

Herbaceous Planting Site Preparation

Site preparation alters the existing vegetation and soil structure in advance of seeding, increasing emergence, growth and survivorship of the seeded natives by removing thatch, improving seed to soil contact, and reducing weeds. From construction sites to crop fields, site conditions can be drastically different and require specific site preparation techniques. There are two broad categories of site preparation: one associated with bare soil sites, and one with vegetated sites.

Caution - Most of the site preparation methods described in this publication involve killing the existing vegetation and should NOT be used if remnant vegetation (high quality native plants that were not planted) are present at the site. Restoration techniques should be applied if remnant plants are present. The purpose of this technical note is to provide general information on planting site preparation. If planning site prep for a planting enrolled in a particular program (EQIP, WRE, CRP, etc.), always refer to the applicable program guidance to ensure all planned practices adhere to program requirements.

Site Preparation for “Bare Soil” Sites

Construction Sites

On many construction sites, the original soil profile has been altered during the construction process. Some areas within the site may have compacted soil from construction equipment (see Assessing for Soil Compaction). Many construction sites have large clods and compacted soil. An ideal seedbed for a native seeding should consist of friable soil particles (1/2 inch or smaller) in the top 1 inch of the soil.

- Rototill or shallow disk (4 inch depth) prior to seeding for compacted soil or if clods are greater than 1/2 inch.
- Seed in fall or in early spring
- Cultipack the site before seeding if a no-till seed drill is used. Cultipack the site after seeding if the site is seeded with a drop or broadcast seeder

Row Cropped Sites

Sites that have been row cropped may require different kinds of site preparation. The amount of site preparation needed depends upon the quantity of crop residue (see Assessing Crop Residue Section) left on the field and the type of seeding equipment used.

Light Crop Residue

- No other site preparation needed if seeded with a no-till drill.
- If broadcast or drop seeding, first cultivate with a spiked toothed harrow to roughen the soil surface.
- Seed in fall or in early spring
- Cultipacking after seeding improves seed-to-soil contact.

Heavy Crop Residue

- Mow (chop) stalks if standing.
- Remove crop residue by baling or by disking/cultivating the planting site to mimic a seedbed needed for a corn or soybean planting.
- Seeding can be done in fall or in spring after removing crop residue.

- Cultipacking after seeding improves seed-to-soil contact.

Feedlots, Overgrazed Pastures

Bare soil can result from severe overgrazing and livestock trampling. By removing livestock from the site, vegetation can re-emerge from underground rootstock. Livestock should be removed for at least one entire growing season to allow the vegetation to recover and be identified. If remnant (not planted) plants are detected, the site should be considered a remnant and site preparation techniques for remnants should be used. Typically, feedlots and overgrazed pastures will contain persistent perennial plants and high levels of weed seed in the soil. Manure can also contribute to high levels of nitrogen in the soil, which will stimulate weed germination and weed growth. If no remnant plants are detected, use site preparation techniques from the Stand Replacement subsection of this publication.

Site Preparation for "Vegetated" Sites

Types of vegetated sites include: turf grass lawns, pastures, hayfields, and conservation plantings. Vegetation on these sites can vary from hayfields and lawns to a dense stand of grasses on a site enrolled in a set-aside program. Caution - If a site contains remnant (not planted) plants, the site should be considered a remnant and site preparation techniques for remnants should be used.

There are two site preparation options- stand replacement (starting over) and stand enhancement (interseeding). Stand replacement site preparation techniques should be used to replace a current stand of non-native grasses and legumes with native grasses and wildflowers. Stand enhancement site preparation techniques are typically used when the goal is to add additional native species to sites that currently have some native plants or are dense stands of native and pasture grasses with few to no wildflowers.

1. Stand Replacement (Starting Over) - Stand replacement has three primary methods of site preparation. Select a site preparation technique based upon the speed in which you want to complete the project, the budget for the project, and the kind of equipment available to conduct site preparation activities.

Spray and Plant (Option 1)

- Mow (4 inches high or less) in spring or in late summer or burn when the vegetation is dormant.
- Apply an appropriate herbicide(s) to actively growing vegetation when there is 4 to 6 inches of new growth. For legume/grass stands, a mixture of a broadleaf and grass herbicide should be used. It can take 2 to 4 weeks after mowing or burning for the vegetation to have enough new growth for a herbicide treatment. Re-spray any green plants after 14 days from the first herbicide treatment. Wait another 14 days after the last herbicide treatment to seed. Seed can then be broadcasted or drilled according to the GA CPA-4 Native Seeding Plan.

Repeated Spray and Plant (Option 2) - This site preparation technique requires an entire growing season and is more expensive than option 1, but control of persistent perennial plants is greatly improved.

- Mow (4 inches high or less) or prescribe burn in early-spring.
- Apply the most appropriate broad spectrum herbicide to vegetation when there is 4 to 6 inches of new growth. Respray or spot treat each time it 'greens up' throughout the summer and into early fall.

- Seed according to the GA CPA-4 Native Seeding Plan. No further site preparation is needed if the site is seeded with a no-till seed drill. If seeding with a broadcast seeder or drop seeder, the area should be roughed up with a spiked toothed harrow before seeding, breaking apart thatch and loosening the surface soil. After seeding, the site should be cultipacked (rolled).
- Spray, Till and Plant (Option 3) - This method controls established persistent perennial plants and germinating weed seed in the soil. Caution - This option is not recommended for erosive sites as repeated discing will create bare soil.
 - Mow (4 inches high or less) or prescribe burn in early-spring.
 - Apply the most appropriate broad-spectrum herbicide to actively growing vegetation when there is 4 to 6 inches of new growth.
 - Wait 10 days after the herbicide application and Disk the site at 3-4 week intervals for the entire growing season.
 - Seed in fall or in early-spring according to the GA CPA-4 Native Seeding Plan.
 - Cultipacking after seeding improves seed-to-soil contact.

2. *Stand Enhancement (Interseeding)* - Stand enhancement techniques are often applied to sites that are dominated by grasses with few to no prairie forbs. Stand enhancement adds native grasses and forbs without eliminating the established vegetation. Seed according to the GA CPA-4 Native Seeding Plan.

Direct Interseeding (Option 1) - Seed is sown into the established vegetation without disrupting the established vegetation. Plant establishment can be low in stands of persistent perennial plants and non-native vegetation can persist for many years after seeding. Any seeding method can be used. This site preparation option is quick and can be done without any specialized equipment, but will require patience.

Repeated Mowing and Interseeding (Option 2)

- Remove standing dead material and thatch by prescribed burning in fall or by late summer haying.
- Seed in fall or in early- spring with a no-till drill.
- Mow from late-April to early-September, four inches high every two or three weeks the first growing season.

Spray, Mow and Interseed of Planted Natives (non-remnants) (Option 3)

- Remove standing dead material and thatch in spring by prescribed burning, haying or mowing.
- Spray 50 percent of the stand with a grass herbicide when there is four to six inches of new growth.
- Seed in fall or in early-spring with a no-till drill.
- Mow once in early-summer in the first growing season.

Disk and Interseed of Planted Natives (non-remnants) (Option 4).

- Removed thatch and standing dead material in late-summer by grazing, haying or mowing.
- Lightly disk (to four inches in depth) 50 percent of the site in early-fall.
- Seed in late-fall or in early-spring. Any seeding method can be used.
- Mow in late-spring and in mid-summer in the first growing season.

Assessing Crop Residue

Crop residue can be grouped into two categories-light or heavy. Light crop residue is defined as crop stubble no more than 4 inches high with residue on the surface not intertwined and some bare soil that can be seen through the residue. Light crop residues can include: soybean residue, corn residue

after a silage harvest, corn residue after baling the residue, or cereal grain residue. Heavy crop residue is defined as crop stubble taller than 6 inches, intertwined and layered on the surface, with no bare soil visible. Heavy crop residues can include: corn or sorghum residue after a typical harvest and some cereal grains or cover crops, such as winter wheat or cereal rye.

Assessing crop residue in the field must be done onsite. Walk in a line across the field and stop in ten spots of equal distance from end to end. Look down near your feet to see if bare soil is visible. Reach down and grab some residue; it is intertwined if a layer of residue larger than your hand comes off the ground. If intertwined residue is found and bare soil cannot be seen in more than five spots, consider the crop residue to be heavy.

The “Screwdriver Method” For Compacted Soil

Soil compaction is a condition when there is a decrease in air space between soil particles. Heavy machinery operation, human or livestock trampling can cause soil compaction. Compacted soil can severely reduce establishment of natives by preventing seeds from being planted at a proper depth and by inhibiting root penetration of newly germinated seedlings. To check for soil compaction near the soil surface, stick a large flat screwdriver into the soil at multiple spots in the compacted region. If the screwdriver cannot be pushed more than 2 inches into the soil in at least half of the spots, there is a good chance that the soil surface is too compacted. To eliminate surface compaction, rototill or disc the site to loosen the upper 4 inches of soil. Any large (greater than 1/2 inch) dirt clods need to be broken into smaller pieces. To reduce clod size, harrow the site using a drag harrow or a piece of chain link fence with some weight added.

Removing Trees and Shrubs

The species composition of a planted native stand will change over time if volunteer trees and shrubs are not eliminated. Shade from trees and shrubs will create cooler and moister conditions under the canopy favoring shade tolerant plant species and displacing full-sunlight species. In addition, woody plants that are left on the site will spread, by suckering and seed, further displacing herbaceous plants and potentially reducing fine fuels in fire dependent plant communities. We recommend the removal of all non-native trees and shrubs.

Pre-planting Herbicide Treatment of woody plants

Herbicides are very effective at killing woody plants. Smaller trees and shrubs can be foliar-sprayed. Trees greater than 1/2 inch diameter need to be cut and the stump chemically treated to prevent resprouting (Table 1). Herbicide should only be applied to the inner bark (cambium layer) of the cut surface. The inner bark region of the cut stump is a thin layer adjacent to the outer bark of the tree. Because of the high concentration of chemical in stump-treatment herbicides, it is important to be careful not to dribble herbicide off the cut surface onto the ground. Coniferous trees (pines and cedars) do not need to be treated after being cut because they will not re-sprout, but all deciduous trees will need to be treated. Stumps need to be cut flat and as close to the ground as possible to prevent interference with seeding equipment.



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Conservation Practice Specifications/Herbaceous Planting Site Preparation Job Sheet

OCTOBER 2016

Client/Operating Unit:		Tract:		Farm No.:	
Farm/Ranch Location:		Field No.:		Program:	
Specifications Date:		Planned Installation Date:			
Proposed Treatment Acres:					

Installation shall be in accordance with the specifications, drawings, and other requirements as identified in this Job Sheet. NO CHANGES ARE TO BE MADE IN THE SPECIFICATIONS WITHOUT PRIOR APPROVAL BY AN AGENCY REPRESENTATIVE.

DESIGN AND INSTALLATION/LAYOUT APPROVAL:

I have job approval authority and certify this practice has been designed with specifications to meet the conservation practice standard and that the client has been advised of installation and layout elements:

NRCS Representative name and title (type or print):		
NRCS Representative Signature:		Date:

LANDOWNER/OPERATOR ACKNOWLEDGES:

- a. They have received a copy of the specifications and understand the contents including the scope and location of the practice.
- b. They have obtained all necessary permits and/or rights in advance of practice application, and will comply with all ordinances and laws pertaining to the application of this practice.
- c. No changes will be made in the installation of the job without prior concurrence of the NRCS.
- d. Maintenance of the installed work is necessary for proper performance during the life of the practice. The practice life is _____.

I have reviewed all specifications and agree to install as specified:

Landowner/operator name and title (type or print):	
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Landowner/operator Signature:		Date:
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RECORD OF COMPLETION AND CHECK OUT CERTIFICATION:

Treated Acres:	Date Completed by Client:	Date Certified:	Approver's Initials:

I have job approval authority and certify this practice has been applied and meets design specifications:

NRCS Representative name and title (type or print):		
NRCS Representative Signature:		Date:
Notes:		