



Native Forb Information Sheet

Missouri Information Sheet

IS-MO-643 Native Forb

Natural Resources Conservation Service (NRCS)
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Missouri Conservation Practice 643

Native forbs or broadleaf plants are a natural part of the Missouri landscape. They welcomed European settlers to the state, painting the prairie and savanna landscapes with vibrant colors that changed throughout the season while supporting an incredible diversity of native wildlife. More than 800 plant species, most of them forbs, have been identified on Missouri's prairies.

Missourians are demonstrating a rekindled interest in native forbs for their beauty, hardiness and wildlife benefits. Native forbs are well adapted to Missouri's climatic extremes, which range from potentially brutal cold in January to the often stifling heat of July. Once established, native forbs require few inputs and little maintenance.

Native forbs feature a variety of shapes, sizes, color, and value to wildlife. The towering compass plant, the vibrant butterfly milkweed, the rather plain but very valuable roundhead lespedeza, and the unique rattlesnake master all add important diversity to any planting. Choosing which ones to plant can be difficult; contact your local conservation agency representative, or one of the vendors of native forb seed for assistance. You can find a list at www.grownative.org, www.monativeseed.org, or www.plant-materials.nrcs.usda.gov/mopmc. Seed vendors can be excellent sources of information, and they are often as eager as you are for your planting to be successful.

Refer to Table 1 in this document for general information about native forbs that are most often available commercially.

Establishing native wildflowers can be fulfilling, but it can also be expensive. Fortunately, there are programs available that may be able to help offset the higher costs. Check with your local Missouri Department of Conservation or USDA office to see if your project qualifies for financial assistance. If you are establishing native forbs with cost-share, be certain you are following the requirements of that particular conservation practice, such as species numbers and selection, or if the seed is required to be Missouri source and origin. Be sure you understand all of the requirements before you commit to buying seed.

Finally, remember that native forbs go with native grasses. Most forb plantings, with the possible exception of small garden plantings or those with the major objective of establishing pollinator habitat, should include native grasses. The presence of native grass aids with weed suppression, supplies fuel for prescribed burning and provides fall color and support for tall wildflowers.





How do I establish native forbs?

Planting native wildflowers can be intimidating. Following a few simple guidelines will help ensure success.

First, determine the species you want to establish and the amount of seed for each. **Conservation of the monarch butterfly is critically important as it represents other pollinators and is experiencing precipitous declines, therefore, it is recommended that at least 1 species of approved milkweed (*Asclepias* spp.) is included in the seed mix (see Table 1). Also see the Monarch Habitat Information Sheet (IS-MO643Monarch) for more specific information related to the monarch.** A general recommendation is to plant at least three pounds of pure live seed (PLS) per acre, comprised of at least 9 species with no single species exceeding 15 percent of the total mixture. Annuals and biennials combined also should not exceed 10 percent of the mixture. A minimum of three flowering species will be included for each season (spring, summer, fall) for native pollinator plantings. This helps ensure a nice diversity, and that the stand will be dominated by perennials, which will persist over time. Refer to Table 1 for information (flower color, blooming time, wildlife value) to aid you in your choices. You may want to come up with 15 or more choices, as not all seed vendors can supply all species every year, and some species may be considerably more expensive than others. There are web sites and books listed in the References section of this Information Sheet where you can get more detailed information on individual plants.

Don't forget to include one or more native grasses in new plantings. If shorter grass species are desired, consider little bluestem or sideoats grama. If taller grasses are what you want, consider big bluestem or indiangrass. Reduce seeding rates of grasses from normal levels for pure stands to lessen competition with the native forbs. Check out the approved cultivar list for native grasses at the Missouri NRCS e-FOTG site for details (<http://efotg.nrcs.gov/>, go to Missouri and select your county. The sheet is located on the left side of the web page under Section IV, Practice Specifications, Vegetation Establishment).

If you are establishing native forbs as part of a restoration of a plant community considered to be rare or declining in Missouri (tallgrass prairie, oak savanna, glades), be certain you are following the requirements of the RESTORATION and MANAGEMENT of RARE or DECLINING HABITATS (643) conservation practice, and applicable job sheets, which require plant material selection based on:

1. The use of Missouri Source Identified Class (herbaceous material) – Missouri source is defined as a native plant that source genetically originated in Missouri; was not introduced; and existed within the state borders prior to arrival of settlers. The location of the wild growing parents must be within Missouri and implies that the geographical location is known.
2. All seed from herbaceous material shall comply with Missouri seed laws including Missouri Crop Improvement Association guidance. All seed will comply with AOSCA (Association of Official Seed Certifying Agencies) certification procedures (including appropriate tagging) to include third-party verification by the Missouri Crop Improvement Association of source, genetic identity, and genetic purity of wildland collected or field or nursery grown plant germplasm materials. Seed must be Missouri origin (grown in Missouri) and certified as Missouri Source Identified Class. If Missouri origin (grown) source Identified class seed is not available Missouri source identified class seed may be obtained only from adjoining states.

Source Identified Certification means:

- Parent seed is collected from natural remnant Missouri populations
- No selection, testing, or breeding for specific traits
- Production fields are inspected to verify species, source, and lack of noxious weeds.
- Seed is certified for purity and germination.



Site Preparation:

After determining what you want to plant, evaluate the area you want to plant. You need to ensure that the seed has good seed-to-soil contact and that competing vegetation (especially grasses) is either eliminated or suppressed to provide the young wildflower seedlings with adequate sunlight, nutrients and water to become established. Success with wildflower establishment hinges on establishing good seed-to-soil contact, planting at the proper depth (average ¼ inch or less, depending on size of seed) and reducing competition. **An acceptable seedbed will have at least 50 Percent bare ground.**



Using a clean-tilled seedbed is perhaps the best way to establish native forbs. Make sure that competing vegetation is removed, and the field is well worked, but firm. You should just barely leave a footprint when you walk across the field. If you find your shoes sink in, take the time to roll the seedbed (cultipackers or rollers are the best).

Crop fields being converted to native forbs may need a chemical application in the fall (October-November) or late winter (late February-early March) before forb seeds begin to germinate in order to control winter annuals and persistent perennial weeds. No-till planting or broadcasting in soybean stubble is an excellent establishment method.

If you plan to renovate an existing cool-season grass patch or an old field with miscellaneous existing herbaceous cover, follow the guidelines outlined in Table 2, or refer to the Missouri Information Sheet *Preparing Non-Native Cool-Season Grasses for Conversion to Wildlife-Friendly Vegetation (IS-MO645C)*. This is located on the Missouri NRCS e-FOTG site at: <http://efotg.sc.egov.usda.gov/treemenuFS.aspx>. Go to Missouri and select your county and it is located on the left side of the web page under Section IV, Upland Wildlife Habitat Management (645) standard.

In some cases you may wish to interseed wildflowers in an area currently dominated by native grasses. Planting in this situation should be done after the grass competition has been reduced since it is essential that seeds have contact with bare soil and that the existing grass is suppressed. This can be done with a properly timed prescribed burn, mowing/haying or an herbicide application.

Native forbs are often susceptible to conventional broadleaf herbicides so they should be applied before forbs are planted or germinate. If a later chemical application is needed for weed control with established forbs, select a product that will not damage the forbs. **Use all products at label rates.** A few forb species show some resistance to imazapic, but consult the label for details because many forb species will be damaged or eliminated with its use. Some vendors may have trouble putting together 10 species mixes of imazapic-resistant forbs. **It is easy to apply too much imazapic, even on 'resistant' forbs. Many of those that are identified on the label as being resistant are for applications of 2-4 ounces. Applications over four ounces may damage or kill these 'resistant' forbs.** Where the use of imazapic is desired to control competing grass, consider spraying in the spring with an imazapic or imazapic/glyphosate application, and plant the forbs and native grass the following winter during the dormant season.



In general, fertilizer is not critical to the success of a native forb planting. Adding lime as called for by a soil test is recommended. Adding phosphorous (P) and potassium (K) is not as critical, but may be done if the soil test shows levels to be low. Care should be taken to limit the amount of nitrogen (N) applied as this will only encourage grass competition. If additional P and K is needed, use the fertilizer blend (N-P-K) with the lowest ratio of nitrogen possible. Apply nutrients in late fall or early winter to minimize negative impacts that may result to native plant seedlings.

When to Plant:

Whatever cover type you are planting the native wildflowers into, **dormant seeding** is the only recommended establishment method. Many forb species require 30-90 days of cold, moist stratification before germinating, and dormant seeding is the easiest way to achieve the necessary stratification. Be careful not to drill the seed too deep. A good rule of thumb is 1.5 times the diameter of the seed, or less. It is far better to plant the seed too shallow than to plant too deeply. Dormant seeding (November 16 to March 15 in northern Missouri, and December 1 through February 29 in southern Missouri) is the preferred method because the process of



freezing and thawing will work the seed into the ground to the correct depth. The best months for dormant seeding are December and January.

Native grasses and forbs can be dormant seeded at the same time. Another attractive option would be to dormant seed the forbs, followed by a grass planting the following spring or next dormant seeding period. In situations with considerable cool-season grass competition, this option would allow the use of a grass-specific herbicide after the forb seeding, followed by a native grass planting the next dormant period. Planting both grass and forbs at the same time in the spring is not recommended since many of the forbs won't even germinate until the following spring, giving the grasses a considerable head start in the battle for sunlight and nutrients.

Planting Methods:

Seeding can vary from site to site, depending upon the conditions of the site. Broadcasting seed by hand may be the most practical way of planting areas where equipment access is difficult, and areas less than 3 acres. For small areas, an ATV-mounted spreader or seeder can also be used. Traditional planting methods will be more practical on larger fields.

Forb seed can vary in size from seed that resembles fine dust to small sunflowers, so the use of some type of inert carrier is often advised to ensure even distribution, especially for hand seeding. Examples of inert carriers that can be used include cat litter, pelletized lime, dried distiller's grain, cotton seed hulls, milorganite, sawdust, rice hulls or even sand. Mix the seed and carrier at a 50:50 ratio, more if hand seeding to ensure better distribution.

Another alternative is to mix the seed with potash or lime, and spread with a fertilizer buggy. Broadcast seedings should not be dragged or harrowed after planting. Instead use a cultipacker (with teeth up) to roll the ground. Research shows improved seedling abundance with incorporation by rolling/cultipacking. However, do not disk or harrow, as you will bury the seed too deeply. Although some seed incorporation is desirable, **if you do not see seed on the top of the ground when you are finished, then you planted too deep**. If equipment access is an issue, a less desirable option is to just let the action of freezing and thawing work the seed into the ground. Remember that you still need at least 50 percent bare ground. Also, be aware of potential for increased soil erosion, and take necessary precautions.



Using a good drill designed to handle wildflower seed is the best way to plant the seed, but **make certain that you can control the depth that the drill places seed into the ground; the shallower, the better.** Some seeders, such as a Brillion, simply drop the seed on the ground and press it in with rollers. These machines can be ideal on clean seedbeds in dormant plantings. If you are only planting forb seed in a drill, you will need to add some type of carrier with the forb seed in order to get the proper application rate. If the forb seed is round and smooth, mix it with a carrier and place in the smaller legume box on the drill. If the forb seed is fluffy, mix it with a carrier and place it in a seed box that has an agitator and picker wheels. Calibrate the drill to ensure that proper seed slot openings are used and that the proper seed rate is applied.

In general, avoid the use of standard grain drills when planting native forbs, as they are not designed to handle forb seed. If using a drill, ensure that the coulters go no deeper than 3/8-inch. If allowed to go deeper, it increases the risk of the seed being planted too deep.

Patience is important because it may take two to five years before wildflowers begin to bloom. Refer to Table 2 for specific guidelines, or have a resource professional complete JS-BIOL-32Glade, Prairie and Savanna Herbaceous Establishment. This is located on the Missouri NRCS e-FOTG site at <http://efotg.sc.egov.usda.gov/treemenuFS.aspx>. Go to Missouri and select your county it is located on the left side of the web page under Section IV, Upland Wildlife Habitat Management (645) standard.

Management Recommendations for New Seedlings

Management is critical to success! Mowing competing vegetation during the establishment year increases the abundance and survival of wildflower seedlings at the end of the establishment year when compared to unmowed plots.

Establishment Period: Removal of competing vegetation is normally carried out for one growing season following establishment. Where applicable, mow as often as necessary during the first growing season to control competing vegetation. Competing vegetation should be cut to a height of 3-6 inches (or above the height of the native seedlings) whenever competing vegetation begins to completely shade the ground. Failure to control competing vegetation is a common reason for the failure of new plantings. Frequent mowing the first year will not be a problem for the new seedlings, as most species focus on developing a root system and produce limited shoot growth. Flail-type mowers are preferred because they thoroughly cut and shred the vegetation, which prevents smothering native wildflower seedlings. For small plantings, a portable string trimmer is a good option. Do not mow once the planting has gone dormant in late fall. During the second year, mow if weeds are out-competing the native wildflowers. The second year mowing should only be completed between March 15 and May 1, or make certain that you mow above the height of the forb seedlings.

Mow, clip or use approved herbicides as necessary to control noxious weeds and undesirable plants during the establishment period. Avoid using broad spectrum herbicides. Instead, spot treat infestations with a selective herbicide because most herbicides will damage or kill some types of native forbs.



Long-term Management: Once the stand is established the introduction of management practices is essential to maintain the vegetative community. Management practice will vary by program and landowner objectives.

Prescribed burning should be conducted no earlier than the beginning of the second growing season, and usually no earlier than the third growing season. If the field cannot be burned the second year, mow in early spring to reduce weed competition. Once the planting is established, burn every third year, or divide the field in thirds and burn a different one-third each year to provide a mosaic of different vegetative habitats. To maintain plant diversity, vary the timing of your prescribed burns between years. For aesthetics, some people prefer to burn annually. However, be aware that annual burns could decrease plant diversity. Control undesirable woody vegetation and invasive perennial plants. *Develop a prescribed burn plan before conducting a prescribed burn.*

PRIMARY HABITAT CONSIDERATIONS:

- RESTORATION and MANAGEMENT of RARE or DECLINING HABITATS (643).
- Provide natural food and cover for many declining animal species.

References:

“Effects of frequent mowing on survival and persistence of forbs seeded into a species-poor grassland”.

D. Williams, L. Jackson and D. Smith. Restoration Ecology 15:124-33p.

Tallgrass Prairie Wildflowers, by Doug Ladd and Frank Oberle. 2005. The Globe Pequot Press, Guilford, Connecticut.

Steiermark’s Flora of Missouri, revised edition, by George Yatskievych. 1999, 2006, and 2013.

Missouri Botanical Garden Press, St. Louis, Missouri, and Missouri Department of Conservation, Jefferson City, Missouri.

Websites:

Ladybird Johnson Wildflower Center website, <http://www.wildflower.org/plants>

Missouri’s GrowNative! website, <http://www.grownative.org>

Missouri Native Seed Association website, <http://www.monativeseed.org>

Pollinator Partnership, “Selecting Plants for Pollinators”, <http://www.pollinator.org>

USDA PLANTS Database, <http://plants.usda.gov/>

USDA-NRCS Elsberry Plant Materials Center website,

<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/mo/plantsanimals/?cid=stelprdb1083060>



TABLE 1 – AVAILABLE FORBS - species selection will only be made for the appropriate habitat type based on a planting site evaluation.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Habitat Type *</u>	<u>Flower Information **</u>	<u>General Information ***</u>
Alum root	<i>Heuchera richardsonii</i>	DP, MP, G	1,2 - Sp - Su	Calyx is mainly green, may have cream colored tips.
Anemone, Meadow	<i>Anemone canadensis</i>	WP	1 - LS – Su, showy	
Aster, Aromatic	<i>Symphyotrichum oblongifolius</i>	DP, MP, G	2 - LSu – F, showy	POL, Fragrant, prefers drier sites.
Aster, New England	<i>Symphyotrichum novae-angliae</i>	WP	2 - LSu – F, showy	POL, Prefers wetter sites, leaves clasp the stem,
Aster, Southern Prairie	<i>Aster paludosus</i>	DP, S, MP	2,3 – LSu - EF	
Aster, Purple daisy	<i>Symphyotrichum patens</i>	S, DP, MP, G	2 - LSu - F	POL
Aster, Silky	<i>Symphyotrichum sericeum</i>	DP, G	2 - LSu – F, showy	POL
Aster, Skyblue	<i>Symphyotrichum oolentangiense</i>	S, DP MP	2 - LSu – F, showy	POL,
Aster, Smooth	<i>Symphyotrichum laevis</i>	S, DP, MP	2 - LSu – F, showy	POL
Aster, White upland	<i>Solidago ptarmicoides</i>	S, MP, DP, G	2,3 – LSu - EF	
Aster, Willowleaf	<i>Symphyotrichum praealtum</i>	WP	2,3 - LSu – F,	POL, Pale lavender color, likes moist areas,
Barbara’s button	<i>Marshallia caespitosa</i>	DP, MP, WP	1 - LS - ESu	Foliage green through winter.
Bean, Small Fuzzy	<i>Strophostyles leiosperma</i>	DP, MP, S	2,3 – ESu - MF	
Beardtongue	<i>Penstemon digitalis</i>	DP, MP, WP, G	1 - LS – MSu, showy	POL,
Beardtongue, Prairie	<i>Penstemon tubaeflorus</i>	S, DP, MP	1 - LS – MSu, showy	POL
Beardtongue, Purple	<i>Penstemon cobaea</i>	S, DP, G	1,2 - LS – ESu, showy	POL,
Beggar tick (A)	<i>Bidens frondosa</i>	WP	2 - Su, showy	Food,
Beggar's lice	<i>Desmodium canescens</i>	S, DP, MP, G	1,2 - LS – Su, showy	Legume, food.
Bergamot, Wild	<i>Monarda fistulosa</i>	S, DP, MP, WP, G	2,3 - LS – EF, showy	POL, mint
Bergamot, Savanna	<i>Monarda bradburiana</i>	S, DP, G	2,3 - LS – EF, showy	POL, mint
Black-eyed Susan (B)	<i>Rudbeckia hirta</i>	S, DP, MP, G	2,3 - LS – F, showy	Food,
Black-eyed Susan, Missouri	<i>Rudbeckia missouriensis</i>	DP, G	2,3 - ESu – F, showy	Food, blooms for a long period.
Blazing Star, Eastern	<i>Liatris scariosa</i>	S, DP, MP	2,3 LSu-EF	POL, blooms during monarch migration.
Blazing star, Prairie	<i>Liatris pycnostachya</i>	DP, MP, WP, G	2,3 - MSu – F, showy	POL, blooms during monarch migration.
Blazing star, Glade/Narrow-leaved	<i>Liatris mucronata</i>	S, DP, G	2,3 - MSu – F, showy	POL, blooms during monarch migration.
Blazing star, Rough	<i>Liatris aspera</i>	S, DP, G	2,3 - MSu – F, showy	POL, blooms during monarch migration.
Blazing star, Squarrosa	<i>Liatris squarrosa</i>	S, DP	2,3 - MSu – EF, showy	POL, blooms during monarch migration.
Blazing star, Squarrolosa	<i>Liatris squarrolosa</i>	S, DP, MP, G	2,3 MSu – EF, showy	POL, blooms during monarch migration.



<u>Common Name</u>	<u>Scientific Name</u>	<u>Habitat Type *</u>	<u>Flower Information **</u>	<u>General Information ***</u>
Blue lobelia	<i>Lobelia siphilitica</i>	WP	2,3 MSu – F, showy	POL
Blue-eyed grass	<i>Sisyrinchium campestre</i>	DP	1,2 - LS - ESu	Resembles grass
Boneset	<i>Eupatorium perfoliatum</i>	WP	2,3 - MSu - F	POL
Brown-eyed Susan	<i>Rudbeckia triloba</i>	S, WP	2,3 - Su – F, showy	Food
Bunchflower	<i>Melanthium virginicum</i>	MP, WP, S (Wet)	2 – ESu - LSu	
Cardinal flower	<i>Lobelia cardinalis</i>	WP	2,3 - MSu – EF, vivid red, showy	POL
Catchfly, Royal	<i>Silene regia</i>	S, DP, MP	1,2,3 - LS – F, showy	Blooms for a long period. Flowers 2 nd year.
Clover, Purple prairie	<i>Dalea purpurea</i>	S, DP, MP, G	1,2 - LS – Su, showy	POL, legume
Clover, White prairie	<i>Dalea candida</i>	S, DP, MP, G	1,2 - LS – Su, showy	POL, legume.
Compass Plant	<i>Silphium laciniatum</i>	DP, MP, WP, G	1,2 - LS – Su, showy	POL, food,
Coneflower, Gray-head	<i>Ratibida pinnata</i>	S, DP, MP, G	1,2,3 - LS – F, showy	POL, food, robust perennial. Extensive root system reduces erosion.
Coneflower, Ozark glade	<i>Echinacea simulata</i>	S, DP, MP, G	1,2 - LS – MSu, showy	POL
Coneflower, Pale purple	<i>Echinacea pallida</i>	S, DP, MP, G	1,2 - LS – MSu, showy	POL
Coneflower, Prairie	<i>Ratibida columnifera</i>	DP, MP, G	1,2,3 - LS – EF, showy	Ray flowers sometimes marked with dark red. Weak perennial on good soil.
Coneflower, Purple	<i>Echinacea purpurea</i>	S, MP, WP, G	1,2,3 - LS – F, showy	POL, prolific bloomer, flowers over a long period.
Coneflower, Black-eyed Susan, Sweet	<i>Rudbeckia subtomentosa</i>	MP, WP	2 - Su, showy	Food,
Coneflower, Yellow	<i>Echinacea paradoxa</i>	S, DP, G	1,2 - LS – ESu, showy	POL
Coreopsis, Lanceleaf	<i>Coreopsis lanceolata</i>	DP, MP, G	1,2 - LS – MSu, showy	POL, food,
Coreopsis, Finger/Prairie	<i>Coreopsis palmata</i>	S, DP, MP, G	1,2 - LS – MSu, showy	Food
Coreopsis, Plains (A)	<i>Coreopsis tinctoria</i>	DP, G	1,2 - Sp – ESu, showy	Food,
Coreopsis, Tickseed/Tall	<i>Coreopsis tripteris</i>	S, DP, MP, WP, G	1,2 - LS – MSu	Food
Coreopsis, Big flower	<i>Coreopsis grandiflora</i>	DP, MP	1,2 - LS – MSu, showy	Food
Culver's root	<i>Veronicastrum virginicum</i>	S, MP, WP	2 - Su, showy	POL, Whorled leaves.
Cup plant	<i>Silphium perfoliatum</i>	WP	2,3 - Su – F, showy	POL
Curly cup gum plant	<i>Grindelia squarrosa</i>	S, DP, MP, G	2,3 - Su - F	
Dragonhead, Narrow-leaved false	<i>Physostegia angustifolia</i>	S, DP, MP	2,3 – LSu - EF	
Flag, Blue	<i>Iris virginica shrevei</i>	WP	1,2 - LS – MSu, showy	Forms large colonies
Flag, Copper	<i>Iris fulva</i>	MP, WP	1 - Sp, showy	
Flax, Yellow	<i>Linum medium</i>	DP, MP	1,2 – LS - LSu	
Foxglove, Fascicled false	<i>Agalinis fasciculata</i>	DP, MP	2,3 – MSu - EF	
Gaura, Large-flowered	<i>Gaura longiflora</i>	DP, MP, WP, S	2,3 – MSu - EF	



<u>Common Name</u>	<u>Scientific Name</u>	<u>Habitat Type *</u>	<u>Flower Information **</u>	<u>General Information ***</u>
Goat's rue	<i>Tephrosia virginiana</i>	S, DP, MP, G	1,2 - LS - MSu, showy	Legume, may have pink/cream flowers.
Golden alexander	<i>Zizia aurea</i>	S, DP, MP, WP, G	1,2 - LS - ESu	Blooms for a long period in the spring.
Goldenrod, Gray	<i>Solidago nemoralis</i>	S, DP, MP, G	2,3 - LSu - F	POL
Goldenrod, Riddell's	<i>Oligoneuron riddellii</i>	WP	2,3 - LSu - F, showy	POL
Goldenrod, Rigid/Stiff	<i>Oligoneuron rigida</i>	S, DP, MP, G	2,3 - LSu - F, showy	POL
Goldenrod, Savanna	<i>Solidago petiolaris</i>	S, DP, G	2,3 - LSu - F, showy	POL, likes partial shade.
Goldenrod, Showy	<i>Solidago speciosa</i>	S, DP, MP	2,3 - LSu - EF, showy	POL
Hyacinth , Prairie	<i>Camassia angusta</i>	MP, WP	1,2 - Sp - ESu, showy	Plant dormant by early summer.
Hyacinth, Wild	<i>Camassia scilloides</i>	S, DP, MP, G	1,2 - Sp - ESu	
Illinois bundle flower	<i>Desmanthus illinoensis</i>	MP, WP, G	1,2 - LS - MSu	Legume
Indian paintbrush (A)	<i>Castilleja coccinea</i>	DP, MP, WP, G	1,2 - Sp - Su, showy	Can be summer seeding on poor sites with established grass
Indigo, Blue wild	<i>Baptisia australis</i>	S, DP, MP, WP, G	1,2 - Sp - ESu, showy	POL, legume
Indigo, Cream wild	<i>Baptisia bracteata</i>	S, DP, MP, G	1 - Sp - LS, showy	POL, Legume
Indigo, White wild	<i>Baptisia alba</i>	S, DP, MP, WP, G	1,2 - LS - MSu, showy	POL, Legume
Ironweed, Missouri	<i>Vernonia missurica</i>	MP, WP	2,3 - MSu - F	POL
Ironweed, Giant	<i>Vernonia gigantea</i>	S (Wet), WP	2,3 - MSu - EF	
Ironweed, Yellow	<i>Verbesina alternifolia</i>	S, BF, WP	2,3 - LSu - MF	
Leadplant	<i>Amorpha canescens</i>	S, DP, MP, G	1,2 - LS - Su, showy	POL, legume, somewhat woody
Lespedeza , Slender	<i>Lespedeza virginica</i>	S, DP, MP, G	1,2,3 - LS - EF	Legume, food,
Lespedeza hairy	<i>Lespedeza hirta</i>	S, DP, MP, G	2,3 - LSu - F	Legume, food
Lespedeza, Postrate	<i>Lespedeza procumbens</i>	DP, G	2,3 - LSu - MF	
Lespedeza, Roundhead	<i>Lespedeza capitata</i>	S, DP, MP, G	2,3 - MSu - F	Legume, food, bloom may be greenish/cream colored
Lespedeza, Violet	<i>Lespedeza violacea</i>	S	2,3 - MSu - MF	
Lousewort/Wood betony	<i>Pedicularis canadensis</i>	S, DP, MP, G	1 - LS	
Milkweed, Butterfly	<i>Asclepias tuberosa</i>	S, DP, MP, G	1,2 - LS - Su, showy	POL,
Milkweed, Common	<i>Asclepias syriaca</i>	DP, MP, WP	1,2 - LS - LSu	
Milkweed, Marsh/Swamp	<i>Asclepias incarnata</i>	WP	3 - F, showy	POL, milky sap,
Milkweed, Purple	<i>Asclepias purpurascens</i>	S, DP, MP	1,2 - LS - MSu, showy	POL, milky sap
Milkweed, Spider	<i>Asclepias viridis</i>	DP, MP	1,2 - LS - ESu	
Tall Green Milkweed	<i>Asclepias hirtella</i>	S, DP, MP, WP, G	2 - Su	
Milkweed, Whorled	<i>Asclepias verticillata</i>	S, DP, MP, G	1,2,3 - LS - EF	
Hairy Mountain Mint	<i>Pycnanthemum pilosum</i>	S, DP, MP, WP, G	MSu-F	POL, mint
Mountain mint, Virginia/Common	<i>Pycnanthemum virginianum</i>	WP	2 - Su	POL, mint
Mountain mint , Slender	<i>Pycnanthemum tenuifolium</i>	S, DP, MP, WP, G	1,2 - LS - Su	POL, Mint, spreads slowly.



<u>Common Name</u>	<u>Scientific Name</u>	<u>Habitat Type *</u>	<u>Flower Information **</u>	<u>General Information ***</u>
Tick trefoil, Showy	<i>Desmodium canadense</i>	S, DP, MP, WP, G	2 - MSu - LSu, showy	Legume, food,
Verbena, Rose	<i>Glandularia canadensis</i>	S, DP, G	1,2 - LS - LSu	
Vervain, Blue	<i>Verbena hastata</i>	WP	2,3 - ESu - MF	POL,
Vervain, Hoary	<i>Verbena stricta</i>	DP, MP	1,2,3 - LS - EF	
Vetch, Canada milk	<i>Astragalus Canadensis</i>	MP	1,2 - LS - LSu	
White wingstem	<i>Verbesina virginica</i>	S, BF	2,3 - LSu - MF	
Yarrow	<i>Achillea millefolium</i>	DP, MP	1,2,3 - LS - F	

Under the “Common Name” column, A = Annual, B = Biennial, otherwise the plant is a perennial.

* S = Oak Savanna, DP = Dry Prairie, MP = Mesic Prairie, WP = Wet Prairie, G = Glade, BF = Bottomland Forest

**Blooming dates: In general, Sp = Spring (1) = April/May; LS = May; Su = Summer (2) = June—August; ESu = June; MSu = July; LSu = August; F = Fall (3) = September—early November; EF = September; MF = October; LF = late October—early November

***POL – important pollinators, native for food = important for wildlife



White flowers

blue/purple flowers

green flowers

red/orange flowers

yellow flowers

pink/violet flowers



Table 2. Options for controlling competing vegetation during forb establishment.

Option	Current Cover	Timing	Method(s)
Single herbicide application	Cropland OR Sparse Grassland	Fall	<p>(This option should not be used when tall fescue or brome is the dominant cover. Two herbicide applications are needed to adequately control these species. Heavy stands of red or ladino clover will also require two treatments)</p> <ol style="list-style-type: none"> For sparse grassland, remove excess vegetation prior to spraying, preferably in late summer or fall (Aug./Sept.) to allow regrowth. Mowing/haying or prescribed burning are the preferred options. Apply herbicide on new growth when it is 4-6 inches in height and actively growing. <ul style="list-style-type: none"> -apply 1.5 quarts of glyphosate. This may be tank mixed with imazapic, but be sure that forbs to be planted are tolerant according to the product label. Spray while undesirable vegetation is actively growing. -for cropland, spray winter annuals prior to March 15th in south Missouri, April 1st in north Missouri, but prior to native forb seedling emergence.
Two herbicide applications	Non-desirable grassland	Fall and Spring	<ol style="list-style-type: none"> Remove excess vegetation in early spring (March). Apply herbicide on new growth when it is 4-6 inches in height and actively growing. <ul style="list-style-type: none"> -apply 1 to 2 quarts of glyphosate. Follow all label instructions. <p>AND</p> <ol style="list-style-type: none"> Apply herbicide in fall (Sept.—Oct.) when grass is actively growing. <ul style="list-style-type: none"> -apply 1.5 quarts of glyphosate. Follow all label instructions. -subsequent applications of glyphosate or a grass-specific herbicide may be necessary in future years to knock back invading undesirable cool-season grasses, see footnotes below for more information. -dormant seed native forbs and grasses. <p>OR dormant seed native forbs after a fall glyphosate application, then use a grass-specific herbicide the following spring to eliminate undesirable grasses. Follow-up with a dormant native grass planting the following winter.</p> <p>OR consider glyphosate-tolerant soybeans or forage sorghum for a year or two to eliminate undesirable vegetation, then dormant seed native forbs and grasses.</p>
Mow or burn	Desirable native grass	Late Summer or Fall	<ol style="list-style-type: none"> Mow/hay or burn in September—October to suppress existing grass. If there is an abundance of litter present, either burn, bale the residue, or lightly disk to expose bare ground prior to seeding. If there is an abundance of undesirable cool-season grass present (such as fescue), wait until the native grass has gone dormant (usually after the first killing frost) and then spray as outlined above for Cropland or Sparse Grassland. Burning is the preferred option, and forbs may be broadcast during the dormant season by seeding directly onto the remaining ash.
Mow and/or burn	Rank stands of native grass	Late Summer	<ol style="list-style-type: none"> Mow or hay in August, then spray regrowth with 1-1.5 quarts of glyphosate in September prior to native grasses going dormant, OR Prescribed burning in late summer (August—September, earlier the better) can be used alone or in conjunction with mowing/haying provided enough fuel remains to conduct a hot burn and set back the grass. Continue frequent mowing throughout the 1st growing season following seeding.



Table 2, continued. Options for controlling competing, non-desirable vegetation during forb establishment.

Contact your local University of Missouri Extension office, or local herbicide dealer for recommendations on type of herbicide and rates for your specific situation. NRCS does not endorse any particular herbicide product. Be sure and follow all label directions. Take care that the timing of the use of a contact herbicide, such as a glyphosate, occurs after desirable plants are dormant in the fall, or prior to their beginning growth in the spring. Remember that native cool season grasses (such as wildrye) and some forbs (such as beardtongue) may not go dormant. In general, spraying to control undesirable cool-season grasses should take place before October 31.

Note that an adequate seedbed for native forb establishment will have at least 50 percent bare ground. Prescribed burning is the preferred method for seedbed preparation when establishing forbs into an existing grass stand. **Do not seed native forbs in the spring.**

Mowing for weed control the establishment year is important, especially for forbs established into existing grass. Research has shown repeated mowing in the establishment year results in better forb establishment and persistence in existing native grass.

When using glyphosate or grass-specific herbicides (sethoxydim, quizalofop p-ethyl, or clethodim) timing is critical. Glyphosate is a contact killer, and its use may harm or kill desirable forbs. Timing should be late fall/early winter after natives have gone dormant. Spray during warm days (50-60 degrees) with low label rates. Use of grass-specific herbicides should be timed in early spring prior to native grass breaking dormancy.

For additional information on native forbs, contact your local USDA Service Center or Missouri Department of Conservation office.

Photos courtesy of the Missouri Department of Conservation.

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