

NATURAL RESOURCES CONSERVATION SERVICE

MULCHING DESIGN PROCEDURE (484DP)

This guide pertains to the all Nebraska FOTG Practice Standards where additional protection for establishment of herbaceous or woody vegetation is needed. It is primarily used in conjunction with the Critical Area Planting (342 Standard) and in any situation where additional erosion control is needed until vegetation is established (See 550DP for additional guidance).

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I. BACKGROUND

- A. Mulching can be utilized on areas to conserve soil moisture; moderate soil temperature; provide erosion control; suppress weed growth; facilitate the establishment of vegetative cover; and improve soil condition.
- B. Mulching is required on areas subject to erosion (i.e. critical erosion areas, structures, grassed waterways, concentrated flow areas, etc.); that are not adequately controlled with other measures (side dikes on waterways, cover crops, or other approved erosion control measures).
- C. Mulching is not required on "Critical Planting Areas" where an adequate cover crop or other vegetative cover provides for adequate erosion control prior to vegetative establishment.

II. MULCH MATERIAL: QUALITY STANDARDS & APPLICATION RATES

- A. Mulch includes natural plant and artificial (i.e. synthetic, commercial) material. Mulch can be applied alone or with commercial tackifier (used to anchor the mulch). Tables 1 and 2 provide a material list and recommended application rates.
 - i) Natural Mulch Material Requirements:
 - 1. Mulch shall be either dry cured native prairie hay, native grass hay from seed growing operations, native grass hay from planted warm season grass stands, or threshed grain straw.
 - 2. Hay or straw in a stage of decomposition so advanced as to "powder" in the mulch blower will be rejected.
 - 3. Straw shall be from threshed oats or wheat. The straw shall be baled before the seasonal growth of annual weeds.
 - 4. Hay & straw mulch shall be certified as "Noxious Weed Free" by the county weed control authority or other approved authorized agents. Attach copy of certification to Notes.
 - ii) Artificial or Synthetic Mulch Requirements

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1. Follow manufactures installation recommendations for specific type mulch used.
2. Attach a copy of the manufacture's warranty and product specifications or record the data in the Notes.

Table 1 Application Rates of Natural Materials With or Without Commercial Tackifier

<i>Description of Material</i>	<i>Application Rate</i>		<i>Type of Planting</i>
	<i>Mulch</i>	<i>Commercial Tackifier</i>	
*Native Grass Hay with viable seed	4,000 lb/ac	n/a	Native Grass / Introduced Grass
*Native Grass Hay with viable seed	2,000 lb/ac	150 gal/ac	Native Grass / Introduced Grass
*Native or Introduced Grass Hay	4,000 lb/ac	n/a	Native Grass / Introduced Grass
*Native or Introduced Grass Hay	2,000 lb/ac	150 gal/ac	Native Grass / Introduced Grass
*Legume Hay	4,000 lb/ac	n/a	Native Grass / Introduced Grass
*Straw	4,000 lb/ac	n/a	Native Grass / Introduced Grass
*Straw or Legume Hay	2,000 lb/ac	150 gal/ac	Native Grass / Introduced Grass
Wood Chips	8-12 T/ac	n/a	Shrubs & Trees only
Wood Chips	6T/ac	150 gal/ac	Shrubs & Trees only
Wood Shaving	2 T/ac	150 gal/ac	Scrubs & Trees only

*Certified Noxious Weed Free

Table 2 Application Rates of Commercial Mulches.

<i>Description of Material</i>	<i>Application Rate</i>	<i>Type of Planting</i>
Jute Netting (Erosion Control)	1 layer on soil surface	Native Grass / Introduced Grass
Excelsior Blankets (Erosion Control)	1 layer on soil surface	Native Grass / Introduced Grass / Shrubs & Trees
Curlex Fiber (Erosion Control)	1 layer on soil surface	Native Grass / Introduced Grass
Spun Glass Fibers	1,000 lbs/acre	Native Grass / Introduced Grass
Hydro-Mulch Fiber	1,500 – 2,000 lbs/acre	Native Grass / Introduced Grass
Synthetic Resin	105 gal/ac	Native Grass / Introduced Grass
Fabric Mulch	1 layer on soil surface	Shrubs & Trees Only
Wood cellulose	1,500 – 2,000 lbs/acre	Shrubs & Trees only

III. INSTALLATION REQUIREMENTS

- A. All areas to be mulched shall be reasonably smooth, free of rills and gullies.
- B. If the area to be mulched is to be seeded, follow seedbed preparation and seeding dates in Field Office Technical Guide Critical Area Planting Design Procedures (342DP) or Herbaceous Vegetation Design Procedures (550DP).
- C. Mulch shall be applied immediately following seeding, unless otherwise directed by the Engineer.
- D. Calibrate equipment to ensure uniform distribution and accurate application rates.
- E. Spread mulching material, uniformly over the area to be protected.
 - i) The mulch material should not inhibit germination or growth of the planted species and will ordinarily not be over one and a half inches in thickness.

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- ii) Hay and straw mulches can be spread by hand or mechanical methods. When spread by hand, the bales must be torn apart, “fluffed up” and spread uniformly over the areas.
 - iii) Artificial mulches shall be applied according to the manufacture’s specification and installation directions. Attach copy of manufactures’ directions to Notes.
- F.** All mulch is to be anchored or crimped the same day it is applied.
- G.** Clean up residual material from equipment and dispose of properly.

IV. ANCHORING REQUIREMENTS

A. Mulch material must be anchored by one of the following methods immediately following application and no later than 24 hours of application:

- i) Mechanical Anchoring
 - 1. Use of a weighted straight disk (preferably with dull blades) or a notched coulter mulch tiller (crimper) with coulter blades not to exceed 8” spacing (6” spacing is preferable).
 - (a) The crimper shall be narrow enough or hinged for uniform crimping. More than one crimping may be necessary.
 - 2. Wood chips may be pressed down by a land roller or by repeated trips with a rubber-tired tractor.
 - 3. Hydromulching with wood fiber or paper in a water-slurry is another form of mulching. This requires the use of a machine called a hydromulcher or hydroseeder and equipment access to the site.
- ii) Manual Hand Anchoring (Using Soil)
 - 1. By hand, place a shovelful of earth on top of the mulch material at a rate of one shovelful for each square yard of mulched material.
- iii) Commercial Tackifier
 - 1. A commercial tackifier may be used to anchor mulch on critical areas too steep for machinery operations. The commercial tackifier may be applied by sprinkling or pressure spraying.
- iv) Commercial Netting or Blankets
 - 1. All commercial netting or blankets must be anchored with soil, staples, or stakes. Secure material every 1 to 2 feet along side, top, and bottom ends. The remaining area should be held down with one (1) staple or stake per square yard. Attach manufacture’s specifications & installation directions to Notes.

V. MULCHING ALTERNATIVES: FEEDING LIVESTOCK ON CRITICAL AREAS (refer to Critical Area Planting Design Procedure (342DP))

- A.** Use seed mixtures and rates in accordance with information provided in establishing grass cover for critical areas after November 1. If using a seed a mixture of adapted native grasses species/varieties, seed at a minimum rate of 30 PLS/sq. ft.
- i) In lieu of seeding, feed hay containing viable mature native grass seed.
- B.** Mulch area with 2 to 3 tons per acre of native hay containing mature seed of desired grass species.

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- C. Anchor hay mulch according to the methods described in this design procedures or by feeding livestock on the enclosed mulched area for a short time period.
- i) Feeding livestock hay should be not begin until after November 1 and discontinued by March 30 and so that the site is left in good condition for establishing grasses (no excessive clumps of hay, manure, etc.).
 - ii) Livestock densities must be kept high in the area to promote even distribution and adequate hoof action of animal impact. Consider rotating placement of feeding areas and supplemental mineral/salt sources to promote even distribution.
 - iii) Livestock must be removed as the area is covered by manure and waste feed. Remove the livestock when there is approximately 1 inch buildup of manure and waste feed.

VI. GUIDELINES FOR OPERATION & MAINTENANCE

- A. Mulched areas will be periodically inspected in accordance with the conservation plan. Regardless of the mulching technique selected, the key consideration in inspection and maintenance is that the mulch needs to last long enough to achieve erosion control objectives.
- i) Where seeds fail to germinate, or they germinate and die, the area must be re-seeded, fertilized (as needed), and mulched within the planting season.
 - ii) Areas where erosion is evident shall be repaired and mulch re-applied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs.
 - iii) Reapply mulch to required thickness to maintain effectiveness and avoid smothering of grass seedlings.
 - iv) For trees and shrubs refer to the Windbreak/Shelterbelt Establishment, Tree/Shrub Planting Procedures Guide (380TPP) in the Field Office Technical Guide.