

# Little Bluestem Urban Prairie 35-121

Updated: 2023

This mix has been designed for urban areas with mesic soils and full sun for at least 70% of the day where land is being converted from other uses such as agriculture or non-native grasses to a prairie reconstruction with the goals of providing wildlife habitat and soil stabilization, water quality benefits. There is also an aesthetic emphasis of this mix with a dominance of medium to low height species that provide visual interest throughout the year.



Partners also include collaboration among Non-profits, Seed vendors, SWCD, Tribal Governments, Consultants, County and Cities. (See partner list on [website](#))

**35-121 Little Bluestem Urban Prairie Mix**

Code	Common Name	Scientific Name	PLS lb/ac	% by PLS lb/ac	Seeds/ft2	% by Seeds/ft2
boucur	Sideoats Grama	<i>Bouteloua curtipendula</i>	0.91	2.84%	2.01	2.91%
bougra	Blue Grama	<i>Bouteloua gracilis</i>	0.41	1.28%	6.02	8.74%
brokal	Prairie Brome	<i>Bromus kalmii</i>	1.35	4.21%	3.97	5.76%
koemac	June Grass	<i>Koeleria macrantha</i>	0.08	0.25%	5.88	8.53%
schsco	Little Bluestem	<i>Schizachyrium scoparium</i>	3.00	9.36%	16.53	23.99%
		<b>Grasses Subtotal</b>	<b>5.75</b>	<b>17.94%</b>	<b>34.40</b>	<b>49.93%</b>
asctub	Butterfly Milkweed	<i>Asclepias tuberosa</i>	0.06	0.19%	0.09	0.14%
ascver	Whorled Milkweed	<i>Asclepias verticillata</i>	0.01	0.03%	0.04	0.06%
astcan	Canada Milkvetch	<i>Astragalus canadensis</i>	0.06	0.19%	0.37	0.54%
dalcand	White Prairie Clover	<i>Dalea candida</i>	0.06	0.19%	0.42	0.61%
dalpur	Purple Prairie Clover	<i>Dalea purpurea</i>	0.20	0.62%	1.10	1.60%
liaasp	Rough Blazing Star	<i>Liatris aspera</i>	0.04	0.12%	0.24	0.34%
pengra	Large-flowered Beardtongue	<i>Penstemon grandiflorus</i>	0.06	0.19%	0.31	0.45%
rudhir	Black-eyed Susan	<i>Rudbeckia hirta</i>	0.31	0.97%	10.48	15.20%
solnem	Gray Goldenrod	<i>Solidago nemoralis</i>	0.03	0.09%	3.31	4.80%
solpta	Upland White Goldenrod	<i>Solidago ptarmicoides</i>	0.05	0.16%	1.18	1.71%
symeri	Heath Aster	<i>Symphyotrichum ericoides</i>	0.04	0.12%	2.94	4.26%
symlae	Smooth Blue Aster	<i>Symphyotrichum laeve</i>	0.04	0.12%	0.81	1.17%
trabra	Prairie Spiderwort	<i>Tradescantia bracteata</i>	0.16	0.50%	0.59	0.85%
verstr	Hoary Vervain	<i>Verbena stricta</i>	0.12	0.37%	1.23	1.79%
zizapt	Heartleaf Alexanders	<i>Zizia aptera</i>	0.06	0.19%	0.26	0.38%
		<b>Forbs Subtotal</b>	<b>1.30</b>	<b>4.06%</b>	<b>23.36</b>	<b>33.91%</b>
cover	Oats/Winter Wheat	<i>Avena sativa/Triticum aestivum</i>	25.00	78.00%	11.14	16.17%
		<b>Cover Crop Subtotal</b>	<b>25.00</b>	<b>78.00%</b>	<b>11.14</b>	<b>16.17%</b>
		<b>Total</b>	<b>32.05</b>	<b>100.00%</b>	<b>68.90</b>	<b>100.00%</b>

# Seed Mix Enhancements or Substitutions

List of Additional Species to Add Diversity or for Substitutions

## Grasses:

Scientific Name	Common Name
<i>Bouteloua hirsuta</i>	Hairy Grama
<i>Bromus pubescens</i>	Hairy Wood Chess
<i>Hesperostipa spartea</i>	Porcupine Grass
<i>Sporobolus heterolepis</i>	Prairie Dropseed

## Forbs:

Scientific Name	Common Name
<i>Artemesia ludoviciana</i>	Prairie Sage
<i>Commandra umbellata</i>	Bastard Toadflax
<i>Coreopsis palmata</i>	Bird's Foot Coreopsis
<i>Drymocallis arguta</i>	Tall Cinquefoil
<i>Euphorbia corollata</i>	Flowering Spurge
<i>Heuchera richardsonii</i>	Alumroot
<i>Liatris punctata</i>	Dotted Blazing Star
<i>Monarda punctata</i>	Horsemint
<i>Phlox pilosa</i>	Prairie Phlox
<i>Symphyotrichum oolentangiense</i>	Skyblue Aster
<i>Symphyotrichum sericeum</i>	Silky Aster
<i>Thalictrum dioicum</i>	Early Meadow-Rue
<i>Tradescantia ohioensis</i>	Ohio Spiderwort

## Legumes:

Scientific Name	Common Name
<i>Amorpha canescens</i>	Lead Plant
<i>Astragalus crassicaarpus</i>	Ground Plum
<i>Glycyrrhiza lepidota</i>	Wild Licorice

## Little Bluestem Urban Prairie Seed Mix Guidance

(MIX IMAGE)

**Seed mix name:** Little Bluestem Urban Prairie 35-121

**Geographic area:** Minnesota, Statewide

**Year of development:** 2016

**Year/s of update:** 2023

**Status** (Standard or Pilot mix): Standard

**Primary and Secondary Functions:**

*Primary* – Wildlife habitat and soil stabilization, water quality benefits, aesthetics

*Secondary* – Carbon Sequestration, emission reductions, pollinator habitat, songbird habitat

**Similar State Mixes:** 35-221 Dry Prairie General, 35-241 Mesic Prairie General, 35-421 Dry Prairie, Northwest, 35-441 Mesic Prairie Northwest, 35-521 Dry Prairie Southwest, 35-541 Mesic Prairie Southwest, 35-621 Dry Prairie Southeast, 35-641 Mesic Prairie Southeast

**Compatible NRCS Practice Standards:** None

**Compatible Minnesota CRP Practices:** None

**Suitable Site Conditions:** Areas with mesic to dry soils and full sun for at least 70% of the day in urban landscapes suitable for the establish of native prairie vegetation.

**How to Modify for Site Conditions and Goals:** This mix includes a list of additional species that can be considered to add species diversity. Site conditions such as sunlight, soils, hydrology and existing vegetation along with functional goals for the project such as carbon sequestration, pollinator habitat, and benefit to grassland bird species can all have an influence on species selection and the modification of seed mixes.

**Site Preparation:** Primary goals for site preparation tend to focus on controlling weed species and providing ideal growing conditions for seed or plants to be installed. Site preparation methods vary depending on past uses of the site that can contribute to soil condition and the amount and type of problematic weed species present. The protection of microorganism populations and native seedbanks, preventing soil erosion, and managing weed establishment are all considerations during the site preparation process. In most cases, non-herbicide methods are preferred over methods that include repeated, intensive herbicide methods to protect aquatic organisms and soil microfauna, but on large acreages herbicides may be the most efficient method of controlling some invasive perennial species.

**Seeding Dates**

Prairies seed mixes can be installed in the spring or fall. Spring seedings should be done on or around May 1-July 1 when soil temperatures are at least 60 degrees Fahrenheit or higher. Fall seeding should occur when soil temperatures fall below 50 degrees Fahrenheit for a consistent period of time (usually around October 15 in the northern half of the state and November 1 in the southern half of the state). Fall dormant seedings can help reduce weed pressure during the first year of growth because cool-season grasses and forbs germinate earlier and start competing with weed species right away. Frost seedings are also an option if the snow cover is not too deep. For a frost seeding, seeding rates may need to be increased by 25 percent due to lower germination rates and loss of seed that is consumed by wildlife over the winter months. In general, grasses are most successful with a spring/early summer seeding while forbs are most successful with a fall dormant seeding, as most forbs require a winter to break their seed dormancy before they can start growing. Planting dates will vary depending on the weather in a particular year and where the planting site is located (e.g., northern Minnesota versus southern Minnesota). Consult with native seed suppliers to determine the best planting dates for that year.

**Seedbed Preparation**

Methods that are used to prepare a seedbed can vary depending on the type of seeding equipment to be used. If a traditional native seed drill will be used, a smooth, firm seedbed is required. Sites that were recently tilled will require additional soil treatment such as harrowing and rolling to prepare an adequate seedbed and prevent seed from being buried too deep. Broadcast seeding can be conducted

on fields that have been disked, as long as the soil is allowed to settle before seeding. Some practitioners have found that broadcast seeding on a smooth surface (not tilled or disked) leads to the establishment of higher diversity. It is important that the soil surface is not too hard packed, so cultipacking or light harrowing of crop fields before broadcast seeding may be needed. Seed can be lost on smooth surfaces, so it is recommended to seed into temporary cover crops or to roll sites after seeding.

### ***Temporary Cover Crops and Mulch***

The use of short-lived temporary cover crops help stabilize project sites and minimize the need for additional mulch in preparation of planting native seed mixes. They can also provide time to observe weed problems, and to allow for proper weed control before fall seeding. Temporary cover crops such as oats or winter wheat (the two species most commonly used) should be mowed to 10-12 inches before seeds mature (or harvested upon maturity) to prevent re-seeding. Other temporary covers including buckwheat, pennycress, and radishes, can help stabilize soil, build soil quality, or provide weed competition as part of restoration projects. If you are seeding into a temporary cover, it is recommended to use a native grass drill to maximize seed to soil contact. When using a broadcast seeder, it is recommended to increase seeding rates to maximize the seed to soil contact.

### **Seeding Methods**

A variety of seeding equipment is used for upland prairie seeding including broadcast seeders, traditional native seed drills, no-till drills, Brillion seeders and Trillion seeders. Specialized native seed drills can handle a wide variety of seed (fluffy, smooth, large and small) and low seeding rates. Since no-till drilling can plant directly into a light stubble layer, this method reduces erosion on the newly seeded site. Conventional grain drills are not capable of handling diverse seed sizes and are unlikely to provide satisfactory results. While no-till native seed drills can plant through light stubble, success is still likely to be greatest when most excess residue is removed. For broadcast seeding equipment should be used that is designed to spread mixes with different sized seeds (e.g., Vicon Seeders).

### **Management Methods –**

*Integrated Pest Management* – Land managers and seed mix practitioners should utilize [Integrated Pest Management](#) in their efforts to establish and manage plantings. Integrated Pest Management, or IPM, is an environmentally sensitive approach to pest management that relies on the use of a combination of practices (conservation grazing, haying, prescribed burning, etc.) to successfully establish and manage native vegetation while minimizing the use of chemicals and accomplishing goals such as the protection and restoration of pollinators and other beneficial insects. Ultimately, using a variety of practices is the most effective, sustainable, and culturally appropriate way to achieve project goals.

### *Establishment Mowing*

Mowing can be an important step in the establishment of upland prairie restoration sites. Mowing at least twice the first season and once the second season with a flail mower or stalk chopper (to prevent smothering plants) is often needed to decrease competition and to provide sufficient sunlight for seedlings. Haying is another method to remove mowed vegetation that prevents smothering of the new seeding. Problematic weeds should be mowed to between five and eight inches before seed is allowed to set (usually as weeds reach 12-14 inches). Mowing height should be raised as native plants establish. Periodic mowing involves mowing the entire planting throughout the first growing season to help prevent a weed canopy from forming and to allow slower germinating plants a chance to grow and be productive. Ideally, periodic mowing is meant to keep the vegetation at around knee height. Mowing

should take place once a month or after vegetation reaches 18" in height. Mowing should be done at a raised height between 4-6 inches. Care should be taken to avoid mowing the planting too frequently or too aggressively, such as weekly or shorter than the recommended height as this can damage the native vegetation and cause the planting to fail. The timing and frequency of mowing should be planned to allow sufficient light to reach native plant seedlings and preventing weed seed production. Sites with low weed competition due to sandy soils or other factors may not need mowing.

### *Spot Mowing*

After vegetation has established it may be beneficial to spot mow areas with invasive or noxious plants. Spot-mowing can slow some of the aggressive and fast-growing invasive plants while allowing the native species to become established. Spot-mowing should be done at a raised height between 4-6 inches in order to target the invasive plants and to not damage the native species. Spot-mowing for control of invasive or noxious weeds can be done every year to ensure planting health, even during 10 establishment years. Care should be taken to avoid mowing the planting too frequently or too aggressively, such as weekly or shorter than the recommended height as this can damage the native vegetation and cause the planting to fail. A list of noxious/invasive weed species that should be eradicated can be viewed at the Minnesota Department of Agriculture's website.

### *Prescribed Burning*

Prescribed burning is beneficial to remove thatch, control invading woody and invasive plants in prairies, fertilize the soil with ashes, stimulate seed germination and new plant growth, and increase diversity in plantings. Burning is typically initiated after the third or fourth years of establishment, after native vegetation is reaching maturity. Uplands benefit from burning every three to five years. The timing of a burn can help with management goals. Late spring burns are used to combat cool-season non-native species such as brome and reed canary grass. Burning a portion of the property each spring instead of an "all at once" burn will leave undisturbed nesting cover for ground nesting birds. Fall and spring burns should be alternated periodically to simulate natural variation. Burn plans are needed to define the details of how the burn will be conducted, who will be involved and for contingency planning. In many cases, permits are also required. It is recommended to only burn one-half or less of a project site at a time if they are large (over 50 acres), or don't have any adjacent refuge such as other conservation lands adjacent to the site for wildlife species. Partial burns and burns that are patchy may also benefit pollinator populations if timed correctly (when pollinators are not actively foraging, or pollinators have pupated and are mobile).

### *Spot Treatment of Weeds*

Problematic perennial weeds that cannot be managed effectively with other methods may require spot treatment with herbicide for sufficient control. Examples include reed canary grass, smooth brome, quack grass, purple loosestrife, Canada thistle, Kentucky bluegrass, crown vetch, and birds-foot trefoil. In some cases, herbicide treatment is not conducted during the first or second year of establishment to avoid impact to seedlings, but it may be important to control some weeds before they have a chance to spread. A common practice for Canada thistle control involves clipping seedheads while they are in the bud stage (usually early June) and conducting herbicide application with a broad-leaf specific herbicide in the fall (mid to late October). This timing limits the application of herbicide while pollinators are active. If herbicides will be used it is important that monitoring indicates that they are needed, and treatments are made with the goal of removing only the target plant or plants. Herbicides should be selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment. For example, they should only be used when pollinators and other insects are not active (A common approach is to mow or grazing invasive weeds in the summer followed

by herbicide application in the fall). Minimize herbicide first year/spot spray year 2. Unless significant problem weeds show up.

**What to Expect in Year 1:** During year one of growth many native grasses and flowers will remain about one to three inches tall. The mowing will play an important role to keep weeds managed so the native plant seedlings receive sufficient water and sunlight. The planting may have a somewhat weedy appearance this first year (see establishment mowing paragraph above).

(IMAGE)

**What to Expect in Year 2:** During year two the native grasses and flowers may reach their mature height and some of them may flower. Mowing may still play a key role in managing weeds and allowing seedlings to grow.

(IMAGE)

**What to Expect in Year 3 and Beyond:** By the end of year three most of the native plants will be nearing maturity and should flower. There may be some species that are slow to establish and may not show up for several years.

### **Problem Solving**

*Poor Establishment After Year 1* – It is often difficult to determine if a seeding is successful during the first year as establishment may vary depending on weather conditions and some species may be slow to establish. It is typically best to wait until the second year to conduct any corrective actions. Look for species such as Black-Eyed Susan flowering in year 1 for confirmation the seeding was a success.

*Poor Establishment After Year 2* – If native plant seedlings are not establishing about every one to two feet it may be necessary to inter-seed some species into the planting. If this is a concern it is recommended to inspect the site during the growing season to recommend what species could be supplemented.

*High Annual and Biennial Weed Competition* – Typically, annual and biennial weed competition is not a big problem in prairie plantings as they are short lived and as long as mowing is conducted before seed is set, they should not add additional seed into the planting.

*High Perennial Weed Competition* – Dense establishment of perennial species can be a problem as it can prevent the establishment of forbs. Prescribed burning, and or herbicide application may be needed to manage perennial weeds.

*Low Forb Diversity After Year 3* – If grasses and sedges are establishing successfully but there is a lack of forbs it is recommended to conduct inter-seeding of additional forbs in late fall or after a prescribed fire in spring or fall. See the [Xerces Society guide](#) for additional information about inter-seeding wildflowers.