

# Managing Native Hay Prairies

## Job Sheet

Natural Resources Conservation Service (NRCS)  
Missouri Department of Conservation (MDC)  
University of Missouri Extension – The School of Natural Resources

<b>For:</b>	<b>County:</b>
<b>Field(s):</b>	<b>Farm #:</b>
<b>Date:</b>	<b>Tract #:</b>
<b>Designed By:</b>	<b>Contact Information:</b>

PROPER MANAGEMENT IS CRITICAL TO  
MAINTAINING A PRODUCTIVE AND DIVERSE  
PRAIRIE

### PURPOSE:

Remnant native prairies can still be found in parts of southwest and west central Missouri. A few small prairies also occur in north and southeast Missouri. Many of these prairies exist today as hay prairies because they produce an inexpensive and dependable source of forage for private landowners. However, reduced production and lower quality forage from continuous late season haying, short cutting heights and lack of management have made many hay prairies relatively unproductive. As a result, many remnant prairies have been converted to cropland or introduced grass and legume pastures. Private landowners can improve native prairie hay production and wildlife habitat by using the following guidelines.



### SPECIFICATIONS:

- ❑ **Time of Cutting** – Harvest date is the most important factor in prairie hay production. Maximum tonnage and highest quality do not occur at the same time of the year. Maximum tonnage is obtained in August, but the highest quality occurs in early-May. The best compromise of forage quality and forage quantity is to hay in late-June to mid-July. Cutting after mid-July also reduces the ability of the plant to rebuild root reserves for next year's growth, thereby reducing next year's hay yield by as much as 50 percent. Continually haying in August or September will eventually change the stand composition of the prairie. As desirable warm-season grasses are weakened by late cutting, undesirable forage plants such as goldenrod and broomsedge invade.

- ❑ **Cutting Height** – The optimum cutting height for native prairie is 3 to 4 inches. Cutting at this height leaves more leaf area for rapid regrowth to rebuild root reserves for next year's production. Cutting height also becomes more important as the cutting date is delayed or on prairies producing below their potential. Never take a second cutting or graze after haying a prairie. The regrowth is essential for rebuilding root reserves and for providing important nesting and wintering cover for grassland wildlife. The yield gained from a second cutting will often reduce yields by the same amount the following year.
  
- ❑ **Fertilization** – Fertilizers can increase hay production, but only if the prairie is managed correctly. ***The health, vigor and productivity of a prairie must be restored through proper management (time of cutting and proper cutting height) before a favorable response can be expected from fertilization.*** Adding nitrogen alone should be avoided as this will only increase weed problems. Nitrogen alone should only be added if used in combination with a late spring prescribed burn. Adding phosphorus and potassium will help reduce broomsedge biomass, thus improving forage quality without harming specie diversity or habitat quality, and replace soil nutrients removed in hay. Adding lime will increase nutrient efficiency and perhaps increase production and forage quality. Adding lime, phosphorus and potassium may also improve forb (wildflower) diversity. All fertilizer blends will have some nitrogen, but choose the mix with the lowest percentage of nitrogen available. The economics of fertilizing native hay prairies ultimately depends on the value of the increased hay produced (1/2 – 1 ton/acre) and the cost of fertilizer. If possible apply fertilizer in May when warm-season grasses are 4 to 6 inches tall. ***A better alternative is to adjust time of cutting and cutting height. Simply adjusting the time of the cutting to late-June through mid-July and increasing cutting heights to 5 inches AND introducing prescribed burning will significantly improve forage production.***
  
- ❑ **Herbicides** – Avoid using broad spectrum herbicides and broadcast spraying. As many as 250 different plants occur on a healthy prairie and many of these are palatable and nutritious for livestock and important food and cover to prairie wildlife. Regularly scout for invasive weeds like sericia lespedeza and spot treat as soon as they are found. Spot treating invasive weeds is more economical than broadcast treatments and saves prairie diversity. Also basal-treat invading trees in draws and fencerows that can not be mowed or periodically burned. Trees outside and inside a prairie will reduce the value for grassland wildlife and be a future source for more sprouts. Consider leaving islands of desirable shrub species like wild plum and dogwood for wildlife habitat. Read and follow label directions when using herbicides.
  
- ❑ **Prescribed Burning** – Prescribed burning is critical to restoring a prairie. Burning will help improve production, reduce undesirable cool-season grasses that can reduce production by using huge quantities of soil moisture, control cedar sprouts, and improve wildlife habitat. Spring burning 2 or more years in succession will usually control invading cool-season grasses and some woody vegetation. Summer or early fall burning will increase forb diversity, but may also reduce native warm-season grass yield but usually not total yield. The increase in forb production may also make the prairie marketable to native seed companies for harvesting wildflower seed. Income gained from seed harvest could potentially offset losses from not haying a prairie for an entire year. Periodic burning will also benefit wildlife by improving nesting and brooding habitat. Plan to burn no more than one-half of the prairie each year so to leave some previous year's growth for nesting cover. Burn the other portion the following year.
  
- ❑ **Rest - Hay Rotation** – Haying one-half of a prairie and resting (no harvesting or grazing) the other half for an entire year can dramatically improve production in the future and provide excellent wildlife habitat. While this management practice seems wasteful, prairies managed under this scenario can produce as much tonnage from one-half of the prairie as when the entire prairie is hayed annually. The rested portion will often produce enough forage the year after resting to compensate for production lost the year of rest. Brushy vegetation will not be a concern even in a rest-hay rotation, especially if prescribed burning is introduced. A rest-hay rotation will also help lower equipment and fuel cost for the operator.

## OPERATION AND MAINTENANCE - SUMMARY:

### Haying:

1. Cut hay prairies in late June to early July to a 3 to 4-inch stubble height.
2. If wildlife is a concern, complete haying between July 16 and August 15 to give ground nesting wildlife time to complete nesting activities. Haying after mid-July should be done in conjunction with a rest-hay rotation and prescribed burning to maintain a productive and diverse prairie.
3. Strictly follow the late June to early July haying dates if equipment can not be raised to cut at a 3 to 4 inch height. Prescribed burning and a rest-hay rotation should also be introduced to improve forage production and plant diversity. *Program policies may restrict haying heights and haying dates. Check with your local USDA Service Center for more details.*
4. Avoid cutting hay prairies in August or September. Late cutting depletes root reserves, thus reduces forage production the following year and eliminates wildlife winter and nesting cover.
5. If hay meadows can not be cut by mid-July, consider introducing prescribed grazing after a frost.
6. Leave all regrowth for winter and nesting cover. Avoid second cuttings or grazing a prairie after haying.
7. Remove hay bales as soon as possible to avoid killing desirable vegetation.

### Fertilization and Herbicides:

1. Fertilizing a prairie will increase production, but better returns can be expected by modifying cutting heights and haying dates.
2. Apply fertilizer in May when warm-season grasses are 4 to 6 inches tall. Prairies should only be fertilized when used in conjunction with spring prescribed burns to control introduced cool-season grasses.
3. Applying lime, phosphorus and potassium may improve forb diversity and production.
4. Choose fertilizer blends with the lowest percentage of nitrogen available.
5. Avoid the use of broad spectrum herbicides except for spot treatments.
6. Regularly scout prairies for aggressive invasive weeds like sericia lespedeza. Spot treat heavy infestations.
7. Basal-treat trees to improve prairie habitat for wildlife and to eliminate sources for future sprouts in the hay meadow.

### Management:

1. Consider establishing a rest-hay rotation on 10 to 50 percent of the prairie each year to improve production, improve wildlife habitat and reduce overhead costs.
2. Reintroduce prescribed burning by burning 1/2 to 1/3 of the prairie. Spring burns will help control invasive cool-season grasses and some woody vegetation, while summer or early fall burning will increase forb diversity and wildlife use. If possible burn on a 3 to 4 year rotation.
3. Summer and early fall burns can significantly improve forb production for potential seed harvest.
4. Consider alternating haying with prescribed grazing every other year.
5. Avoid overseeding prairies with cool-season grasses and legumes. Introducing cool-season grass such as tall fescue will reduce forage quality and quantity in a prairie because of different maturity dates for cool- and warm-season grasses. Cool-season forages also reduce the vigor of native prairie plants.
6. Consider leaving scattered clumps of shrubby cover for prairie chickens, quail broods and other prairie wildlife.
7. It is always best to combine management tools such as prescribed burning, rest-hay rotation, prescribed grazing and spot herbicide treatments to increase economic return and improve grassland health.

Consult with NRCS or MDC wildlife biologists or grassland conservationist for recommendations on more complex sites. Contact your University Extension Center for additional information on wildlife management.

Comment:



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