



COOL-SEASON GRASSES

ESTABLISHING AND MAINTAINING PLANTINGS FOR
EROSION CONTROL, WATER QUALITY, AND WILDLIFE HABITAT

Conservation Practice Job Sheet

Natural Resources Conservation Service (NRCS)

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INTRODUCTION

Cool-season grasses are plants that grow best in the spring and fall when soil and air temperatures are cooler. They generally go dormant in mid-summer. Cool-season grasses, either alone or in combination with legumes and/or wildflowers, can be planted to reduce soil erosion and sedimentation, improve water quality, provide wildlife habitat, and beautify an area. Tall fescue, red fescue, ryegrass, orchardgrass, bluegrass and timothy are examples of commonly planted cool-season grasses.

This job sheet provides instructions for planting and maintaining cool-season grasses in good condition so they can serve their intended purpose. Using proper planting and management techniques, especially during the establishment years, will significantly improve plant health, reduce weed problems, and increase the likelihood of success.

SITE PREPARATION

Before planting, it is essential to reduce competition from other vegetation that may be present on the planting site, such as other grasses or weeds. The type and density of the existing vegetation will determine how much pre-planting control is needed.

It's important to allow adequate time to complete this process. If significant quantities of noxious or aggressive weeds or invasive plants are present, be aware that you may need a year or two to control them before you can plant, especially if you will be planting in a large area. By state law, noxious weeds in Maryland are Johnsongrass, shattercane, Canada thistle, bull thistle, plumeless thistle, and musk thistle.

Sites without Existing Vegetation

If the cool-season grasses will be planted into a clean, relatively weed-free area (such as cropland that was planted during the previous growing season), then competition from existing vegetation should not be a concern. However, a cover crop or nurse crop may be needed for erosion control and/or to reduce future weed competition (see page 2).



Take into account any noxious or aggressive weeds on the site that might have been suppressed (but not killed) with previous herbicide applications. If live rootstocks are present, these weeds may be very difficult to kill in a new planting without destroying the desirable plants. If you think you may have a weed problem, or if you don't know the site's weed history, it may be prudent to wait one full growing season to see what comes up. Use an appropriate herbicide to treat weeds if they occur, then plant the cool-season grasses.

Sites with Existing Vegetation

If cool-season grasses are going to be planted into existing vegetation (for example, into other grasses or weeds), you will need to reduce competition before planting. For sites that need extensive preparation, much of the work can be done during the fall prior to spring planting, or in late summer before a fall planting.

Mow or brush hog the field or planting site. Then either treat the area with an appropriate herbicide or cultivate the planting area to reduce competition.

Using herbicides. Choose a non-selective herbicide such as glyphosate (for example, Roundup, KleenUp). A selective herbicide such as 2,4-D may be used instead, depending on the species of weeds you are

Land owners and managers please note: If you received cost-sharing for your grass planting, be sure to check with your funding agency/organization for specific maintenance or management requirements.

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trying to control. Follow all label directions when using herbicides, and consider herbicide persistence (carryover) as it may affect new plantings.

For extremely vigorous turf or weeds, you should plan to make one application of herbicide in early fall, followed by another the next spring before planting. Or, if you make the first herbicide application in the spring, you should plan to make a second application a few weeks before planting, depending on label directions.

Do not plant the cool-season grasses until the competing vegetation is sufficiently controlled. It is much easier to control the competition before planting than afterward. Cultivation of the planting area may be needed following herbicide treatment if the dead plant matter is very thick and will be difficult to plant through. You may also need to re-spray after cultivation if weed seeds brought to the surface germinate.

Using cultivation only. If you do not want to use herbicides, then you will need to cultivate the field or planting site. Cultivation is usually less effective than herbicides for killing heavy sod or persistent weeds. Also, bare ground produced by cultivation may be subject to erosion and can provide a good seedbed for more weed growth. If necessary, use a cover crop or nurse crop to control erosion and help suppress weeds.

Herbicide Carryover

Carryover from herbicide treatments (recently applied or from prior years) can pose a threat to new plantings. Seedlings are particularly sensitive to herbicide carryover. Herbicides such as Basagran, Blazer, Poast, Plateau and Roundup have low persistence and generally do not pose a risk for carryover. Herbicides such as Atrazine, Preview, Canopy, Classic, Lorox Plus, Command, Scepter and Treflan have medium to high persistence and can pose a risk of carryover. The persistence of herbicides is directly affected by factors such as soil pH and moisture. To assess risks before planting, read the herbicide label or contact the manufacturer for specific information on persistence.

PLANTING

Planting Dates

Recommended planting dates typically range from late winter to late spring, and late summer to mid-fall. Most cool-season grasses benefit from planting in early fall, which allows two growing periods (fall and the next spring) for establishment of roots before summer. Summer heat and the lack of moisture is very stressful for cool-season grasses. Their survival is dependent on a well-developed root system.

Before deciding on the best planting date for a site, consider the need for weed control vs. the likelihood of having sufficient moisture for germination and growth of grass seedlings. Where cool-season weeds are likely to be a problem, planting in mid to late spring will allow more time for weed control before planting. On droughty sites, plantings made during late winter to early spring, or mid to late fall, are more likely to have the soil moisture necessary for seedling establishment.

To obtain recommended planting dates for your area, contact your local NRCS Field Service Center.

Seed Availability

Seeds of many species may be available throughout the year, but supplies are usually best from late winter to early spring, and early in the fall. Don't wait to buy seed until the day you are ready to plant. Local seed suppliers may not always have the species or varieties you want in stock, but may be able to order them for you. Or, you may need to order your seeds by mail or on the Internet. Contact your local NRCS Field Service Center if you need the names of suppliers. Store all seeds in a cool dry place before planting.

Using a Cover Crop or Nurse Crop

If erosion is a concern, use a cover crop or nurse crop of 20 to 40 pounds/acre of oats, barley, or wheat. Oats are the preferred nurse crop because they are less competitive than the other small grains. To use as a cover crop, plant the small grain at the higher rate in the fall prior to a spring planting of cool-season grasses, or in the spring before a fall planting of cool-season grasses. Plant the small grain at the lower rate when used as a nurse crop along with the cool-season grasses.

If erosion is not a concern, a cover crop or nurse crop can be planted at the lower seeding rate to help suppress weeds.

Planting Methods

Generally, the best method for establishing cool-season grasses is to use a no-till planter to drill seed into existing cover (for example, into a cover crop, crop residue, chemically killed weeds or grasses, etc.). No-tilling into undisturbed soil greatly reduces the germination of annual weeds and minimizes erosion, especially where slopes are 6 percent or more.

No-till planting into plant residue. On sites where existing vegetation was killed with herbicide or there is crop residue from previous years, no-till the cool-season grasses directly through the dead residue. Add a nurse crop as needed to control erosion and/or suppress weeds. If you must work up the soil because the residue is too thick to plant through, it is strongly recommended that you use a cover crop or nurse crop.

No-till spring planting into a fall cover crop. In the fall, prepare a seedbed by working the soil with a plow, disk, or similar equipment. Continue tillage until a reasonably uniform seedbed is prepared. Then plant a cover crop. In the spring, no-till the cool-season grass seed into the cover crop. (If the cover crop is tall, mow it first and no-till into the stubble.) If aggressive or noxious weeds have developed since the previous fall, use an appropriate herbicide to treat them before planting.

Broadcast planting. If necessary, cool-season grasses can be planted by broadcasting onto a conventionally prepared seedbed. Broadcast seed onto a well-prepared, firm seedbed. Grasses with small seeds may need to be mixed with a filler (for example, sawdust, finely ground corn, or slightly moistened peat moss) to achieve an even distribution of seed. Incorporate the seed into the soil 1/8 to 1/4-inch deep by cultipacking, raking, or dragging. Broadcasting is usually less successful than no-tilling because it is more difficult to get good seed placement in the soil.

Lime and Fertilizer

Most cool-season grasses prefer a pH of 5.5 and above. If legumes are included in the planting, a pH of at least 6.0 is desirable. A pH of 6.0 to 6.5 is ideal for most plantings.

Apply lime and fertilizer if needed based on soil test results. The use of commercial fertilizer and other forms of plant nutrients must be in compliance with Maryland nutrient management regulations, as applicable. Fertilizer applied without a soil test may result in an inefficient quantity of nutrients for plant establishment, or could result in overapplication of nutrients leading to potential water quality problems and excessive weed growth. For additional information, consult with your local Maryland Cooperative Extension specialist or certified nutrient management consultant.

PROTECTING PLANTS

Use fences and other exclusion devices to control livestock and human access to the planting, at least until it is well established. Many types of fences and exclusion devices are available. Contact your local NRCS Field Service Center for recommendations for your site.

ESTABLISHING AND MAINTAINING THE PLANTING

Cool-season grasses usually take one to two years to become fully established. During that time, weeds can be a major problem.

The goal of weed control is to reduce (but not eliminate) competition from broadleaf and grass weeds such

as mare's tail, ragweed, dandelion, foxtail, crabgrass, etc. Many of these plants provide good food and wildlife cover, but if they get too tall and dense, they will shade out the cool-season grass seedlings. Don't wait until weeds are four feet tall before trying to control them. Mowing them at that stage will produce so much plant litter that you may smother the seedlings.

Establishing the Planting

Planting year. Mow the planting as needed to control weeds. Don't let weeds get taller than 18 inches. Mow to a height of 4 to 6 inches or just above seedling height.

Selective herbicides can be sprayed over the planting to control specific weeds. Herbicides are most effective when weeds are young and actively growing. Be sure to read and follow all label directions when using herbicides. Do not apply herbicides on windy days when spray drift can damage nearby plantings. Control noxious weeds as required by state law.

Second year after planting. Inspect the planting in early spring. If weeds persist and comprise more than 25 percent of the stand, either treat with an appropriate herbicide or plan on periodically mowing the area to a height of 6 to 8 inches. Throughout the growing season, continue to mow as needed to keep weeds under control. Always avoid damaging the plantings during mowing. A good rule of thumb is to cut off no more than one-third of the grass leaf area at one time.

Maintaining the Planting

By the third year, cool-season grasses should be well established. Established stands do not require frequent attention, but most need occasional management to rejuvenate the stand and to keep trees and shrubs from invading.

The type and frequency of management will depend on the purpose of the planting. 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).

For optimum water quality benefits, you should maintain a dense stand of grasses and, where feasible, use management practices such as haying and grazing to remove nutrient-rich top growth from the site.

Management and maintenance activities may include mowing, weed control, haying, grazing, and overseeding with forbs or legumes.

Mowing. For optimum wildlife benefits, mow on a 2 to 3 year rotation to control woody growth. Mow only 1/3 to 1/2 of the planting each year. The remaining unmowed areas will provide year-round wildlife food and cover. The best time to mow is late winter to early spring, preferably in March. This will allow grasses to

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provide protective cover for wildlife during the winter. On sites where soils are usually too wet in the spring, you can mow in the fall when soils are dry. Do not mow during the primary nesting season (April 15 - August 15).

For practices where water quality has been identified as the primary purpose, more frequent mowing may be needed to maintain grass in a dense turf-type condition that will prevent erosion and protect water quality. If wildlife habitat is a concern, do not mow during the primary nesting season (April 15 - August 15).

If stands are dense and have large quantities of top growth, cuttings should be removed if at all possible. If the cuttings are not removed, they can smother new growth.

In order to allow a sufficient recovery period before winter dormancy, grasses should be allowed to reach a height of 5 to 6 inches before the first killing frost. Mowing can also be done after the first killing frost when plants are dormant.

Weed control. Control noxious weeds and other invasive plants by spot treatment, using mechanical methods or approved herbicides. For more information about controlling specific weeds, contact your local office of Maryland Cooperative Extension or the Maryland Department of Agriculture, Weed Control Section.

Haying. Cool-season grasses are best hayed or grazed during the spring and fall when they are actively growing. Take the first cutting of orchardgrass, fescue, and other non-jointed grasses when plants are in the boot stage, with successive cuts made after an 8 to 10-inch recovery. For timothy and other jointed grasses, take the first cutting when plants are in early to full head, then successive cuts at 6 week intervals. Allow grasses to reach a height of 5 to 6 inches before the first killing frost.

If the planting is intended primarily for wildlife habitat, do not cut hay during the primary nesting season (April 15 - August 15). Haying during the nesting season can kill many ground-nesting birds, rabbits, and other ground-dwelling wildlife.

Grazing. Begin initial grazing when the plants are at least 8 inches tall. Graze down to 3 inches, and allow

regrowth to 8 inches before grazing again. The final grazing height should be about 4 inches to allow sufficient recovery before dormancy.

To minimize adverse impacts on wildlife, graze only 1/3 of the stand each year. When properly managed, grazing livestock have minimal impacts on nesting birds and other wildlife. Therefore, grazing is acceptable during the nesting season, *provided that the area is not overstocked or overgrazed.*

Overseeding forbs and legumes. As a grass planting matures, the forb and legume component tends to decline due to natural thinning, disease, winter injury, and heat stress. Forbs and legumes that were originally planted with cool-season grasses may be re-established by overseeding the grasses with the desired seeds.

Use one of the following planting methods for overseeding:

1. **No-till planting.** Cut the grass short before overseeding. Use a no-till drill to place seed ¼ to ½-inch into the soil, with minimal disturbance of existing plants. This is the preferred method for planting forbs and legumes because drilling places the seed directly in the soil;
2. **Broadcast planting.** Cut the grass short and broadcast the seed. Then press the seed into the soil with a smooth or ring-type roller, or pull a drag or harrow over the seeded area to enhance seed-soil contact. The success of broadcast seeding depends in part on the amount of ground litter (thatch) that is present. For legumes and other small seeds, the litter layer should be less than ¼-inch thick, preferably almost zero. If the litter is thicker, then it must be opened before seeding by using a light disk, harrow, or other implement to expose the soil surface. It is important that as many seeds as possible come in direct contact with the soil;
3. **Frost seeding.** For legumes only, you can use frost seeding during the dormant season. Broadcast legumes over the grass in late winter or very early spring when the ground is still frozen. Freezing and thawing, in combination with rainfall, will work the seed into the soil surface.

For optimum wildlife habitat, do not overseed during the primary nesting season (April 15 - August 15).

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