

Tree/Shrub Site Preparation

Conservation Practice Specification Sheet

490



Definition

Treatment of areas to improve site conditions for establishing trees and/or shrubs.

Purpose

Site preparation is used to create a favorable site conditions for establishing woody plants. Establishment may occur by direct seeding, natural regeneration by seed, and hand or machine planting. It may also be used to expose mineral soils and create light and space conditions for favorable for natural regeneration by root or stump sprouts. The practice removes vegetation competing for water, light, space and nutrients so seeds or seedlings of desirable woody species have adequate space to survive and grow.

Where used

Site preparation is used when converting cropland or grassland to a woody planting such as a windbreak, shelterbelt or living snow fence

and for establishing riparian forest buffers. It is essential for afforestation, the creation of new forests where none currently exist. It is also used to open space to establish more desirable species from seed trees for regeneration and after a timber harvest for reforestation.

Resource management system

The tree/shrub site preparation practice is a part of a resource management system (RMS) for a conservation management unit. The practice should be paired with the practice Tree/Shrub Establishment (612). For example, Tree/Shrub Site Preparation (490) and Tree/Shrub Establishment (612) can be combined with Wetland Restoration (657) and/or Wetland Wildlife Habitat Management (644) to act together to enhance or improve habitat for bottomland forests and wetland wildlife, including forest interior birds, or native bat populations and other forest dwelling pollinators. Other practices for an RMS may include Forest Trails and

Landings (655), Firebreak (394), Prescribed Burning (338) or water quality practices such as Grassed Waterways (412), Critical Area Planting (342), Riparian Forest Buffers (391) or Filter Strips (393).

For site preparation to function properly, livestock and certain wildlife must be excluded or controlled and managed with Prescribed Grazing (528), Access Control (472) and/or Fence (382), as appropriate, prior to planting.

Methods of Site Preparation

Various methods are used to prepare a site for woody planting: mechanical, chemical, prescribed burning and biological control (livestock grazing). These methods are often used in combination to create suitable conditions for plant establishment.

The methods or treatments used should be appropriate for the limitations of the site and the equipment used. Document the site conditions including soil types, moisture content at time of treatment, percent slope, size of treatment area, intensity of activity, treatment method, planned planting method and plant materials to be planted.

Wildlife Benefits

Documenting and protecting existing wildlife habitats provides additional benefits. Refer to the practice Upland Wildlife Habitat Management (645), Tree/Shrub Establishment (612), or Early Successional Habitat Development (647) or other suitable wildlife practices to maximize benefits. Minimize adverse impacts to wildlife when selecting and implementing site preparation.

Specifications

Site-specific requirements are listed on the job sheet. Additional provisions are entered on the job sketch sheet. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See NRCS Conservation Practice Standard Tree/Shrub Site Preparation (490) for more information.

MECHANICAL SITE PREPARATION

Mechanical site preparation uses hand tools or machinery to remove vegetation and condition the soil. It is used when the species to be planted needs to be in contact with the mineral soil layer (scarification); where a restrictive soil pan or plow layer needs to be broken up; and

when a smooth and firm seed bed is needed for machine planting. When using mechanical site preparation, use soil disturbing equipment on the contour with erosive soils and on steeper slopes. If slopes exceed 35%, use soil stabilization practices, such as Mulching (484), to reduce the risk of soil erosion.

Treatments include patch or row scarification, raking, disking, bedding, roller chopping and shearing. Use contour strip tilling on steep and erosive sites. Facilitating practices include: Filter Strips (393), Contour Buffer Strips (332), Contour Farming (330), Riparian Forest Buffers (391), Forest Trails and Landings (655), Mulching (484) or Critical Area Planting (342) among others. In many situations mechanical site preparation is used with herbicides (chemical methods) or prescribed burning.

Estimate soil erosion ratings by using the Web Soil Survey: Site Preparation-Surface, Site Preparation-Deep, Soil Rutting Hazard and/or Erosion Hazard (off-road, off-trail), as appropriate, in the Suitabilities and Limitations tab.

<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

A rating of unsuited for mechanical site preparation means that site preparation methods other than mechanical will be used.

A rating of very severe for erosion hazard or rutting hazard means that site preparation methods other than mechanical will be used.

Ratings of moderate or severe for erosion hazard or rutting hazard means that appropriate facilitating practices for soil and/or water protection must be used; see above for a list of facilitating practices.

If the rating for rutting hazard is severe, the soils should not be disturbed when wet or when ruts are likely to occur.

If a root growth restrictive layer is suspected, contact a local soil scientist for an on-site evaluation.

Deep ripping shall be performed when a root growth restrictive layer caused by surface compaction, tillage pans, deep compaction or inherent hardpans exist less than 12 inches from the soil surface.

If a root growth restrictive layer exists, deep ripping shall be performed. Use a published County Soil Survey or the Web Soil Survey (Soil Qualities and Features/Depth to Any Soil Restrict

Layer tab) to determine the depth to a soil restrictive layer. Ripping may also be needed for plow pans in croplands if they may restrict root growth of trees or shrubs.

Refer to the MNDNR's publication "Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers and Resource Managers" for recommendations for treating slash and debris.

http://www.frc.state.mn.us/documents/council/site-level/MFRC_FMG&Biomass_2007-12-17.pdf

CHEMICAL SITE PREPARATION

Chemical application is used to kill vegetation that will compete with the planned woody species to be established. It is used in areas where mechanical site preparation methods are not suitable (see above section). Heavily vegetated sites may need chemical treatments after mechanical site preparation. There are a wide variety of chemicals approved for site preparation treatments. Only use chemicals that are approved for the site and vegetation to be removed and will not harm planted species.

For chemical site preparation use the practice standard Integrated Pest Management (595) as a supporting practice. Use WIN-PST to evaluate leaching and runoff potentials. Pesticide/soil hazard risk ratings of "extra high" or "high" shall be accompanied by mitigating practices and/or substitution of pesticides to lower risk ratings.

If the planned establishment is using fabric mulch in tilled rows, apply appropriate chemical(s) in bands over the marked planting rows so that the chemical application does not exceed the fabric width. Use the practice Tree/Shrub Establishment (612) to determine row widths and the practice Mulching (484) for guidelines on using fabric mulches.

PRESCRIBED BURNING

Prescribed burning is often used as a supplementary site preparation treatment. Use the practice Prescribed Burning (338) when including this as a site preparation treatment.

BIOLOGICAL CONTROL

Prescribed grazing may be used as a site preparation method to control invasive species or other vegetation management objectives, particularly on steep slopes and where existing vegetation is very heavy. The practice Prescribed Grazing (528) must be used to implement the practice. Intensity, timing, frequency and duration of grazing activities must be documented and managed in order to achieve the desired objectives. Livestock must be removed from the establishment site prior to planting the woody species. If a temporary fence is needed use the practice Fence (382) as a supporting practice.

COVER CROPS

If a temporary or permanent vegetative cover is needed after site preparation, use the cover guidelines in the practice standard Tree/Shrub Establishment (612).

Operation and maintenance

Site preparation for afforestation or reforestation projects need maintenance until the woody species are seeded or planted. Whether in strips, blocks, clumps, groups or broad areas, noxious weeds, invasive plants and competing vegetation needs to be controlled or removed, and erosion, runoff and sedimentation needs to be controlled. Seeding or planting must take place as soon as possible after site preparation has been completed. Cover crops should be used if bare soil is left exposed to potential wind or water erosion.