

# Warm-Season Grasses

For Erosion Control, Water Quality, and Wildlife Habitat

## Conservation Practice Job Sheet

October 2011

### INTRODUCTION

Warm-season grasses produce most of their growth during the warmest months of the year, typically from June through early September. Many warm-season grasses are deep rooted, long-lived perennials with considerable tolerance to relatively low pH, low fertility, and drought. Warm-season grasses grow best on deep, well drained soils, although a few species will tolerate poorly drained soils.

Warm-season grasses can be planted to reduce soil erosion and sedimentation, improve water quality, and provide wildlife habitat. Stiff-stemmed warm-season grasses can serve as barriers to erosion, and can trap sediments. Warm-season grasses with a bunch-type growth form provide nesting habitat and cover for birds and mammals. Forbs and legumes are usually planted in combination with warm-season grasses to provide sources of food, including seeds, insects, and wildflower pollen and nectar.

### ESTABLISHMENT AND MAINTENANCE

Establishment and maintenance requirements for warm-season grasses are significant and should be considered. Warm-season grasses usually take 2 to 3 years to become fully established. During that time, weeds can be a major problem. Although some weeds, such as foxtail and ragweed, can provide food and cover for wildlife, they need to be controlled, usually by periodic mowing throughout the growing season, while the warm-season grasses are becoming established. Sites with existing vegetation or weed problems will also require up to one year or more of site preparation prior to planting, usually consisting of herbicide treatment and/or cultivation.

By the 3<sup>rd</sup> year, warm-season grasses should be well established. Most stands need occasional mowing every 2 to 3 years to keep trees and shrubs from invading. All mowing should be conducted outside the primary nesting season (April 15 – August 15) once the stand is established. Mature stands that are not regularly hayed or grazed may pose a fire hazard. Firebreaks of cool-season grasses may be appropriate around buildings, woodlands, or other locations.



Photo by Anne Lynn

### MANAGEMENT

Management activities vary depending upon objectives, and may be conducted to maintain stand vigor, reduce litter accumulation, enhance wildlife benefits, and/or maintain plant diversity. Management activities may be used alone or in combination to achieve desired objectives.

When warm-season grasses are established for wildlife benefits, periodic disking and/or prescribed burning are usually necessary to prevent the grasses from becoming too dense. Under dense conditions the movement of ground birds and germination of annual forbs and legumes are inhibited. Management activities are typically conducted on a 2 to 4 year rotation to maintain a diversity of wildlife cover throughout and across years. For optimum wildlife habitat, all management practices should be conducted outside of the primary nesting season for birds and ground-nesting wildlife (April 15 - August 15).

### INSTRUCTIONS

The following schedule provides instructions for planting, maintaining, and managing warm-season grasses so they can serve their intended purpose. Using proper planting and management techniques will significantly improve plant health, reduce weed problems, and increase the likelihood of success.

**Program Participation** – If you are enrolled in a program that provides financial assistance for establishment and/or management of warm-season grass stands, specific restrictions and requirements may apply. Refer to the program specific guidance provided in addition to this job sheet.

ESTABLISHMENT AND MAINTENANCE PLAN FOR WARM-SEASON GRASSES				
Name:	Farm:	Tract:	Primary Purpose(s): <input type="checkbox"/> Erosion Control <input type="checkbox"/> Water Quality <input type="checkbox"/> CREP/CRP <input type="checkbox"/> Wildlife Habitat for:	
	Tax Map:	Parcel:		
Address:	Assisted by:			
	Date:			

**SEED MIXTURE**

Planting Area (Field # , Firebreak, etc.)	Acres	Species and/or Wildflower Mix	Cultivar (if any)	Seeding Rate (PLS lbs/ac)	Total Quantities Needed
<b>Nurse/Cover Crop</b>		<b>Oats, Barley, or Wheat</b> (oats are preferred because they are less competitive)		<b>20 - 40</b>	

**Additional Recommendations/Notes:**

**ESTABLISHMENT AND MAINTENANCE PLAN FOR WARM-SEASON GRASSES**

**ESTABLISHMENT**

**Site Preparation**

**Site Without Existing Vegetation**

- Site preparation not required (recently cropped, with no likelihood of aggressive weed problems).
- Plant a cover crop of oats, barley, or wheat to control erosion or suppress weed growth.
- Site has history of noxious or aggressive weeds. Treat weeds with herbicide and plant a full-season cover crop.

**Site With Existing Vegetation**

Mow or brush-hog the site and treat using one of the following methods:

- Herbicide Treatment** – Use an herbicide with low persistence (e.g. glyphosate) to kill existing vegetation. If the existing vegetation is well-established dense turf, a fall and spring or two spring treatments will probably be required.
- Cultivation** – Cultivate the site to remove all existing vegetation. Plant a cover crop of oats, barley, or wheat, if necessary, to control erosion and suppress weed growth.

**Planting**

**Seed Mixture** – The species, cultivar, and seeding rate in pure live seed (PLS) is provided on the previous page. If a species or cultivar is not available, contact your local Soil Conservation District office to discuss alternatives.

**Nurse Crop** – Use a nurse crop of \_\_\_\_\_ at a rate of \_\_\_\_\_ lb/ac at the time of planting for erosion control or weed suppression.

**Planting Dates** – Use the appropriate planting dates based on your plant hardiness zone. Spring plantings of warm-season grasses may be conducted up to June 30<sup>th</sup> in all zones if sufficient moisture is available.

Plant Hardiness Zone	Spring Planting	Fall Dormant Planting	Spring Planting - CSG/WSG Mix
5b and 6a	<input type="checkbox"/> Mar 15 – Jun 15	<input type="checkbox"/> Nov 1 – Dec 1	<input type="checkbox"/> Mar 15 – May 31
6b	<input type="checkbox"/> Mar 1 – Jun 15	<input type="checkbox"/> Nov 15 – Dec 15	<input type="checkbox"/> Mar 1 – May 15
7a and 7b	<input type="checkbox"/> Feb 15 – May 31	<input type="checkbox"/> Dec 1 – Dec 31	<input type="checkbox"/> Feb 15 – Apr 30

**Planting Equipment** – Many types of warm-season grasses require use of a special seed drill. For the mixture selected, use the following implement:

- Native seed drill
- Small grain seed drill
- Broadcast seeder – For small or fluffy seed, mix a filler (e.g. sawdust) with the seed for even distribution.
- Any of the above

**Planting Method**

- No-till** planting into residue or clean seed bed.
- No-till** planting into a spring cover crop. If the cover crop is tall or thick, mow it prior to planting. The cover crop may also be “burned down” with an herbicide prior to planting.
- Broadcast** seeding. Broadcast onto a firm seedbed and incorporate seed using a cultipacker, rake, or drag.

**Lime and Fertilizer** – Most warm-season grasses tolerate poor pH and nutrient conditions.

- If the pH is below 5.0, lime can be applied to achieve a pH of 5.5 to 6.5.
- Phosphorus (P<sub>2</sub>O<sub>5</sub>) and potassium (K<sub>2</sub>O) should only be applied if a soil test indicates that these nutrients are in the low range, based on a nutrient management plan.
- Do not apply nitrogen because it is not needed and will only promote weed growth.

## ESTABLISHMENT AND MAINTENANCE PLAN FOR WARM-SEASON GRASSES

### Weed Control During Establishment

#### *Planting Year*

In the first growing season after seed germination, it is very important to ensure that the seedlings do not get shaded out by weeds. Weeds can be controlled by mowing or herbicide treatment, as follows:

- Mow the planting as needed during the summer months to control weeds and keep them below 18 inches. Mow to a height of 6 to 8 inches or just above seedling height (do not mow seedlings). Discontinue mowing after early August unless you can set the mower high enough to stay above the seedlings. Nesting season restrictions on mowing do not apply during the establishment period.
- Selective herbicides can be used for controlling specific weeds, and are most effective when weeds are young and actively growing. If you have native wildflowers in your planting, mowing or specialized herbicides such as Plateau may be the best options, because most wildflowers are susceptible to herbicides that control broadleaf plants. Be sure to read and follow herbicide label instructions.

#### *Second and Third Year After Planting*

- In early spring, if unwanted cool-season grasses or weeds comprise more than 25 percent of the stand, either treat with an appropriate herbicide or keep the area mowed very short until the warm-season grasses start to green up. Non-selective herbicides (e.g., Roundup) can be used to control cool-season grasses when warm-season grasses are dormant, but will also kill most actively-growing legumes or wildflowers.
- Throughout the growing season, mow above seedling height (about 8 inches) as needed to keep weeds under control.

## MAINTENANCE

Warm-season grass stands require periodic maintenance to maintain stand vigor, control noxious and invasive weeds, and prevent succession of woody vegetation. Control of noxious weeds (specifically, johnsongrass, shattercane, Canada thistle, bull thistle, plumeless thistle, and musk thistle) is required by State law.

### Weed Control

Control noxious weeds and other invasive plants by spot treatment using mechanical methods or approved herbicides. If it becomes necessary to control noxious weeds during the nesting season, contact your local weed control specialist concerning recommendations for spot-treating the weed problem.

### Control of Woody Growth

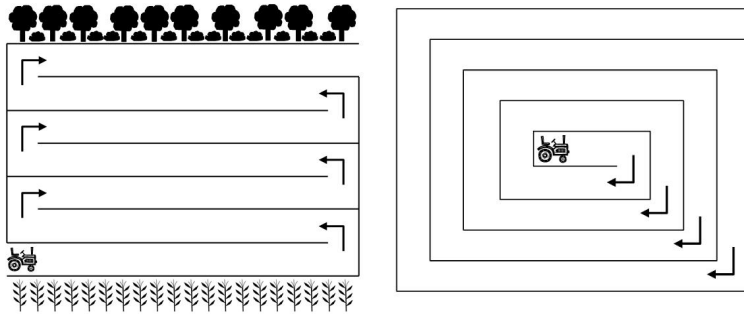
Methods to control woody growth include mowing, targeted herbicide treatment, disking, and prescribed burning. Mowing is the most common method because of access to equipment, but not necessarily the most effective method. Herbicide treatment is a common and effective method of controlling brush. Disking and prescribed burning are considered management practices, which are described in the next section.

#### *Mowing*

- Mow as needed, but preferably on a 2 to 3 year rotation, mowing only 1/3 to 1/2 of the planting each year. The remaining unmowed areas will provide year-round wildlife food and cover.
- Mowing during the growing season, generally in late summer, is more effective for woody vegetation control than mowing during the dormant season, because it limits the amount of carbohydrate reserves that can be translocated to the roots. However, to protect wildlife, do not mow during the primary nesting season (April 15 - August 15). If mowing in the fall, allow enough time for grasses to reach a height of 6 to 8 inches before the first killing frost.
- To the extent possible, mow in a manner that will provide escape routes for wildlife at the time of mowing, such as mowing from the inside out, or mowing from the field side toward the woods edge.
- Do not mow for cosmetic purposes.

## ESTABLISHMENT AND MAINTENANCE PLAN FOR WARM-SEASON GRASSES

### MAINTENANCE



Edge-to-edge (left) or inside-to-outside (right) mowing patterns provide escape routes for wildlife.

#### **Targeted Herbicide Application**

Herbicide treatment is a common and effective method for controlling woody vegetation. Methods vary depending on the type, size, and age of the target species, and the size of the treatment area. Provided below are some general recommendations on the use of herbicides for woody vegetation control. For more specific information, contact your local University of Maryland Extension or Soil Conservation District office, or county weed control agent.

- Small areas of woody vegetation can be treated using basal bark, foliar spray, or cut-surface treatment methods in which the herbicide is applied with portable sprayers and hand tools.
- Large areas of woody vegetation will likely require foliar application of a systemic herbicide using a wick bar applicator. Systemic herbicides (e.g. 2,4-D) are absorbed by the plant and translocated to the roots. Woody vegetation may need to be mowed and allowed to re-grow to enable effective application of herbicide to foliar surfaces.
- Application of systemic herbicides in late summer or early fall, prior to leaf-drop, is typically more effective because the herbicide will be translocated to the roots.
- Check the pesticide label to determine the types of plants that are controlled or damaged by the herbicide. If you have native wildflowers in your planting, mowing or specialized herbicides such as Plateau may be the best options, because most wildflowers are susceptible to herbicides that control broadleaf plants.
- Always read and follow the pesticide label when applying herbicides.

MANAGEMENT PLAN FOR WARM-SEASON GRASSES				
Name:		Assisted by:		Date:
Farm:	Tract:	Field(s):	Acres:	Program:
<p><b>Strip Disking</b>      <input type="checkbox"/> <i>Required</i>    <input type="checkbox"/> <i>Required as necessary</i>    <input type="checkbox"/> <i>Optional</i>    <input type="checkbox"/> <i>Will not be used</i></p> <p>Strip disking is used to reduce the density of the warm-season grass stands, provide openings in the stand for wildlife movement and foraging, and to increase plant diversity and food sources by encouraging the germination of forbs and legumes. The appropriate intensity and timing for disking will depend on the objectives and the stand characteristics. Strip disking should only be used if it will not result in excessive erosion or adversely impact water quality, and will not destroy the planting.</p> <p><b>Minimum Set-backs</b></p> <p>The following set-backs are required in order to maintain the functions of the planting and protect water quality. Do <u>not</u> disk in these areas.</p> <ul style="list-style-type: none"> <li>• 24 feet from a watercourse, water body, or wetland;</li> <li>• 15 feet from adjacent cropland or intensively used areas, if present. Infrequently used field roads or firebreaks planted with cool-season grasses can be included in this set-back.</li> </ul> <p><b>Disking Intensity</b></p> <ul style="list-style-type: none"> <li>• Before disking, mow the area that will be disked. Fall mowing can facilitate spring disking by providing time for breakdown of leaf matter.</li> <li>• The required disking intensity will vary depending on the density of grasses in the stand. For stands where grasses are not dense, a single pass with a light finish disk may be sufficient. Thick stands of perennial warm-season grasses will require heavier, more intensive disking to open up the stand. In thick stands, multiple passes with a tandem disk, or a single pass with a heavy offset disk may be required to thin the grasses. A heavy offset disk will slice and turn the soil and bury residue, which may be needed to reduce the overall cover of grasses. After use of a heavy offset disk or when the soil has been turned over, the soil surface should be smoothed with a cultipacker, harrow, or other finishing implement.</li> </ul> <p><b>Width, Spacing, and Timing</b></p> <ul style="list-style-type: none"> <li>• Disk in strips on 1/3 to 1/2 of each field on the contour on a 2 or 3-year rotation.</li> <li>• Strip disk either in late summer to early fall (September 1 – October 15), or in late winter to early spring (preferably in March). Fall disking tends to promote the growth of forbs and legumes (e.g., ragweed, partridge pea), whereas spring disking tends to promote the growth of annual grasses (e.g., foxtail). Because warm-season grasses may be more susceptible to disking in late summer or early fall, when they are sending reserves into their roots, disking at this time may be more useful for reducing the thickness of the grasses.</li> <li>• Do <u>not</u> disk during the primary nesting season (April 15 – August 15).</li> </ul> <p><b>Highly Erodible Land with an EI ≥ 16</b>    <input type="checkbox"/> is included in this plan. Follow this special guidance:</p> <ul style="list-style-type: none"> <li>• Disk in strips <u>no wider than 30 feet on the contour</u>, in an alternating pattern of disked and undisked strips. Undisked strips should be twice the width of disked strips.</li> <li>• Disking intensity should be light enough to maintain at least 30% residue cover in the disked strips.</li> <li>• Do not disk parts of the field where excessive erosion or gully erosion is likely to occur.</li> <li>• <u>On highly erodible land with an EI &gt; 30</u>, only disk in the upper half of the slope, and adjust the disking intensity to attain at least 60% residue cover.</li> </ul>				

## MANAGEMENT PLAN FOR WARM-SEASON GRASSES

**Prescribed Burning**    *Required*    *Optional*    *Will not be used*

Prescribed burning is the most effective management technique for removing accumulated plant litter and controlling woody plants. Prescribed burning will also enhance warm-season grass re-growth, but alone, may not be effective at maintaining the forb and legume component of the stand.

- Conduct prescribed burns on a 2 to 3 year rotation, usually starting in the 4<sup>th</sup> or 5<sup>th</sup> year after planting.
- Prescribed burning can be used in combination with strip disking to create greater habitat diversity and/or to facilitate disking. Within a given year, half of the undisked strips between disked strips can be burned to create a mosaic of undisturbed, disked, and burned strips.
- Prescribed burning requires the use of firebreaks that are usually 12 to 15 feet wide. Existing strips of cool-season grasses or disked strips of bare ground can be used as firebreaks.
- Prescribed burning requires a permit and may not be allowed in some areas. Contact your local office of the Maryland Department of Natural Resources, Forest Service, or Soil Conservation District for current information concerning permits and assistance for this practice.
- Do not burn during the primary nesting season (April 15 - August 15).

**Inter-seeding Native Forbs and Legumes**    *Required*    *Optional*    *Will not be used*

**Type:**    *Perennial/annual mix*    *Annuals or legumes*

As a grass stand matures, the forb and legume components tend to naturally decline. Forbs and legumes may be inter-seeded into existing grass stands to maintain plant diversity and provide food for wildlife. Refer to the Maryland job sheet *Herbaceous Plantings for Pollinator Habitat* for more information.

- Inter-seed forbs and legumes on an as-needed basis. This management practice is not a food plot activity, and should only be used as necessary to maintain plant diversity. Managed disking will encourage germination of wildflowers that are currently in the seedbank.
- Use the same forbs and legumes as originally specified in the planting mix, or select a different mix based on recommendations from your local Soil Conservation District office.
- Native forb and legume mixes can be inter-seeded at a rate of 2 to 5 lb pure live seed (PLS) per acre, while annuals or legumes alone are typically inter-seeded at rates from 5 to 10 lb per acre, depending on the species.
- If the grass stand is thick or contains more than ¼ inch of litter (thatch), lightly disked or harrow the stand prior to seeding. It is important to ensure that the stand contains space for the plants to establish. When disking or harrowing is needed, use a minimum set-back of at least 24 feet from a watercourse, water body, or wetland.
- Refer to the planting dates provided in the *Establishment* section above for inter-seeding native forbs and legumes.
- Do not inter-seed during the primary nesting season (April 15 - August 15).

Use one of the following planting methods for inter-seeding:

1. **Broadcast Seeding.** Cut the grass short before seeding. Broadcast the seed. Then go over it with a cultipacker, drag or harrow to enhance seed-to-soil contact.
2. **No-till Planting.** Cut the grass short before seeding. Use a no-till drill to place seed about ¼-inch into the soil.

### MANAGEMENT PLAN FOR WARM-SEASON GRASSES

**Managed Haying and Grazing**    *Approved for* \_\_\_\_ *acres*    *Optional*    *Not Allowed*

Managed haying or grazing can be used to reduce excess biomass and provide supplemental feed for livestock. Warm-season grasses are best suited for haying and grazing in the summer when they are actively growing.

**Haying** – For perennial warm-season grasses, take the first cutting when plants are in the late boot stage. For most species, it's important to leave at least a 6-inch stubble (at least 8 inches for eastern gamagrass). Allow grasses to reach a height of 8 to 10 inches before the first killing frost.

**Grazing** – Begin initial grazing when the plants are at least 12 inches tall. Graze down to 6 inches, and allow re-growth to 12 inches before grazing again. The final grazing height should be about 8 to 10 inches to allow sufficient recovery before dormancy.

- Do not hay or graze until after July 15<sup>th</sup>, and defer until after August 15<sup>th</sup> if possible.
- Hay or graze only 1/3 to 1/2 of the stand on a 3-year rotation.
- Mow in a manner that will provide escape routes for wildlife (see *maintenance mowing*, above).
- Exclude livestock from streams, wetlands, and other environmentally sensitive areas.
- *If enrolled in a financial assistance program for establishment of warm-season grasses, specific restrictions and requirements may apply. Refer to program specific guidance for more information.*

**Additional Recommendations:**

*Brand names are mentioned in this job sheet for informational purposes only. NRCS does not intend endorsement of brands mentioned, nor criticism of similar products not mentioned.*

*Contents of this job sheet may be reproduced for non-commercial purposes, provided that USDA-NRCS, Maryland, is credited. Adapted by Steve Strano, NRCS, Maryland, from previous versions developed by A Lynn and L Marques, formerly with NRCS, Maryland.*

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.