inches	10-18 inches	Full sun, partial shade
<i>Wyethia mollis</i>	Woolly Mule Ears	WYMO	Zones 7-10	Native	Perennial	32 inches	10-18 inches	Full sun
<i>Zizia aptera</i>	Heart Leaf Golden Alexanders	ZIAP	Zones 3-8	Native	Perennial	1-3 feet	15-50 inches	Full sun, partial shade
<i>Zizia aurea</i>	Golden Alexanders	ZIAU	Zones 3-8	Native	Perennial	1.5-3 feet	10 inches	Full sun, partial shade

Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Drought Tolerance	Growth Form	Elevation	Bloom Color	Flowering Season
Neutral	Loamy, sandy, gravely	2-4	460,000	Spring	High	Open	4,500-8,000 feet	Bright Orange	Summer
Acidic, neutral, and basic	Well-drained	8	190,000	Fall	Low	Shrubby/ Clumpy	3,000-8,400 feet	Lavender, Creamy Green	Summer
Neutral	Moist, well-drained	20-40	30,000	Early Spring	Medium	Large Colonies	2,500-11,400 feet	Bright Yellow	Spring, Summer
Acidic	Moist, well-drained	9.5	165,000	Spring, Fall	Medium	Clump Forming	2,500-7,000 feet	Plum, Yellow	Summer
Acidic	Moist, well-drained	11	128,000	Fall	Medium	Grass-like	2,500-7,000 feet	Dark Blue-Green, Yellow	Spring, Summer
Acidic, neutral, and basic	Moist, wet	1	1,400,000	Fall	Medium	Rhizomatic	Up to 7,000 feet	Purple, Blue	Summer
Neutral	Loamy	2.5	448,000	Fall	High	Erect	Up to 7,000 feet	Purple, Blue	Summer
Acidic	Moist, loamy	4	448,000	Fall	Medium	Upright	3,700-4,900 feet	Purple, Lavender	Summer
Acidic, neutral, and basic	Dry	0.2	7,761,000	Spring, Fall	Low	Dense Clusters	Up to 1,000 feet	White	Summer
Neutral, basic	Loamy, sandy, gravely	45	33,000	Fall	High	Mounding	5,000-10,000 feet	Pink, Purple	Spring, Summer
Acidic, neutral	Well-drained, moist	3.3	448,000	Fall	Medium	Erect	5,400-7,000 feet	White, Purple, Violet	Spring
Neutral, basic	Clay, loamy	16	27,000	Fall	Low	Upright	4,500-11,000 feet	Pale Yellow	Spring, Summer
Neutral, basic	Loamy, sandy, gravely	20-25	47,539	Fall	High	Upright	Up to 8,500 feet	Yellow	Summer
Acidic, neutral	Moist	7.5	176,000	Fall	Medium	Colonies	3,600-8,600 feet	Yellow	Spring, Summer
Acidic, neutral	Moist	8	176,000	Fall	Medium	Colonies	6,000-10,500 feet	Yellow	Spring, Summer



SHRUBS & WOODY PLANTS

Shrubs and woody plants not only provide food and shelter for wildlife, they also contribute to diverse ecosystems that create critical habitat for plants, pollinators, and insects alike. Millborn is proud to offer the highest quality and quantity of product lineup for shrubs and woody plants. No matter how complex the needs of your project are, you can meet them with Millborn.

A shrub is a woody plant that has several stems and is usually less than ten feet in height. You may know them as bushes, which are extra dense shrubs. Shrubs and woody plants are essential components of any diverse ecosystem, offering food, cover, warmth, concealment, height diversity, and a nesting habitat for wildlife of all shapes and sizes.

All our products are available in custom mixes, so let us know the needs of your project and growing conditions and we'll design a mix to fit your specific project goals.

Amelanchier alnifolia, Saskatoon Serviceberry

- Shrub-small tree, variable growth form. Brown bark, red fissures. Flowers white.
- Important for reclamation, riparian, and shelterbelts.
- Fire dependent. Fire tolerant, post-fire crown sprouting.



Did You Know: Produces berries that are great in pies, jams, or jellies

Amorpha canescens, Leadplant

- Sub-shrub with herbaceous stem. Opposite, odd, lanceolate leaflets. Pubescent stems and underside of leaflets. Purple florets along long florescences.
- Useful in erosion control. Nitrogen fixer. Soaking seeds important for seeding success.
- Weakly tolerant to saline and acidic soils, moderately tolerant to alkaline soils. Drought and shade tolerant.
- Palatable for livestock and wildlife.



Did You Know: Name comes from the color of its leaves

Amorpha fruticosa, Desert False Indigo

- Deciduous shrub. Variable leaf shape. Alternate, odd leaflets. Flowers purple-blue with orange anthers.
- Presoaking seeds is required for seeding success.
- Drought tolerant.



Did You Know: Toxic if consumed

Artemisia cana, Silver Sagebrush

- Narrow bladed leaves. Growth form is upright, clumping formation expanding at the ground level.
- Seeds and plants should be watered if soil is dry.
- Heat and drought tolerant.
- Fair energy value, fair to good protein value. Low to good palatability for livestock, good for wildlife.



Did You Know: Silver sage is one of the species traditionally used in native ceremonies

Artemisia frigida, Fringed Sage (Fringed Sagewort)

- Mound-forming sub-shrub. Leaves are silky gray-green with yellow disk flowers.
- Broadcast or drilled, no deeper than 1/8 inch.
- Pioneer species, resistant to browsing. Unpalatable to fair for cattle. Fair to good for sheep. Some use by wildlife.



Did You Know: Seedlings are short-term drought resistant, making them moderately competitive

Artemisia ludoviciana, Prairie Sage (Cudweed Sagewort)(White Sage)

- Perennial herb rather than brush. White-wooly stem. Leaves alternate. Flowers greenish to white.
- Requires sufficient sunlight to germinate.
- Drought tolerant.
- Good browse for wildlife and livestock. Essential cover for small mammals and sage grouse.



Did You Know: White Sage is a common species used in smudging ceremonies

Artemisia nova, Black Sagebrush

- Low growing sage species. Three lobed, pubescent leaves. Floral stems above floral canopy.
- 400 plants/acre. Drilled no deeper than 1/4 inch, late fall-winter. Slower growing, deferred grazing for 2-5 years will help establishment.
- Calcareous soil tolerant.
- Good browse for wildlife and livestock.



Did You Know: Contains natural pain relieving compounds and strong anti-inflammatory properties

Artemisia tridentata ssp. *tridentata*, Basin Big Sagebrush

- Looks like a sagebrush. Evergreen and deciduous foliage. Leaves are three lobed. Basin Big Sage leaves are many times longer than they are wide. Single main trunk.
- Optimal plant density is 400 plants per acre. Drill no deeper than 1/8 inch. Seeds have low viability.
- Secondary compounds deter browsing of deciduous foliage. Not alkali, saline, or calcareous tolerant.
- Excellent winter browse species for many wildlife species. Habitat for many wildlife species.



Did You Know: *Artemisia tridentata* is Nevada's state flower

Artemisia tridentata ssp. *Wyomingensis*, Wyoming Big Sagebrush

- Looks like a sagebrush. Evergreen and deciduous foliage. Leaves are three lobed. Wyoming Big Sage leaves are shorter and three times longer than wide. Branched at or above ground.
- Optimal plant density is 400 plants per acre. Drill no deeper than 1/8 inch. Seeds have low viability.
- Secondary compounds deter browsing of deciduous foliage. Mildly alkali tolerant.
- Excellent winter browse species for many wildlife species. Habitat for many wildlife species.



Did You Know: *Artemisia tridentata* is the state flower of Nevada

Atriplex canescens, Fourwing Saltbrush

- Polymorphic species, evergreen to deciduous. Dioecious (male and female plants). Fruits have four large wings.
- Important reclamation species. Root sprout after fires. Slow establishment. 400 plants per acre.
- Some insect concerns. Not tolerant to browsing of young plants. Very saline tolerant, somewhat sodic tolerant.
- Highly palatable browse for livestock and wildlife.



Did You Know: Taproots can extend as deep as 40 feet

Baptisia alba, White Wild (False) Indigo

- Pea-like floral blooms in an upright manner. A foliage is displayed. Stems are erect.
- Sew seed 1/4 inch deep in the late fall.
- Drought tolerant.
- Poisonous to cattle, horses, and other livestock.



Did You Know: "Baptisia" means "to dye" in Latin, due to some indigo species being used for dye

Ceanothus integerrimus, Deerbrush

- Large, rounded, glossy leaves. Bushy appearance. Expansion and growth occur at the ground level. Flowers white, lilac, or pink.
- Germination is best following a period of cold.
- Drought tolerant.
- High-quality, palatable forage for livestock and wildlife.



Did You Know: Valuable plant for honey production

Ceanothus sanguineus, Redstem Ceanothus

- Small clusters of florals occur at the ends of branches and atop. Erect stems with branching leaves.
- Will continue sprouting following a disturbance like fire.
- Drought tolerant.
- Moderately palatable for cattle, fair to excellent for sheep. Fair to good cover and forage value for wildlife.



Did You Know: Redstem Ceanothus grows in two small native areas of the Upper Peninsula of Michigan, geographically separate from other populations of the species

Ceanothus velutinus, Snowbrush Ceanothus

- Evergreen style leaves that are often sticky and shiny. Small, pyramid style floral clusters bloom atop and throughout. Semi-erect stems that expand at the ground level.
- Self seeding once established.
- Poor to good palatability for cattle, sheep, and horses. Valuable browse and cover for wildlife.



Did You Know: Snowbrush Ceanothus has been recorded in mountain lion stomach samples

Chrysothamnus viscidiflorus, Douglas (Low) Rabbitbrush

- Low-growing shrub. Leaves are linear. Stems glabrous or pubescent. Flowers are yellow.
- Seed does not persist in seed bank. Well suited for reclamation. Shallow drilled or broadcast. May become weedy with high disturbance.
- Increases with overgrazing. Mowing and burning ineffective. Some insect susceptibility.
- Desirable fall browse for livestock and wildlife. Deer browse in spring. Cover and nesting for sage-grouse and small mammals.



Did You Know: Provides nectar to butterflies in late summer and early fall

Ericameria nauseosa, Rubber Rabbitbrush

- Shrub, branching from the base, flexible, yellow green with felt-like hairs. Leaves linear. Flowers tubular and yellow at the end of branches.
- Soil stabilizer, important in reclamation.
- Tolerant to many substrates.
- Low forage value for all livestock. Occasionally toxic. Important winter browse for wildlife in depleted systems.



Did You Know: Native Americans used this for baskets, yellow dye, chewing gum, tea, cough syrup, and to treat chest pains.

Gutierrezia sarothrae, Broom Snakeweed

- Subshrub. Woody base, bushy and branch upwards. Non-woody stems pubescent. Leaves linear to threadlike. Flowers dense clusters at the end of stems. Plant is resinous.
- Seeds require 4-6 month ripening period prior to germination.
- Pest resistant. May be considered weedy if not managed properly. Low salinity tolerance.
- Consumption of large amounts during winter of early spring causing saponin toxicity in livestock. Important forage for some wildlife species.



Did You Know: May comprise of up to 28% of pronghorn diets

Krascheninnikovia lanata, Winterfat

- Low-growing, erect to spreading half shrub. Leaves simple, alternate. Spike inflorescence.
- Excellent species for soil stabilization. Pioneer species. Winter to early spring planting leads to best results.
- Winter grazing tolerant, but growing season browsing can lead to decreased plant survivability.
- Good to excellent browse for cattle, sheep, and goats, fair for horses. Very good browse for wildlife.



Did You Know: Important in the winter for deer

Purshia tridentata, Antelope Bitterbrush

- Varied growth forms from erect to decumbent. Leaves graygreen to bright green. Flowers are white top yellow.
- Late fall or winter seeding recommended.
- Not fire resistant. Species varies in cold, elevation, drought tolerance.
- High quality browse for livestock and wildlife in spring and winter. Because it is very palatable, grazing should be controlled to eliminate overuse.



Did You Know: Native Americans used Antelope Bitterbrush for numerous medicinal purposes

Rosa arkansana, Prairie Wild Rose

- Five-petaled flowers that are round in shape with wavy edges and pointed tips. Stamens surround the flower. Stems expand at the ground level.
- Mix the seeds with moist sand prior to sowing.
- Drought tolerant.
- Browsed by wildlife, including mule deer. Used for cover by many small wildlife species.



Did You Know: State flower of Iowa and North Dakota

Rosa woodsii, Woods' Rose

- Subshrub-shrub, may form impenetrable thickets. Red-brown-gray stems, curved-straight prickles. Leaves alternate. Flowers five petals, pink-lavender.
- Rhizomatous growth means it is effective for erosion control in disturbed areas. Pioneer species. Seeds viable for 2-5 years, 30-40 day germination.
- Rhizomes make plant fire tolerant, even with top-kill.
- Energy and protein source for wildlife. Browsed by livestock and wildlife.



Did You Know: The hips are dried for use in flavoring teas, jellies, and puddings

Yucca glauca, Soapweed Yucca

- Clumping formation. Leaves grow from the center of the plant in a dagger-like formation. White floral bloom in an upward manner.
- Soaking seed for 24 hours will improve germination [rate].
- Grazed by wildlife and livestock, generally when limited forage is available. Used by few species for cover and nesting.
- Drought tolerant.



Did You Know: Roots can be utilized to make a soap used for washing hair, clothing, and blankets

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed
<i>Amelanchier alnifolia</i>	Saskatoon Serviceberry	AMAL2	Zones 2-8	Native	Perennial	4-15 feet	12-140 inches
<i>Amorpha canescens</i>	Leadplant	AMCA6	Zones 2-9	Native	Perennial	3 feet	20-45 inches
<i>Amorpha fruticosa</i>	Desert False Indigo	AMFR	Zones 3-10	Native	Perennial	3-10 feet	10-65 inches
<i>Artemisia cana</i>	Silver Sagebrush	ARCA13	Zones 3-7	Native	Perennial	1.5-3.5 feet	8-12 inches
<i>Artemisia frigida</i>	Fringed Sage (Fringed Sagewort)	ARFR4	Zones 3-10	Native	Perennial	4-14 inches	8-12 inches
<i>Artemisia ludoviciana</i>	Prairie Sage (Cudweed Sagewort) (White Sage)	ARLU	Zones 4-9	Native	Perennial	4-16 inches	10-40 inches
<i>Artemisia nova</i>	Black Sagebrush	ARNO4	Zones 3-8	Native	Perennial	2 feet	6-20 inches
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	Basin Big Sagebrush	ARTRT	Zones 4-9	Native	Perennial	3-9 feet	6-35 inches
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	Wyoming Big Sagebrush	ARTRW8	Zones 3-10	Native	Perennial	2-3 feet	8-20 inches
<i>Atriplex canescens</i>	Fourwing Saltbrush	ATCA2	Zones 5-9	Native	Perennial	1-8 feet	8-24 inches
<i>Baptisia alba</i>	White Wild (False) Indigo	BAAL	Zones 5-8	Native	Perennial	2-4 feet	32-48 inches
<i>Ceanothus integerrimus</i>	Deerbrush	CEIN3	Zones 7-9	Native	Perennial	3-18 feet	16-40 inches
<i>Ceanothus sanguineus</i>	Redstem Ceanothus	CESA	Zones 4-8	Native	Perennial	3-10 feet	18-23 inches
<i>Ceanothus velutinus</i>	Snowbrush Ceanothus	CEVE	Zones 4-8	Native	Perennial	2-9 feet	27-45 inches
<i>Chrysothamnus viscidiflorus</i>	Douglas (Low) Rabbitbrush	CHV18	Zones 3-8	Native	Perennial	4 feet	7-24 inches
<i>Ericameria nauseosa</i>	Rubber Rabbitbrush	ERNA10	Zones 4-9	Native	Perennial	2-5 feet	7-18 inches

Sun & Shade Tolerance	Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Mycorrhizal Dependent	Drought Tolerance	Growth Form	Elevation
Partial shade, full shade	Acidic, neutral	Clay, loamy, sandy	1	61,000	Spring, Fall	Yes	Low	Spreading	Up to 9,800 feet
Full sun, partial shade	Acidic, neutral, and basic	Loamy, sandy, gravelly	6.5	97,000	Spring, Fall	Yes	High	Semi-Erect	Up to 10,200 feet
Full sun	Acidic, neutral, and basic	Loamy, sandy, gravelly	20	63,055	Spring, Summer	Yes	Medium	Dense Thickets	1,300-7,500 feet
Full sun	Neutral, basic	Clay, loamy, sandy	1	850,000	Spring	Yes	High	Erect, Branching	2,000-10,000 feet
Full sun, partial shade	Neutral, basic	Clay, loamy, sandy	0.4	3,875,000	Spring, Fall	No	High	Mat-Forming	3,000-8,000 feet
Full sun, partial shade	Neutral, basic	Loamy, sandy	0.4	4,000,000	Spring, Summer	No	High	Erect, Clustered	Up to 11,500 feet
Full sun	Neutral, basic	Clay, loamy, sandy	1-3	550,000	Fall	Yes	High	Spreading	4,000-8,000 feet
Full sun	Neutral	Clay, loamy, sandy	1-3	1,700,000 - 2,400,000	Spring, Fall	No	High	Multiple Stem	1,900-6,900 feet
Full sun	Neutral	Clay, loamy, sandy	1-3	1,700,000 - 2,500,000	Spring, Fall	Yes	High	Branching	2,600-7,200 feet
Full sun, partial shade	Neutral, basic	Clay, loamy, sandy	1-3	38,000-78,000	Fall	Yes	High	Upright, Mounding	Up to 8,000 feet
Full sun, partial shade	Acidic, neutral	Loamy, sandy	56	25,000	Spring, Fall	Yes	Medium	Shrublike	Up to 8,200 feet
Full sun, partial shade	Acidic, neutral, basic	Clay, loamy, sandy	5.5	41,000-178,000	Fall, Late Winter	Yes	High	Branched, Spreading	1,700-3,600 feet
Partial shade, full shade	Neutral	Loamy, sandy	5	141,800	Fall	Yes	Medium	Erect	2,400-4,000 feet
Partial shade, full shade	Acidic, neutral, and basic	Loamy, sandy, gravelly	5.2	124,275	Fall	Yes	Low	Ascending-Erect	1,500-7,000 feet
Full sun, partial shade	Neutral, basic	Loamy, sandy	1-3	782,000	Spring	Yes	High	Low Native Shrub	Above 2,600 feet
Full sun	Neutral, basic	Loamy, sandy	1	693,000	Spring, Fall	Yes	High	Multi-Branched	Up to 8,000 feet

Scientific Name	Common Name	USDA symbol	USDA Hardiness Zones	Native or Introduced	Lifespan	Mature Height	Annual precipitation needed
<i>Gutierrezia sarothrae</i>	Broom Snakeweed	GUSA2	Zones 7-10	Native	Perennial	8-28 inches	7-30 inches
<i>Krascheninnikovia lanata</i>	Winterfat	KRLA2	Zones 3-8	Native	Perennial	1-2 feet	7-16 inches
<i>Purshia tridentata</i>	Antelope Bitterbrush	PUTR2	Zones 3-6	Native	Perennial	2-6 feet	8-34 inches
<i>Rosa arkansana</i>	Prairie Wild Rose	ROAR3	Zones 4-7	Native	Perennial	1.5-8 feet	10 inches
<i>Rosa woodsii</i>	Woods' Rose	ROWO	Zones 3-8	Native	Perennial	10-80 inches	12-40 inches
<i>Yucca glauca</i>	Soapweed Yucca (Small Soapweed)	YUGL	Zones 3-10	Native	Perennial	3 feet	7-60 inches

Sun & Shade Tolerance	Soil acidity	Soil Type Adaptation	Recommended Seeding Rate PLS lbs/acre	Seeds/lb	Planting Season	Mycorrhizal Dependent	Drought Tolerance	Growth Form	Elevation
Full sun	Neutral, basic	Clay, loamy, sandy	.25	1,600,000	Spring, Summer	Yes	High	Subshrub	1,600-9,500 feet
Full sun	Neutral, basic	Clay, loamy, sandy	2-4	123,000	Spring	Yes	High	Erect, Spreading	Up to 10,000 feet
Full sun	Neutral, basic	Loamy, sandy, gravelly	1-3	15,500	Spring, Summer	No	High	Upright	4,000-11,000 feet
Full sun, partial shade	Acidic, neutral	Loamy, sandy, gravelly	25	40,000	Spring	Yes	High	Spreading	1,650-6,550 feet
Full sun, full shade	Acidic, neutral, basic	Loamy, sandy, gravelly	15	51,000	Spring	Yes	Medium	Rhizomatous	Above 2,600 feet
Full sun	Neutral	Loamy, sandy	30	22,680	Spring, Fall	Yes	High	Rhizomatous	660-7,200 feet



PERENNIAL BROADLEAVES & LEGUMES

Broadleaves and legumes are an important part of creating a big-picture vegetation management plan. Trust Millborn to have the broadleaf and legume seed you need, when you need it. We can even mix it in to a custom blend for your project. Whatever makes it easier for you to get the job done – that's what we're here to do.

Technically speaking, broadleaves are just that – a plant with a broad leaf (or a relatively flat, broad surface). Legumes are type of broadleaf that can form a nodule on its root and fix excess soil nitrogen. Clovers, peas, and vetches are common legume examples. They form relationships with bacteria to fix atmospheric nitrogen in the soil and promote breakdown and mineralization of residue due to higher nitrogen content.

Scientific Name	Common Name	Full PLS Seeding Rate	Bloom Period	Seeds per LB	Bloom Color	Vegetative Height
<i>Astragalus cicer</i>	Cicer Milkvetch	12	August to October	12,256	White	12-36"
<i>Cichorium intybus</i>	Chicory	5	June to July	425,923	Pale Blue	30-40"
<i>Lotus corniculatus</i>	Birdsfoot Trefoil	6	June to July	375,000	Yellow	12-36"
<i>Medicago sativa</i> ssp. <i>falcata</i>	Falcata Yellow Blossom Alfalfa	10	June to July	227,000	Yellow	30-36"
<i>Melilotus albus</i>	White Blossom Sweet Clover	10	June to July	260,000	White	48-60"
<i>Melilotus officinalis</i>	Yellow Blossom Sweet Clover	10	June to July	260,000	Yellow	48-60"
<i>Onobrychis viciifolia</i>	Sainfoin	40	April to May	30,240	Pink	30-36"
<i>Plantago lanceolata</i>	Plantain	5	June to July	230,000	White	12-15"
<i>Sanguisorba minor</i>	Small Burnet	12	April to May	55,000	Pink-Red	18-24"
<i>Securigera varia</i>	Crownvetch	18	June to July	140,000	Pale Pink	24-30"
<i>Trifolium alexandrinum</i>	Berseem Clover	10	June to July	206,880	Yellow-White	18-24"
<i>Trifolium frangiferum</i>	Strawberry Clover (Raw)	15	June to July	300,000	Pink	12-14"
<i>Trifolium hybridum</i>	Alsike Clover	8	June to July	700,000	Pale-White	24-30"
<i>Trifolium incarnatum</i>	Crimson Clover (Raw)	15	June to July	149,700	Red	12-24"
<i>Trifolium michelianum</i> ssp. <i>balansae</i>	Balansa Clover	8	June to July	149,700	White-Pink	24-30"
<i>Trifolium pratense</i>	Medium Red Clover	10	June to July	275,000	Pink	24-36"
<i>Trifolium repens</i>	Ladino White Clover (VNS)	5	June to July	871,650	White	8-12"
<i>Trifolium repens</i>	White Clover	5	June to July	871,650	White	4-8"



TURF SPECIES

From standard to specialized, Millborn's turf mix lineup is as diverse as it is precise. Every turf mix features premium grass seed and a strategically designed mixture of grass seed species. Whether you're a groundskeeper, contractor, sports complex director, or homeowner, Millborn's turf mixes have helped thousands of people serious about their turf be successful.

Scientific Name	Common Name	Full PLS Seeding Rate	Seeds per LB	Vegetative Height
<i>Agropyron cristatum</i>	Crested Wheatgrass (Turf Type)	12	175,000	10-30"
<i>Agrostis stolonifera</i>	Creeping Bentgrass	50	6,000,000	6-24"
<i>Cynodon dactylon</i>	Bermudagrass	12	1,800,000	1-2"
<i>Festuca arundinacea</i>	Turf Type Tall Fescue	25	200,000	12-18"
<i>Festuca brevipila</i>	Hard Fescue	200	550,000	12-18"
<i>Festuca glauca</i>	Blue Fescue	5	435,000	12-14"
<i>Festuca ovina</i>	Sheep Fescue	175	400,000	12"
<i>Festuca rubra</i>	Creeping Red Fescue	200	400,000	12-18"
<i>Festuca rubra ssp. commutata</i>	Chewings Fescue	175	400,000	12-18"
<i>Lolium perenne ssp. multiflorum</i>	Annual Ryegrass	25	227,000	12-36"
<i>Lolium perenne ssp. perenne</i>	Perennial Ryegrass (Turf Type)	30	240,400	16-24"
<i>Paspalum notatum</i>	Bahiagrass	15	275,000	3-4"
<i>Poa pratensis</i>	Kentucky Bluegrass	175	1,389,840	12-18"
<i>Poa trivialis</i>	Rough Bluegrass	3	2,100,000	1-12"
<i>Puccinellia distans</i>	Alkaligrass	100	1,200,000	12-18"



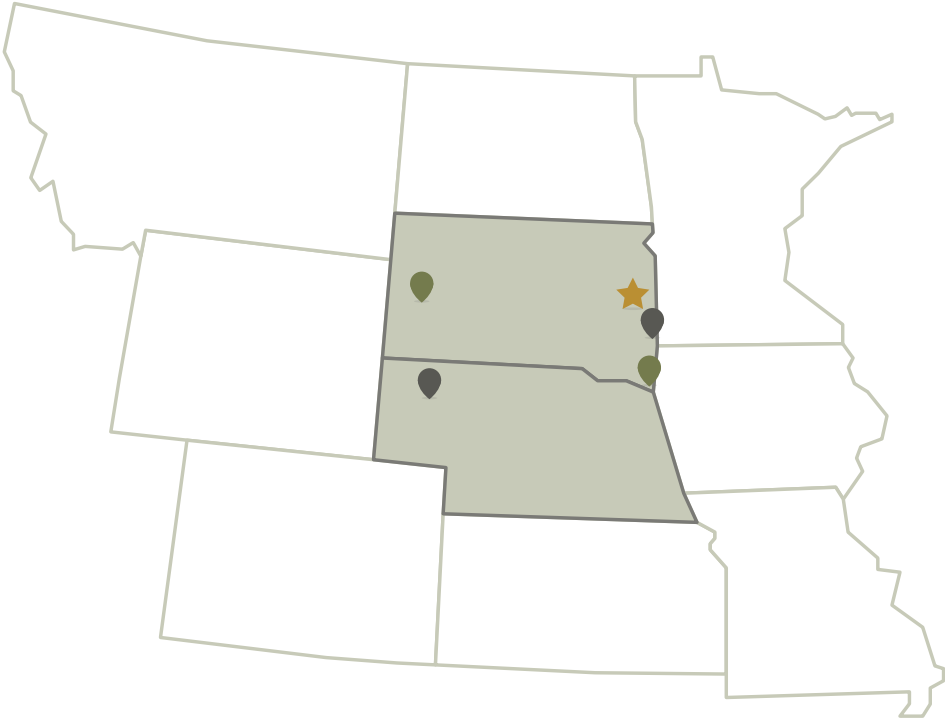
FIELD GRASSES

Field grasses are an important part of vegetation management plans, especially if there is a grazing component to your project. When establishing field grasses, be sure to consider all the variables involved in these projects – the growing conditions in your area will guide the selection of field grasses that are right for your specific project. Our experts stand ready to help you select species and varieties that will ensure long-lasting productivity.

Scientific Name	Common Name	Full PLS Seeding Rate	Seeds per LB	Vegetative Height
<i>Agropyron cristatum</i>	Crested Wheatgrass (Field Type)	12	175,000	1-4'
<i>Agrostis gigantea</i>	Redtop	8	4,990,000	2-3'
<i>Alopecurus arundinaceus</i>	Creeping Foxtail	8	750,000	3-6'
<i>Bromus biebersteinii</i>	Meadow Brome	25	71,000	2-5'
<i>Bromus inermis</i>	Smooth Brome	25	136,000	2-4'
<i>Dactylis glomerata</i>	Orchardgrass (Paiute)	12	654,000	2-4'
<i>Elymus dahuricus</i>	Dahurian Wildrye	10	80,000	1-5'
<i>Elymus hoffmannii</i>	Green Wheatgrass	10	111,000	3-3.5'
<i>Festuca arundinacea</i>	Tall Fescue (Forage)	25	227,000	2-5'
<i>Festuca pratensis</i>	Meadow Fescue	25	225,000	2-4'
<i>Festulolium</i> ssp.	Festulolium	30	227,000	1-3'
<i>Lolium perenne</i> ssp. <i>multiflorum</i>	Italian Ryegrass	20	247,000	2-4'
<i>Lolium perenne</i> ssp. <i>perenne</i>	Perennial Ryegrass (Forage Type)	30	240,400	2-3'
<i>Lolium perenne</i> ssp. <i>perenne</i>	Tetraploid Perennial Ryegrass	30	217,000	1-2.5'
<i>Phalaris arundinacea</i>	Reed Canarygrass	8	530,000	5-8'
<i>Phleum pratense</i>	Timothy	10	1,230,000	1.5-3'
<i>Poa pratensis</i>	Kentucky Bluegrass (Forage)	25	2,177,000	1-3'
<i>Thinopyrum intermedium</i>	Intermediate Wheatgrass	15	88,000	3-4'
<i>Thinopyrum intermedium</i> ssp. <i>barbulatum</i>	Pubescent Wheatgrass	15	100,000	3-4'
<i>Thinopyrum ponticum</i>	Tall Wheatgrass	15	79,000	3-6'



STAY CONNECTED.



HEADQUARTERS:

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Brookings, SD 57006

RETAIL LOCATIONS:

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