Riparian Forest Buffer

Conservation Practice Job Sheet (391)
Kentucky

Natural Resources Conservation Service (NRCS) February 2005

Participant Name _____

INFORMATION ON THIS JOB SHEET IS CONSIDERED TO BE PART OF THE CONTRACT AND/OR CONSERVATION PLAN.

Definition

An area of trees, woody shrubs, grasses, and other vegetation established in zones located adjacent to and up-gradient from water courses, wetlands, sinkholes, and impounded water bodies.

Purpose

The purpose is to intercept and reduce sediment, nutrients, pesticides, and other pollutants in surface runoff and in shallow subsurface water flow. Woody vegetation in buffers provides food and cover for wildlife, helps lower water temperatures by shading water bodies, and slows out-of-bank flood flows. In addition, the vegetation closest to the stream or water body provides woody debris for aquatic organisms and increases the resistance of stream banks to erosion caused by high water flows.

Conditions Where Practice Applies

This practice applies on cropland, pastureland, marginal pastureland, hayland, and other lands adjacent to water courses, water bodies, and sinkholes where vegetation is needed for water quality protection, erosion control and wildlife.

Establishment Requirements

Riparian buffers are composed of two to three zones. Zone 1 begins at the top of the bank and extends up gradient until it reaches the edge of zone 2. Zone 3 begins at the up gradient edge of zone 2**.**

The first row of trees shall be planted at a distance of half the planned row spacing from the top of the bank, sinkhole opening, normal water line of ponds, or at a minimum distance allowed for safe operation of planting equipment.

If existing trees are adjacent to the feature being buffered, the first row of trees shall be planted at the drip line of the existing trees. Vegetation within each zone will be established according to conservation plan map and the following information.

Tree/Shrub Establishment

When possible, plant materials and seed should be from within a 150-mile radius of the planting site. If possible, seedlings shall be lifted within one week of planting and shall not be lifted until November 5th or until the seedlings have become dormant which ever is later. All seedlings will have a root collar diameter of at least 1/4 inch and roots of at least 5 inches in length.

<u>Seedling Care</u>

Seedlings should be protected from sun and wind during shipping and the planting operation. Seedling roots should be kept moist during transportation, storage, and during the planting operation. Seedlings should be planted immediately after delivery. If planting will be delayed for more than 5 days, place them in cold storage at 35 to 45 degrees F. If cold storage is not available, seedlings should be heeled-in. Spread roots against the back of a trench that is slightly deeper than the root system. Cover roots with soil and tamp the soil firmly to eliminate air space.

Site Preparation

Site preparation for tree planting may include mowing, disking, and/or herbicide application. Mowing heights shall be 8 inches or shorter. Mowing or disking shall be done in the late summer or fall prior to planting and before any planned herbicide application. If herbicide application is planned, allow at least 4-6 inches of re-growth after mowing prior to applying herbicide to ensure adequate uptake. Herbicide application for burn down purposes should be done when vegetation is actively growing. Herbicides must be used according to label recommendations. See Table 2 for specific site preparation and herbicide requirements.

Seedling Planting

1. Trees will be planted when the ground is not frozen between November 15th and April 15th in western Kentucky and between November 15th and May 1st in eastern Kentucky.

2. Planting rates for trees and shrubs should be between 605 seedlings per acre (approximately 6' x 12' spacing) and 681 seedlings per acre (approximately 8' x 8' spacing). Consider using the 12' row widths for equipment access during post planting management activities. Use the 8' x 8' spacing when it is anticipated that the planting will not receive mechanized post planting management activities.

3. At least 80% of the tree species planted shall consist of three hard mast species equally distributed by number. To ensure interspersion, rows may contain the same species but the same species shall not be planted in two consecutive rows. To achieve optimum interspersion, plant at least 2 species per row alternating species within the row. See Table 4 for the tree species that are planned.

2. Trees shall be planted with conventional planting equipment such as the dibble or planting bar, spade, mattock, shovel, or mechanical tree setter.

3. Plants shall be placed in a hole or slit of sufficient depth and width that the root system is fully accommodated in its natural form and position. They shall be set deep enough that the root collar is at or slightly below ground level. Soil shall be packed firmly around the roots. Plants will be carried so roots remain moist during planting.

Grass Establishment

1. Native grasses will be seeded between April 15th and June 30th. Legumes and forbs can be seeded at the same time a the grass or can be over seeded during the fall or spring after native grass planting. Note: Annual legumes may only be seeded during the spring.

   For cool season species, the spring seeding period is between February 1 and May 15. The fall seeding period for cool season species is between August 1 and October 10.

2. Species, seeding rates, and seeding dates will be according to Table 4.

3. Seed will conform to minimum state standards for purity, germination and other features. Seed tags and other information may be requested by NRCS representatives to verify contract compliance.

4. All soil amendments shall be made according to University of Kentucky soil test recommendation. Fertilizer and lime are not required for native grass plantings on riparian buffers unless recommended by NRCS due to site conditions. See Table 3 for more detail on soil amendments.

5. Competition control, seedbed preparation and seeding shall be done according to the following.

Competition Control Before Planting

Competition control is critical to ensuring a good grass stand. Either conventional seedbed preparation or herbicide application or both may be used to control competition prior to planting.

Several steps are required to get successful competition control when using a herbicide especially on fescue stands. The first step in killing fescue is to mow the area in late summer for a fall herbicide burn down or in late summer or early spring for a spring herbicide burn down. If possible after mowing and prior to herbicide application, remove the hay to provide a better seed bed and allow for better herbicide contact with vegetation. (Hay removal is not allowed if the area is currently under a CRP contract.)

If needed, a second herbicide application should be planned. This application should occur just prior to

grass planting and after the remaining vegetation has regrown to a 4 - 6 inch height. All herbicide applications shall be made when vegetation is actively growing.

A second herbicide application prior to planting is recommended for dense fescue or orchard grass stands and other areas where competition may not be controlled by one application. See Table 2 for specific pre-planting herbicide application requirements.

Seeding and Seedbed Preparation

Important: Regardless of the seeding method used, seeding depth should never exceed ¼ inch for native warm season grasses and ½ inch for introduced cool season grasses. Avoid no-till planting or cultipacking planted seedbeds in wet soil since it may result in placing the seed to deep. For native grasses, having some seed on the soil surface is better than having it too deep.

No-till establishment is the preferred method since soil disturbance is minimum, thus reducing weed competition and soil erosion. Conventional seeding may be used for establishment on areas that have been recently cropped where weedy competition will be lessened and on areas where the risk of soil erosion is minimal.

No-Till Seeding

Smooth seeded species like most cool season grasses and beardless or debearded native grass species can be planted using a conventional no-till drill set to the appropriate depth, ¼ inch for native grass and ¼ - ½ for cool season grass.

The fluffy seed associated with most native grasses should be seeded with a no-till drill specialized to plant these seeds. These specialized drills have seed boxes with dividers and agitators, picker wheels, and oversized drop tubes. These drills are designed so they can be adjusted to ensure shallow planting depths. Some conventional no-till drills have been retro fitted with a fluffy grass seed box. Care needs to be exercised when setting these drills to ensure that planting depths are no deeper than ¼ inch.

Two common mistakes when no-till planting include pulling the drill to fast and not stopping to check seeding depth often enough.

Conventional Seeding

Note: No-till is the preferred method for planting native grasses.

Prepare a clean seedbed by plowing and disking. After disking, make at least one trip over the field using a cultipacker to firm the seedbed. The importance of a dry firm seedbed cannot be over emphasized to ensure proper planting depth.

Broadcast seed with a drop spreader. When using a cyclone type spreader, a carrier should be used to help distribute the seed. Agricultural grade lime should be used as a carrier at a 200 lbs./acre rate. Since seed will only broadcast as far as the carrier, make sure your passes overlap to ensure even coverage.

After broadcasting, cultipack or roll the seeded area only once to ensure good seed to soil contact and the proper shallow seeding depth.

Eastern Gama Grass Planting

Eastern Gama grass may be planted into a conventionally tilled seedbed or into killed grass sod using a corn planter. Planting depth for Eastern Gama grass shall not be deeper than 1-1½ inchs.

Operation and Maintenance

Competition control remains an important part of tree/shrub and grass cover establishment for up to two years after planting. If needed, competing vegetation will be controlled through mowing or post planting herbicide application until the planned cover is established. Contact NRCS or a TSP for site specific post planting competition control recommendations.

Planted vegetation will be inspected periodically and protected from adverse impacts including insects, diseases or competing vegetation, fire and damage from livestock

If the riparian buffer is being established under a cost- share program, follow management requirements as outlined on the program specific Management and Maintenance job sheets.

Table 1 - This table contains several options for controlling competing grasses and weeds during vegetation establishment. If two burn downs are planned, records should indicate that herbicide was applied to the field twice. A double rate of herbicide applied once over a field does not constitute two burn downs and will be paid for a single burn down. Two burn downs are recommended when the dominant species in a field is either fescue or orchard grass. Options below that include Plateau or Journey herbicide shall not be used on acreage where introduced grasses or trees are being planted. If Plateau or Journey herbicide will be used, check the label to determine which species are compatible prior to species selection. Apply all herbicides according to label recommendations.

Option	Current Condition	Planned Vegetation	Timing	Method
1 Single Burn Down	Cropland Or Grassland	Tree and Shrubs Or Introduced Grass	Fall or Spring	Remove excess vegetation prior to herbicide application. Apply tank mixture when vegetation is actively growing after 4 to 6 inches of regrowth has occurred. Tank Mixture: per acre in April – June. 1.5 to 2 Quarts Roundup Ultra* or similar Glyphosate based product. Note: Ammonium Sulfate or other additives may be used when applying herbicide at lower rates.
2 Single Burn Down	Cropland	Native Grass	Spring	Remove excess vegetation prior to herbicide application. Apply tank mixture when vegetation is actively growing after 4 to 6 inches of regrowth has occurred. Apply just prior to planting to provide residual competition control. Tank Mixture: per acre in April – June. 4.0 – 6.0 oz. Plateau* or 10.7 – 16.0 oz. Journey* Methylated soybean oil (MSO) or similar adjuvant may be added to the mixture to aid in product effectiveness.
3 Single Burn Down	Grassland	Native Grass	Spring	Remove excess vegetation prior to herbicide application. Apply tank mixture when vegetation is actively growing after 4 to 6 inches of regrowth has occurred. Apply just prior to planting to provide residual competition control. Tank Mixture: per acre in April – June 1.5 – 2.0 quarts Roundup Ultra* or similar Glyphosate base product and 4.0 – 6.0 oz. Plateau* or 10.7 – 16.0 oz. Journey* Methylated soybean oil (MSO) or similar adjuvant may be added to the mixture to aid in product effectiveness.
4 Two Burn Downs	Grassland	Trees and Shrubs Or Native Grass Or Introduced Grass	Fall or Spring And Spring	Remove excess vegetation prior to herbicide application. Apply tank mixture when vegetation is actively growing after 4 to 6 inches of regrowth has occurred. Tank Mixture: per acre in September - October or April - June. 1 to 2.0 Quarts Roundup Ultra* or similar Glyphosate based product. Note: Ammonium Sulfate or other additives may be used when applying herbicide at lower rates. And Apply tank mixture just prior to planting and after remaining vegetation grows 4 to 6 inches. Tank Mixture: per acre in April-June 1 to 2 Quarts Roundup Ultra* or similar Glyphosate based product. Note: Ammonium Sulfate or other additives may be used when applying herbicide at lower rates.
5 Two Burn Downs	Grassland	Native Grass	Fall or Spring And Spring	Remove excess vegetation prior to herbicide application. Apply tank mixture when vegetation is actively growing after 4 to 6 inches of regrowth has occurred. Tank Mixture: per acre in September - October or April - June. 1 to 2 Quarts Roundup Ultra* or similar Glyphosate based product. Note: Ammonium Sulfate or other additives may be used when applying herbicide at lower rates. And Apply tank mixture just prior to planting and after remaining vegetation grows 4 to 6 inches. Tank Mixture: per acre in April-June 1 to 2 Quarts Roundup Ultra* or similar Glyphosate based product and 4.0 – 6.0 oz. Plateau* or 10.7 – 16.0 oz. Journey Note: Ammonium Sulfate or other additives may be used when applying herbicide at lower rates.

**NRCS does not require specific herbicides by trade name. The active ingredient in Roundup is glyphosate. The active ingredient in Plateau is imazameth. The active ingredients in Journey are glyphosate and imazameth. Other brands of herbicide containing these ingredients may be substituted; however, application rates, application timing, and results may vary.*

Table 2 - The following table contains information about site preparation related to planned herbicide application(s) to be carried out as part of the riparian buffer plantings. Some herbicide applications will be made prior to planting (pre-planting) to burn down existing vegetation. All herbicide products must be used according to label specifications.

Field Number	Zone	Acres	Pre-Planting Application(s) (Tentative Date)	Post-Planting Application(s) (Tentative Date)	Comments

Table 3 – Fertilizer/Lime recommendations for vegetation establishment.**

Tract No.	Field No.	Zone	Ac.	Nitrogen Lbs./ac	Total Nitrogen Lbs.	Phosphorus (P_2O_5) lbs./ac	Total Phosphorus Lbs.	Potassium (K_2O) lbs./ac	Total Potassium Lbs.

****** Fertilizer/lime applications are not generally recommended for native grass species. If cost-share payments apply, payments for soil amendments if recommended by NRCS will be made based on University of Kentucky soil test recommendations. Material specifications, weight and other certification information may be requested by NRCS and FSA representatives as necessary to verify contract compliance.

Table 4 - Vegetation and zone width establishment requirements. Duplicate this sheet as needed.

						Tree /Shrub Species				Herbaceous Species			
Tract No.	**Field No.**	**Zone**	**Width 1/**	**Length**	**Ac.**	**Tree/Shrub Species 2/**	**Spacing (Ft.)**	**Trees per Acre**	**Total Number Trees**	**(Grass/Legume)**	**Seeding Rate 3/ (/Ac)**	**Total Seed (Lbs/Oz.)**	**Planting Date**

1/ Width of existing trees not included
2/ At least 80% of the species for each buffer area shall consist of three hard mast tree species.
3/ Seeding rates are based on a Pure Live Seed (PLS) basis.