United States Department of Agriculture **December 2017**

Prairie and Savanna Restoration Job Sheet JS-MO643

Landowner/Producer:		**Farm #:**
Field/Stands(s):	**Acres:**	**Tract #:**
Planned By: *I certify the information in this job sheets meets the criteria for the planned purpose(s) and the NRCS conservation practice standard and specifications.* **Signature:**		**County:**

DEFINITION

Restore and establish native prairie or savanna communities and associated wildlife species. Savannas in Missouri contain widely spaced oak trees (10 to 30 percent canopy coverage) with an herbaceous, prairie-like understory. Prairie communities are largely devoid of trees (less than 10 percent canopy coverage) with an abundance of forbs (wildflowers), grasses, and sedges.

PURPOSES (check all that apply)

☐ Establish prairie community
☐ Establish savanna community
☐ Restore remnant prairie
☐ Restore remnant savanna

CONDITION WHERE PRACTICE APPLIES

Savanna or prairie establishment/restoration will only be applied on fields where the respective savanna or prairie ecological site map units comprise over 50 percent of the field.

SPECIFICATIONS

Any vegetation that would hinder planting or provide excessive competition to the seeding or interseeding should be removed with the appropriate treatment.

Site preparation is planned as follows (check all that apply):

☐ Removal of existing woody vegetation
☐ Chemical control of herbaceous vegetation
☐ Mechanical (plowing, disking, or roto-tilling)
☐ Prescribed burning
☐ Other, such as haying or grazing

A successful planting is often the result of proper site preparation, the use of locally adapted seed, proper seeding methods, and maintenance after planting.

WOODY VEGETATION REMOVAL

After removal of woody vegetation, less than 10 percent canopy should remain for prairie and 10 to 30 percent for savanna. Use of a bulldozer is not acceptable restoration method. Exceptions may be granted after site evaluation by an Area Biologist.

Check all that apply:

- ☐ Use chainsaws or other hand methods (hack and squirt, basal spraying, etc.)
- ☐ Cut down or girdle woody vegetation. Where possible, cut all stumps at ground level.
- ☐ Apply approved herbicide to all cut stumps, other than cedar or pine, to prevent resprouting.
- ☐ Remove downed woody material.
- ☐ Leave scattered shrub islands for additional diversity and cover.

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For existing wooded communities of oak dominated stands, reduce current stocking to levels shown in the following chart.

Average tree diameter (canopy trees only)	*Trees per acre (10 % canopy)*	*Trees per acre (20 % canopy)*	*Trees per acre (30 % canopy)*
4	55	105	160
6	40	60	80
8	20	40	60
10	15	25	40
12	10	20	30
14	7	15	20
16	5	11	16
18	4	8	13
20	3	7	11

NOTE: These numbers represent full crown development.

Field	Acres	Percent Canopy to Be Removed	Species To Be Removed	Percent Canopy Remaining	Method Applied	Time of Treatment

Disposal of Woody Vegetation: If needed, plan how treated material will be disposed before beginning any treatment methods. If recommendations include prescribed burning consider methods to reduce fuel loads, such as piling debris and burn when there is snow cover on the ground or shortly after a rain event. Allow woody material to cure for 6 to 12 months before conducting a controlled burn. If the ground is completely covered with cedar slash and other debris, wait 1 or 2 years before conducting a controlled burn. Remove any volatile fuels (e.g., cedar trees) from within 50 feet of a firebreak. Do not place slash piles next to desirable trees or on highly erodible slopes.

Recommendations for disposal of treated material:

HERBACEOUS VEGETATION REMOVAL FOR SITE PREPARATION

Avoid tilling the ground prior to planting, as this will only increase weed competition and potential soil erosion. To remove existing herbaceous vegetation, to prepare the site for an herbicide application, seeding, or for interseeding, apply the following treatment(s). **Check all that apply:**

☐ Prescribed burning ☐ Disking ☐ Haying ☐ Mowing ☐ Grazing

Field	Acres	Planned Treatment	Time of Treatment

Treatment Notes:

CHEMICAL APPLICATION

☐ Apply approved herbicide

1 to 3 herbicide applications may be necessary to remove undesirable herbaceous vegetation from an existing remnant community or future planting site. Crop fields being converted to prairie or savanna should still receive at least 1 chemical application to eradicate winter annuals and persistent perennial weeds.

Crop fields being converted should be sprayed in October to November or late February to early March, before seeds begin to germinate. Old fields with undesirable perennial vegetation such as tall fescue, smooth brome, or tall goldenrod will require multiple herbicide applications across 2 entire growing seasons to correctly prepare the site. Follow herbicide label rates, directions, and manufacturer recommendations. See the Native Forb Information Sheet (IS-MO-643Native Forb) for additional information.

Field	Acres	Herbicide	Time of First Treatment	Time of Second Treatment	Time of Third Treatment

PLANTING DATES

Once the site has been prepared for seeding, a dormant seeding is strongly recommended for establishment of native forbs, grasses, and sedges. The best months for a dormant seeding are typically December and January.

PLANTING METHODS

The site will be planted using the following method (check all that apply):

☐ Broadcast
Carrier to be used:
☐ No-till drill
☐ Follow broadcast seeding with cultipacker

Planting methods will vary from site to site, depending upon the conditions of the site. Broadcasting seed by hand may be the most practical way of planting prairie and savannas less than 3 acres in size. For hand seeding, mix the seed with an inert carrier such as cat litter, pelletized lime, dried distiller's grain, cotton seed hulls, milogranite, rice hulls, sawdust, or sand to better distribute the seed over the entire area. Mix the seed and carrier at a 1:1 or 1:2 ratio. For small areas, an ATV-mounted spreader or seeder can also be used. Another alternative is to mix the seed with potash or lime and spread with a fertilizer buggy.

Broadcast seedings should not be dragged, disked, or harrowed after planting. Instead use a cultipacker (with teeth up) to roll the ground, or just let the action of freezing and thawing work the seed into the ground. **If you do not see seed on the top of the ground when you are finished, then you planted too deep.**

SEEDING MIXES

See the Prairie Information Sheet (IS-MO-643Prairie), NRCS Missouri Wildlife and Pollinator Plantings Job Sheet (JS-MO645Wildlife and Pollinator Plantings), and the Missouri NRCS Native Forb Information Sheet (IS-MO643NativeForb) for seeding specifications and approved species.

If you are establishing native forbs or grasses (see Table 1 and Table 1 of the Missouri Native Forb Information Sheet), as part of a restoration of a plant community considered to be rare or declining in Missouri (tallgrass prairie, oak savanna, or glades), be certain you are following the requirements of the Restoration and Management of Rare or Declining Habitats (643) conservation practice standard, 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 source that 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 the area identified on the Seed Source Geography Map (see Figure 1 of the Upland Wildlife Habitat Management (645) conservation practice standard).

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.

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 2 species of approved milkweed (Asclepias spp.) are included in the seed mix. See the Missouri NRCS Native Forb Information Sheet (IS-MO643NativeForb), the Upland

Wildlife Habitat Management (645) standard, and the Missouri NRCS Monarch Habitat Information Sheet (IS-MO643Monarch) for further information.

RESTORING REMNANT NATIVE PRAIRIE OR SAVANNA

Existing desirable trees, shrubs, and herbaceous vegetation should be maintained based on the planned community. The amount of desirable vegetation may limit site preparation activities. Tillage should be avoided if remnant vegetation is present on the site. If desirable native forbs, grasses, and sedges are intermixed with undesirable herbaceous vegetation apply the following technique(s) to control unwanted vegetation:

- ☐ Apply selective herbicides
  - ☐ Apply herbicides when native vegetation is dormant
- ☐ Prescribed burning
- ☐ Interseed native grasses and/or forbs
  - ☐ Grasses
  - ☐ Forbs

Native forbs should be interseeded from November 16 to March 15 in northern Missouri, December 1 to February 29 in southern Missouri. For native forbs, refer to the Native Forb Information Sheet (IS-MO643NativeForb) and the Missouri NRCS Native Forb and Non-native Legume Interseeding Job sheet (JS-MO645Native Forb and Non-Native Legume Interseeding) for more information.

Field	Acres	Planned Treatment	Time of Treatment

Treatment Notes:

TREE/SHRUB ESTABLISHMENT

☐ **Savanna *tree and/or shrub planting***

For savanna tree/shrub establishment, a minimum of 3 tree species will be used based on the corresponding Ecological Site Description (ESD). Shrub plantings are optional but will result in a more complete restoration. If desired, plant at least 1 shrub species based on the corresponding ESD.

☐ Plant trees at the rate of 25 trees per planted acre at no less than a 30-foot spacing. Tree planted acres will be at least 10 percent, but no more than 30 percent, of each field. If possible plant the trees in clusters or blocks rather than evenly spaced across a field. Shrub plantings should also be clustered dependent upon site conditions. Shrub plantings will follow the woody cover requirements in Upland Wildlife Habitat Management (645) standard. Shrubs do not count as part of the woody (tree) canopy coverage requirement.

☐ Tree planting stock will be at least 3 feet tall and 1/2 inch caliper or greater or 3-0 to 2-1 stock. Seedlings will be planted by hand or with an auger of appropriate size. Soil will be firmly packed around seedling roots. See Tree and Shrub Establishment (612) standard for recommended tree planting stock care, planting dates, and weed control.

☐ Savanna shrub planting: plant at least 1 shrub species based on the corresponding ESD. Shrub plantings will follow the woody cover requirements in Upland Wildlife Habitat Management (645) standard.

☐ **Prairie s*hrub planting***

Shrub establishment on prairies will be clustered and will be located along streams and draws, whenever possible. Shrubs are optional and, if desired, must make up less than 10 percent of the prairie. Plant at least 3 shrub species based on the corresponding ESD. Shrub plantings will follow the woody cover requirements in Upland Wildlife Habitat Management (645) standard.

Treatment Notes:

OPERATION AND MAINTENANCE: CARE AFTER ESTABLISHMENT/RESTORATION

First and second year maintenance: Removal of competing vegetation is normally carried out for 1 to 2 growing seasons following establishment. Complete the following maintenance practices **(check all that apply)**:

- ☐ Mow vegetation to a height of 6 inches when the average weed height is 1 foot. Mow as often as necessary during the first and second growing seasons to control competing vegetation. A flail-type mower is preferred, as it thoroughly cuts and shreds the vegetation and avoids smothering native grass and wildflower seedlings. Do not mow once the planting has gone dormant in late fall.
- ☐ During the second year, mow between March 15 and May 1, only if weeds are out-competing the native grasses, and wildflowers.
- ☐ Mow, clip, or use approved herbicides as often as necessary to control noxious weeds and undesirable plants during the establishment period. Avoid the use of broad spectrum herbicides and spot treat infestations with a selective herbicide.

Long-term Management: Once the stand is established, management is required to maintain the vegetative community. Long-term management is not feasible without prescribed burning even if other management methods are used. For planted habitats, prescribed burning will be conducted no earlier than the beginning of the third growing season in areas devoid of trees.

- ☐ Prescribed burning will be conducted every 3 to 5 years on newly restored sites. Do not apply to the Areas planted to trees until the trees are 3 to 6 inches in diameter at breast height.
- ☐ Prescribed burning will be conducted every 1 to 3 years to restore existing prairie or savanna sites.
- ☐ Control undesirable woody vegetation.
- ☐ Grazing of natural communities can be used to improve habitat conditions or plant diversity for wildlife. A site evaluation and a grazing plan to achieve and maintain the site must be approved by the Area Biologist.

For greatest habitat benefit burn between July 16 and March 15. *Prescribed burning beyond March 15 for wildlife management purposes will be based on recommendation of NRCS or MDC wildlife planner.* See IS-MO338 Prescribed Burning Information Sheet.

Field	Acres	Recommended Month(s) for Prescribed Burn	Year of Treatment

PRIMARY HABITAT CONSIDERATIONS:

- Restoration and Management of Rare or Declining Habitats (643) standard.
- Provide natural food and cover for many declining animal species.

REFERENCES:

Refer to the following job sheets, information sheets or detailed management plan for additional information.

JS-BIOL-20 Native Forb and Non-native Legume Interseeding
JS-MO314Brush Management
JS-MO612Tree and Shrub Establishment
IS-MO338Prescribed Burning Information Sheet
IS-MO643Prairie Information Sheet
IS-MO643Savanna Information Sheet
IS-MO645Native Forb Information Sheet

SITE SPECIFIC RECOMMENDATIONS:

Comment:

Certification Statement:
I certify that implementation of this conservation practice is complete, meets criteria for the stated purpose(s), and meets the NRCS conservation practice standard and specifications.

X

Planner/Technical Service Provider

TABLE 1 - APPROVED GRASS/GRASS LIKE - species selection will only be made from appropriate habitat type based on planting site evaluation.

Common Name	Scientific Name	Habitat Type *
GRASSES/GRASS LIKE		
Winter bent grass	*Agrostis hyemalis*	S, DP, MP, WP
Big bluestem	*Andropogon gerardii*	S, DP, MP, WP, G
Splitbeard bluestem	*Andropogon ternarius*	DP, G
Broomsedge	*Andropogon virginicus*	S, DP, MP, WP, G
Sideoats grama	*Bouteloua curtipendula*	S, DP, MP, G
River oats	*Chasmanthium latifolium*	S, MP, WP
Canada wildrye	*Elymus canadensis*	S, MP, WP
Virginia wildrye	*Elymus virginicus*	S, MP, WP, G
Cluster fescue	*Festuca paradoxa*	S, DP, MP, WP
Junegrass	*Koeleria cristata*	S, DP, MP
Switchgrass	*Panicum virgatum*	S, DP, MP, WP, G
Beaked rush	*Rhynchospora globularis*	MP, WP
Little bluestem	*Schizachyrium scoparium*	S, DP, MP, G
Tall nutgrass	*Scleria triglomerata*	S, DP, MP, WP, G
Indian grass	*Sorghastrum nutans*	S, DP, MP, G
Prairie cordgrass	*Spartina pectinata*	WP
Tall dropseed	*Sporobolus compositus*	S, DP, MP, G
Prairie dropseed	*Sporobolus heterolepis*	S, DP, MP, G
Porcupine grass	*Stipa spartea*	DP, MP
Purple top	*Tridens flavus*	S, MP
Eastern gamagrass	*Tripsacum dactyloides*	S, DP, MP, WP
Short's sedge	*Carex shortiana*	S, MP, WP
Six weeks fescue	*Vulpia octoflora*	S, DP, MP, G

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